PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

ADDENDUM TO THE FINAL ENVIRONMENTAL IMPACT REPORT, OCTOBER 2009, FOR THE TEHACHAPI RENEWABLE TRANSMISSION PROJECT

State Clearinghouse No. 2007081156

Application No. A.07-06-031

Decision No. D.09-12-044

The California Public Utilities Commission (CPUC) has prepared this Addendum to the October 2009 Final Environmental Impact Report (FEIR) for the Tehachapi Renewable Transmission Project (TRTP) pursuant to the California Environmental Quality Act (Pub. Res. Code §21000 et seq., "CEQA") and the State CEQA Guidelines (14 Cal. Code Regs §15000 et seq.).

The FEIR analyzed the environmental effects of the construction and operation of the TRTP by Southern California Edison (SCE). The TRTP consists of new and upgraded electrical transmission infrastructure along approximately 173 miles of new and existing rights-of-way in Kern, Los Angeles, and San Bernardino Counties. The TRTP is intended to provide the electrical facilities necessary to interconnect new wind energy generation facilities in the Antelope Valley, address the reliability needs of the transmission grid due to projected load growth in the Antelope Valley, and address transmission constraints south of SCE's Lugo Substation.

In November 2011, the CPUC issued an Assigned Commissioner's Ruling directing SCE to prepare testimony on new options for the portion of the TRTP known as Segment 8A that traverses the City of Chino Hills. In response, testimony was submitted by SCE in January 2012 on options to the approved TRTP in Chino Hills. These options included alternative routes, different types of overhead structures, and undergrounding options. In December 2012, SCE submitted preliminary testimony describing five underground transmission options for Chino Hills in response to the Scoping Memo and Ruling of Assigned Commissioner issued on July 2, 2012, as amended. On February 28, 2013, SCE submitted refined testimony on the underground options. Four of the underground options identified by SCE, referred to as UG1, UG2, UG4, and UG5 are under consideration by the CPUC as alternatives to a portion of the approved overhead transmission line through the City of Chino Hills, as described below.

This Addendum has been prepared to address proposed changes to the TRTP along a portion of Segment 8A in the City of Chino Hills. Specifically, options have been considered for placing either a 500-kV single-circuit or 500-kV double-circuit transmission line underground in an approximately 3.5-mile segment of existing ROW through the City of Chino Hills. The CPUC originally approved the construction of a 500-kV double-circuit overhead transmission line through this portion of Chino Hills as part of the TRTP.

The three underground transmission options proposed for Chino Hills would be installed in a ductbank using an extruded-dielectric cable system (XLPE) and would include the construction of two transition stations at each end where the transmission line transitions from above ground to below ground and vice versa. The alignment for the underground options is same as that of the approved overhead transmission line. The underground options may also require the installation of shunt compensation reactors at SCE's Mira Loma and Vincent substations, including possible expansion of the Mira Loma substation to accommodate the reactors. The double-circuit underground options (UG1 and UG2) would require installation of reactive compensation at SCE's Serrano Substation. At this time, construction of

the TRTP is ongoing and has not been completed, including the portion of Segment 8A through the City of Chino Hills.

The Commission will consider the following actions: (1) whether an approximately 3.5-mile portion of the approved transmission line (within Segment 8A in Chino Hills) should be installed underground; and (2) whether the underground installation should include one circuit or two circuits. These actions involve consideration of the following underground options described in SCE's February 28, 2013, testimony:

- UG1 – Double-circuit XLPE using three cables per phase in the existing SCE ROW
- UG2 – Single-circuit XLPE using three cables per phase in the existing SCE ROW (with ducts and structures installed for a future second circuit)
- UG4 – Single-circuit XLPE using three cables per phase in the existing SCE ROW
- UG5 – Single-circuit XLPE using two cables per phase in SCE ROW (with ducts and structures for a third cable)

Under State CEQA Guidelines Section 15162, when an EIR has been certified for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. (CEQA Guidelines §15162(a)(1))
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. (CEQA Guidelines §15162(a)(2))
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
    b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative. (CEQA Guidelines §15162(a)(3))

The CPUC Energy Division has conducted a detailed and comprehensive review of the changes to the TRTP which will occur if one of the proposed underground options is approved. Based on this detailed and comprehensive review, presented in Attachment A, the CPUC Energy Division has concluded that the proposed changes would not trigger any of the conditions set forth in CEQA Guidelines Section 15162, and therefore that an Addendum is appropriate pursuant to CEQA Guidelines Section 15164.

Attachment A

Environmental Evaluation

Environmental Evaluation

for

Underground Transmission Options (Single- and Double-Circuit) for

Southern California Edison's Tehachapi Renewable Transmission Project

(A.07-06-031)

Lead Agency:

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Prepared by:

Aspen Environmental Group
5020 Chesebro Road, Suite 200
Agoura Hills, California 91301

June 2013

Environmental Evaluation

Tehachapi Renewable Transmission Project: Underground Options for Chino Hills

A.1 Project Description

The California Public Utilities Commission (CPUC) approved the Tehachapi Renewable Transmission Project (TRTP or Approved Project) in December 2009 through the issuance of a Certificate of Public Convenience and Necessity (Decision 09-12-044)[1]. The Approved Project was analyzed in a Final Environmental Impact Report (EIR), SCH #2007081156, that was certified by the CPUC prior to approval. The Final EIR, including all of its analysis and mitigation, is hereby incorporated by reference into this Environmental Evaluation[2].

The Approved Project consists of multiple segments involving new transmission lines, upgrades to existing transmission lines, a new substation, expansion and upgrades to five existing substations, and relocation of subtransmission and distribution lines. One of the segments, referred to as Segment 8A in the Final EIR, involves replacement of an existing transmission line with a new 500-kV double-circuit transmission line through portions of the Whittier Narrows, Puente Hills, Chino Hills, and Chino Valley in Los Angeles and San Bernardino Counties.

In November 2011, the CPUC issued an Assigned Commissioner's Ruling (ACR) directing the Project proponent, Southern California Edison (SCE), to prepare testimony on new routing options for the portion of Segment 8A that traverses the City of Chino Hills. In response, testimony was prepared by SCE in February 2012 on options to the Approved Project in Chino Hills. Additionally, in December 2012, SCE prepared preliminary testimony on underground transmission options for Chino Hills in response to the Assigned Commissioner's scoping memos and rulings on the TRTP. Five underground options were presented by SCE:

- UG1 – Double-circuit XLPE using three cables per phase in SCE ROW
- UG2 – Single-circuit XLPE using three cables per phase in SCE ROW (with ducts and structures for second circuit)
- UG3 – Single-circuit XLPE using two cables per phase in SCE ROW (with ducts and structures for a third cable and second circuit)
- UG4 – Single-circuit XLPE using three cables per phase in SCE ROW
- UG5 – Single-circuit XLPE using two cables per phase in SCE ROW (with ducts and structures for a third cable)

On February 28, 2013, SCE submitted refined testimony on underground options in response to the Assigned Commissioner's Scoping Memos and Rulings on the TRTP. Four of the options identified by

[1] The full text of the Certificate of Public Convenience and Necessity (Decision 09-12-044) can be viewed at this location: http://docs.cpuc.ca.gov/published/final_decision/111744.htm

[2] The full text of the Final Environmental Impact Report for the Tehachapi Renewable Transmission Project can be viewed at this location: ftp://ftp.cpuc.ca.gov/gopher-data/environ/tehachapi_renewables/finalEIR.htm

SCE, referred to as UG1, UG2, UG4, and UG5 are under consideration by the CPUC as alternatives to the Approved Project through the City of Chino Hills (Figure A.1-1). Build-out of the second circuit as opposed to build-out of only the second circuit infrastructure is the sole difference between UG1 and UG2. Therefore, UG1 will represent both UG1 and UG2 in this Environmental Evaluation since UG1 is considered the worst-case scenario in terms of impacts for purposes of this evaluation. Build-out of the third cable as opposed to build-out of only two cables is the sole difference between UG4 and UG5. Therefore, UG4 will represent both UG4 and UG5 in this Environmental Evaluation since UG4 is considered the worst-case scenario in terms of impacts for purposes of this evaluation.

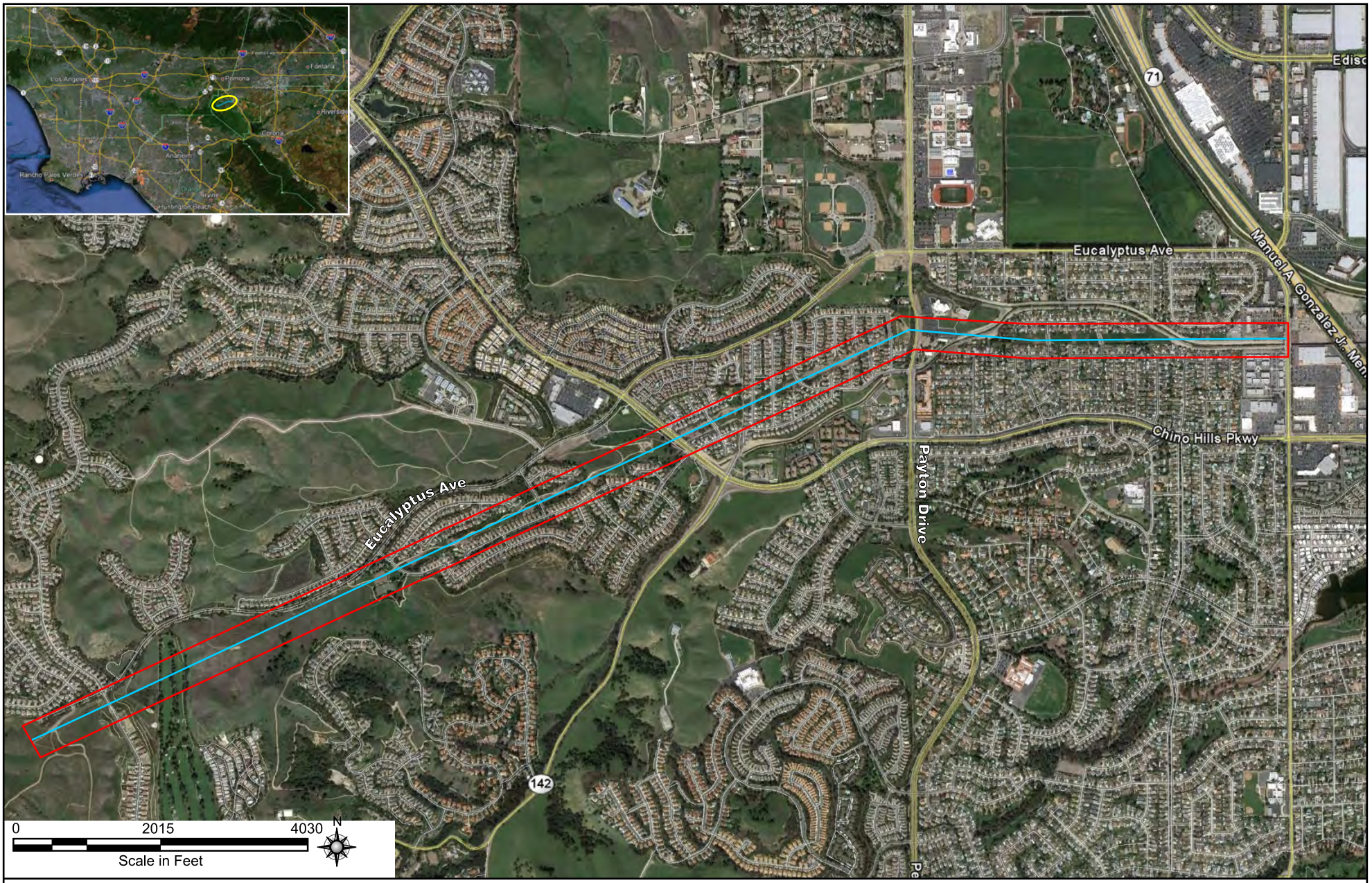
Options UG1 and UG4 are reviewed in this Environmental Evaluation to determine whether the changes proposed to the Approved Project by these two underground options would result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects pursuant to CEQA Guidelines Section 15162. It is important to note that UG1 not only represents the worst-case scenario among UG1 and UG2, but among all five of the underground options identified above by SCE. Therefore, any of the other underground options identified would be covered under this environmental evaluation, should the CPUC decide to consider another underground option among the five identified by SCE above.

