2.0 Project Description

Southern California Edison Company (SCE, or the applicant) proposes to construct the Santa Barbara County Reliability Project (proposed project) between the City of Ventura, in Ventura County, and the City of Carpinteria, in Santa Barbara County. The proposed project comprises the following:

- Removal and/or replacement of existing 66-kilovolt (kV) subtransmission structures facilities, primarily within existing utility rights-of-way (ROWs) between the existing Santa Clara Substation in Ventura County and the existing Carpinteria Substation in Santa Barbara County.
- Installation of marker balls on overhead wire where determined necessary.
- Modification of subtransmission and substation equipment within the existing Carpinteria Substation, Casitas Substation, and Santa Clara Substation.
- Replacement of line protection relays within existing substation equipment rooms or cabinets at the Getty Substation, Goleta Substation, Ortega Substation, and Santa Barbara Substation.
- Installation of telecommunications facilities to connect the proposed project to the applicant's existing telecommunications system for the protection, monitoring, and control of subtransmission and substation equipment.
- Installation of new telecommunications facilities along reconstructed subtransmission segments and at the Carpinteria Substation, Casitas Substation, Santa Clara Substation, and Ventura Substation.
- Transfer of distribution lines (and third-party infrastructure as necessary) to new subtransmission structures.
- Removal of subtransmission infrastructure, such as tower foundation footings, decommissioned during previous 66-kV reconstruction activities between 1999 and 2004.

The applicant estimates that construction would take approximately 24 months. The construction duration does not include any potential delays due to nesting birds, weather, outage constraints, permit acquisitions, or other unpredictable events. It is anticipated that the proposed project would be operational in 2017. Figure 2-1 shows the proposed project location and major components.

2.1 Location of the Proposed Project

The subtransmission components of the proposed project have been subdivided into seven geographically defined portions within Santa Barbara and Ventura counties (Figure 2-1):

- Segment 1 spans from the Santa Clara Substation in the east to the Casitas Substation in the west.

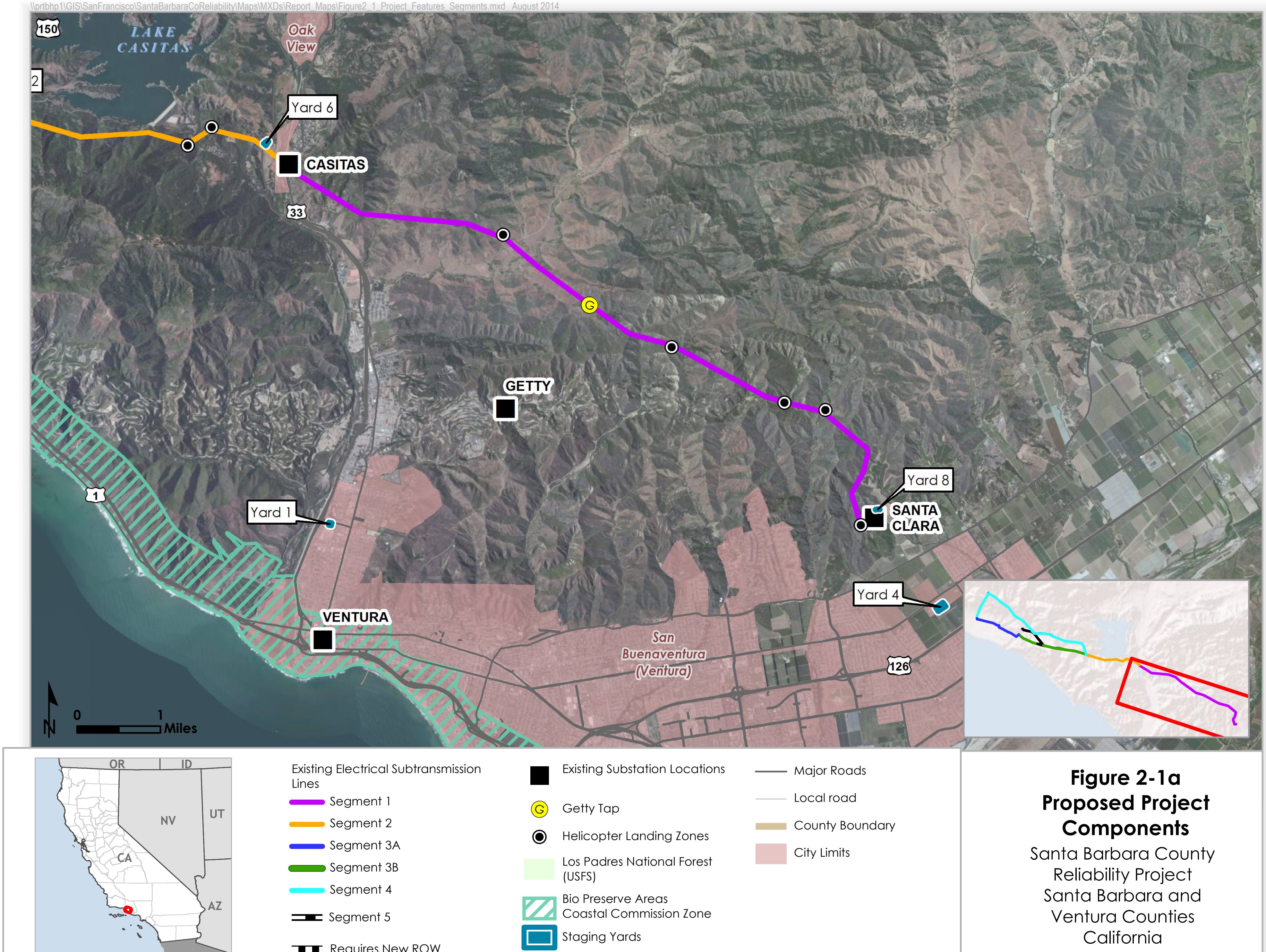


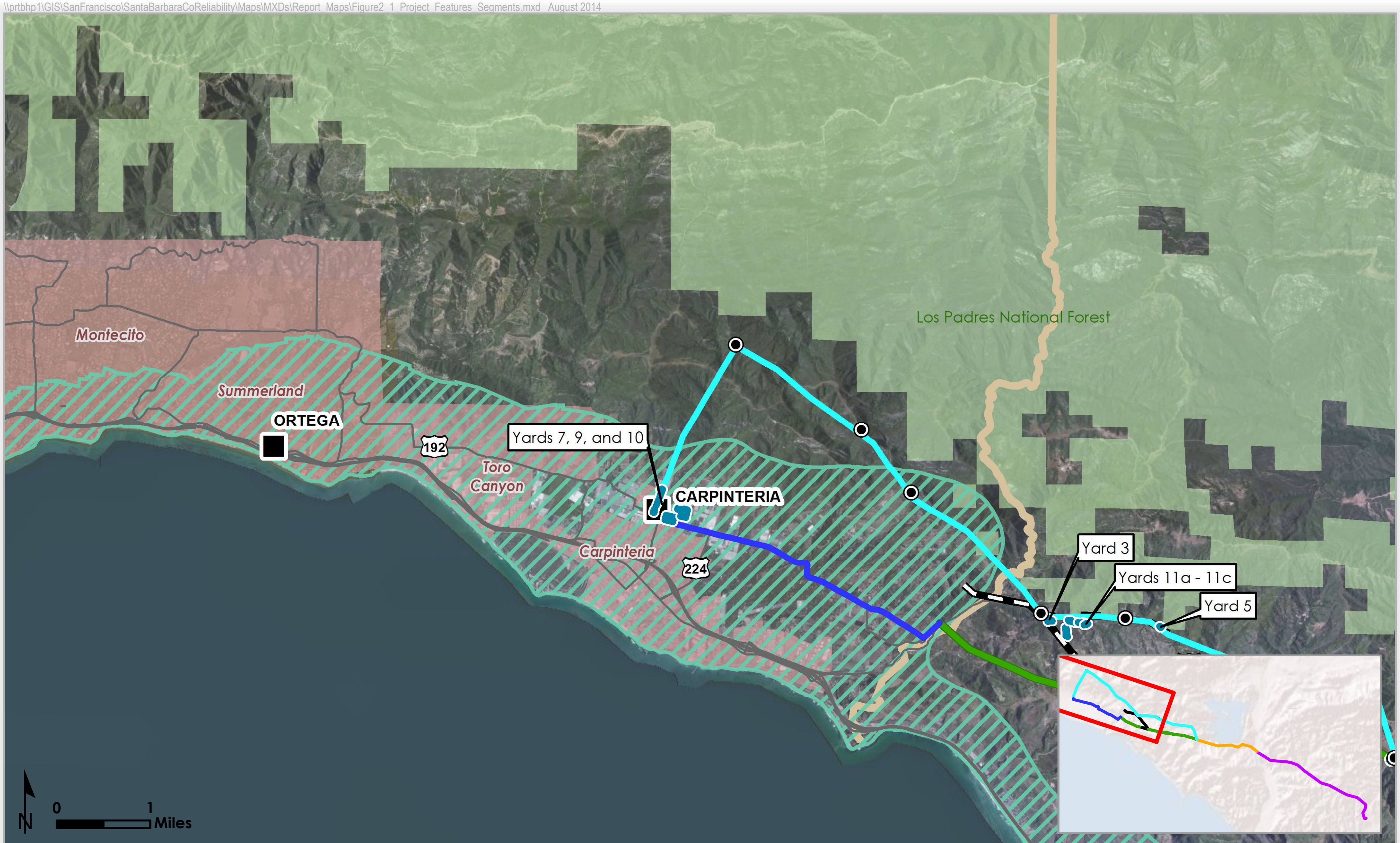
Figure 2-1a
Proposed Project Components
Santa Barbara County Reliability Project
Santa Barbara and Ventura Counties
California

Existing Electrical Subtransmission Lines
- Segment 1
- Segment 2
- Segment 3A
- Segment 3B
- Segment 4
- Segment 5
- Requires New ROW

- Existing Substation Locations
- Getty Tap
- Helicopter Landing Zones
- Los Padres National Forest (USFS)
- Bio Preserve Areas Coastal Commission Zone
- Staging Yards

- Major Roads
- Local road
- County Boundary
- City Limits

Figure 2-1b
Proposed Project Components
Santa Barbara County Reliability Project
Santa Barbara and Ventura Counties
California



Existing Electrical Subtransmission Lines
- Segment 1
- Segment 2
- Segment 3A
- Segment 3B
- Segment 4
- Segment 5
- Requires New ROW

- Existing Substation Locations
- Getty Tap
- Helicopter Landing Zones
- Los Padres National Forest (USFS)
- Bio Preserve Areas Coastal Commission Zone
- Staging Yards

- Major Roads
- Local road
- County Boundary
- City Limits

Figure 2-1c
Proposed Project Components

Santa Barbara County Reliability Project
Santa Barbara and Ventura Counties
California

- Segment 2 spans from the Casitas Substation in the east to the "Y"[1] in the west.
- Segment 3A spans from the Carpinteria Substation in the west to the Santa Barbara County/Ventura County border in the east.
- Segment 3B spans from the Santa Barbara County/Ventura County border in the west to the Y in the east.
- Segment 4 spans from the Y in the east to the Carpinteria Substation in the west.
- Segment 5 spans from Segment 3B to Segment 4 and adjacent to Segment 4 for approximately 1 mile.
- The "Getty Tap" is located approximately in the middle of Segment 1.

In addition, the proposed project includes work to be conducted at eight existing substations:

- Santa Clara Substation: Located on Elizabeth Road, approximately 0.5 miles from Elizabeth Road and Foothill Road in unincorporated Ventura County.
- Getty Substation: Located approximately 1 mile east of the terminus of Oil Field Road in unincorporated Ventura County.
- Casitas Substation: Located on State Route 33, southwest of Park View Drive in unincorporated Ventura County.
- Ventura Substation: Located on S. Ventura Avenue, northwest of E. Santa Clara Street in the City of Ventura.
- Carpinteria Substation: Located on Foothill Road/State Route 192, northwest of Linden Avenue in the City of Carpinteria.
- Ortega Substation: Located in an unincorporated area west of the City of Carpinteria.
- Santa Barbara Substation: Located in the City of Santa Barbara at Edison Avenue and E. Montecito Street.
- Goleta Substation: Located in unincorporated Santa Barbara County north of the City of Goleta off of S C E Powerline Service Road.

2.2 Components of the Proposed Project

The components of the proposed project are summarized in Table 2-1 and shown on Figure 2-1. The following subsections describe each proposed project component and work to be conducted at each location.

[1] The Y refers to a point where Segments 2, 3B, and 4 converge near Casitas Pass.

2.2.1 66-kV Subtransmission Lines

The proposed project would include the reconstruction of existing 66-kV subtransmission line elements primarily within existing ROWs operated by the applicant, along the six different segments identified in Section 2.1. These segments are shown on Figure 2-1 and described below.

Table 2-1 Approximate Dimensions and Specifications of Components of the Proposed Project

Component	Dimensions	Proposed Project Specifications
66-kV Segments		
Segment 1	9 miles	• Structures to be removed: Foundations at up to 15 LST locations. • Structures to retrofit: 1 TSP. • Other components to be installed: new fittings to accommodate telecommunications cable on three existing LST; automation equipment on an existing TSP; pole switch on an existing wood pole, and marker balls on overhead wire where necessary.
Segment 2	4.1 miles	• Structures to be removed: Foundations at up to 15 LST locations. • Other components to be installed: automation equipment on one TSP; new fittings to accommodate telecommunication cable on one LST; marker balls on overhead wire where necessary.
Segment 3A	3.7 miles	• Structures to be removed: 17 topped subtransmission wood poles. • Transfer of 16-kV line and telecommunications line to existing LWS poles. • Other components to be installed: 2.3 miles of FRC on existing LWS poles.
Segment 3B	5.2 miles	• Structures to be removed: 31 LST, existing conductor • Structures to be installed: 21 TSP, 1 LWS. • Other components to be installed: new 954 ACSR conductor (27,500 feet); marker balls on overhead wire where necessary. • Two portions of Segment 3B, totaling 6,300 feet, would be moved from the current alignment and constructed in new ROW.
Segment 4	10.8 miles	• Structures to be removed: 74 LST, 1 wood H-frame, 7 wood poles, existing conductor. • Structures to be installed: 59 TSP, 4 J-Tower, 1 LWS. • Other components to be installed: new double-circuit 954 ACSR conductor (57,000 feet); marker balls on overhead wire where necessary.
Segment 5	11,000 feet (2.08 miles approx.)	• Structures to be removed on existing 66-kV line: 12 LST, 2 Wood H-frames, 11,000 feet of conductor (between Segments 3B and 4).
Getty Tap	900 feet	• Structures to be removed: 4 wood H-frames, 3 wood poles, existing conductor, and three switches. • Structures to be installed: 2 TSP, 4 LWS H-frames, 3 LWS. • Other components to be installed: three switches and associated automation equipment, 900 feet of 653 ACSR conductor from the tap location to an existing 66-kV subtransmission line.