Option UG4 (from this point on to be referred to as the Single-Circuit Option) consists of the installation of an underground single-circuit extruded-dielectric cable system (XLPE) using three cables per phase in a ductbank (a series of conduits encased in concrete) placed in the existing Approved Project right-of-way (ROW) in the Chino Hills area (Figure A.1-2). The Single-Circuit Option would require the construction of two transition stations (Figures A.1-3 and A.1-4) where the transmission line transitions from above ground to below ground and vice versa, each approximately 1 acre in size. The size of these transition stations would accommodate a single-circuit underground transmission line consisting of three cables per phase and would include termination structures, lightning arresters, switches, and additional shunt compensation reactors.

Option UG1 (from this point on to be referred to as the Double-Circuit Option) consists of the installation of an underground double-circuit XLPE transmission line using three cables per phase in a ductbank placed in SCE's existing ROW in the Chino Hills Area (Figure A.1-2). The Double-Circuit Option would also require the construction of two transition stations (Figures A.1-3 and A.1-4) where the transmission line transitions from above ground to below ground and vice versa, each approximately 3 acres in size. The size of these transition stations would accommodate a double-circuit underground transmission line consisting of three cables per phase and would include termination structures, lightning arresters, switches, and additional shunt compensation reactors.

For the Single-Circuit Option, SCE would install nine cables (three cables for each of the three phases that comprise a circuit) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier. SCE would also install nine splices in two concrete vaults every 1,500 feet. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable clamps would be spaced at approximately four- to five-foot intervals in the splice vaults. The XLPE cable has an outside diameter of between 5.5 to 6 inches, and weighs approximately 26 pounds per foot. The circuit will have a total of twelve 8-inch ducts encased in concrete. Only nine of the twelve ducts would be filled with cable; the other ducts would be used as maintenance spares.

For the Double-Circuit Option, SCE would install eighteen (nine for each circuit) cables (three cables for each of the three phases that comprise a circuit) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier. SCE would also install eighteen (nine for each circuit)

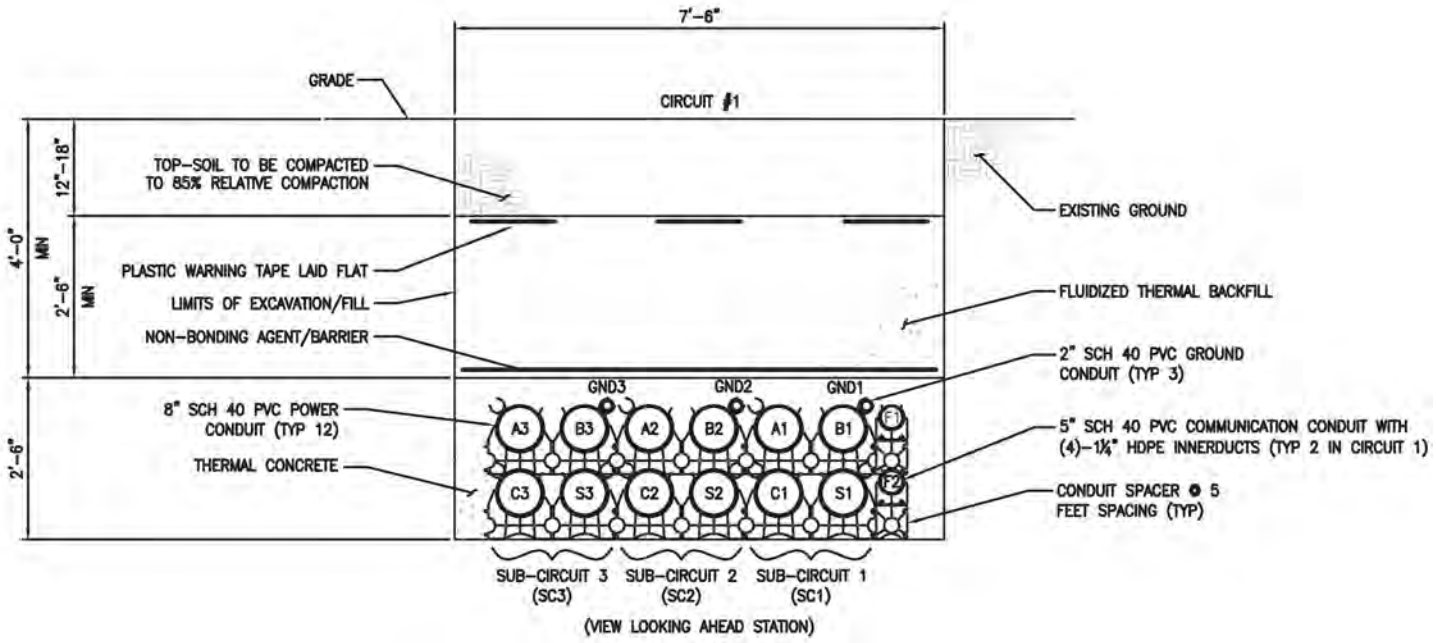


Aspen Environmental Group

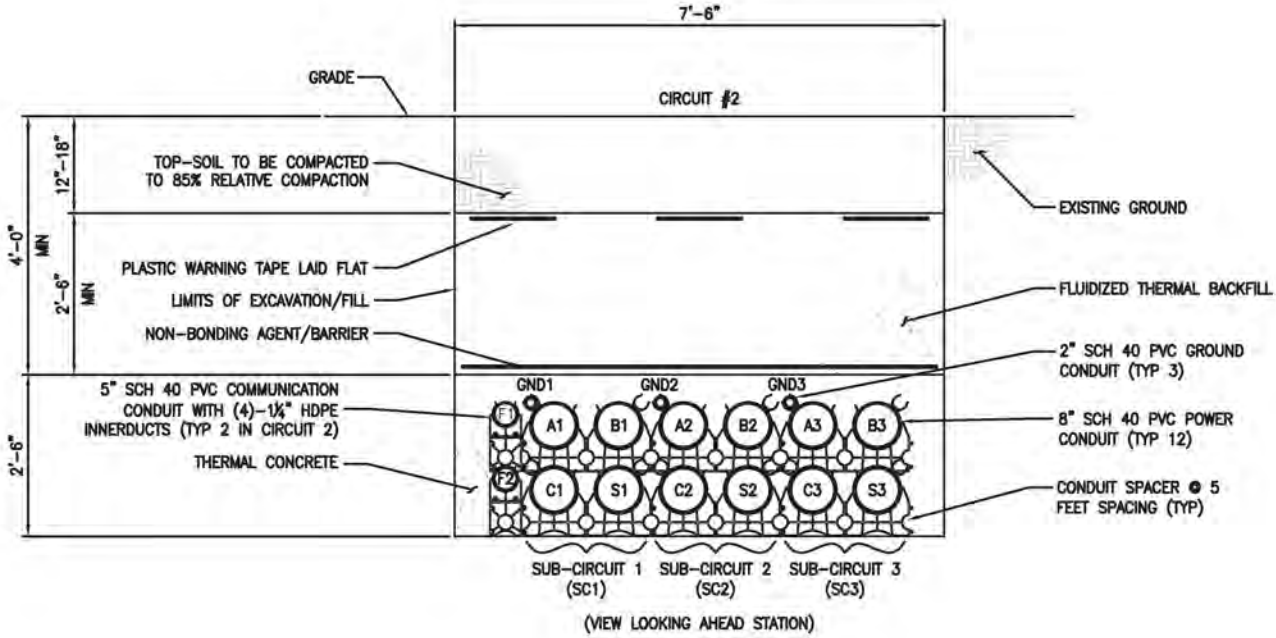
Underground: Single-Circuit or Double-Circuit XLPE, 3 Cables per Phase in Conduit, in ROW from Western Terminus of Eucalyptus Ave to Pipeline Ave

Figure A.1-1

Project Location



DETAIL 1
SINGLE-CIRCUIT DUCT BANK



DETAIL 2
SINGLE-CIRCUIT DUCT BANK

*Note: Trench section details will be the same for a two-cables per phase duct bank configuration. However, cables would be installed in six (6) conduits, rather than nine (9) conduits.

Aspen Environmental Group

Figure A.1-2
Typical Trench Section Details

Source: Edison, 2013.

Figure A.1-3

Western Transition Station

Source: Edison, 2013.

Figure A.1-4

Eastern Transition Station

splices in two concrete vaults every 1,500 feet. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable clamps would be spaced at approximately four- to five-foot intervals in the splice vaults. The Double-Circuit Option would also have eighteen (nine for each circuit) dielectric fluid or SF_6 (Sulfur Hexafluoride) filled terminations. The XLPE cable has an outside diameter of between 5.5 to 6 inches, and weighs approximately 26 pounds per foot. The double-circuit will have a total of twenty-four (twelve for each circuit) 8-inch ducts encased in concrete. Only eighteen (nine for each circuit) of the twenty-four (twelve for each circuit) ducts would be filled with cable; the other ducts would be used as maintenance spares.

The Single-Circuit and Double-Circuit Options would utilize the existing SCE ROW in Chino Hills. The Approved Project included the removal of existing 220-kV transmission structures that had been located in the Chino Hills ROW since the 1940s, and replacement of these structures with double-circuit 500-kV structures (a mix of tubular steel poles and lattice steel structures). To date, SCE has removed all of the existing 220-kV transmission line and structures, and has completed construction of 12 of the 18 new transmission structures in Chino Hills. The six remaining structures have been partially constructed. Construction of the Single-Circuit and Double-Circuit Options would require removal of the 12 completed structures, the six partially constructed structures, and portions of associated foundations. The Double-Circuit Option essentially consists of constructing the Single-Circuit Option twice. Therefore, if the Double-Circuit Option is selected, implementation would occur directly after implementation of the Single-Circuit Option. However, horizontal directional drilling (HDD) for both options would occur at the same time (see Section A.1.11.1).

SCE would need to construct transition stations at each end of the underground XLPE cable systems: one transition station would be located on the western boundary of Chino Hills, and the other transition station would be located on the eastern boundary of Chino Hills (Figures A.1-3 and A.1-4). These transition stations would be required to transition the 500-kV transmission line from an overhead configuration (i.e., open air) to an underground configuration (i.e. insulated cable). The transition stations would be unattended facilities and would include a small control room to house monitoring and protection equipment to support normal operation of the circuits. They would have some supervisory control and data acquisition (SCADA) monitoring of the underground cable, but no SCADA control of switching. The transition stations would be walled and remotely monitored for security purposes.

Installation of the Single-Circuit and Double-Circuit Options would require modifications to the overhead transmission line entering both transition stations. At each transition station, SCE would need to install a lattice double-circuit 500-kV dead-end structure to bring the overhead transmission lines into the transition stations.

Modifications would be required at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation. SCE would be required to install inductive reactance (opposition to a change in alternating current flow) at Mira Loma Substation to compensate for capacitive reactance (opposition to alternating current due to the capacitance of a capacitor, cable, or circuit) in the underground cable segment of the transmission line. Protective relay system changes would be implemented at Vincent Substation. To compensate for the capacitive reactance in the underground cable segment of the transmission line during low load conditions, SCE would add inductive reactance at Serrano Substation.

The Single-Circuit and Double-Circuit Options referred to in this analysis include all project components, including substation modifications, overhead transmission modifications, and the construction of transition stations.

Additional descriptions of both the Single-Circuit and Double-Circuit Options are provided in Section A.1.10 below.

A.1.1 Project Title

Southern California Edison's Underground Transmission Options (Single-Circuit and Double-Circuit) for the Tehachapi Renewable Transmission Project

A.1.2 Project Sponsor's Name and Address

Southern California Edison Company
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

A.1.3 Lead Agency Name and Address

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

A.1.4 Lead Agency Contact Person and Phone Number

John Boccio, CEQA Project Manager
Energy Division
California Public Utilities Commission
505 Van Ness Avenue, Fourth Floor
San Francisco, California 94102
(415) 703-2641

A.1.5 Project Location

The Single-Circuit and Double-Circuit Options both have the same travel route. This route is located within SCE's existing transmission ROW, which parallels the alignment of Eucalyptus Avenue and is located south of this street in the cities of Chino and Chino Hills, California (Figure A.1-1). The route traverses for approximately 3.5 miles from southwest to northeast, with the southwest end concluding near the end of Eucalyptus Avenue and the northeast end concluding adjacent to State Route (SR) 71 (Chino Valley Freeway). The route is located approximately 2.7 miles south of SR 60 and traverses underground in SCE's existing ROW across Pipeline Avenue, Peyton Drive, Chino Hills Parkway, and Canon Lane. It also traverses the golf course of the Western Hills Country Club, the parking lot of the Baja Christian Ministries, and residential neighborhoods. Access routes are depicted in Appendix 4.

A.1.6 General Plan Designation

The CPUC has primary jurisdiction over the Single-Circuit and Double-Circuit Option routes because it authorizes the construction, operation, and maintenance of facilities constructed and operated by investor-owned utilities in California, such as SCE. Such projects are exempt from local land-use and zoning regulations and permitting. However, CPUC General Order 131-D Section 1X.B states that:

> "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public

utilities subject to the Commission's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters."

SCE has considered local and State land use plans and policies as part of the planning process for TRTP and the CPUC also considered such plans and policies as part of the environmental review process for the Approved Project.

The General Plan land use designations for the location of the Single-Circuit and Double-Circuit Option routes are Open Not Developable, Other Institutions, Agriculture, General Commercial, Residential, Regional Retail, General Industrial, Light Industry, K-12 Schools, Colleges/Junior Colleges, Urban Mixed Categories, Utilities, and Parks/Recreation. Please see Section 3.9 (Land Use) of the TRTP Final EIR for a complete discussion of general plan designations.

A.1.7 Zoning

The CPUC has primary jurisdiction over the Single-Circuit and Double-Circuit Option routes as described above in the General Plan discussion (Section A.1.7). Please see Section 3.9 (Land Use) of the TRTP Final EIR for a complete discussion of general plan designations and zoning.

A.1.8 Project Overview

In response to the CPUC's ACR, SCE prepared testimony on options for the portion of the transmission line (Segment 8A) that traverses Chino Hills. The Single-Circuit and Double-Circuit Options, two of the options identified by SCE, are under consideration by the CPUC as alternatives to the Approved Project through Chino Hills.

The Single-Circuit Option consists of the installation of an underground single-circuit XLPE transmission line with three cables per phase in a ductbank in the existing ROW in the Chino Hills area.

If approved, SCE has estimated that the Single-Circuit Option could be operational by May 2016 and would include the following major components:

- Installation of nine cables (180,000 feet; three cables for each of the three phases that comprise a circuit) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier (Figure A.1-2);
- Installation of a ductbank system (17,250 feet) comprised of twelve 8-inch schedule 40 PVC ducts installed in a rectangular configuration of two rows of six ducts, which are encased in concrete (Figure A.1-2);
- Installation of nine splices in three concrete vaults located approximately every 1,500 feet along the underground transmission line. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable clamps would be spaced at approximately four to five foot intervals in the splice vaults;
- Construction of two transition stations, each approximately 3 acres in size for a single-circuit line (Figures A.1-3 and A.1-4), and modifications to the overhead transmission line entering both transition stations;
- Installation of approximately 144 reels of cable (conductor). Each reel, holding approximately 1,550 feet of cable and approximately 13 feet in diameter by 8 feet wide, and weighing approximately 45,000 pounds;
- 14,500 feet of HDD Installation (Appendix 3);

- Construction footprint would be approximately 73 acres (permanent disturbance of 36 acres and temporary disturbance of 37 acres); and
- Modifications will be required at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation.

The Double-Circuit Option consists of the installation of an underground double-circuit XLPE transmission line with three cables per phase in a ductbank in the existing ROW in the Chino Hills area.

If approved, SCE has estimated that the Double-Circuit Option could be operational by January 2022 and would include the following major components:

- Installation of eighteen (nine for each circuit) cables (360,000 feet; three cables for each of the three phases that comprise a circuit) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier (Figure A.1-2);
- Installation of a ductbank system (34,500 feet) comprised of twelve (for each circuit) 8-inch schedule 40 PVC ducts, three 2-inch schedule 40 PVC ducts, and two 5-inch schedule 40 PVC ducts installed in a rectangular configuration of two rows of six ducts, which are encased in concrete (Figure A.1-2);
- Installation of eighteen (nine for each circuit) splices in three concrete vaults located approximately every 1,500 feet along the underground transmission line. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable clamps would be spaced at approximately four to five foot intervals in the splice vaults;
- Construction of two transition stations, each approximately 3 acres in size for a double-circuit line (Figures A.1-3 and A.1-4), and modifications to the overhead transmission line entering both transition stations;
- Installation of approximately 288 reels of cable (conductor). Each reel, holding approximately 1,550 feet of cable and approximately 13 feet in diameter by 8 feet wide, and weighing approximately 45,000 pounds;
- 17,000 feet of HDD Installation (Appendix 3);
- Construction footprint would be approximately 89 acres (permanent disturbance of 53 acres and temporary disturbance of 36 acres); and
- Modifications will be required at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation.

A.1.8.1 Project Objectives

The objectives for TRTP, including the portion of Segment 8A which contains the Single-Circuit and Double-Circuit Options, are the same as described in the Final EIR. As discussed in Section 1 (Introduction) of the Final EIR, the Approved Project's three primary objectives are to:

- Provide the electrical facilities necessary to reliably interconnect and integrate in excess of 700 MW and up to approximately 4,500 MW of new wind generation in the Tehachapi Wind Resource Area currently being planned or expected in the future, thereby enabling SCE and other California utilities to comply with the California Renewable Portfolio Standard goals in an expedited manner (i.e., 20 percent renewable energy by year 2010 per California Senate Bill 107);
- Further address the reliability needs of the California Independent System Operator-controlled grid due to projected load growth in the Antelope Valley; and

- Address the South of Lugo transmission constraints, an ongoing source of concern for the Los Angeles Basin.

A full description of the objectives of TRTP is provided in Section 1.2 of the Final EIR.

A.1.8.2 Purpose and Need

System Capacity and Need

When completed, the TRTP will provide the transmission upgrades needed to interconnect and deliver up to 4,500 MW of new generation under development in the renewable resource-rich Tehachapi area for delivery to the load centers, including the Los Angeles Basin. The transmission upgrades are needed to reliably interconnect and deliver up to 4,500 MW of new renewable generation to the grid. The southern segments of TRTP (including Segment 8A through Chino Hills) are particularly critical, because these upgrades must be complete in order to deliver up to 3,400 MW of new generation to load centers in the Los Angeles Basin south of SCE's Vincent Substation.

Upgrades to the northern segments of TRTP, located north of SCE's Vincent Substation, will increase the amount of power that can be reliably delivered to Vincent Substation. However, current transmission capacity limitations south of Vincent limit the amount of power that can actually be delivered to the load centers south of Vincent. According to SCE, without the completion of TRTP Segments 6, 7, 8, and 11, only 1,100 MW can be delivered south of Vincent. The transmission upgrades in Segments 6, 7, 8, and 11 must be completed to increase the new generation deliveries from 1,100 MW up to 4,500 MW.

Among the segments south of Vincent, Segment 8 is a critical link. Segment 8 consists primarily of a rebuild of approximately 33 miles of an existing 220-kV transmission line to 500-kV standards from the San Gabriel Junction (located approximately two miles east of the existing Mesa substation) to the Mira Loma substation. Approximately five miles of Segment 8 traverse Chino Hills through an existing SCE ROW that supported 220-kV infrastructure for many years. Segment 8 is necessary because it contains the necessary 500-kV upgrades to the portions of the Mira Loma-Vincent line located between the San Gabriel Junction and Mira Loma Substation. A delay in completing Segment 8 would delay the in-service date of the entire Mira Loma-Vincent 500-kV transmission line. Up to 3,400 MW of new generation that can be reliably delivered to the load centers south of Vincent will be curtailed until the entire Mira Loma-Vincent 500-kV line is placed into service when Segment 8 is completed.

A.1.9 Project Components

<u>Single-Circuit Option</u>

The Single-Circuit Option consists of the installation of an underground single-circuit XLPE transmission line in a ductbank in the existing ROW in the Chino Hills area. It would include the installation of cables, a ductbank system, splices, and transition stations.