Table 2-1 Approximate Dimensions and Specifications of Components of the Proposed Project

Component	Dimensions	Proposed Project Specifications
Substations		
Santa Clara	N/A	• Modifications to the 66-kV switchrack and within the communications room.
Carpinteria	1,150 feet	• Modifications to the 66-kV switchrack and within the MEER. • Structures to be removed: 3 LST, 2 wood poles, 3 switches. • Structures to be installed: 3 TSP. • Conductor installation and realignment: 1,200 feet of 954 SAC to be routed and connected to existing 66-kV switchrack.
Casitas	130 feet (duct banks)	• Modifications to the 66-kV switchrack and within the MEER. • Structures to be installed: 1 TSP. • Conductor installation and realignment: two duct banks (eight conduits, 130 feet in total).
Other Substations (Getty, Goleta, Ortega, and Santa Barbara Substations)	N/A	• Components to be installed: upgraded line protection relay equipment within existing substation equipment rooms or cabinets.
Telecommunications		
Telecommunication route and Equipment	24 miles	• Install new telecommunication cable on 66-kV subtransmission structures along Segments 1, 2, and 4, which will transition to an underground configuration when the cable enters Santa Clara, Casitas and Carpinteria substations. • Less than 0.7 inches in diameter. • New terminal equipment to be installed at Carpinteria, Casitas, Santa Clara, and Ventura substations.
De-energizing Structures		
Retired 66-kV subtransmission line sections	Multiple segments of conductors	• Approximately 6,500 feet of 336 ACSR would be de-energized between Santa Clara Substation and the Getty Tap in Segment 1. • Approximately 49,200 feet of 2/0 bare copper conductor would be de-energized between the Getty Tap and Casitas Substation in Segment 1. • Approximately 16,300 feet of 2/0 bare copper conductor would be de-energized on the Santa Clara–Getty 66-kV subtransmission Line in Segment 3B. • Approximately 12,000 feet of 653 ACSR and 8,500 feet of 2/0 bare copper conductor would be idled in and adjacent to Segment 4. • Approximately 24,200 feet of 2/0 bare copper conductor and 17,600 feet of 653ACSR would be de-energized in Segment 4.
Removal of Additional Structures		
Private irrigation structures	TBD	• Removal or relocation to be determined case-by-case with landowners.

Table 2-1 Approximate Dimensions and Specifications of Components of the Proposed Project

Component	Dimensions	Proposed Project Specifications
Access and Spur Roads		
Rehabilitation and/or upgrades to existing access/spur roads and construction of new spur roads	120 miles	• Structures to be installed: retaining wall-type structures to minimize disturbance in some locations.

Key:
ACSR aluminum conductor steel-reinforced
FRC fault return conductor
kV kilovolt
LST lattice steel tower
LWS lightweight steel pole
MEER mechanical electrical equipment room
N/A not applicable
ROW right-of-way
SAC stranded aluminum conductor
TBD to be determined
TSP tubular steel pole

2.2.1.1 Segment 1

Segment 1 originates at the Santa Clara Substation and terminates at the Casitas Substation, with a total length of approximately 9 miles within unincorporated areas of Ventura County. In Segment 1, the applicant would:

- Remove foundations at up to 15 lattice steel tower (LST) locations to approximately 2 feet below grade, except in places where removal could result in erosion problems or landowner concerns.
- Retrofit one tubular steel pole (TSP) to accommodate new telecommunications cable.
- Install new fittings to accommodate the telecommunications cable on three LSTs.
- Install automation equipment on an existing TSP.
- Replace a pole switch on a single wood pole.
- Install marker balls on overhead wire where determined necessary.

2.2.1.2 Segment 2

Segment 2 originates at the Casitas Substation and terminates at the Y, in unincorporated Ventura County. The length of Segment 2 is approximately 4.1 miles. In Segment 2, the applicant would:

- Remove foundations at up to 15 LST locations to approximately 2 feet below grade, except in places where removal could result in erosion problems or landowner concerns.
- Install automation equipment on an existing TSP.
- Install new fittings to accommodate telecommunications cable on one LST.
- Install marker balls on overhead wire where determined necessary.

2.2.1.3 Segment 3A

Segment 3A originates at the Carpinteria Substation, located in the City of Carpinteria, and terminates at the border of Santa Barbara County and Ventura County. The linear length of Segment 3A is approximately 3.7 miles, with conductor spans that range from 105 to 425 feet in length. In Segment 3A, the applicant would:

- Relocate existing 16-kV distribution circuits and third-party telecommunications facilities that are collocated on topped[2] wood poles to adjacent existing 66-kV lightweight steel (LWS).
- Install approximately 2.3 miles of fault return conductor on the existing 66-kV LWS poles.
- Remove 17 existing topped subtransmission poles, including six poles containing distribution and communication facilities that would be transferred to existing 66-kV LWS poles, five poles containing third-party facilities that would be transferred by the applicant or the third-party owner, and four existing wood poles that contain no equipment.

2.2.1.4 Segment 3B

Segment 3B originates at the Santa Barbara County/Ventura County line and terminates at the Y in unincorporated Ventura County, with a length of approximately 5.2 miles. The conductor spans along Segment 3B range from approximately 250 to 2,500 feet in length. In Segment 3B, the applicant would:

- Replace approximately 31 LSTs and associated structures with approximately 21 TSPs and one LWS pole.
- Remove d up to 31 LST foundations. Remove existing LST foundations to 2 feet below ground surface, except in areas where removal could result in erosion problems or landowner concerns.
- Remove the existing conductor and install approximately 27,500 feet of single-circuit 954 aluminum conductor steel-reinforced (ACSR) cable.
- Move approximately two portions of Segment 3B, totaling6,300 linear feet from the current alignment to new ROW to avoid geotechnical concerns.
- Install marker balls on overhead wires where determined necessary.

2.2.1.5 Segment 4

Segment 4 originates at the Y (unincorporated Ventura County) and terminates at the Carpinteria Substation (City of Carpinteria, Santa Barbara County), with a length of approximately 10.8 miles. The conductor spans along Segment 4 range from approximately 110 to 1,800 feet in length. In Segment 4, the applicant would:

[2] "Topped" refers to a pole structure where the upper portion has been removed (reducing its overall height) after the conductor or circuits installed on that portion of the pole have been retired. The remaining lower portion of the structure would continue to support the electric power circuit or third party facility.

- Replace approximately 74 LSTs, one wood H-frame, and seven wood poles with approximately 59 TSPs, 4 J-Towers, and one LWS pole.
- Remove the necessary conductor and install approximately 57,000 feet of double circuit 954 ACSR wire.
- Remove two pole switches.
- Remove existing LST foundations to 2 feet below ground surface, except in areas where removal could result in erosion problems or landowner concerns.
- Install telecommunication cable on all TSPs and J-Towers.
- Install marker balls on overhead wires where determined necessary.

Of the structures described above, two existing structures and several access and spur road segments are located on US Forest Service (USFS) managed land within the Los Padres National Forest. Work within the Los Padres National Forest would involve the removal and replacement of existing structures with new TSPs or J-Tower, removal and replacement of conductor, and improvements to existing access and spur roads, resulting in approximately 2.4 acres of disturbance within the Los Padres National Forest.

Of the structures described above, 22 existing structures and a number of access and spur road segments are located within the Santa Barbara County Coastal Zone. Work within the Coastal Zone would involve the removal and replacement of existing structures with new TSPs, removal and replacement of conductor, and improvements to or construction of new access and spur roads, resulting in approximately 1.49 acres of permanent disturbance and 4.02 acres of temporary disturbance. One of the 22 structures, and its associated spur road, is collocated within the Los Padres National Forest.

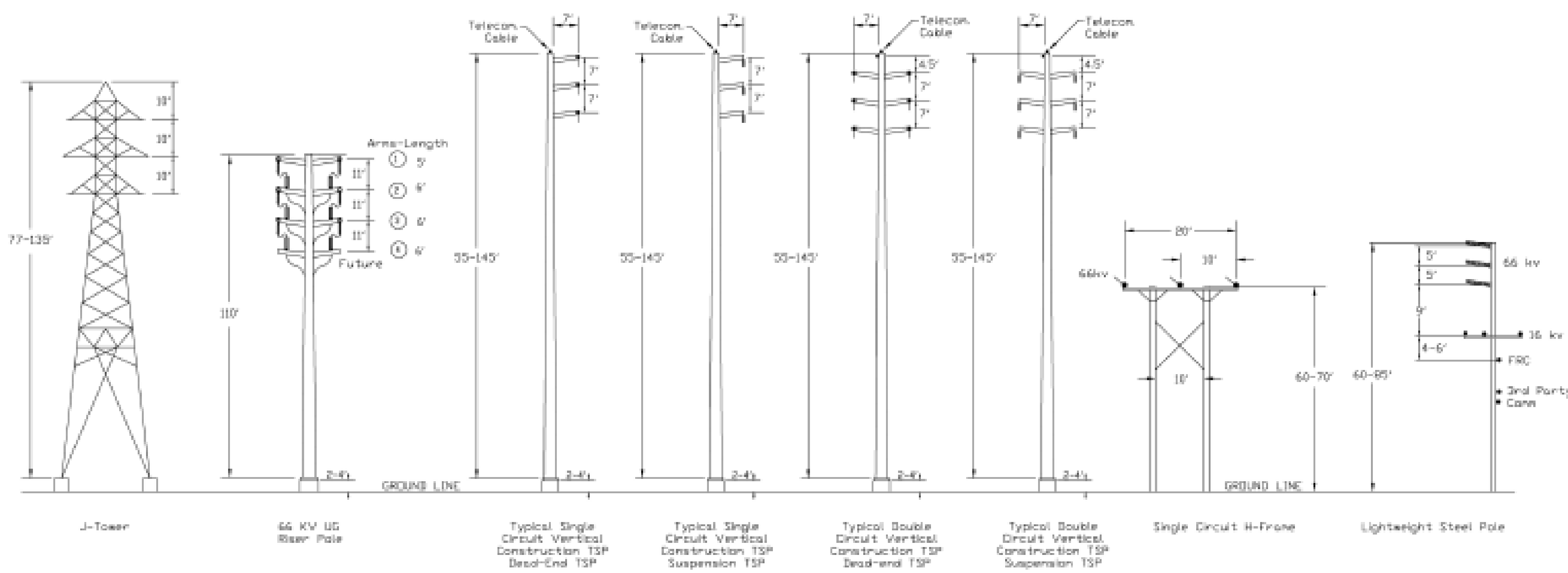
2.2.1.6 Segment 5

The proposed project also involves the removal of 12 existing LSTs, two wood H-frame structures, and approximately 11,000 feet of conductor due to their location on unstable slopes. These structures are located between Segments 3B and 4 and adjacent to Segment 4 for approximately 1 mile. Structures would be accessed using existing access roads. The structures would be removed using the same techniques as described above in Section 2.3.2.6, "Transfer and Removal of Existing Structures/Facilities." This area is labeled as "Existing SubTrans 66-kV To Be Removed" on Figure 2-1. No new structures would be constructed.

2.2.1.7 Structures

The proposed 66-kV subtransmission lines would be built using LWS poles, LWS H-frames, J-Towers, and TSPs (Figure 2-2). These structures would be designed consistent with the Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2012 (APLIC 2012). Figure 2-2 shows a schematic of each proposed structure, and Table 2-2 summarizes the number and dimensions of structures proposed to be installed.

Figure 2-2 Proposed 66-kV Subtransmission Structures



Source: SCE 2012

Tubular Steel Pole

Approximately 85 TSPs would be installed for the proposed project, primarily in Segments 3B and 4. The TSPs would be approximately 4 to 6 feet in diameter at the base and extend approximately 55 to 145 feet above ground, including the above-ground height of the foundation. The TSPs would be attached to concrete foundations approximately 5 to 9 feet in diameter and would extend underground approximately 15 to 70 feet, with a projection of approximately 2 to 4 feet of concrete above ground. TSP footings would use approximately 11 to 175 cubic yards of concrete depending upon the diameter and depth of the footing. The TSPs would be all-steel structures with a dulled finish. TSPs to be installed in Segment 4 and at the Carpinteria Substation would be equipped with fittings to accommodate telecommunications cable.

Table 2-2 Proposed Structures to be Installed

Pole Type	Approximate Number of Proposed Structures	Approximate Height Above Ground (feet)	Approximate Pole Diameter (feet)	Approximate Auger Hole Depth (feet)	Approximate Auger Diameter (feet)
TSP	85	55–145	4–6 at base	15–70	5–9
LWS Pole	5	60–85	1–2 at base	9–11	2–2.5
LWS H-Frame	6	60–70	1–2 at base	9–11	2–2.5
J-Tower	4	77-135	n/a	n/a	n/a
Guy Pole	Less than 10	25–40	1–2 at base	9–11	2–2.5

Notes:
Pole heights and spacing would be determined upon final engineering and would be constructed in compliance with CPUC GO 95.
Structure count includes only those structures that would be permanently installed in Segments 3A, 3B, and 4, at the Getty Tap segment, and at Carpinteria Substation and Casitas Substation. Temporary structures are not included.
Key:
CPUC California Public Utilities Commission
GO General Order
LWS lightweight steel
n/a not applicable
TSP tubular steel pole

Lightweight Steel Pole

Approximately five LWS poles would be installed as part of the proposed project. LWS poles would not require concrete footings (direct buried) and would extend approximately 60 to 85 feet above ground. The diameter of the LWS poles would typically be 1 to 2 feet at ground level, tapering to the top of the pole.

Lightweight Steel Pole H-Frame

Approximately six H-frames constructed from LWS poles would be installed for the proposed project. In addition, the proposed project would use two previously installed LWS H-frames. The LWS H-frames would be direct-buried and extend approximately 60 to 70 feet above ground. The diameter of the LWS poles would typically be 1 to 2 feet at ground level, tapering to the top of the pole.

J-Tower

Four J-Towers would be installed along Segment 4 as part of the proposed project. SCE currently uses J-Towers as an alternative where using a TSP is impractical (e.g., where site access is constrained, thus necessitating helicopter-assisted construction, assembly of sections off-site, and then final assembly of sections by hand on-site; or where due to engineering issues the use of a TSP would be problematic). The J-Tower requires four footings to be placed in a square approximately 30 feet apart. The J-Tower structures would range in height from 77 to 135 feet. The use of J-Towers at specific construction sites of the proposed project would, due to site-specific conditions, allow SCE to reduce ground disturbance at these construction sites through the reduction in size or elimination of spur roads, retaining walls, and construction pads.

Guying and Guy Pole

A guy is a tensioned cable designed to add stability to a free-standing structure. Fewer than 10 guy wires could be attached to subtransmission structures along Segments 3B and 4. Guying consists of a guy wire (down guy) attached to a buried anchor, or, when there is not adequate space for the required down guy, a shorter guy pole (stub pole) is typically placed with a down guy and buried anchor in a location that has sufficient room for these facilities. The height, depth, and diameter of stub poles and guy wire anchors would be determined on a case-by-case basis.

Temporary Guard Structures

Guard structures are temporary facilities that may be installed at transportation, flood control, and utility crossings for wire stringing/removal activities. These structures are designed to stop the movement of a conductor should it momentarily drop below a conventional stringing height. If used, guard structures would be temporarily installed on each side of all public road crossings and where installation of the 66-kV subtransmission line crosses other utilities along the route. Guard structures could also be temporarily installed on each side of driveways and private roads that are crossed, where necessary. Guard structures would be constructed on site using wood poles and then removed after construction is complete. In some cases, specifically equipped boom trucks could be substituted for guard structures because they would already be located at the site for general construction activities. Decisions regarding whether to use guard structures or boom trucks would be determined during construction.

2.2.1.8 Insulators and Conductors

The applicant would install approximately 27,500 feet of single circuit and 57,000 linear feet of new double circuit 954 ACSR conductor and polymer insulators on each proposed overhead structure along Segments 3B and 4. On the Getty Tap segment, approximately 900 feet of 653 ACSR would be installed. All conductor would be non-specular.

Fault Return Conductor

Although the existing and proposed LWS poles are earth-grounded structures, the applicant would provide additional fault protection by installing a fault return conductor (FRC) along approximately 12,000 feet (2.3 miles) of Segment 3A. This conductor would electrically ground the LWS poles. The purpose of ground fault protection is to minimize potential damages to equipment and hazards for personnel and the public due to ground fault currents.

Federal Aviation Administration Requirements

The alignment of the lines and terrain in the region would require that the Federal Aviation Administration (FAA) be notified due to the above-ground height of the conductor or telecommunications cable between towers. The applicant would file the necessary FAA Form 7460 for structures or lines as outlined in Code of Federal Regulations Title 14 Part 77, upon completion of final engineering and prior to construction. All FAA recommendations would be implemented into the design of the proposed project.

If a span required three or fewer marker balls, then the marker balls on the span would all be aviation orange. If a span required more than three marker balls, then the marker balls would alternate between aviation orange, white, and yellow. Marker balls would be 36 inches in diameter.

2.2.1.9 Underground Subtransmission Facilities

Underground subtransmission facilities would transition the previously constructed Segment 1 and Segment 2 overhead lines through two existing duct banks into the Casitas Substation. One duct bank would be approximately 50 feet long, and the other would be approximately 80 feet long, for a total of 130 feet. Each duct bank would house three copper underground subtransmission cables (3,000 kcmil[3]), which would be 225 feet and 175 feet in length, respectively. The cable lengths are longer than the duct lengths to take into account the additional cable needed to terminate the cable at the substation rack positions and at the top of the riser poles. No underground vaults would be installed at the Casitas Substation.

2.2.1.10 Access and Spur Road

Access to the proposed project's 66-kV subtransmission lines for construction, operation, and maintenance activities would be facilitated by a network of approximately 120 miles of existing dirt access roads and both existing and new spur roads. Such roads are located primarily within existing ROWs or covered under easements.

During construction, the proposed project would employ existing public roads and existing access and spur roads to the maximum extent practical. Rehabilitation and/or upgrades to existing access and spur roads and construction of new spur roads would be required to facilitate construction access and permanent maintenance access. In some locations, primarily along Segment 4, the applicant would install retaining wall–type structures or mechanically stabilized embankments to avoid extensive grading operations and minimize the area of surface disturbance. Short distances of new spur roads would be constructed to access structure sites. These spur roads would be constructed using native soils or import fill, depending upon whether the native soil properties are determined to be unsuitable based upon the geotechnical recommendations.

2.2.2 Getty Tap

The Getty Tap would be located approximately in the middle of Segment 1 (Figure 2-3). To maintain service to the Getty Substation, the Getty Tap would be installed to connect conductor currently part of the existing (and soon-to-be-retired) Santa Clara–Getty 66-kV Subtransmission

[3] A circular mil (cmil) is a standard unit of measure used for electrical systems that refers to the area of the cross section of larger conductor sizes. One cmil is equal to the area of a circle with a 1-mil diameter, and 1 kcmil is equal to 1,000 cmils. Large conductor sizes rated for use on electrical transmission lines are generally 0.6 to 2 inches in diameter. A 3,000-kcmil conductor is approximately 2 inches in diameter. In general, a larger diameter conductor is capable of greater electrical carrying capacity than a smaller diameter conductor (Grigsby 2001). Note: The overall diameter of the cable would be approximately 4 inches.

Line to the new Santa Clara–Carpinteria–Getty 66-kV Subtransmission Line. In the Getty Tap portion of the proposed project, the applicant would:

- Install approximately two TSPs, three LWS poles, and four LWS H-frames.
- Install approximately three switches.
- Remove approximately two wood poles and four wood H-frames.
- Install approximately 900 feet of 653 ACSR from the tap location to an existing 66-kV subtransmission line.
- Remove approximately 200 feet of 2/0 bare copper conductor and 75 feet of 653 ACSR.
- Install one switch and its automation equipment, and install and connect automation equipment for two existing pole switches.
- Remove three switches.

2.2.3 Substations

2.2.3.1 Santa Clara

The Santa Clara Substation contains both 220-kV and 66-kV equipment. The proposed project would involve only modifications to the 66-kV equipment. Work at the Santa Clara Substation would occur on the 66-kV switchrack and within the communications room. The two 66-kV operating buses at the Santa Clara Substation currently have 30 positions.

The following work would be conducted at three positions as part of the proposed project:

- Six new potential transformers (PTs) and their associated foundations would be installed: a set of two PTs for each of the three line positions.
- New protection equipment would be installed for the three line positions.
- Circuit breakers, group-operated disconnects, other associated equipment (including new foundations), and 200 feet of 2/0 bare copper conductor would be removed from one line position.

Following the upgrades to the 66-kV positions, subtransmission lines would be retired, removed, and/or reconfigured.

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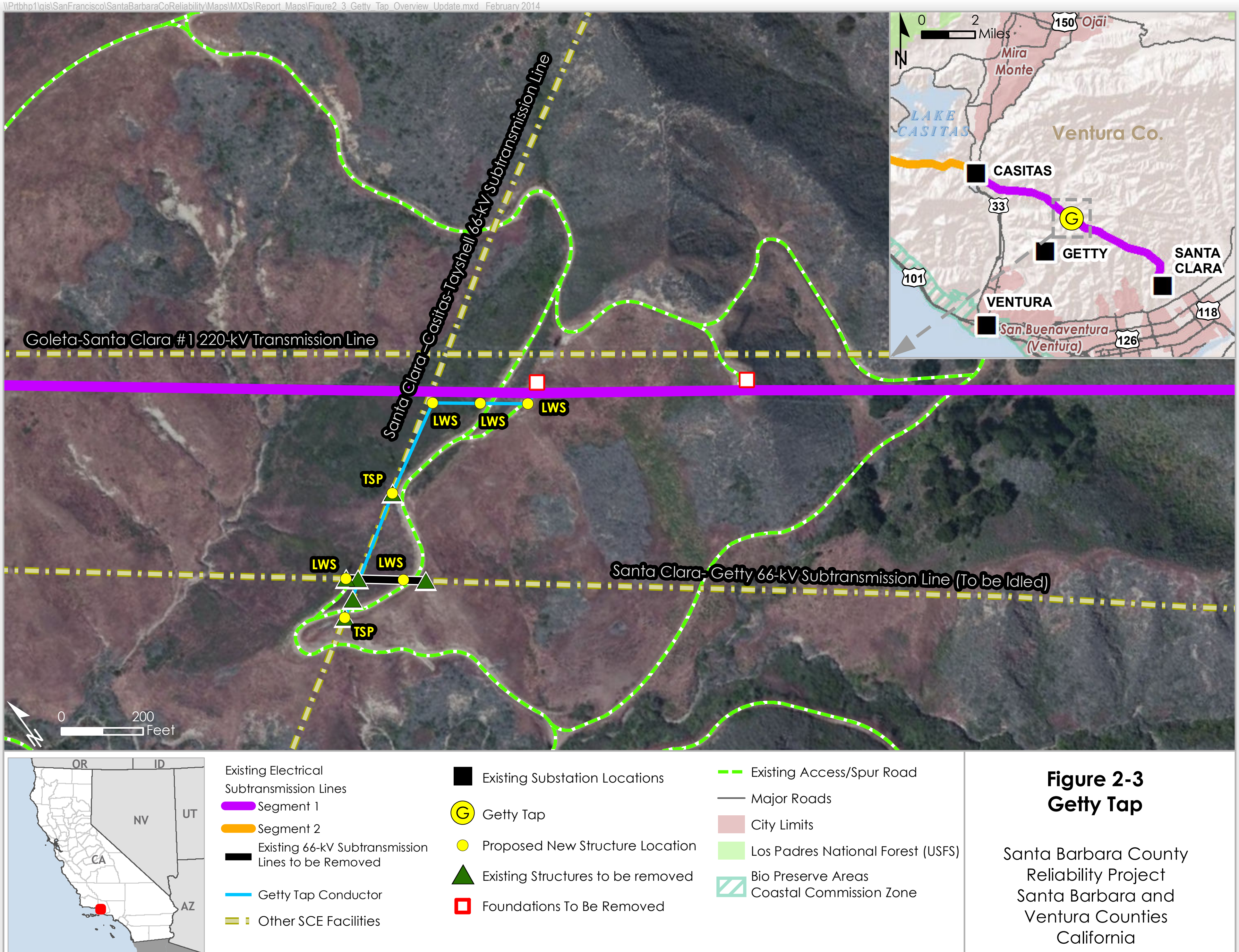

Figure 2-3
Getty Tap

Santa Barbara County Reliability Project
Santa Barbara and Ventura Counties
California

2.2.3.2 Casitas

Work related to the proposed project at the Casitas Substation would occur on the 66-kV switchrack and within the Mechanical Electrical Equipment Room (MEER). As discussed above in Section 2.2.1.8, following modifications to the 66-kV positions, both subtransmission lines that enter the substation would be routed through new underground conduit to the switchrack, and the overhead conductor would be removed. The proposed project would:

- Modify the existing the 66-kV switchrack by installing 12 surge arresters (three on each operating and transfer bus and three on each line position); new group-operated disconnects and new foundations at one line position; and new protection equipment for two line positions.
- Install and realign 66-kV subtransmission conductor within and in proximity to the Casitas Substation. To accommodate this realignment, one TSP would be installed on the eastern portion of the substation property outside the substation fence.
- Connect existing lines to the new TSP and install new underground cables to facilitate circuit re-arrangement inside the substation.
- Install two duct banks consisting of four 5-inch conduits each (a total of eight conduits) on the applicant's property both within and outside the substation fence from the base of the new TSP to the existing circuit breakers at two positions. A total of approximately 130 feet of duct in two duct banks would be installed. Each subtransmission cable would be placed in a conduit and then connected to the appropriate 66-kV position.

2.2.3.3 Carpinteria

At the Carpinteria Substation, work would occur on the 66-kV switchrack and within the MEER. The proposed project would:

- Modify the existing 66-kV switchrack by extending the 66 kV transfer bus by one position to create a new line position.
- Increase the capacity of the 66-kV operating and transfer buses installing 1590 ACSR, which will involve replacing all existing porcelain insulators on the 66-kV switchrack with polymer-type insulators; installing three surge arresters on the 66 kV operating bus and three surge arresters on the transfer bus; installing new group-operated disconnects (and new foundations) at one new and four existing positions; installing five new circuit breakers (and new foundations); installing PTs (and new foundations) at one new and three existing line positions; and installing new surge arresters at four positions; installing new protection equipment for four line and bus tie positions.

Following the modification to the 66 kV switchrack, the subtransmission lines routed in and out of the substation would be realigned and upgraded from 653 ACSR to 954 SAC. Approximately 1,100 feet of 653 ACSR would be removed, and 1,200 feet of 954 SAC would be routed overhead and connected to the 66-kV switchrack. In addition, a 66-kV station switch and three subtransmission line switches located in the substation would be removed. To accommodate these upgrades, three existing LSTs and two wood poles inside the substation fence line would be replaced with three TSPs.

2.2.3.4 Other Substations

Work proposed at the Getty Substation, Goleta Substation, Ortega Substation, and Santa Barbara Substation would include the installation of upgraded line protection relay equipment within existing substation equipment rooms or cabinets on the substation sites.

2.2.4 Telecommunications

Telecommunications cable would be installed at or near the top of overhead structures in Segments 1, 2, and 4. Pulling and splicing locations would be the same as those used for installation of subtransmission conductor. The purpose of the proposed telecommunication infrastructure is to connect the existing telecommunications system operated by the applicant and would provide Supervisory Control and Data Acquisition (SCADA), protective relaying, data transmission, and telephone services for the proposed project and associated facilities. A new telecommunications route is required to connect the Carpinteria Substation, Casitas Substation, Santa Clara Substation, and Ventura Substation. The connection between the Ventura Substation and Santa Clara Substation would use existing telecommunications facilities. All work conducted at the Ventura Substation would occur within the MEER and would not include any ground-disturbing activities.

2.2.4.1 Fiber Optic Lines and Telecommunications Equipment

Approximately 127,000 feet (approximately 24 miles) of new telecommunication cable would be installed on 66-kV subtransmission structures in Segments 1, 2, and 4, connecting the Carpinteria Substation, Casitas Substation, and Santa Clara Substation. The cable would be approximately 0.7 inches in diameter.