Cables

To construct the Single-Circuit Option, SCE would install nine cables (three cables for each of the three phases) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier (Figure A.1-2). The XLPE cable has an outside diameter between 5.5 to 6 inches, and weighs approximately 26 pounds per foot.

SCE would install nine splices in three concrete vaults every 1,500 feet. The splice vaults would be staggered with two vaults side by side and the third vault in front of the two side by side vaults. The

approximate area requirement for the set of three vaults is 80 feet long by 22 feet wide. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable lamps would be spaced at approximately four- to five-foot intervals in the splice vaults.

Ductbank System

The ductbank for each circuit would be comprised of twelve 8-inch schedule 40 PVC ducts installed in a rectangular configuration of two rows of six ducts, three 2-inch schedule 40 PVC ducts placed on top of the 8-inch ducts, and two 5-inch schedule 40 PVC ducts placed to the side of the 8-inch ducts, which are encased in concrete (Figure A.1-2). However, only nine of the twelve ducts would be filled with cable. The other ducts would be used as maintenance spares. The 2-inch ducts are used for installing ground continuity conductor and the 5-inch ducts are for fiber optic cables. The dimension of the ducts encased in concrete is approximately 90 inches wide by 30 inches high.

Transition Stations

The transition stations would be approximately 3 acres each in size to accommodate a single-circuit line (Figures A.1-3 and A.1-4). If room does not exist to permit installation of shunt compensation reactors at the Mira Loma and Vincent substations, the reactors and switching equipment would need to be located at the transition stations, which would likely increase the size of the transition stations.

Cable Pulling

Approximately 144 reels of cable would be required for the installation of the Single-Circuit Option, which would be transported from a SCE storage yard to the ROW in Chino Hills. Each reel, holding approximately 1,550 feet of cable, is approximately 13 feet in diameter by 8 feet wide, and weighs approximately 45,000 pounds. Due to the size and weight, only one reel at a time can be transported on a truck.

Double-Circuit Option

The Double-Circuit Option consists of the installation of an underground double-circuit XLPE transmission line in a ductbank in the existing ROW in the Chino Hills area. It would include the installation of cables, a ductbank system, splices, and transition stations.

Cables

To construct the Double-Circuit Option, SCE would install eighteen (nine for each circuit) cables (three cables for each of the three phases) using 5000-kcmil segmental copper conductor with XLPE insulation and metallic moisture barrier (Figure A.1-2). The XLPE cable has an outside diameter between 5.5 to 6 inches, and weighs approximately 26 pounds per foot.

SCE would install eighteen (nine for each circuit) splices in three concrete vaults every 1,500 feet. The splice vaults would be staggered with two vaults side by side and the third vault in front of the two side by side vaults. The approximate area requirement for the set of three vaults is 95 feet long by 66 feet wide. If the ROW does not allow for the vaults to be staggered, the vaults would need to be installed next to each other. A non-staggered orientation would require an installation approximately 90 feet wide, which would place the outermost vaults approximately 30 feet from the edge of the ROW. At each splice location, there would be link boxes with sheath voltage limiters or ground connection. Cable lamps would be spaced at approximately four- to five-foot intervals in the splice vaults. Each circuit would require its own set of three splice vaults.

Ductbank System

The ductbank for each circuit would be comprised of twelve 8-inch schedule 40 PVC ducts installed in a rectangular configuration of two rows of six ducts, three 2-inch schedule 40 PVC ducts placed on top of the 8-inch ducts, and two 5-inch schedule 40 PVC ducts placed to the side of the 8-inch ducts, which are encased in concrete (Figure A.1-2). However, only nine of the twelve ducts would be filled with cable. The other ducts would be used as maintenance spares. The 2-inch ducts are used for installing ground continuity conductor and the 5-inch ducts are for fiber optic cables. The dimension of the ducts encased in concrete is approximately 90 inches wide by 30 inches high. The depth from grade to top of encasement is 48 inches minimum, and may vary along the route. The ductbank systems would likely be comprised of two separate sets of ductbank, one for each circuit.

Transition Stations

The transition stations would be approximately 3 acres each in size to accommodate a double-circuit line (Figures A.1-3 and A.1-4). If room does not exist to permit installation of shunt compensation reactors at the Mira Loma and Vincent substations, the reactors and switching equipment would need to be located at the transition stations, which would likely increase the size of the transition stations.

Cable Pulling

Approximately 288 reels of cable would be required for the installation of the Double-Circuit Option, which would be transported from a SCE storage yard to the ROW in Chino Hills. Each reel, holding approximately 1,550 feet of cable, is approximately 13 feet in diameter by 8 feet wide, and weighs approximately 45,000 pounds. Due to the size and weight, only one reel at a time can be transported on a truck.

A.1.10 Project Construction

Installation of the Single-Circuit and Double-Circuit Options would include activities associated with the following:

- Demolition of existing structures;
- Trenching and HDD earth work;
- Constructing the ductbank systems;
- Pulling each cable from one vault to the next;
- Installing splices, terminations, sheath voltage limiters, grounds, cable supports and restraining hardware inside the vaults;
- Installing rack structures, terminations, and surge arresters for the transition stations;
- Establishment of staging yards; and
- Development of access roads.

SCE anticipates that construction of the Single-Circuit Option would take approximately 3 years and 3 months. Construction would commence following CPUC approval, final engineering, and procurement activities. In order to achieve an operating date of May 2016 , construction would be required to start in February 2013.

SCE anticipates that construction of a Double-Circuit Option would take approximately 7 years and 3 months. In order to achieve an operating date of January 2022, construction would be required to start in October 2014.

A.1.10.1 All Components

Demolition of Existing Structures

The Single-Circuit and Double-Circuit Options would require the removal of existing structures that have been constructed as part of the Approved Project in the city of Chino Hills (Figure A.1-5). SCE has completed construction of 12 of the 18 transmission structures in Chino Hills. The six remaining structures have been partially constructed. Construction of the Single-Circuit and Double-Circuit Options would require removal of the 12 completed structures, the six partially constructed structures, and associated foundations. Additionally, foundations of old 220-kV towers also need to be removed as these were left in place for some time.

The abandoned aboveground structures would include tubular steel poles (TSPs) and lattice structures. For TSPs, first the cross-arms are removed one by one. Because the poles have jacking bolts, if SCE determines that the TSPs can be reused elsewhere, the bolts will be used to remove the poles one section at a time. If it is determined that the TSPs cannot be used for any other project, the poles can be cut in pieces and disposed of.

A lattice structure would be demolished in a process in reverse of its construction. Sections would be unbolted and lowered to the ground with a crane.

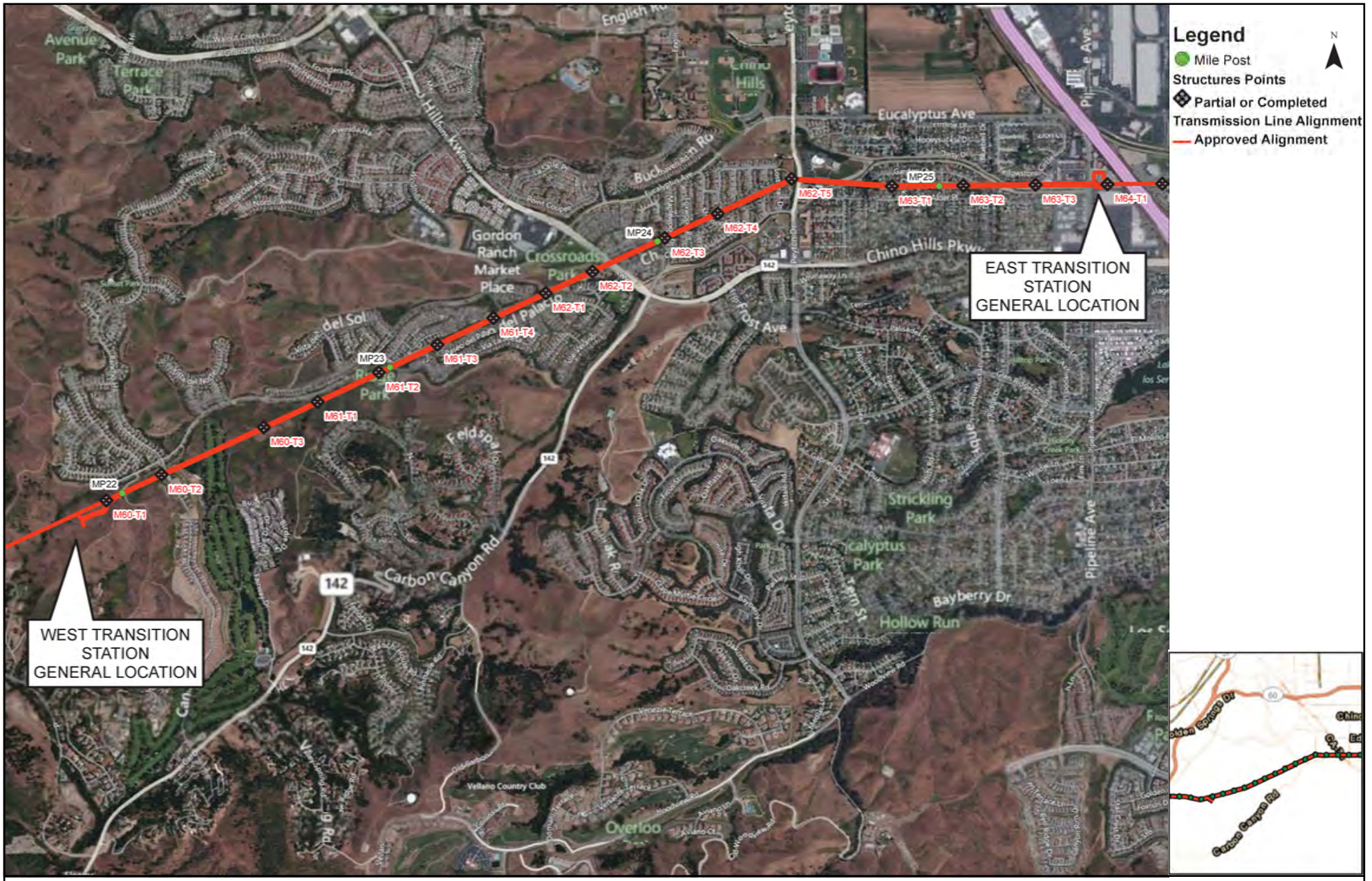
Typically, the soils from underground trench excavation could be utilized to fill the holes.

Trenching and Ductbank and Vault Installation

SCE anticipates using shored trench construction for the entire length of the underground segment through Chino Hills. In certain areas, however, site-specific topology and soil conditions may warrant sloped sides for trenches. Additional construction planning would need to be performed in order to identify those areas. Construction on slopes greater than 20 percent would require tracked construction equipment including excavators and bulldozers. Benching of slopes would be anticipated for these areas for placing restraining vaults and concrete anchors to prevent conduit and ductbank creep, respectively. More detailed construction planning would need to be conducted in order to design construction for areas with slopes of 20 percent or greater.