As mentioned above, most of the telecommunications cable would be installed overhead on subtransmission structures, above the subtransmission conductor. Short segments would be installed underground in conduit as the telecommunications cable enters and exits the Carpinteria, Casitas, and Santa Clara Substations. In addition to the underground work at the substations, new relays would be installed in the existing MEERs at the Carpinteria Substation and Casitas Substation, and in the communications room at the Santa Clara Substation.

New terminal equipment, channel multiplexer equipment, equipment cabling, and other telecommunication equipment devices would be installed within the MEERs at the Carpinteria Substation, Casitas Substation, and Ventura Substation, and in the communication room at the Santa Clara Substation. This work would provide the required telecommunication circuit connection to subtransmission line protection relay equipment within the substations.

2.2.4.2 Telecommunications Route

A summary of the proposed underground telecommunication cable facilities is provided in Table 2-3. Approximately 47,500 feet (approximately 9 miles) of telecommunications cable would be installed on subtransmission structures in Segment 1 from the Santa Clara Substation to the Casitas Substation. The route would originate in the communications room at the Santa Clara Substation. The telecommunications cable would be installed underground in an existing control cable trench and through approximately 225 feet of new conduit from the communications room to the easternmost TSP in Segment 1, where it would transition to an overhead configuration.

Table 2-3 Proposed Underground Telecommunication Construction

Substation	Trench Length (feet)[1,2,4]	
	Inside Substation Area	Outside Substation Area
Santa Clara	~ 80	~ 145
Casitas[3]	~ 25	~ 75
Carpinteria	~ 80	0

Source: SCE 2012
Notes:
[1] No vaults would be constructed as part of the proposed project.
[2] The applicant could modify trench length based on final engineering design.
[3] The conduit for Segments 1 and 2 is routed through the same trench and duct bank at Casitas Substation.
[4] Conduit would be installed in trenches that are approximately 11 inches wide and 36 inches deep.

At the Casitas Substation, the telecommunications cable would transition from overhead to underground, entering the MEER through approximately 100 feet of new conduit and the existing control cable trench. The telecommunications cable would exit the MEER underground through a separate conduit within the same control cable trench and proceed to an LST located outside the substation fence, where it would transition to an overhead configuration. From the Casitas Substation, the telecommunications cable would proceed for approximately 78,500 feet (approximately 15 miles) on subtransmission structures in Segments 2 and 4 to the Carpinteria Substation.

At the Carpinteria Substation, the telecommunications cable would transition from an overhead to an underground configuration, entering the MEER through approximately 80 feet of new conduit and then the existing control cable trench.

If used, guard structures would be temporarily installed on each side of all public road crossings and where installation of the telecommunications cable crosses other utilities along the route. Temporary guard structures could also be installed on each side of driveways and private roads that are crossed, where necessary. Guard structures could be constructed on site using wood poles and then removed after construction is complete. In some cases, specifically equipped boom trucks could be substituted for guard structures because they would already be located at the site for general construction activities. Decisions regarding whether to use guard structures or boom trucks would be determined during construction.

2.2.5 De-Energizing Facilities

At the conclusion of construction of the proposed project, sections of several 66-kV subtransmission lines would be de-energized, as follows:

- Approximately 6,500 feet of 336 ACSR would be de-energized between Santa Clara Substation and the Getty Tap in Segment 1.
- Approximately 49,200 feet of 2/0 bare copper conductor would be de-energized between the Getty Tap and Casitas Substation in Segment 1.
- Approximately 16,300 feet of 2/0 bare copper conductor would be de-energized on the Santa Clara-Getty 66k-V Subtransmission Line in Segment 3B.

- Approximately 12,000 feet of 653 ACSR and 8,500 feet of 2/0 bare copper conductor would be idled in and adjacent to Segment 4.
- Approximately 24,200 feet of 2/0 bare copper conductor and 17,600 feet of 653 ACSR would be de-energized in Segment 4.

The de-energized conductor would be grounded on the existing subtransmission structures, and these conductors and structures would not be removed as part of the proposed project. De-energized line sections would be secured by attaching them to newly installed subtransmission structures installed as part of the proposed project or by using guy wires attached to the existing structures

2.2.6 Removal of Additional Structures

The proposed project would be constructed and operated in areas that contain existing private irrigation systems and other private infrastructure. In coordination with landowners, these systems and infrastructure may be temporarily removed, relocated, and/or replaced to facilitate the safe and efficient construction of the proposed project and to protect the current uses of private lands.

2.3 Construction

The following subsections describe the construction activities associated with the proposed project. Unless otherwise indicated, the following construction descriptions apply to all proposed project components.

2.3.1 Staging Areas and Site Preparation

2.3.1.1 Staging Areas

Construction of the proposed project would require the establishment of temporary staging areas. Staging areas would be used as reporting locations for workers, vehicle and equipment parking, and material storage. These areas could also have construction trailers for supervisory and clerical personnel and could be lit for staging and security purposes. In addition, normal maintenance and refueling of construction equipment would also be conducted at staging areas. All refueling and storage of fuels would be performed in accordance with the Storm Water Pollution Prevention Plan (SWPPP).

Each staging area would be 0.5 to 4.7 acres in size. Preparation of these areas would include installation of temporary perimeter fencing and, depending on existing ground conditions at the site, minor grading, blading, brushing and/or compaction of soil, the application of gravel or crushed rock. Following the completion of construction for the proposed project, any land that may be disturbed at the staging yard would be restored as close to preconstruction conditions as possible or to the conditions agreed upon between the landowner and the applicant. The applicant anticipates using one or more of the staging areas, as listed in Table 2-4.

Table 2-4 Staging Areas Proposed

Staging Area	Location	Condition	Dimensions (acres)	Use/Project Component
Yard 1	South of Stanley Ave. and east of Highway 33, Ventura County	Existing asphalted storage area	2.1	Existing pole storage area and contractor show-up area
Yard 2	Near the "Y" (where Segments 2, 3B, and 4 converge); south of Casitas Pass Rd. on Red Mountain Fire Rd.).	Disturbed grazing pasture	1.0	Material and hardware storage
Yard 3	6374 Casitas Pass Rd., Ventura County	Disturbed grass meadow	0.8	Pole and material staging
Yard 4	Southern California Edison Ventura Service Center	Existing gravel and asphalted storage	2.0	Material and hardware storage, helicopter staging, and contractor show-up area
Yard 5	5901 Casitas Pass Rd., Ventura County	Existing asphalted storage/parking area	0.25	Pole and material staging
Yard 6	Santa Ana Rd. (west of Casitas Substation)	Disturbed grass meadow	1.1	Material staging and contractor show-up area
Yard 7	Carpinteria Substation ROW	Disturbed ROW and orchard trees	1.3	Material staging and contractor show-up area
Yard 8	Santa Clara Substation	Disturbed dirt road	0.3	Contractor show-up area
Yard 9 (Carpinteria Yard 1)	Northwest corner of the Foothill Rd and Seacoast Way intersection, Santa Barbara County)	Disturbed agricultural field	3.8	Material staging and contractor show-up area
Yard 10 (Carpinteria Yard 2)	500 ft. Northeast of the corner of Foothill Road and Seacoast Way, Santa Barbara County	Disturbed agricultural field	4.7	Material staging and contractor show-up area
Yard 11a (Hwy 150 Yard A)	200 ft. east of the intersection of Ocean View Road and Hwy 150	Existing gravel and asphalted storage	0.8	Material and hardware storage
Yard 11b (HWY 150 Yard B	750 ft. east of the intersection of Ocean View Road and Hwy 150	Disturbed vegetation and gravel surface	0.46	Material and hardware storage
Yard 11c (Hwy 150 Yard C)	1,200 ft. east of the intersection of Ocean View Road and Hwy 150, Ventura County	Disturbed vegetation and gravel surface	0.35	Material and hardware storage
Yard 11d (Hwy 150 Yard D)	475 ft. south of the intersection of Ocean View Road and Hwy 150, Ventura County	Disturbed vegetation	1.6	Material and hardware storage

Source: SCE 2012

Materials commonly stored at the staging yards would include, but not be limited to, construction trailers, construction equipment, portable sanitation facilities, steel bundles, steel/wood poles, conductor reels, telecommunications cable reels, hardware, insulators, cross arms, signage, consumables (such as fuel and filler compound), waste materials for salvaging, recycling, or disposal, and materials used according to best management practices (BMPs), such as straw wattles, gravel, and silt fences.

A majority of materials associated with the construction efforts would be delivered by truck to designated staging yards and then transported by truck or helicopter from a staging yard to the construction or work areas; some materials may be delivered directly to the temporary subtransmission construction areas. Construction areas would be located at or near each related structure within the applicant's or public ROWs. In addition to being the location for construction, these locations may also be used to temporarily stage project-related equipment and/or materials.

The SCE Ventura Service Center would serve as the primary helicopter staging yard for the proposed project. The helicopter staging yard would be used for tower assembly activities in the unlikely event that towers needed to be installed with a helicopter. Additionally, operation crews, as well as fueling and maintenance trucks, would be based in the helicopter staging yards.

If necessary, additional helicopter staging yards of approximately 0.5 acres in size would be sited at locations that optimize flight time to structure locations. Final siting of helicopter staging yards, if such yards are required, would be identified with the input of the subtransmission line contractor, land management agencies, private landowners, and the helicopter contractor as necessary. Approval for use of additional staging yards would need to be obtained from the CPUC through the minor project refinement process detailed in Section 9.1, "Minor Project Refinement."

2.3.1.2 Grading

Grading activities would be required only for proposed road work and preparation of subtransmission wire pulling sites. There is no grading associated with the proposed substation upgrades.

2.3.1.3 Retaining Walls

Retaining walls would be installed to avoid extensive grading and minimize the area of surface disturbance. The applicant has identified 31 locations along the project route where retaining walls would be used. Table 2-5 lists the construction sites where retaining walls would be installed and the type of structure to be installed.

Table 2-5 Proposed Locations for Retaining Walls

Construction Site	Retaining Wall-Type Structure	Construction Site	Retaining Wall-Type Structure
62	Soldier Pile	104	MSE
64	MSE	105	MSE
64	Soldier Pile	107	MSE
67	MSE	109	MSE
74	MSE	118	MSE
76	MSE	120	MSE
76	Soldier Pile	125	MSE
85	MSE	Access road between Construction Sites 73-74	MSE
86	MSE	Access road between Construction Sites 87-88	MSE
90	MSE	Access road between Construction Sites 89-90	MSE
93	MSE	Access road between Construction Sites 111-112	MSE or Soldier Pile

Table 2-5 Proposed Locations for Retaining Walls

Construction Site	Retaining Wall-Type Structure	Construction Site	Retaining Wall-Type Structure
96	MSE	Access road between Construction Sites 115-116	MSE
97	Soldier Pile	Access road between Construction Sites 116-117	MSE
98	MSE	Access road between Construction Sites 125-126	MSE
99	MSE	Access road between Construction Sites 131-133	MSE
100	MSE		

Key:
MSE mechanically stabilized embankment

2.3.2 66-kV Subtransmission Lines and Getty Tap

2.3.2.1 Access and Spur Roads

Approximately 120 miles of existing access and spur roads would be employed for construction of the proposed project. At present, approximately 25 miles of these existing roads are projected to require restoration work, including re-grading and repair of the existing roadbed. These roads would be cleared of vegetation; blade-graded to remove potholes, ruts, and other surface irregularities; and re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment.

At present, the applicant projects that approximately five of the 120 miles of existing access and spur roads would require extensive rehabilitation, such as:

- Widening of the existing roadbed at curves and other locations.
- Installation of new, or repair of existing, drainage structures such as water bars, overside drains and pipe culverts to allow for construction traffic usage, as well as to prevent road damage due to uncontrolled water flow.
- Repair and stabilization of slides, washouts, and other slope failures by installing retaining walls or other means necessary to prevent future failures. The type of structure used would be based on specific site conditions.

In addition, the proposed project would require the construction of approximately 4 miles of new spur roads. Construction activities for these new spur roads would be similar to those associated with the rehabilitation of existing roads. Access and spur roads would have a minimum drivable width of 14 feet (18 feet wide total, including a 2-foot shoulder on each side of the road) but may be wider depending on final engineering requirements and field conditions. Generally, the grade of access and spur roads would not exceed 12 percent; however, in certain cases grades could reach approximately 14 percent. For grades exceeding 12 percent, these would not exceed 40 feet in length and would be located more than 50 feet from any other excessive grade or any curve. All curves would have a radius of curvature not less than 50 feet, measured along the center line of the usable road surface.

All spur roads more than 500 feet long would include a Y-type or circle-type turnaround. Where a circle-type turnaround is not practical, the applicant would construct an alternative turnaround configuration to provide vehicle access to the structure location. This permanent area would also be used as a crane pad for both construction and ongoing operation and maintenance activities. Approximately 70 turnarounds would be constructed or reestablished.

All access and spur roads would be left in place to facilitate future access for operations and maintenance purposes.

A Cat trail would be created to access construction site 128 . A cat trail is a rudimentary, temporary means of overland access typically developed by a bulldozer. In general, cat trails are used where the terrain is too steep for conventional construction equipment to safely navigate to the work site. The cat trail would not be compacted like an access road, and some vegetation would likely remain on the cat trail. Following construction, the cat trail would either be revegetated or left to revegetate naturally.

2.3.2.2 Structure Site Preparation

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 the structure footings. The graded area would be compacted to at least 90 percent relative density and would be capable of supporting heavy vehicles.

A laydown/work area would be established adjacent to each pole installation location. This laydown/work area would be used for the temporary staging and assembly of the pole. In addition, within the laydown/work area, a crane pad of approximately 40 by 40 feet could be established. Where existing terrain within the laydown/work area is sufficient to support crane operations, the crane pad would be developed within the laydown/work area, adjacent to the pole installation location. In areas where the existing terrain within the laydown/work area is insufficient to support crane operations, a separate crane pad may be cleared of vegetation and/or graded as necessary to provide an appropriate and level surface for crane operation.

In some steep and/or rugged terrain, benching may be required in order 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. Structure foundations for each TSP would require a single drilled, poured-in-place concrete footing. The foundation process begins with the drilling of a foundation hole. The holes would be drilled using truck- or track-mounted excavators with various diameter augers to match the diameter requirements of the structure type. TSPs would require an excavated hole approximately 5 to 9 feet in diameter and approximately 15 to 70 feet deep. TSP footings would project approximately 2 to 4 feet above ground level. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at each site and would be determined during final engineering.