Vault clusters, three sets of vaults per circuit, are arranged along the underground route to facilitate the splicing of the cable. Vault clusters are spaced between 800’ to over 2,300’ apart, depending on terrain. Terrain permitting, the splice vaults can sometimes be staggered with two vaults side by side and the third vault in front of the two side by side vaults. If the terrain of the ROW does not allow for the vaults to be staggered, the vaults would need to be installed next to each other (i.e., side by side by side).

Duct bank systems would be comprised of two separate sets of duct bank, one for each circuit. A duct bank is comprised of twelve 8-inch schedule 40 PVC ducts arranged on 12-inch centers, three 2-inch schedule 40 PVC ducts placed above the 8-inch ducts, and two 5-inch schedule 40 PVC ducts placed to the side of the 8-inch ducts. These conduits are encased in high-strength concrete specially designed to efficiently transfer heat away from the cables. The dimension of the ducts encased in concrete is approximately 90 inches wide by 30 inches high. The depth from grade to top of encasement is 48 inches minimum, and may vary along the route.



Aspen Environmental Group

Source: Edison, 2013.

Figure A.1-5

Partial or Completed Structures

To install these duct banks, several hundred feet of trench would first be excavated. Twenty foot lengths of the PVC conduits would be glued together, and the duct bank assembled using duct spacers at 5-foot intervals, which is a time-consuming task. An on-site inspector must be present to witness that the conduits and conduit joints are installed correctly and free of foreign material that may damage the cables. After installation, a cement truck slowly drives by the trench opening and pours high-strength concrete into the trench, enough for at least three inches of encasement for all of the outside conduits. Several feet of thermal backfill is then poured into the trench above the concrete duct bank to ensure uniform thermal soil property around the cable circuits. Afterward, the original soil is compacted back into the trench to the proper grade if the original soil has suitable thermal properties.

Horizontal Directional Drilling (HDD)

Certain areas in the ROW have a greater slope, or require placing cable under existing infrastructure, and would therefore require either HDD or a restraining vault because larger slopes create instability of the cable and the cable would creep downhill during thermal expansion and contraction causing displaced splices, which would lead toward splice failure (Appendix 3). This approach would require six bores approximately 36 inches in diameter each, spaced 20 feet on center (Figure A.1-6). The 20 foot spacing is required to mitigate mutual heating of the parallel cables at this depth, which would reduce rated cable ampacity. The HDD bores are installed much deeper than the trench. There are some areas where the slope is greater and the terrain does not allow HDD. These areas would require additional restraint vaults. In total, six restraint vault locations per circuit have been identified.

Typical HDD staging areas are approximately 100 feet by 200 feet. Typical steps for HDD include:

- Setup and launch the drill head;
- Drill a pilot hole;
- Backream the bore hole to size;
- Pull the bore casing into the borehole;
- Pull the conduit with conduit spacers at every 5 feet into the casing;
- Pump a thermal fill into the casing;
- Repeat process for each conductor phase;
- Run pull rope in each conduit;
- Stage for cable installation (cable reel on one end and cable puller on the other);
- Connect cable to pull rope and pull cable through conduit; and
- Repeat process for each conductor phase.

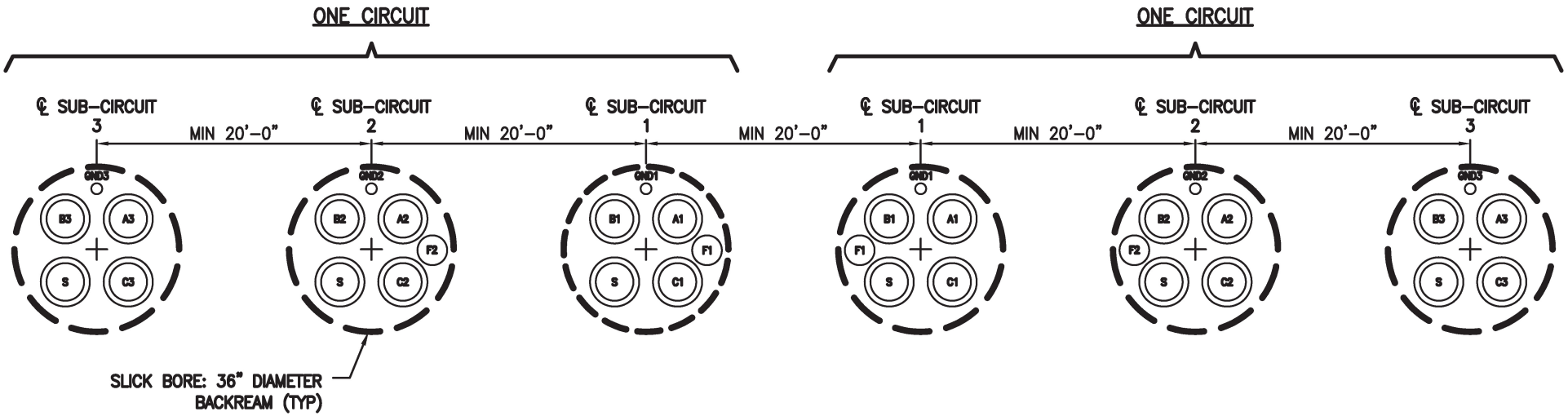


Figure A.1-6

Typical Section for Horizontal Directional Drilling

Figures A.1-7 through A.1-9 show typical HDD and its components.

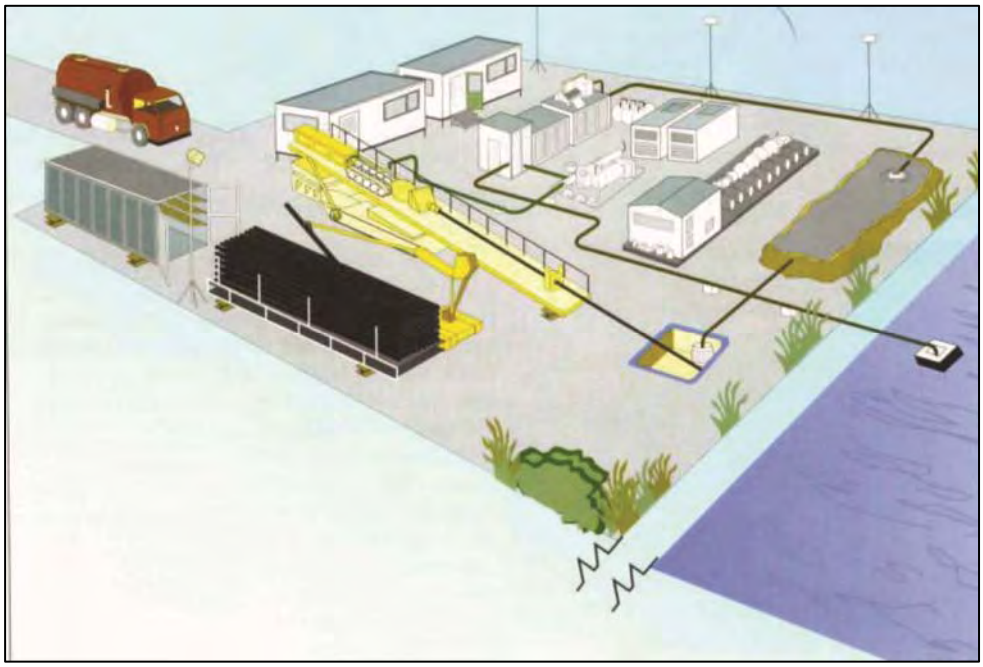


Figure A.1-7: Components of a HDD Installation
(Source: Power Delivery Consultants, 2012)

Figure A.1-8: Equipment Setup for a major HDD installation crossing a river
(Source: Power Delivery Consultants, 2012)

Figure A.1-9: Typical directional drilling operation
(Source: Power Delivery Consultants, 2012)

Splice Installation

Due to cable length and shipping weight restrictions limiting the length of the cable, vaults would be placed anywhere from 800 feet to 2,300 feet from each other, depending on the terrain. The splice vault has an internal dimension of 38 feet long by 10 feet high by 10 feet wide and comes in fivesections. Each section could weigh between 25,000 and 30,000 pounds. To install these vaults, SCE must construct a hole at least 45 feet long by 15 feet deep by 12 feet wide. Heavy cranes would be utilized to lower the first section of the vault into the pit. The second section of the vault is then lowered into the same pit, ensuring that all seams line up.

Cable Pulling

Approximately 288 reels of cable are required for the installation of the Double-Circuit Option (approximately 144 for the Single-Circuit Option). This cable would be transported from a SCE storage yard to the ROW in Chino Hills. Each reel, holding between approximately 800 feet of cable to over 2,300 feet of cable, could be as large as 15 feet in diameter by 14 feet wide, and weigh as much as 70,000 pounds. Because of the size and weight, only one reel at a time can be transported on a truck. Once at the pull site, the cable reel would be loaded onto a trailer and the trailer maneuvered to the vault (the feed point). A pulling winch would be located in the vicinity of the next vault (the pull point). The pulling winch would slowly pull the cable from one vault to the next. This operation would be repeated for all of the reels of cable. Splicing of the cables would generally be started after the cable has already been pulled between several splice vaults.

Accessories Installation

Installation of the accessories, including splices, terminations, grounding boxes, cable supporting and restraining hardware, and link boxes with sheath voltage limiters is critically important. The most critical and labor intensive work is on the splices and terminations. Scaffolding would be erected at the transition stations and temporary shelters put up so that the terminations can be installed without being contaminated from the external environment. Three splices or terminations take approximately seven to twenty days working around the clock to complete.

Staging Yards

The location and size of staging areas is currently unknown. However, locations and size would likely be similar to the Approved Project and within the SCE ROW. Typical directional drilling staging areas would be approximately 100 feet by 200 feet in size.

Access Roads

Truck access/egress along the existing ROW is anticipated to be the same as that of the Approved Project (Appendix 4). Additional access roads would be required within the ROW to provide the necessary construction, operations, and maintenance access. SCE would implement the Segment 8 Phase I Construction Transportation Plan (CTP) and CTP Errata 1 and Errata 2 prepared for previous work in Chino Hills. Additionally, consistent with TRTP practices and as required for construction of the Single-Circuit and Double-Circuit Options, SCE will submit additional errata to the Segment 8 Phase I CTP for CPUC review and approval if necessary.

Construction or improvement of permanent and/or temporary access roads would occur within existing and newly acquired ROW. However, with property owner approval, temporary construction activities outside of the ROW would be required in certain areas.