The excavated material would be distributed at each structure site, used to backfill excavations from the removal of nearby structures (if any), or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be provided to the property owner, upon request, or disposed of at an off-site disposal facility in accordance with all applicable laws.

Following excavation of the foundation footings, steel reinforced rebar cages would be set, survey positioning would be verified, and concrete would then be placed. Steel reinforced rebar cages may be assembled at staging yards and delivered to each structure location by flatbed truck or assembled at the job site. Depending upon the type of structure being constructed, soil conditions, and topography at each site, TSPs would require approximately 11 to 175 cubic yards of concrete delivered to each structure location.

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 were used, mud slurry would be added in conjunction with the drilling. 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 or tank adjacent to the foundation and/or vacuumed directly into a truck to be reused or discarded at an off-site disposal facility, in accordance with all applicable laws.

Concrete samples would be drawn at the time of pour and tested to ensure that engineered strengths were achieved. A concrete mix of the type normally used in this type of project takes approximately 20 days to cure to an engineered strength. This strength is verified by controlled testing of sampled concrete. Once this strength has been achieved, crews for the proposed project would be permitted to commence erection of the structure.

Conventional construction techniques as described above would generally be used for installing new foundations. Alternative foundation installation methods may be used where conventional methods are not practical. In certain cases, equipment and material may be deposited at structure sites using helicopters or by workers on foot, and crews may prepare the foundations using hand labor assisted by hydraulic or pneumatic equipment, or other methods.

During construction, existing concrete supply facilities would be used where feasible. For any areas that do not have concrete supply facilities, a temporary concrete batch plant would be set up in an established material staging yard. Equipment for this plant would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, and cement; a water tank; portable pumps; a pneumatic injector; and a loader for handling concrete additives not in the silos. Dust emissions would be controlled by watering the area and by sealing the silos and transferring the fine particulates pneumatically between the silos and the mixers.

Prior to drilling for foundations, the applicant or its contractor would contact Underground Service Alert to identify any underground utilities in the construction zone.

Tubular Steel Pole

TSPs consist of multiple sections. The pole sections would be placed in temporary laydown/work areas at each pole location. Depending on conditions at the time of construction, the top sections may come pre-configured, be configured on the ground, or be configured after pole installation with the necessary cross arms, insulators, and wire stringing hardware.

A crane would be used to set each steel pole base section on top of the previously prepared foundations. If existing terrain around the TSP location is not suitable to support crane activities, a temporary crane pad would be constructed within the laydown/work area. Each pole base section would be secured first, and then the subsequent section of the TSP would be placed on the base section. The pole sections may also 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 TSPs.

Lightweight Steel Pole

Each LWS pole would require a hole to be excavated using an auger or a backhoe. Excavated material would be handled according to the applicant's waste management practices (Section 2.4.4). LWS poles consist of separate base and top sections and may be placed in temporary laydown/work areas at each pole location. Depending on conditions at the time of construction, the top sections may come pre-configured, be configured on the ground, or be configured after pole installation with the necessary cross arms, insulators, and wire-stringing hardware. The LWS poles would be installed in the holes, typically by a line truck with an attached boom. Each pole base section would be secured first, and then the top section placed on the base section. 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.

Lightweight Steel Pole H-Frame

Each LWS pole for an H-frame structure would require a hole to be excavated using an auger or a backhoe. Excavated material would be handled according to the applicant's waste management practices (Section 2.4.4). LWS H-frame poles consist of separate base and top sections and may be placed in temporary laydown/work areas at each pole location. Depending on conditions at the time of construction, the top sections may come pre-configured, be configured on the ground, or be configured after pole installation with the necessary cross arms, insulators, and wire-stringing hardware. The LWS poles would then be installed in the holes, typically by a line truck with an attached boom. The cross-bracings used to connect the two poles would be installed after erection of the structure.

J-Tower

The J-Tower footings would be dug by hand or by a drilling rig, depending on the depth of the footings and terrain constraints. Steel and concrete for the footings would be flown to the site by a helicopter or moved overland to the site using existing access roads. If helicopter-supported construction is used, sections of the J-Tower would be assembled at a helicopter landing zone/staging area, and then transported to the construction site by helicopter and bolted together by hand, with each successive section being placed on the top of the previously-transported section. If overland transportation of steel is chosen, steel members for the structure would be moved to the site via access and spur roads or via the cat trail and assembled on-site by hand.

Guy Pole Installation

Where required to stabilize LWS poles, each wood guy pole would require a hole to be excavated using an auger, backhoe, or hand tools. Excavated material would be handled according to the applicant's waste management practices (Section 2.4.4). The wood poles would be placed in temporary laydown/work areas at each pole location. The wood poles would then be installed in the holes, typically by a line truck with an attached boom.

Guard Structures

Guard structures are temporary facilities that are typically installed at transportation, flood control, and utility crossings for wire stringing/removal activities. These structures are designed to stop the movement of a conductor should it momentarily drop below a conventional stringing height. The applicant estimates that approximately 60 guard structures may need to be constructed as part of the proposed project.

Typical guard structures are standard wood poles. Depending on the overall spacing of the conductors being installed, approximately two to four temporary guard poles would be required on either side of a crossing. In some cases, specifically equipped boom trucks or, at highway crossings, temporary netting could be installed instead of guard poles. The temporary guard structures would be removed after the conductor is secured into place.

For highway and certain water crossings, and where the proposed route would cross telecommunications and other wires, the applicant would work closely with the applicable jurisdiction or owner entity to secure the approvals necessary to string conductor over the applicable infrastructure.

2.3.2.3 Wire Stringing, Pulling, and Splicing

Wire stringing activities would be in accordance with SCE common practices and similar to process methods detailed in the IEEE Standard 524-2003 (Guide to the Installation of Overhead Transmission Line Conductors). Safety devices such as traveling grounds; guard structures; radio-equipped roving vehicles; and safety personnel would be in place to ensure the safety of workers and the public, prior to the initiation of wire stringing activities. Advanced planning would be implemented to determine circuit outages, pulling times, and safety protocols to ensure the safe installation of wire.

Wire stringing activities include the installation of conductor, telecommunications cable, FRC, insulators, stringing sheaves (rollers or travelers), vibration dampeners, weights, suspension and dead-end hardware assemblies onto subtransmission line structures. Each wire-stringing operation would include a wire puller positioned at one end and a tensioner and wire reel stand truck positioned at the other end of the line segment to be pulled.

The following five steps describe typical wire stringing activities:

1. **Planning:** Develop a wire stringing plan to determine the sequence of wire pulls and the set-up locations for the wire pull/tensioning/splicing equipment.
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 the particular set of spans selected for a conductor pull. In areas where a bucket truck is unable to install a lightweight sock line, a helicopter would fly the 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.

3. **Pulling:** The sock line would be used to pull in the conductor pulling rope and/or cable. 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.
4. **Splicing, Sagging, and Dead-Ending:** Once the conductor is pulled in, if necessary, all mid-span splicing would be performed. Once the splicing has been completed, the conductor would be sagged to proper tension and dead-ended to structures.
5. **Clipping-In:** After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called clipping in. Where possible, the conductor being replaced would be used to pull in the new conductor.

The puller, tensioner, and splicing set-up locations associated with the proposed project would be temporary and the land that may be disturbed would be restored to as close to preconstruction conditions as possible or to the conditions agreed upon between the landowner and the applicant. The set-up locations require level areas to allow for maneuvering of the equipment and, when possible, these locations would be located on existing roads and level areas to minimize the need for grading and cleanup. The number and location of these sites would be determined during final engineering. The approximate area needed for stringing set-ups associated with wire installation is variable and depends upon terrain.

Wire pulls are the length between two wire installation points along the line. Wire pulls are designed based on 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, typical wire pulls occur approximately every 10,000 to 12,000 feet. When the line route alignment contains multiple deflections or is situated in rugged terrain, the length of the wire pull is decreased. Generally, pulling locations and equipment set-ups would be in direct line with the direction of the overhead conductors and established approximately a distance of three times the height away from 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 used for splicing and field snubbing of the conductors. 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.

2.3.2.4 Insulators and Conductors

Installation of Marker Balls

As presented earlier, all FAA recommendations, including the installation of marker balls on appropriate infrastructure where necessary, would be implemented into the design of the proposed project. In most cases, marker balls would be installed by helicopter because of this method's efficiency, minimal ground disturbance, and ability to operate in rugged terrain. In limited circumstances, marker balls may be installed using a spacer cart, but this method is generally less efficient and may result in additional ground disturbance.

The applicant would select the most suitable installation method for a particular span. The applicant would generally use a light-duty helicopter to install the marker balls. Installation by helicopter may require an outage that de-energizes nearby energized subtransmission lines and transmission lines.

Helicopter installation requires staging at a landing zone, where the helicopter would pick up the construction worker and a marker ball(s) and travel to the installation location. To minimize ground disturbance, the applicant would use previously disturbed areas as landing zones.

In limited circumstances, the applicant may employ a spacer cart to install marker balls and associated hardware. The spacer cart would be installed on the overhead wire by installation crews, either by helicopter or by using a crane placed on an existing crane pad created during the construction of the structure. Because any installation of spacer carts by crane would take place during construction, it is not expected that installation or use of spacer carts would cause any additional ground disturbance.

Due to the terrain in the areas where marker balls may be required, installation by crane would likely be infeasible and may entail significant additional ground disturbance. For these reasons, crane installation of marker balls would not be considered for the proposed project.

Fault Return Conductor

The FRC would be installed along 2.3 miles of Segment 3A. This conductor would be installed parallel with the overhead 66-kV subtransmission line relocation proposed along Segment 3A, about 1 to 2 feet above the existing third-party telecommunication facilities, and 4 to 6 feet below the existing 16-kV distribution line. The applicant anticipates installing the FRC within the same timeframe as the proposed overhead telecommunication line. To maintain proper clearances, the existing telecommunication and distribution facilities that would be relocated to existing LWS poles may need to be rearranged.

2.3.2.5 Underground Facilities

The proposed project would require a total of 130 feet of new underground 66-kV subtransmission line and associated transition and support structures at the Casitas Substation. Installing the underground subtransmission cable would require surveying, trenching, duct bank installation, pulling and splicing of the cable, and construction of transition structures. These activities are described below.

Surveying

The applicant would conduct a survey of existing underground utilities along the proposed underground subtransmission duct bank route. The applicant would notify all applicable utilities through the Underground Service Alert service in order to locate and mark existing utilities. In addition, when necessary, the applicant would conduct exploratory excavations to verify the location of existing utilities.

Trenching

An approximately 20- to 24-inch-wide trench varying in depth from approximately 5 feet to 12 feet would be required to install the proposed 66-kV underground subtransmission line.[4] During trenching, the applicant would mark the location and applicable underground utilities, lay out a trench line, saw or cut asphalt or concrete pavement as necessary along the trench line, dig to the appropriate depth with a backhoe or similar equipment, and install the duct bank. Once the duct bank has been installed, the trench would be backfilled with sand slurry mix. The applicant would dispose of excavated materials at an off-site disposal facility in accordance with applicable regulations. Similarly, should groundwater be encountered, the applicant would pump it into a tank and transport it to an off-site disposal facility pursuant applicable regulations. Steel plates would be placed over open trench sections to maintain vehicular and pedestrian traffic. Provisions for emergency vehicle access would be arranged with local jurisdictions in advance of construction activities.

Duct Bank Installation

The proposed duct bank would comprise cable conduit, spacers, ground wire, and concrete encasement. The duct bank would consist of two sets of four 5-inch diameter polyvinyl chloride (PVC) conduits fully encased with a minimum of 3 inches of concrete. The majority of the proposed 66-kV underground subtransmission duct banks would be installed in a vertically stacked configuration, and each duct bank would be approximately 21 inches in height by 20 inches in width. In areas where underground utilities are highly congested or where it is necessary to fan out the conduits to reach termination structures, the applicant may be required to use a flat configuration duct bank. In the event that the proposed 66-kV subtransmission duct bank would cross or run parallel to other underground utilities structures that operate at normal soil temperature (gas, telephone, water mains, storm drains, sewer lines), a minimal radial clearance of 6 inches for crossing and 12 inches for paralleling these structures would be required. Clearances and depths used by the applicant would comply with Rule 41.4 of California Public Utilities Commission (CPUC) General Order (GO) 128.

Cable Pulling, Splicing, Termination

Following the duct bank installation, the applicant would pull the electrical cables through the duct bank by using a cable reel and a pulling reel located at the opposite end. Further, the applicant would terminate cables at transition structures, which would place cables from underground to overhead configuration.

Transition Structures

The applicant would install a TSP riser pole to transition cables from underground to an overhead configuration. This transition structure would support cable terminations, lightning arresters, and dead-end hardware for overhead conductors. Construction methods for this structure are described in Section 2.3.2.2. On the opposite side of the duct bank, cables would transition through conduit sweeps and connect to the existing 66-kV switchrack positions within the Casitas Substation.

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[4] The applicant would adjust trench dimensions to meet the California Occupational and Safety Health Administration requirements. Variations in trench depth are due to the change in elevation between the driveway and substation yard.

2.3.2.6 Transfer and Removal of Existing Structures/Facilities

The proposed project would involve removing structures, conductor, and associated hardware. Table 2-6 summarizes the number of structures and project components proposed to be removed. The components would be removed by using helicopters in areas of difficult access (particularly along Segment 4), or by equipment and vehicles in areas accessible by ground.