Generally, dirt access roads would have a minimum 17 foot drivable width, with two feet of shoulder on each side as determined by the existing land terrain to accommodate required drainage features. Typically the drivable road width would be widened, generally ranging from an additional one to eight feet along curved sections of the access road. Specific site locations may warrant widening the drivable width on curves with a radius with curvature less than 50 feet by a distance equal to 400/radius of curvature. Curves would generally have a minimum radius of curvature of 50 feet measured from the center line of the drivable road width. Access road gradients would be modified so that sustained grades do not generally exceed 12%. The minimum width of the dirt access roads may increase should specialty equipment become necessary.

Rehabilitation and/or upgrades to existing access roads may also be required to facilitate construction access and support permanent operation and maintenance activities conducted by heavy construction and maintenance equipment. Typical construction activities associated with rehabilitating existing dirt access roads include vegetation clearing, blade-grading, and re-compacting to remove potholes, ruts, and other surface irregularities. Existing dirt roads may also require additional upgrades such as protection for underground utilities and widening existing road widths that are too narrow for safe vehicle operation.

Typical construction activities associated with new roads generally include similar activities described for the rehabilitation of existing dirt roads, but may also include the additional construction requirements. The extent of any additional improvement depends upon the existing land terrain. For existing relatively

flat terrain (approximately 0 – 4% grade), construction activities are generally similar to rehabilitation activities to existing dirt roads.

Constructing new roads on relatively flat terrain may require additional activities such as clearing and grubbing and constructing drainage improvements, such as wet crossings, water bars, and culverts. Constructing new roads on rolling terrain (approximately 5 -12% grade) may require additional activities such as cut and fill in excess of two feet in depth, benched grading, drainage improvements such as v-ditches, downdrains, and energy dissipaters, and slope stability improvements such as retaining walls and mechanically stabilized earth walls. The extent of slope stability improvements is determined after site specific geotechnical investigations are performed. Constructing new roads in mountainous terrain (over 12% grade) requires activities similar to rolling terrain construction activities, although more significant cut and fill depths, benched grading, drainage improvements and slope stability improvements would likely be required. In some cases paving of the road may be necessary.

SCE would also have to construct temporary construction roads separate from the access roads. Temporary construction roads are constructed and used solely for the purpose of temporary Project construction activities. Existing roads used for temporary construction access would be returned to a condition that is equal to or better than the road conditions at the time of pre-construction activities. New roads constructed for temporary construction access would be returned to a natural vegetation state or final condition.

Overhead Transmission Line Modifications

Installation of the Single-Circuit and Double-Circuit Options would require modifications to the overhead transmission line entering both transition stations. At each transition station, SCE would need to install a lattice double-circuit 500-kV dead-end structure to bring the overhead transmission lines into the transition stations. At the east transition station, there is an assumption that SCE could install a dead end tower adjacent to the flood control channel. Because of the terrain near the western transition station, aerial marker balls may need to be installed if recommended by the Federal Aviation Administration (FAA).

Existing Substation Modifications

Modifications will be required at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation. SCE would be required to install inductive reactance at Mira Loma Substation to compensate for capacitive reactance in the underground cable segment of the transmission line (Figure A.1-10). The compensation would be necessary for voltage regulation during low load conditions. The inductive reactance would consist of about 450 Megavolt Amperes (MVA), switched in three independent blocks of about 150 MVA each. Ten single phase inductor units of about 50 MVA each would be installed along with their foundations. Nine of those units would be interconnected into three 3-phase banks, and there would be one spare inductor unit installed with the capability to be switched into service in place of any of the other nine units. A 500-kV jack bus, about 315 feet long, 65 feet high, and 90 feet wide, would be constructed using three dead-end structures and bundled 2156 kcmil ACSR conductor. Three 500-kV disconnect switches and three 500-kV circuit breakers would be installed, along with their foundations, to switch the blocks of inductive reactance in and out of service. A number of 500-kV post insulators would be necessary along with their pedestals and foundations to support interconnecting jumpers between the inductors, circuit breakers, disconnects, and the jack bus.

The Rancho Vista 500-kV Line and the Vincent 500-kV line would be reworked to make room for the inductive reactance, and its interface with the Vincent line. Approximately one 500-kV lattice steel

LEGEND

Approximate Location of the Proposed Mira Loma Substation Expansion Area

Mira Loma Substation

Note: Approved TRTP and Proposed CHUG features visible in view are provided on figure as applicable.

Structures

LST* TSP*

Approved TRTP - Will not be Constructed if CHUG Approved

Approved TRTP - No Change if CHUG Approved

Non-Project Structure - No Change if CHUG Approved

*LST - Lattice Steel Tower; TSP - Tubular Steel Pole

1 Inch = 300 feet
0 300
Feet

Aspen Environmental Group

Figure A.1-10

Mira Loma Substation Expansion

structure would be removed, and approximately one lattice steel structure and one tubular steel structure would require erection associated with the Rancho Vista 500-kV line rework. Also one lattice steel structure would require demolition and approximately one tubular steel structure and a steel H-frame structure will be required in connection with the Vincent 500-kV line rework. Line risers would require fabrication and installation in association with the Vincent H-frame structure to electrically interface with the transmission line.

SCE would also have to improve the protective relay scheme associated with the 500-kV Vincent – Mira Loma transmission line. Because the underground line technology is incompatible with line carrier protection signals, a different technology would be required in order for the protective relays to exchange signals. Miscellaneous additional work would include digging cable trenches, installing underground conduit, and extending driveways. Installing the necessary upgrades at Mira Loma substation would require SCE to incorporate approximately 4.5 acres of new land into the northwest corner of the substation. The northern boundary of the station would remain the same, but a 1,136 foot long section of the west fence would be relocated to the west approximately 175 feet.

The modifications at Vincent Substation involve protective relay system changes. Finally, SCE would need to make certain modifications at Serrano Substation. To compensate for the capacitive reactance in the underground cable segment of the transmission line during low load conditions, SCE would add inductive reactance at Serrano Substation. SCE would also modify the protective relay scheme associated with the 500-kV Serrano – Mira Loma transmission line. The underground line segment is incompatible with line carrier protection, and therefore a different technology would be required to be implemented.

Reactive compensation at the Serrano Substation would not be needed for the Single-Circuit Option.

Transition Stations

SCE would need to construct transition stations (not part of the Approved Project) at each end of the underground XLPE cable systems: one transition station will be located on the western boundary of Chino Hills, and the other transition station will be located on the eastern boundary of Chino Hills (Figures A.1-3 and A.1-4). These transition stations would be required to transition the 500-kV transmission line from an overhead configuration (i.e., open air) to an underground configuration (i.e. insulated cable). The transition stations would be unattended facilities and would include a small control room to house monitoring and protection equipment to support normal operation of the circuits. They would have some supervisory control and data acquisition (SCADA) monitoring of the underground cable, but no SCADA control of switching. The transition stations would be walled and remotely monitored for security purposes.

The eastern transition station would be located on an irregularly shaped piece of land, some of which is unusable, and would include a transmission tower located on that property. The eastern transition station and western transition station would each be approximately three acres in size.

The eastern and western transition stations will each contain the following equipment and facilities:

- Dead-end takeoff structure to terminate the overhead transmission line at the transition station;
- Risers within the dead-end takeoff structure;
- 500-kV disconnect switch, with associated pedestal, and footings;

- Jack-bus91 fabricated using double bundled 2156 kcmil ACSR conductor, associated dead-ends and footings;
- 500-kV cable termination assemblies, with steel supports, and footings;
- 500-kV surge arresters, with steel supports and footings;
- Interconnecting jumpers fabricated using bundled 2156 kcmil ACSR conductors;
- Station Light and Power, associated distribution and low voltage switchgear; and
- Mechanical Electrical Equipment Room (MEER).

The proposed 500-kV steel dead-end takeoff structure would be approximately 133 feet high. The 500-kV jack bus would be about 65 feet high, about 160 feet long, and about 90 feet wide. Each dead-end takeoff structure with its associated disconnect switch and jack bus would accommodate one transmission line circuit.

Eighteen 500-kV cable termination assemblies would be installed below the 500-kV jackbus. The assemblies would be placed above and supported by 8-inch conduits, and a steel support pedestals and concrete foundations. A 500-kV surge arrester would be installed along with each 500-kV cable termination assembly, and would include a steel pedestal and concrete foundation.

The MEER would be a prefabricated metal or concrete structure approximately 15 feet high, 30 feet long, and 15 feet wide constructed on a slab foundation. SCE anticipates the MEER would be of earth tone color (roof and sidewalls) and that the roofline, wall joints, and doorway would be of a compatible color scheme. Control cable trenches, if required, would be installed to connect the MEER to the various equipment in the yard.

Transition station lighting would consist of high-pressure sodium low intensity lights located in the racks and in areas of the yard where operating and maintenance activities may take place during evening hours for emergency/scheduled work. Maintenance lights would be controlled by a manual switch and would normally be in the “off” position. The maintenance lights would be directed downward to reduce glare outside the facility. A light, indicating the operation of the rolling gate controlling access to the transition station, would automatically turn on once the gate begins to open and would turn off shortly after the gate is closed.

Per SCE requirements, the proposed transition stations would be enclosed on all sides by an eight-foot masonry perimeter wall. Barbed wire and heliacal razor wire would be affixed near the top of the perimeter wall inside of the transition station and would be visible from the outside.

The transition stations would be constructed with enough space inside the perimeter wall to accommodate a second transmission line circuit, although the initial construction would only accommodate a single circuit.

Location of Eastern Transition Station

SCE is considering locating the eastern transition station on the east side of Pipeline Avenue and understands that Chino Hills prefers the east side of Pipeline Avenue over the site located on the west side of Pipeline Avenue that was described previously in the Final EIR and prior testimony. While SCE has determined that it is possible to locate the transition station on either side of Pipeline Avenue, the transition stations must be approximately twice the width of the transmission line ROW (i.e.,

approximately 300 feet wide rather than 150 feet wide) to accommodate the transition from a horizontal double-circuit (or single-circuit) configuration exiting the ground to the vertical configuration of the overhead line. This means that additional property outside of the existing ROW must be obtained. While the western transition station is mostly surrounded by open space, the eastern transition station would be located near improvements that are close to, and in some cases within, the proposed ROW.

Table A.1-1 presents a comparison of the Eastern Transition Station Locations.

Table A.1-1. Comparison of Eastern Transition Station Locations

West of Pipeline Avenue	East of Pipeline Avenue
Original location of transition station analyzed in Final EIR.	Location requested by Chino Hills.
Would require displacement of existing businesses.	Closest to edge of the Chino Hills city limit.
Higher land acquisition costs for commercial properties.	Parcel controlled by Chino Hills.
Condemnation of private property likely required.	Lower land acquisition cost.
Transition station wall within 100 feet of a private preschool.	Transition station wall within 25 feet of a private preschool.
Visual impacts as the switching station would be closer to residences.	Commercial businesses not impacted.
Shorter cable length would result in lower material and construction costs.	Longer cable would result in higher material and construction costs.
Lower material and construction costs offset by higher commercial land acquisition costs and potential business damages.	Higher material and construction costs offset by lower land acquisition costs.
No trenching across Pipeline Avenue.	Trenching across Pipeline Avenue would have temporary impacts to traffic.