Table 2-6 Summary of Structures and Conductor Proposed To Be Removed

Project Component	Structures	Structure Foundations[1]	Conductor Type/Length
Segment 1	0	15	N/A
Segment 2	0	15	N/A
Segment 3A	17 wood poles	0	N/A
Segment 3B	31 LSTs	31	2/0 bare copper / 30,000 feet
Segment 4	74 LSTs; 7 wood poles; 1 wood H-frame	74	2/0 bare copper / 36,740 feet 653 ACSR / 47,600 feet
Segment 5	12 LSTs 2 wood H-frames	12	2/0 bare copper/ 10,776 feet
Getty Tap	4 wood H-frames; 3 wood poles	0	2/0 bare copper / 200 feet 653 ACSR / 75 feet
Carpinteria Substation	3 LSTs; 2 wood poles; 3 switches	3	653 ACSR / 1,070 feet
Casitas Substation	0	0	2/0 bare copper/ 180 feet 336 ACSR / 74 feet

Source: SCE 2012
Note:
[1] Maximum number of structure removals.
Key:
ACSR Aluminum conductor steel-reinforced
LST Lattice steel tower
N/A Not applicable

For areas accessible on the ground, the transfer and removal of existing structures and facilities would involve the following sequence of activities:

- Wire pulling locations: Wire pulling sites would typically be located approximately every 10,000 to 12,000 feet along the existing 66-kV subtransmission lines. Pulling sites could occur at more frequent intervals depending on the locations of dead-end structures and turning points. Pull and tensioning equipment would be sited at the wire pulling sites to facilitate removal of the existing conductors.
- Conductor removal: After the wire pulling equipment is in place, the old conductor is typically transferred to the new structures that would be pre-rigged with rollers. The old conductor would then be pulled out with a pulling rope and/or cable attached to the trailing end of the conductor, which would be used to pull in the new conductor. The old

conductor wire would be transported to a construction yard, where it would be prepared for recycling.

- Structure removal: For each structure to be removed, an approximately 100- by 150-foot work area would typically be required. Most structure removal activities would use the crane pad or other previously disturbed areas established for structure installation. If previously disturbed areas adjacent to the structure are not available, an area would be cleared of vegetation and graded if necessary. The crane would typically be positioned approximately 60 feet from the tower location to dismantle the tower structure. Structures would be dismantled down to the foundations and the materials would be transported to a staging yard, where they would be prepared for recycling. In areas not suited for crane access, towers may be disassembled by hand.
- Footing/foundation removal: Footings would be removed to a point 1 to 2 feet below grade, and the holes would be filled with excess soil and smoothed to match the surrounding grade. Footing materials would be transported to a staging yard, where they would be prepared for disposal.

Prior to removal of existing structures, subtransmission lines would be transferred to new structures. Approximately 17 wood poles that are adjacent to previously installed LWS poles in Segment 3A would be removed as part of the proposed project. Six of these 17 poles currently have distribution facilities. Prior to removal of existing poles, the existing distribution lines and associated hardware would be transferred to the LWS poles. All remaining distribution equipment that is not reused by the applicant would be removed and delivered to a facility for recycling. Typical distribution transfer would include the use of two bucket trucks.

A separate group of five of these 17 existing wood poles currently have only third-party telecommunication facilities. The third-party equipment would be transferred by its owner or by the applicant to the subtransmission poles in Segment 3A as part of the proposed project, or the applicant would relinquish these poles to the third party.

Four of the 17 existing wood poles have no equipment installed on them. These poles would be removed by the applicant as part of the proposed project.

Wood poles not relinquished to a third-party joint utility owner would be completely removed once the subtransmission, distribution, and telecommunication lines are transferred to new poles. This process would remove the entire pole, including above- and below-grade portions. 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 imported fill as needed. No non-relinquished existing wood poles would be topped and left in place. Typical pole removal would include the use of a boom truck, as well as one companion truck, to support the structure during dismantling and removal of the pole. Backfilled holes would be compacted and smoothed to match the surrounding grade.

Depending on their type, condition, and original chemical treatment, removed wood poles could be reused by the applicant for other purposes, 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.

2.3.2.7 Energizing Subtransmission Lines

Energizing the new lines is the final step in completing the subtransmission construction. 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. Only the Getty Substation and its single customer would experience a short-duration service outage as new lines are energized.

2.3.2.8 Helicopter Use

Helicopters would be used to support construction activities in areas where access is limited (e.g., no suitable access road, limited construction area to facilitate on-site structure assembly, and/or environmental constraints to accessing project components with standard construction vehicles and equipment) or where system outage constraints are a factor. Project-related helicopter activities could include transportation of construction workers, delivery of equipment and materials to structure sites, structure placement, hardware installation, conductor and telecommunications cable stringing operations, and installation of marker balls. Helicopters may be used in other areas to facilitate construction, depending on recommendations made by the installation contractor.

Helicopter operations would occur in areas necessary to support the construction and operation of the proposed project. Helicopters and their associated support vehicles and equipment may be based at a local airport at night or on off days. Associated ground-based support vehicles would utilize existing, rehabilitated, or new access or spur roads.

SCE has identified 15 preliminary helicopter landing locations. The locations are on a combination of previously disturbed existing access and/or spur roads and undisturbed areas adjacent to the roads. The undisturbed areas may require brushing. The landing zones would vary in size and are estimated to be a minimum of 2,500 square feet and potentially up to approximately 8,500 square feet, depending on whether the same location is used for other project construction activity. These landing zones would support construction, potential helicopter refueling, and emergency landings; however, the proposed landing zones are preliminary and may be moved and/or modified during final engineering.

2.3.3 Substations

Some below-grade construction for substation equipment, subtransmission conductor and telecommunications cable would occur at Carpinteria, Casitas, and Santa Clara substations. These facilities may include cable trenches, conduits, equipment foundations and/or duct banks.

Above-grade installation of substation facilities, such as disconnect switches, potential transformers, and circuit breakers, would be completed at the Carpinteria Substation, Casitas Substation, and Santa Clara Substation. At the Carpinteria Substation, a 66-kV bus tie position would also be installed. These facilities would likely be installed on new structures.

2.3.4 Telecommunications

2.3.4.1 Equipment Installation

New terminal equipment, channel multiplexer equipment, and other telecommunication equipment devices would be installed on equipment racks located within the Casitas Substation MEER, Carpinteria Substation MEER, Goleta Substation communications room, Ortega Substation MEER, Santa Barbara Substation MEER, Santa Clara Substation communications room, and Ventura Substation MEER. The new telecommunication equipment installation and the attachment of the proposed new telecommunication cable would allow the configuration of new optical cable lightwave systems connecting the above locations. Telecommunication circuits for line protection, SCADA, communication, control, and monitoring would be configured and wired to the appropriate transmission/substation relays or equipment.

2.3.4.2 Cable Installation

Telecommunications cable would be installed at or near the top of overhead structures in Segments 1, 2, and 4. Pulling and splicing locations would be the same as those used for installation of subtransmission conductor. Telecommunication cable splices would be made within 36- by 36- by 10-inch metal enclosures that would be attached to subtransmission structures with metal straps. Along Segments 1, 2, and 4, splice boxes would be installed on subtransmission structures at locations no more than 2 miles apart.

At the Santa Clara Substation, Casitas Substation, and Carpinteria Substation, the telecommunications cable would transition from an overhead configuration to an underground configuration through risers installed on TSPs and by using metal banding to attach the cable to the legs of an LST. Risers would be installed on a TSP at the Carpinteria Substation and on the easternmost TSP in Segment 1 adjacent to the Santa Clara Substation.

New underground facilities would be installed at the Casitas Substation, Carpinteria Substation, and Santa Clara Substation. Conduit would be installed in trenches approximately 11 inches wide and 36 inches deep. New underground conduit and structures would typically be installed with a backhoe. PVC conduit would be placed in the trench and covered with a minimum of approximately 3 inches of concrete slurry, then backfilled and compacted.

The telecommunications cable would be installed in an innerduct that protects and identifies the cable within the underground conduit and structures. To install the innerduct, it would first be pulled in the conduit from structure to structure using a pull rope and pulling machine or truck-mounted hydraulic capstan. Then the telecommunications cable would be pulled inside the innerduct using the same procedure.

2.3.5 Removal of Additional Structures

Portions of the proposed project would be constructed on irrigated agricultural lands. These properties contain irrigation infrastructure, including pumps, sprinklers, supply lines, and other equipment, that would need to be removed, relocated, and/or replaced to facilitate construction of the proposed project. Prior to construction, the applicant would consult with property owners to locate irrigation infrastructure and determine appropriate protection measures. Actions could include the marking of agricultural infrastructure, installation of steel or wood plating on access roads to distribute the weight of construction vehicles and protect shallow-buried irrigation piping, or the installation of temporary protection structures (bollards, jersey walls) adjacent to infrastructure along access roads. Where infrastructure cannot be protected in place, the applicant would temporarily relocate infrastructure to prevent damage and would then re-site the infrastructure following completion of construction. Infrastructure damaged during construction or relocation would be repaired or replaced as close to preconstruction conditions as feasible or to the conditions agreed upon between the landowner and the applicant following the completion of construction of the proposed project.

2.3.6 Post Construction Activities

Following the completion of construction for the proposed project, the applicant would clean up all temporarily disturbed areas (which may include the material staging areas, construction setup areas, pull and tension sites, and splicing sites) as close to pre-construction conditions as feasible, or to the conditions agreed upon between the landowner and the applicant.

2.3.7 Land Disturbance and Acquisition

Construction of the proposed project would result in the disturbance of approximately 313.5 acres of land at the proposed project components. The applicant estimates that approximately 112 acres would be disturbed permanently. The approximate land disturbance from implementation of the proposed project is summarized in Table 2-7. The applicant would acquire temporary construction easements where necessary, particularly for pulling sites and staging areas/laydown/work yards.

Except for two portions along Segment 3B (totaling 6,300 feet) that would occur in new ROW, the proposed project infrastructure would be built within existing fee-owned or easement ROW already operated and maintained by the applicant. Similarly, existing and proposed access roads and spur roads proposed by the applicant would be located primarily within existing ROWs or covered under easements. The width of these ROWs varies over the length of the proposed project from 24 to 165 feet. Except for new land rights necessary to accommodate this short realignment within Segment 3B, the applicant does not anticipate acquisition of additional or upgraded rights on private lands.

Table 2-7 Approximate 7 Approximate Land Disturbance from Implementation of the Proposed Project

Component	Sites/Miles	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)
Material Staging Yards[1]	4 sites	15.0	0	15.0
New Access/Spur Roads	4 miles	0	12.0	12.0
Minor Rehabilitation of Existing Access/Spur Roads	25 miles	0	76.0	76.0
Extensive Rehabilitation of Existing Access/Spur Roads	5 miles	31.0	15.0	46.0
LWS Pole	5 sites	1.5	0.5	2.0
Guy Pole	10 sites	2.5	0.5	3.0
LWS H-Frame	4 sites	1.0	0.5	1.5
TSP	86 sites	52.0	7.0	59.0
J-Towers	4 sites	1.5	0.5[2]	2.0[3]

Table 2-7 Approximate 7 Approximate Land Disturbance from Implementation of the Proposed Project

Component	Sites/Miles	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)
Pull and Tensioning Site	13 sites	15.0	0	15.0
Tower/H-Frame Removal Sites	127 sites	65.5	0	65.5
LST Footing Only Removal Sites	30 sites	4.0	0	4.0
Wood Pole Removal Sites[4]	29 sites	7.0	0	7.0
Guard Structures	60 sites	5.0	0	5.0
Telecommunication	32.8 miles	0.5	0	0.5
Total Acreage Disturbance		**201.5**	**112**	**313.5**

Source: SCE 2012
Notes:
[1] Does not include existing asphalted or gravel staging areas.
[2] Based on assumption that the tower's four footings at spaced 30 feet apart.
[3] Based on disturbance data provided in the 2013 Description of Refined Activities Document.
[4] Based on the assumption that temporary disturbance would be the same as installation of a LWS pole.
Key:
kV kilovolt LST lattice steel tower
LWS lightweight steel ROW right-of-way
TSP Tubular steel pole

Los Padres National Forest Land

As mentioned in Section 2.2.1, approximately 5.1 miles of the proposed Segment 4 would be located within the Los Padres National Forest boundary, under U.S. Forest Service (USFS) jurisdiction. The applicant has operated and maintained existing structures along Segment 4 for over 50 years, consistent with a Special Use Permit (SUP) granted by the USFS for the purpose of locating, surveying, constructing, operating, and maintaining power transmission infrastructure. This SUP was valid until 2012, and the applicant has already filed a long-term renewal application, waiting for formal USFS action. In the interim, both the applicant and the USFS have continued to perform actions pursuant to the SUP, including filing two additional permit amendments: a permit for the replacement and road maintenance of three towers within the Los Padres National Forest; and an application to authorize the installation of a fiber optic telecommunication line. The applicant's SUP document records are provided in Appendix A. Pursuant to Forest Service directives (FSH 2709.11), the applicant would upgrade existing rights on public lands where necessary prior conducting proposed work along Segment 4. The Los Padres National Forest is conducting a separate review of various SCE transmission lines as part of a broader NEPA effort, including work that is not related to the proposed project.

Bureau of Reclamation Land

Although several structures along Segment 2 are located on Bureau of Reclamation Land, the applicant's easement includes the right to make modifications to existing transmission lines and supporting infrastructure. Only minor modifications, such as the removal of tower foundations and the addition of fiber optic cable, are proposed along Segment 2.

2.4 Construction Equipment, Workforce, Schedule, and Plans

2.4.1 Construction Equipment and Workforce

The estimated duration, workforce, and daily outcome for each construction activity is summarized in Table 2-8, below. A list of construction equipment and vehicles and their estimated duration of use during construction is provided in Appendix C, Air Calculations. Construction would be performed by either the applicant's construction crews or its contractors. If the applicant's construction crews are used, they would be based at SCE's Ventura Service Center or one or more staging yards set up for the proposed project. In general, construction would occur in accordance with accepted construction industry standards. The applicant would comply with applicable local ordinances for construction activities or would request a variance from the applicable jurisdiction.

Contractor construction personnel would be managed by the applicant's construction management personnel and would be based in the contractor's existing yard or one or more staging areas established as part of the proposed project.

The applicant anticipates a total of approximately 105 construction personnel working on any given day. Crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would vary depending on factors such as material availability, resource availability, weather factors, and construction scheduling.

2.4.2 Construction Schedule

The applicant anticipates that construction of the proposed project would take approximately 24 months. Table 2-8 presents the duration of the proposed activities, workforce needed, and estimated outcome per day for 66-kVsubtransmission line construction and telecommunication system installation. Construction would commence following regulatory approvals, final engineering, procurement activities, and receipt of all applicable permits. Construction of the proposed project would occur primarily during daytime hours. However, it is possible that some construction could occur at night, requiring temporary artificial illumination. Lighting, if needed, would be used to protect the safety of the construction workers; lights would be oriented and shielded to minimize their effect on any nearby sensitive receptors.