Construction Hours

Construction efforts for the Single-Circuit and Double Circuit Options would occur during the same hours specified in the Final EIR. The Single-Circuit and Double-Circuit Options would comply with Applicant Proposed Measure NOI-1 (Limit Hours and Days of Construction). SCE would comply with all applicable noise ordinances pertaining to construction hour limitations. In the event that construction must occur outside the allowable work hours, a variance would be obtained.

Post-Construction Cleanup

All areas that are temporarily disturbed by construction activities associated with the Single-Circuit and Double-Circuit Options would be restored by SCE once construction is complete. Restoration areas could be inclusive of, but not limited to: access roads not needed for operation and maintenance; staging yards and staging areas; pull, tension and splicing sites; and pull box locations. Activities associated with restoration of these areas would include restoring original contours and reseeding. Native seed mix would be used in natural open space areas. All construction materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws.

Construction Equipment and Personnel

The estimated elements, materials and number of personnel and equipment required for construction of the Proposed Project are provided in Appendix 5 (Air Quality Emission Calculations).

Construction would be performed by either SCE construction crews or contractors. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a maximum total of approximately 104 construction personnel (includes overlap of construction phases) working on any given day, with a maximum total of approximately 486 construction personnel for the Single-Circuit Option and 606 construction personnel for the Double-Circuit Option working during the entire construction process. Crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon local jurisdiction permitting, material availability, and construction scheduling.

A.1.11 Operation and Maintenance

There are no available installed project examples to assess the operating life of 500-kV XLPE cables buried in duct bank; however, SCE can make an assumption based on prior underground transmission line projects of a smaller magnitude. The projected and designed 500-kV XLPE cable life is 40 years. This projection assumed that the various industry specifications are followed, installations are performed error free, and routine maintenance is performed on the system. Qualified electrical workers must routinely inspect the system to ensure the structural integrity of that vault as well as the cable and splice supports. Furthermore, the ROW must be routinely patrolled for intrusions and potential dig-in. As 40 years of operation approaches, SCE would need to perform an evaluation of the underground system to determine if the cable and subsequent accessories must be replaced.

In addition to routine check and maintenance to the vaults, SCE's qualified electrical workers must also check on the condition of the sheath voltage limiters, grounding connection, splices, terminations, corrosion of the metallic supports and restraints, and condition of the cable. From time to time, a jacket integrity test is performed on the cable. This is accomplished by applying minimum 10-kV direct voltage across the cable jacket for one minute. The test equipment will trip out if the cable jacket has been damaged. If cable damage is identified, the cable must be exposed by excavating the surrounding material, and the cable repaired.

For reliability reason, spare components must also be procured and stored on hand. Several reels of cable must be stored nearby in case of emergency. The cable accessories must be stored indoor.

Operations and maintenance of overhead transmission lines would be similar, but would occur above-ground and involve different components. Activities would involve periodic inspection approximately once per year via helicopter, and/or truck, and/or on foot (to access more remote locations). Recurring maintenance identified in the inspection process would include vegetation management, invasive plant survey and control, wood pole management, insulator washing, insulator replacement, repair of ground wires, tighten/repair of hardware, tighten/replacement of guy wires, and adjustments to switch mechanisms.

A.1.12 Other Permits and Approvals

The CPUC has exclusive authority to approve or deny modifications to the Approved Project; however, various permits from other agencies would also need to be obtained by SCE for the Single-Circuit and Double-Circuit Options. Table A.1-2 summarizes the permits from other agencies that may be needed to implement the Single-Circuit and Double-Circuit Options.

Table A.1-2. Permits that May Be Required for the Single-Circuit and Double-Circuit Options	
Agency	Permit / Approval / Consultation
Federal	
U.S. Army Corps of Engineers	Clean Water Act (CWA) Section 404 permit for activities that would result in discharge of fill or dredged material in and adjacent to Waters of the United States. A CWA Section 401 Water Quality Standards Certification from the Water Resources Control Board is a prerequisite for USACE issuance of a CWA Section 404 permit.
State	
California Department of Fish and Wildlife	Streambed Alteration Agreement (per Section 1602 of the California Fish and Game Code) for effects to the bed, channel, or bank of rivers, streams, or lakes.
State Water Resources Control Board	National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities and Clean Water Act Section 401 certification.
Regional Water Quality Control Board (RWQCB) – Lahontan Region	National Pollutant Discharge Elimination System, Construction General Permit Storm Water Pollution Prevention Plan (SWPPP) Submittal of Notice of Intent (NOI) to Regional Board and preparation of SWPPP
California Department of Transportation	Transportation Permit for movement of vehicles that may qualify as an oversized or excessive load (if required).
California Air Resources Board	Portable Engine Registration for specified non-mobile portable engines.
Division of Occupational Safety and Health	Construction permit (for construction of trenches or excavations which are five (5) feet or deeper and into which a person is required to descend).

No local discretionary approvals are required because the CPUC has preemptive jurisdiction over the construction, operation, and maintenance of SCE facilities in California. This CPUC authority does not preempt the authority of special districts, such as local air pollution control districts, or other State agencies or the federal government. Although local discretionary approvals are not required, SCE would still be required to obtain ministerial building and encroachment permits from local jurisdictions per the CPUC's General Order 131-D, which requires SCE to comply with local building, design, and safety standards to the greatest degree feasible to minimize Project conflicts with local conditions. Jurisdictions from which SCE may be required to obtain ministerial permits for the Single-Circuit or Double-Circuit Option include: City of Chino Hills, City of Chino, and San Bernardino County.

A.2 Environmental Determination

A.2.1 Environmental Factors Potentially Affected

The environmental factors checked below would be affected by the proposed modifications to the project, changes in circumstances, or new information, involving at least one impact that falls into the category of "Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects Compared to the Project as Approved," as indicated by the checklist on the following pages.

- ☐ Agriculture Resources
- ☐ Air Quality
- ☐ Biological Resources
- ☐ Cultural Resources
- ☐ Environmental Contamination and Hazards
- ☐ Geology and Soils
- ☐ Hydrology and Water Quality
- ☐ Land Use
- ☐ Noise
- ☐ Public Services and Utilities
- ☐ Traffic and Transportation
- ☐ Visual Resources
- ☐ Wilderness and Recreation
- ☐ Wildfire Prevention and Suppression
- ☐ Electrical Interference and Hazards
- ☐ Mandatory Findings of Significance

A.2.2 Environmental Determination

On the basis of this initial evaluation:

☐ I find that:
Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, show any of the following:

1. The project will have one or more significant effects not discussed in the previous EIR;
2. Significant effects previously examined will be substantially more severe than shown in the previous EIR or negative declaration;
3. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
4. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Therefore, a SUBSEQUENT/SUPPLEMENTAL EIR will be prepared.

☒ I find that some changes or additions to the Approved Project are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. Therefore, an ADDENDUM will be prepared.

John Boccio, Project Manager
Energy Division CEQA Unit
California Public Utilities Commission

Date

A.3 Evaluation of Environmental Impacts

This section evaluates whether the project approval would result in any of the conditions described in State CEQA Guidelines Section 15162 calling for preparation of a subsequent EIR.

1. "Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects Compared to the Project as Approved" is appropriate under the following circumstances:

    a. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

    b. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

    c. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, show any of the following:

        i. The project will have one or more significant effects not discussed in the previous EIR;

        ii. Significant effects previously examined will be substantially more severe than shown in the previous EIR;

        iii. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

        iv. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

    (CEQA Guidelines §15162(a)(1)-(3).)

2. "Addendum: None of These Conditions Have Occurred" is appropriate if some changes or additions to the previous EIR are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. (CEQA Guidelines §15164(a).)

A.3.1 Agricultural Resources

AGRICULTURAL RESOURCES Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
AG1	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation and the USDA Natural Resources Conservation Service, to non-agricultural use? (Note 1)	☐	☒
AG2	Involve other changes in the existing environment, which, due to their location or nature, could result in interference with agricultural operations?	☐	☒
AG3	Conflict with a Williamson Act contract?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

Note: (1) The conversion of Farmland would be considered significant if greater than ten acres is converted to non-agricultural use. This threshold is used because it is the minimum acreage requirement for individual parcels able to enter into Williamson Act contracts as stated in Section 51222 of the California Government Code, and represent parcels or areas of agricultural land that are large enough to sustain agricultural uses. Ten acres is the minimum mapping unit on the DOC FMMP Important Farmland maps. The minimum mapping unit indicates the spatial scale of the maps and is the smallest unit or feature represented on the maps, with smaller than 10-acre features being absorbed into the surrounding classifications.

A.3.1.1 Setting

In order to identify California's agricultural land resources, the California Department of Conservation (DOC) established the Farmland Mapping and Monitoring Program (FMMP) which applies the Natural Resources Conservation Service's (NRCS) soil classification system. Agricultural data collected by the NRCS and DOC is compiled by county, and this data is then used to determine whether the land is designated as Important Farmland.

The FMMP Important Farmland data includes a 10-acre minimum mapping unit, which means that units of land smaller than 10 acres are incorporated into the surrounding map classifications (DOC, 2004a). Important Farmland is classified as the following: Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and agricultural land under Williamson Act contracts.

The Single-Circuit and Double-Circuit Option route is located within the Cities of Chino Hills and Chino. Of the 3.5-mile route, approximately 300 feet of the west end of the route is located within the City of Chino Hill's Agriculture-Ranch zoning designation. The route would not traverse land zoned for forestry. The nearest parcels of Farmland are approximately 0.25 mile north of the east end of the route (DOC, 2010). The nearest land under Williamson Act contract would be over 25 miles east of the Option 11 route (DOC, 2004b).

Other components of the Single-Circuit and Double-Circuit Options are addressed in the setting provided for the Approved Project, with the exception of the modifications to the substations. The modifications proposed for the Vincent and Serrano Substations would occur within in the existing substation site; however, the modifications to the Mira Loma Substation would require SCE to incorporate approximately 4.5 acres of new land into the northwest corner of the substation. The northern boundary of the station would remain the same, but a 1,136-foot section of the west fence would be relocated to the west approximately 175 feet. Existing land uses on the Mira Loma substation expansion site include agricultural activities such as the raising of livestock, cultivated lands, and fallow lands (Ontario, 2007a). The Mira Loma substation expansion site is designated by the FMMP as Prime Farmland and Farmland of Local Importance (DOC, 2010). Also, a portion of the Mira Loma substation

expansion site is under a Williamson Act contract that will expire in 2017 (Ontario, 2010). At this time, the Mira Loma substation expansion site appears to be fallow.

Applicable Regulations

Regulations and guidelines applicable to Agricultural Resources are presented in Section 3.2.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

A.3.1.2 Environmental Impacts and Mitigation Measures

AG1 Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation and the USDA Natural Resources Conservation Service, to non-agricultural use?