Table 2-8 Proposed Subtransmission and Telecom System Construction Schedule

Activity	Estimated duration	Workforce	Estimated daily outcome
Survey	17 days	4	1 mile
Staging areas/Material storage	24 months	4	N/A
Tree trimming	14 days	3	40 trees
ROW clearing	20 days	5	0.25 mile
Roads and landing work	49 days	5	Brushing/Trimming: 2 miles Existing roads: 1 mile New roads (moderate): 1 mile New roads (mountain): 0,5 mile Structure pads (flat): 4 pads Structure pads (mountain): 2 pads

Table 2-8 Proposed Subtransmission and Telecom System Construction Schedule

Activity	Estimated duration	Workforce	Estimated daily outcome
Guard structure installation	12 days	6	5 structures
Removal of existing conductor and telecom cable	32 days	20	0.5 mile
LST removal	230 days	8	0.5 LSTs
LST foundation removal	88 days	4	2 foundations
Wood H-frame/ wood pole removal	4 days	6	9 poles or 4 H-frames
TSP foundations	178 days	6	0.5 TSPs
TSP haul	45 days	6	2 TSPs
TSP assembly	89 days	8	1 TSP
TSP erection	89 days	8	1 TSP
J-Tower haul	4 days	6	1 J-Tower
J-Tower footing installation	11 days	8	0.3 footing
J-Tower assembly and erection	12 days	12	0.3 J-Tower
Wood/LWS pole haul	4 days	4	4 poles
LWS H-frame/LWS pole installation	4 days	8	4 poles or 2 H-frames
Conductor installation	44 days	20	0.5 mile
Telecommunications cable and FRC installation	21 days	20	2 miles
Guard structure removal	9 days	6	7 structures
Duct bank installation	3 days	6	250 feet
Underground cable installation	1 day	8	0.33 mile
Restoration	17 days	7	1 mile
Telecom system installation at Carpinteria Substation	30 days	3	N/A
Telecom system installation at Casitas Substation	20 days	3	N/A
Telecom system installation at Goleta Substation	5 days	3	N/A
Telecom system installation at Ortega Substation	5 days	3	N/A
Telecom system installation at Santa Barbara Substation	5 days	3	N/A
Telecom system installation at Santa Clara Substation	30 days	3	N/A
Telecom system installation at Ventura Substation	30 days	3	N/A

Source: SCE 2012

Key:

FRC Fault return conductor
LST Lattice steel tower
LWS Lightweight steel
N/A Not applicable
ROW Right-of-way
TSP Tubular steel pole

2.4.3 Hazardous Materials

Construction of the proposed project 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.

The applicant would update current Spill Prevention Control and Countermeasure Plans (SPCC) Plans for the existing facilities before any new oil-containing equipment would be brought to the substation locations. The SPCC Plans for the substations would be updated to describe how hazardous materials released from electrical equipment would be diverted and directed toward containment structures and how containerized hazardous materials would be stored within a temporary containment area with sufficient containment capacity.

2.4.4 Waste Disposal

Construction of the proposed project would result in the 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 sanitation waste management practices. Material from existing infrastructure that would be removed as part of the proposed project, such as conductor, steel, concrete, and debris, would be temporarily stored as the material awaits salvage, recycling, or disposal.

The existing wood poles removed as part of the proposed project would be returned to a staging yard and then reused by the applicant, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of an RWQCB-certified municipal landfill.

Material excavated during construction of the proposed project could either be used as fill, made available for use by the landowner, or could be disposed of offsite. If contaminated material is encountered during excavation, the applicant would stop at that location, and the applicant's Spill Response Coordinator would be called to the site to make an assessment and notify the proper authorities.

The estimated quantity of solid waste that would be generated for the proposed project to be deposited at approved landfills would be approximately 7,213 tons. Following are the types and amounts of waste sources:

- Subtransmission overhead construction: approximately 179 tons, which includes wood poles[5] and miscellaneous hardware.
- Civil work (exported soils maximum[6]): approximately 7,032 tons, which includes access roads rehabilitation, new spur roads, TSP work areas, retaining wall structures, drainage structures etc.
- Substation construction: approximately 1.5 tons, which includes hardware and equipment.

[5] It is expected the majority of the removed wood poles would be taken to an approved landfill, but some poles may still be structurally suitable for re-use. Removed tower steel, empty wire reels, concrete footings, pallets, etc. would be recycled or re-used.

[6] Note that some of the excess soils may be used on existing dirt access roads.

- Telecom construction: approximately 0.25 ton, which includes waste generated from splicing and direct buried conduit.

2.4.5 Storm Water Pollution Control

Construction of the proposed project would disturb a surface area greater than 1 acre. Therefore, the applicant will be required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ from the State Water Resources Control Board. Commonly used BMPs are 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 construction components.

2.4.6 Dust Control

During construction, migration of fugitive dust from construction sites would be limited by control measures set forth by Ventura County Air Pollution Control District Rule 55 and Santa Barbara County Air Pollution Control District Rule 345, as further discussed in Section 4.3, "Air Quality." SCE would use up to 393 acre-feet of water during construction, primarily for dust control.

2.4.7 Traffic Control

Construction activities within public street ROWs would require the use of a traffic control service, and all lane closures would be conducted in accordance with local ordinances and city/county permit conditions. These traffic control measures would be consistent with those published in the California Joint Utility Traffic Control Manual (California Inter-Utility Coordinating Committee 2010), as discussed in Section 4.15, "Transportation and Traffic."

2.5 Operation and Maintenance

2.5.1 Ongoing Activities

Ongoing operation and maintenance activities are necessary to ensure reliable service, as well as the safety of utility workers and the general public.

All substations associated with the proposed project are, and would continue to function as, remotely controlled substations. The applicant's Grid Control Center, Alternate Grid Control Center, and all Switching Centers are equipped with Energy Management System workstations allowing them to monitor and respond to alarms as the system status changes. All workstation users have the ability to perform supervisory control of remote station equipment within their jurisdictional areas. In addition, all remote substations with supervisory control are equipped with a Programmable Logic Controller integrated with Substation Automation System (SAS). All automatic functions and data acquisition are performed by the SAS. When a station is supervisory controlled, controllable points can be initiated from the switching center with operational jurisdiction.

Substation Operators perform station inspections in unstaffed substations when there is any indication of trouble. Routine circuit breaker and disconnect switching operations at remotely controlled stations would normally be performed by remote control on orders by the responsible switching center. The System Operators are responsible for maintaining the correct status of all lines and equipment under their jurisdiction.

The subtransmission lines would be maintained in a manner consistent with CPUC GO 95 and GO 128. Normal operation of the lines would be controlled remotely through the applicant's control systems, and manually in the field as required. The applicant inspects the subtransmission overhead facilities in a manner consistent with CPUC GO 165 a minimum of once per year via ground and/or aerial observation, but usually more frequently based on system reliability.

In most cases, the applicant would maintain and repair subtransmission and substation facilities within previously disturbed areas surrounding or adjacent to a specific structure, including structure location(s), stringing sites, laydown areas, and/or access roads. The applicant would repair or replace facilities due to external factors such as fires, earth movement (due to slides or earthquakes), vehicles contacting structures, etc. and for ongoing maintenance of infrastructure as it ages. Maintenance would occur as needed and could include activities such as repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. Most regular operations and maintenance activities for overhead facilities are performed from existing access roads with no surface disturbance. Potential work to be done at existing facilities, such as repairing or replacing existing poles and towers, could occur in undisturbed areas.

Existing conductors could require re-stringing to repair damaged equipment. Some pulling sites could be located in previously undisturbed areas, and at times, conductors could be passed through existing vegetation en route to their destination.

Routine access and spur road maintenance would be conducted on an annual basis as needed. Access and spur road maintenance includes maintaining a vegetation-free corridor (to facilitate access and prevent fires) and blading to smooth over washouts, eroded areas, and washboard surfaces as needed. Access and spur road maintenance could include brushing (i.e., trimming or removal of shrubs) approximately 2 to 5 feet beyond the edge of the road or roadside berm when necessary to keep vegetation from intruding into the roadway. Access and spur road maintenance would also include cleaning ditches, moving and establishing berms, clearing and making functional drain inlets to culverts, culvert repair, clearing and establishing water bars, and cleaning and repairing over-side drains. Access and spur road maintenance includes the repair, replacement, and installation of storm water diversion devices as needed.

Insulators could require periodic washing with water to prevent the buildup of contaminants (e.g., dust, salts, droppings, smog, and condensation) and reduce the possibility of electrical arcing, which can result in circuit outages and potential fire. Frequency of insulator washing is region-specific and based on local conditions and build-up of contaminants. Insulators, hardware, and other components are replaced as needed to maintain circuit reliability.

Wood pole testing and treating is a necessary maintenance activity conducted to evaluate the condition of wood structures both above and below ground level. Intrusive inspections require the temporary removal of soil around the base of the pole, usually to a depth of approximately 12 to 18 inches, to check for signs of deterioration. Public roads and existing access and spur roads would be employed to access the poles. All soil removed during intrusive inspections would be replaced and compacted at the completion of the testing.

Regular tree pruning would be performed in compliance with existing state and federal laws, rules, and regulations and is crucial for maintaining reliable service, especially during severe weather or disasters. Tree pruning standards for distances from overhead lines have been set by the CPUC (GO 95, Rule 35), Public Resources Code Section 4293, California Code of Regulations Title 14, Article 4, and other government and regulatory agencies.

The applicant's standard approach to tree pruning is to remove at least the minimum required by law plus one year's growth (species dependent). In addition to maintaining vegetation-free access and spur roads and clearances around electrical lines, clearance of brush and weeds around poles, and as required by local jurisdictions on fee-owned ROWs, is necessary for fire protection. Section 4292 of the California Public Resources Code directs the owner, controller, operator, or maintainer of electrical transmission lines in mountainous land, forest-covered land, brush-covered land, or grass-covered land, to maintain around and adjacent to any pole or tower that supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak that consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower, and to maintain a clearance of 4 feet from any line operating at 2,400 or more volts, but less than 72,000 volts.

GO 95, Rule 35 mandates that certain vegetation management activities be performed to establish necessary and reasonable clearances, and establishes minimum clearances between line conductors and vegetation that under normal conditions shall be maintained. These requirements apply to all overhead electrical supply and communication facilities that are covered by this GO, including facilities on lands owned and maintained by California State and local agencies.

Operations and maintenance related helicopter activities could include transportation of workers, delivery of equipment and materials to structure sites, structure placement, hardware installation, and conductor or telecommunications cable stringing operations. Helicopter landing areas could be located where access by road is infeasible. In addition, helicopters must be able to land within the applicant's ROWs, which could include landing on access or spur roads.

In addition to regular operations and maintenance activities, the applicant conducts a wide variety of emergency repairs in response to emergency situations, including, but not limited to, damage resulting from high winds, storms, fires, other natural disasters, and accidents. Such repairs could include replacement of downed poles or lines or re-stringing conductors. Emergency repairs could be needed at any time.

The telecommunication equipment would be subject to maintenance and repair activities on an as-needed or emergency basis. Activities could include replacing defective circuit boards, damaged radio antennas, or feedlines and testing the equipment. Telecommunication equipment would also be subject to routine inspection and preventative maintenance such as filter change-outs or software and hardware upgrades.

Most regular operations and maintenance activities of telecommunication equipment would be performed at substations and would be accessed from existing access roads with no surface disturbance. Access road maintenance would be performed as discussed above.

Telecommunication cable maintenance activities would include patrolling, testing, repairing, and replacing damaged cable and hardware. Most regular maintenance activities of overhead facilities would be performed from existing access and spur roads with no surface disturbance, although some activities could occur in undisturbed areas.

Repairs made to existing facilities, such as repairing or replacing existing cables and restringing cables, could occur in undisturbed areas. Access and habitat restoration may be required for routine or emergency maintenance activities.

2.5.2 Electric and Magnetic Fields

Electric and magnetic fields (EMFs) occur both naturally and as a result of human activity across a broad electrical spectrum. Naturally occurring electric and magnetic fields are caused by the weather and the earth's geomagnetic field. The fields caused by human activity result from technological application of the electromagnetic spectrum for uses such as communications, appliances, and the generation, transmission, and local distribution of electricity.

In 1993, the CPUC implemented decision D.93 11-013, which requires utilities to use "low-cost or no-cost" EMF reduction measures for EMFs associated with electrical facilities that require certification under CPUC GO 131-D. The decision directed utilities to use a 4 percent benchmark for low-cost field reduction measures. This decision also implemented a number of EMF measurement, research, and education programs. The CPUC did not adopt any specific numerical limits or regulation of EMF levels related to electric power facilities. The CPUC's January 27, 2006, decision (D.06-01-042) affirmed the 1993 decision on the low-cost/no-cost policy to mitigate EMF exposure for new utility transmission and substation projects. For further information about EMFs and CPUC guidelines, refer to: http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields.

SCE would incorporate the following low-cost/no-cost measures into the design of the proposed project:

- Utilizing subtransmission structure heights that meet or exceed SCE's preferred EMF design criteria.
- Utilizing double-circuit construction that reduces spacing between circuits as compared with single-circuit constructions.
- Arranging conductors of proposed subtransmission line for magnetic field reduction.
- Placing new substation electrical equipment away from the substation property lines closest to populated areas.

After several decades of study, there is still a lack of agreement in the scientific community regarding the potential health impacts of human exposure to EMF from electric power facilities. Additionally, there are no federal or state standards limiting public exposure to EMF emitted by electrical power lines or substation facilities in the State. For these reasons, EMF is not evaluated in this environmental impact report (EIR) as an issue to be addressed under the California Environmental Quality Act (CEQA), and no related impact significance is presented in this section. EMF information provided in this EIR is intended to provide the public with a better understanding of the topic.

2.6 Applicant Proposed Measures

To avoid and mitigate potential significant impacts to environmental resources, the applicant has committed to implementing the applicant proposed measures (APMs) listed below in Table 2-9.

Table 2-9 Applicant Proposed Measures

APM AQ-1	The following control measures stated in the VCAPCD Ventura County Air Quality Assessment Guidelines to minimize the generation of fugitive dust (PM_{10} and $PM_{2.5}$) would be implemented during construction of the proposed project as feasible: 1. The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized to prevent excessive amounts of dust. 2. Pre-grading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) should penetrate sufficiently to minimize fugitive dust during grading activities. 3. Fugitive dust produced during grading, excavation, and construction activities shall be controlled by the following activities: a) All trucks shall be required to cover their loads, as required by California Vehicle Code §23114. b) All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible. 4. Graded and/or excavated inactive areas of the construction site shall be monitored by (indicate by whom) at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally safe dust control materials, shall be periodically applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area should be seeded and watered until grass growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust. 5. Signs shall be posted on site limiting traffic to 15 miles per hour or less. 6. During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the APCD in determining when winds are excessive. 7. Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads. 8. Personnel involved in grading operations, including contractors and subcontractors, should be advised to wear respiratory protection in accordance with California Division of Occupational Safety and Health regulations.
APM AQ-2	The following control measures stated in the VCAPCD Ventura County Air Quality Assessment Guidelines would be implemented during construction of the Project as feasible: 1. Minimize equipment idling time. 2. Maintain equipment engines in good condition and in proper tune as per manufacturers' specifications.

Table 2-9 Applicant Proposed Measures

	3. Lengthen the construction period during smog season (May through October), to minimize the number of vehicles and equipment operating at the same time. 4. Use alternatively fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, if feasible.
APM BIO-1	Pre-construction biological surveys for special-status plants and wildlife would be conducted 0 to 30 days before the start of construction by a qualified biologist in all laydown/work areas. If a special-status species is encountered, biologists would record the location, take a photograph, and delineate a buffer area, as appropriate, where activities should be restricted for the protection of the resource. If impacts to the special-status plant(s) or wildlife cannot be avoided, SCE would consult with the appropriate resource agency or agencies.
APM BIO-2	To the extent feasible, SCE would minimize impacts and permanent loss to native vegetation types, vegetation that may support special-status species, and known populations of special-status plants at construction sites by avoiding construction activities in areas flagged to be avoided. If it is not possible to avoid impacts to native vegetation, a project revegetation plan may be prepared in consultation with the appropriate agencies for areas of native habitat temporarily impacted during construction.
APM BIO-3	Biological monitors would monitor construction activities in wildlife habitat areas that may contain special-status species, critical habitat for those species, or unique resources to ensure such species, habitat, or resources are avoided.
APM BIO-4	SCE would conduct project-wide nesting bird surveys. SCE would, if feasible, remove trees, vegetation, subtransmission structures, and poles outside of the nesting season. If a tree, subtransmission structure, or pole containing a raptor nest must be removed during nesting season, SCE biologists would consult with the appropriate resource agencies. If work is scheduled to take place in close proximity to an active nest, appropriate nesting buffers or other measures would be established based on consultation with the appropriate resource agencies or an adaptive management plan to address nesting birds, which would be subject to the approval of the CDFW. This Project-specific Nesting Bird Management Plan would allow for implementation of species-specific buffer modification guidelines provided by a qualified utility avian biologist; nest buffers would be determined by species sensitivity to disturbance, the nature of the construction activity, and the environmental conditions surrounding the nest.
APM BIO-5	During the pre-construction surveys, a qualified biologist would identify any potential San Diego desert woodrat middens within 50 feet of project-related activities. At the discretion of a qualified biologist, an exclusion buffer would be established around any woodrat middens that can be avoided, and these exclusion zones would be flagged or fenced to protect the nest during the breeding season (October through June). If a woodrat midden cannot be avoided, an appropriate resource agency would be consulted regarding a potential buffer reduction.
APM BIO-6	A pre-construction, focused burrowing owl protocol 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. If occupied burrows are found, adequate buffers shall be established around burrows based on a project-specific nesting bird management plan or consultation with the appropriate agencies. If occupied burrows cannot be avoided, an appropriate relocation strategy would be developed in conjunction with the CDFW and may include collapsing burrows outside of nesting season and using exclusionary devices to reduce impacts to the burrowing owl. Biological monitors would monitor all construction activities that have the potential to impact active burrows.
APM BIO-7	The NPDES Construction General Permit would require SCE to develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies best management practices (BMPs) to avoid or minimize impacts to water quality and riparian habitat

Table 2-9 Applicant Proposed Measures

	during construction. See Appendix B for example BMPs provided by SCE.
APM GEN-1	The applicant would develop a Worker Environmental Awareness Plan. The applicant would also prepare a presentation used 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 APMs and any mitigation measures identified, all construction personnel would also receive the following: • A list of phone numbers for the applicant's environmental specialist personnel associated with the proposed project (archaeologist, biologist, environmental compliance coordinator, and regional spill response coordinator). • Instruction on the Santa Barbara County APCD and Ventura County APCD fugitive dust rules. • Instruction on biological resources (including special-status species and other sensitive habitats and resources that could occur in the vicinity of the proposed project); the locations of sensitive resources; the legal status and protection afforded these species; and the measures to be implemented for avoidance and minimization of impacts to the resources. Penalties for violations of environmental laws will also be incorporated into the training. • A review of applicable local, state, and federal ordinances, laws, and regulations pertaining to historic preservation; a discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and the applicant policies; a review of archaeology, history, prehistory, Native American cultures, and paleontological resources in the proposed project vicinity; and instruction regarding what typical cultural resources look like. • Instruction regarding the procedures to be implemented should unanticipated cultural resources (as well as paleontological resources) be encountered during construction activities, including stopping work in the vicinity of the find and contacting the archaeologist or environmental compliance coordinator, who would provide guidance on how to proceed. • Instruction regarding the importance of maintaining a clean construction site, including ensuring that all food scraps, wrappers, food containers, cans, bottles, and other trash from the proposed project are deposited in closed trash containers. Trash containers would be removed from the project area as required and would not be permitted to overfill. • Instruction regarding the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific BMPs, and the location of Material Safety Data Sheets for the proposed project. • 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. • A copy of the truck routes to be used for material delivery. • Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project.

Table 2-9 Applicant Proposed Measures

APM CUL-1	Potential project-related effects on historical resources may be mitigated or reduced to a less than significant level by implementing SCE's cultural resources Unanticipated Discovery Plan and employing one or more standard practice mitigation scenarios including, but not limited to: • Prehistoric Resources – avoid where feasible (avoidance by design, preserve in place, capping) – minimize (reduction of Area of Direct Impact/Effect) – mitigate (historic context statement, data recovery) • Historic Resources – avoid where feasible (avoidance by design, preserve in place, capping) – minimize (reduction of Area of Direct Impact/Effect) – mitigate (historic context statement, data recovery) • Historic Architecture/Utility Infrastructure – avoid where feasible (avoidance by design, preserve in place)o – minimize (reduction of Area of Direct Impact/Effect) – mitigate (historic context statement, Historic American Engineering Record, Historic American Building Survey, advanced California Department of Parks and Recreation recordation) The applicant's Unanticipated Discovery Plan would describe the procedures to be followed in the event that previously unidentified cultural resources are discovered during construction of the proposed project. If previously unidentified cultural resources are discovered during construction, personnel would be instructed to suspend work in the vicinity of the find. The resource would then be evaluated for listing in the CRHR by a qualified archaeologist, and, if the resource is determined to be eligible for listing in the CRHR, either the resource would be avoided or appropriate archaeological protective measures would be implemented. If human skeletal remains are uncovered during construction of the proposed project, the applicant and/or its contractors shall immediately halt all work in the immediate area, contact the applicable County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. Per Health and Safety Code 7050.5, upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. If the applicable County Coroner determines that the remains are Native American, it is anticipated that the coroner would contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code 5097.98 (as amended by Assembly Bill 2641). In addition, the applicant shall ensure that the immediate vicinity where the Native American human remains are located is not damaged or disturbed by further development activity until the applicant has discussed and conferred, as prescribed in Public Resources Code 5097.98, with the most likely descendants regarding their recommendations.

Table 2-9 Applicant Proposed Measures

APM CUL-2	SCE shall prepare and implement a PRMP that would include, but not be limited to: preconstruction coordination; recommended monitoring methods; emergency discovery procedures; sampling and data recovery methods, if needed; museum storage coordination for any specimens and data recovered; and reporting requirements. The PRMP would also provide for sediment screening, fossil preparation, curation, and preparation of a report detailing the results of the work. In addition, the PRMP would specify monitoring requirements such as the presence of a paleontological monitor when work is being performed at formations with high paleontological sensitivity. If very few or no fossil remains are found during ground-disturbing activities, monitoring time can be reduced or suspended entirely, per recommendations of the paleontological field supervisor.
APM CUL-3	A cultural resources survey of those areas that could not be previously accessed would be conducted prior to the start of construction. These surveys would identify and/or address any potential sensitive cultural resources that may be impacted by the Project, including the substation sites, subtransmission line and telecommunication cable routes, wire stringing locations, access and spur roads, drilling and crane pads, and staging yards.
APM GEO-1	Based on the findings of the geotechnical analysis, SCE would design project components to minimize the potential for landslides, lateral spreading, subsidence, liquefaction, or collapse. Measures that may be used to minimize impacts could include, but are not limited to: stabilization fills, retaining walls, slope coverings, removal of unstable materials, avoidance of highly unstable areas, construction of pile foundations, ground improvements of liquefiable zones, installation of flexible bus connections, and incorporation of slack in cables.
APM NOISE-1	Construction activities will be conducted or phased to ensure that the noise generated during construction would not exceed significance thresholds or durations identified by the City of Carpinteria Resolution No. 408; the County of Ventura noise regulations set forth in the County's Construction Noise Threshold Criteria and Control Plan; or the County of Santa Barbara Environmental Thresholds and Guidelines Manual.
APM NOISE-2	Equipment and trucks used for project construction shall employ the best available noise control techniques to the extent feasible.
APM NOISE-3	Stationary noise sources shall be located as far from adjacent noise sensitive receptors as reasonably possible and shall be enclosed if feasible.
APM NOISE-4	Where feasible, temporary portable sound barriers would be deployed where construction activities would cause noise levels at sensitive receptor locations to be in excess of an applicable criteria threshold. For purposes of this APM, schools would only be considered sensitive receptor locations during instruction hours.
APM NOISE-5	At least 2 weeks prior to the anticipated start of construction at a particular location, SCE will notify all property owners within 300 feet of that location that construction activities are about to commence at that location.

Key:
APCD Air Pollution Control District
APM Applicant proposed measure
BMP Best management practice
CDFW California Department of Fish and Wildlife
CRHR California Register of Historic Resources
PM_{10} Particles 10 microns or less in diameter
$PM_{2.5}$ Particles 2.5 microns or less in diameter
PRMP Proposed resource management plan
SCE Southern California Edison
SWPPP Storm water pollution prevention plan
VCAPCD Ventura County Air Pollution Control District

2.7 Permitting and Consultation Requirements

Table 2-10 lists the federal, state, and local permits and consultations that may be required for construction and operation of the proposed project.

Table 2-10 Consultation and Permitting Requirements

Agency / Group	Jurisdiction	Consultation or Permit
Federal		
United States Army Corps of Engineers	Work within Waters of the United States, including wetlands	Consultation with the USACE, RWQCB, CDFW, and USFWS for a Clean Water Act Section 404 permit
United States Fish and Wildlife Service	Threatened or endangered species and conservation plans	Take authorization (if required) and consultation with the USFWS. Consultation for Section 7 or 10 of the Federal Endangered Species Act.
National Marine Fisheries Service	Alterations to steelhead designated critical habitat	Consultation to determine appropriate best management practices for widening an access road in Sutton Creek.
United States Forest Service	United States National Forest System land, Los Padres National Forest	Permission to construct components within the Los Padres National Forest. NEPA review for these components as well as additional SCE work on forest lands, which is not related to the proposed project, will be conducted separately by Los Padres National Forest Service staff.
Federal Aviation Administration	Aircraft operation and safety in United States air space	Consultation to determine whether Congested Area Plan approval for helicopter external-load operations is required. Consultation to ensure compliance with Federal Aviation Regulations Part 77 (Objects Affecting Navigable Airspace).
State		
California Public Utilities Commission	CEQA review and overall approval of the proposed project	Permit to Construct for construction of electric subtransmission line facilities designed for operation at 66 kV.
California Department of Fish and Wildlife	Threatened or endangered species and conservation plans	Take authorization (if required) and consultation with the USFWS. Consultation for Section 2081 of the California Endangered Species Act. Consultation for Section 1600 of the Fish and Game Code (streambed alteration agreement).
California Department of Transportation	Acts on behalf of the Federal Department of Transportation pursuant to California Streets and Highways Code 660 to 711.21 and California Code of Regulations 1411.1 to 1411.6.	Caltrans requires that all work done within, under or above a state or interstate highway right-of-way obtain an encroachment permit. A Transportation Permit required for oversize and/or overweight truck loads that exceed the limits of a legal load as defined by Division 15 of the California Vehicle Code.
California State Water Resources Control Board	Storm water discharges and Clean Water Act Section 401 permit	Notice of Intent to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ and Section 401 Permit associated with issuance of a Clean Water Act Section 404 Permit
State Historic	Historic, cultural, and	Consultation regarding known cultural resources.

Table 2-10 Consultation and Permitting Requirements

Agency / Group	Jurisdiction	Consultation or Permit
Preservation Office, Native American Heritage Commission	archaeological resources	Consultation regarding the listing of cultural or historic resources in the National Register of Historic Places or California Register of Historical Resources.
Regional and Local		
Santa Barbara County Planning and Development Department	CEQA review and approval of work within the California Coastal Zone	Coastal Development Permit for Segment 3A and portions of Segment 4.
City of Carpinteria Community Development Department	CEQA review and approval of work within the California Coastal Zone	Coastal Development Permit for a portion of Segment 3A.
Central Coast and Los Angeles Regional Water Quality Control Board	National Pollutant Discharge Elimination System permitting	As directed by State Water Resources Control Board, monitor development and implementation of SWPPPs and other aspects of the National Pollutant Discharge Elimination System permit and 401 certification program. SWPPPs are required for storm water discharges associated with construction activities that disturb more than 1 acre of land.
Ventura County Air Pollution Control District and Santa Barbara County Air Pollution Control District	Air pollution and greenhouse gas emissions including fugitive dust	
City/County (other ministerial)	Flood control areas, temporary land occupancy and staging areas, grading, excavation, afterhours work, encroachment, tree trimming/removal, and traffic control/lane closures	Permits for crossing flood control areas, temporary use/occupancy, grading, excavation and shoring, and afterhours work (if required)

Source: SCE 2012
Key:
Caltrans California Department of Transportation
CDFW California Department of Fish and Wildlife
CEQA California Environmental Quality Act
kV kilovolt
NEPA National Environmental Policy Act
RWQCB Regional Water Quality Control Board
SCE Southern California Edison
SWPPP Storm Water Pollution Prevention Plan
USACE U.S. Army Corps of Engineers
USFWS U.S. Fish and Wildlife Service

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