The Final EIR (Section 3.2, Page 3.2-15) concludes that construction of access and spur roads, transmission structures, and stringing and pulling sites for the Approved Project would temporarily convert a total of approximately 54.75 acres of Farmland to non-agricultural use, which would be mitigated to a less-than-significant level with implementation of mitigation measures. The Approved Project would result in the permanent conversion of 5.83 acres of Farmland to non-agricultural use (Section 3.2, Page 3.2-17), which would be less than the minimum area necessary for sustainable agriculture and less than the minimum Department of Conservation mapping unit such that permanent impacts to Farmland would be less than significant. The Single-Circuit and Double-Circuit Options would not be located on any lands categorized as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. As discussed in the setting above (Section A.3.1.1), the Single-Circuit and Double-Circuit Option route traverses lands designated as Urban and Built-Up Land and Grazing Land by the FMMP. Therefore, no Farmland would be affected by construction or operation of the Single-Circuit and Double-Circuit Options. Further, the minimum mapping unit for Grazing Land is 40 acres, and the 300 foot route segment at the west end of the route within the City of Chino Hill's Agriculture-Ranch zoning designation would also have less than significant impacts. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

As stated in the setting above, implementation of the Single-Circuit and Double-Circuit Options would include modifications to three existing substations. As stated in the setting above, project components included in the Single-Circuit and Double-Circuit Options are addressed in the setting provided in the Approved Project, with the exception of the modifications to the substations. The modifications proposed for the Vincent and Serrano Substations would occur within in the existing substation site, and therefore will not result in significant new effects or substantially more severe effects to agricultural resources. The modifications to the Mira Loma Substation are analyzed below. The northern portion of the Mira Loma Substation expansion site currently includes land designated as Prime Farmland and Farmland of Local Importance (DOC, 2010). As such, construction of the expansion would result in greater impacts to agricultural lands in comparison to the Approved Project. However, as discussed in the Land Use analysis, the expansion site is within the approved Rich-Haven Specific Plan (part of the City of Ontario's New Model Colony). According to the EIR prepared for the Specific Plan, the Land Evaluation and Site Assessment (LESA) scored calculated for the impacts to Important Farmland was found to be less than significant. In addition, as noted above under Criterion AG1, the conversion of Important Farmland would be considered significant if greater than ten acres is converted to non-agricultural use. Therefore, since the proposed expansion site is less than 10 acres, the conversion of Important Farmland would not be significant, and the modifications to the Mira Loma Substation would

not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

AG2 Would the project involve other changes in the existing environment, which, due to their location or nature, could result in interference with agricultural operations?

The Final EIR (Section 3.2, Page 3.2-17) concludes that the Approved Project would be constructed across approximately 23.69 miles of agricultural land in Kern County, approximately 31.92 miles of agricultural land in Los Angeles County, and approximately 19.94 miles of agricultural land in San Bernardino County. Construction and operation of the Approved Project would interfere with agricultural operations; however, impacts would not be significant with implementation of adopted mitigation measures. The Single-Circuit and Double-Circuit Options would not be located on active agricultural lands. As such, no agricultural operations would be affected by construction or operation of the Single-Circuit and Double-Circuit Options. No impact would occur and, therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor increase the severity of any significant impacts identified in the Final EIR.

The Mira Loma Substation expansion site would occur on land that is currently fallow, and as discussed below the expansion site is within the City of Ontario's approved Rich-Haven Specific Plan, which includes residential, regional commercial and community facility land uses. As such, implementation of the expansion site would not interfere with ongoing agricultural operations, because such operations would not be consistent with the approved Specific Plan. Therefore, the modifications to the Mira Loma Substation would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

AG3 Would the project conflict with a Williamson Act contract?

As discussed in the Final EIR (Section 3.2, Page 3.2-18), the Approved Project crosses 0.91 miles of land under Williamson Act contract in Kern County, as part of Segment 4. This is the only portion of the Approved Project to traverse or run adjacent to Williamson Act contract land. Since Kern County considers electrical infrastructure projects, such as the Approved Project, be allowable uses under Williamson Act contracts, there would be no conflict with Williamson Act contracts.

The closest Williamson Act lands are located immediately east of the proposed eastern transition station within the City of Chino. However, this area consists of urban and built-up land and no agricultural activities are present. In addition, according to the City of Chino's Williamson Act map, the contracts are either terminated or no records were found (Chino, 2008). Therefore, construction and operations activities for these Options would not conflict with land under Williamson Act contracts. No impact would occur and, therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

Approximately 3.5 acres of the Mira Loma Substation expansion site is subject to a Williamson Act contract that is due to expire in 2017. This portion of the expansion site is within the boundaries of Rich-Haven Specific Plan, which was approved in 2007. Development of the Rich-Haven community has not begun and the current status of potential development is not known at this time. Construction of the proposed expansion site would conflict with 3.5 acres of a Williamson Act contract. The entire Williamson Act contract includes approximately 65 acres, and the conflict with 3.5 acres would account for 5 percent of the contracted land. As such, the expansion site would affect a small portion of the overall Williamson Act contract on land that is currently fallow, so the impact to the Williamson Act lands would not conflict with ongoing agricultural activities. In addition, as noted above, the proposed

expansion site is designated within a specific plan and the City of Ontario has planned for the development of single-family residences in this area. As such, upon realization of the specific plan, agricultural production will cease and all Williamson Act contracts will either expire or be cancelled. Therefore, the proposed expansion site would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

A.3.2 Air Quality

AIR QUALITY Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
AIR1 Generate emissions of air pollutants that would exceed any SCAQMD, AVAQMD, or KCAPCD regional air quality standard?	☐	☒
AIR2 Generate emissions of air pollutants that would exceed any SCAQMD localized significance threshold?	☐	☒
AIR3 Generate toxic air contaminant emissions that would exceed SCAQMD risk thresholds?	☐	☒
AIR4 Result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) requirements?	☐	☒
AIR5 Expose a substantial number of people to objectionable odors?	☐	☒
AIR6 Conflict with air quality provisions of the Angeles National Forest Strategy?	☐	☒
AIR7 Be inconsistent with the current approved Air Quality Management Plans?	☐	☒
AIR8 Result in greenhouse gas emissions substantially exceeding baseline greenhouse gas emissions and following construction would not impel a regional reduction in GHGs?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.2.1 Setting

The setting discussion provided in the Final EIR Air Quality section (Section 3.3.2, pp. 3.3-4-21; and Section 3.3.3, pp. 3.3-22-25) remains valid (CPUC, 2009). However, a few changes to the regional setting, specifically within the South Coast Air Basin (SoCAB) that surrounds the Single-Circuit and Double-Circuit Option area, have occurred since the Final EIR was published, including:

- The entire SoCAB has been redesignated by the California Air Resources Board (CARB) from attainment to nonattainment of the nitrogen dioxide (NO_2) California Ambient Air Quality Standard (CAAQS).
- The entire SoCAB has been redesignated by the United States Environmental Protection Agency (USEPA) from severe-17 to extreme nonattainment of the Ozone (O_3) National Ambient Air Quality Standard (NAAQS).
- The USEPA has enacted new primary 1-hour NO_2 and Sulfur Dioxide (SO_2) NAAQS (0.100 ppm for NO_2 based on the 98th percentile of daily 1-hour maximum concentrations averaged over three years, and 0.075 ppm for SO_2 based on the 99th percentile of the daily 1-hour maximum concentrations averaged over three years). The USEPA has designated the entire SoCAB as Unclassifiable/Attainment for these new standards. However, the SoCAB is still identified as a Maintenance area for NO_2 due to its former nonattainment status in regards to the previous primary standard.

These changes in attainment designation and ambient air quality standards do not materially change the basis of the air quality analysis or the significance criteria used to categorize air quality impacts.

Applicable Regulations

Federal/State

Federal and state regulations and guidelines applicable to Air Quality are presented in Section 3.3.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

Local

The South Coast Air Quality Management District (SCAQMD) has promulgated revisions to stationary internal combustion engines (Rule 1110.2) and architectural coating regulations (Rule 1113) that may affect the construction contractor during Project construction. These regulations would affect the architectural coating products that can be used within the SoCAB during Project construction and could affect the portable stationary engines, such as the horizontal drill rig engines, used during project construction if such engines are not currently permitted by SCAQMD or registered under the Portable Equipment Registration Program (PERP) by CARB. However, given the existing mitigation requirements for off-road engines and the small amount of architectural coating expected to be required, the effect of these regulation revisions would be very limited for the construction activities proposed for the Single-Circuit and Double-Circuit Options. Revisions have not been made to the SCAQMD fugitive dust control regulation (Rule 403) since 2005.

A.3.2.2 Environmental Impacts and Mitigation Measures

AIR1 Generate emissions of air pollutants that would exceed any SCAQMD, AVAQMD, or KCAPCD regional air quality standard?

Construction

The Single-Circuit and Double-Circuit Options construction emission calculations and assumptions are provided in Appendix 5. Construction activities for the Single-Circuit and Double-Circuit Options undergrounding would predominately involve shallow surface trenching with some horizontal drilling operations. These activities are less intensive and involve a substantially lower amount of heavy equipment use and bulk material hauling than required to complete the large tunnel required for the Alternative 5 undergrounding alternative that was analyzed in the Final EIR.

The emission calculations, as shown below in Table A.3.2-1, demonstrate maximum daily emissions that are significantly lower than the maximum regional emissions from the Approved Project, which include helicopter based tower construction and significant unpaved road travel. Additionally, the Single-Circuit and Double-Circuit Options maximum daily emissions would be well below the maximum daily emissions determined for the Alternative 5 undergrounding option. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant effect or a substantial increase in the severity of a previously identified significant effect analyzed in the Final EIR. The Single-Circuit and Double-Circuit Options would be subject to the same air quality mitigation measures as the Approved Project, which would mitigate impacts in the same manner as the Approved Project.

Table A.3.2-1. Maximum Daily Construction Emissions/SCAQMD Regional Emission Threshold Comparison

	NOx	VOC	CO	PM10	PM2.5	SO_2
Single-Circuit Maximum Daily Emissions (lbs/day)	140.72	13.26	103.01	54.38	18.12	0.29
Double-Circuit Maximum Daily Emissions (lbs/day)	143.35	13.38	103.76	59.86	19.32	0.30
Significance Threshold	100	75	550	150	55	150
Exceeds (YES/NO)	YES	NO	NO	NO	NO	NO
Final EIR Approved Project Maximum Daily SoCAB Emissions (lbs/day)	2,320.31	420.77	1,628.25	706.35	242.14	10.66
Final EIR Alternative 5 Undergrounding Emissions (lbs/day)	855.10	87.36	313.53	132.01	53.85	0.98

Source Appendix 5; CPUC 2009

The total construction emissions for the Single-Circuit and Double-Circuit Options are provided and compared with the Alternative 5 Undergrounding total construction emissions below in Table A.3.2-2. The Single-Circuit and Double-Circuit Options have substantially lower total emissions than those estimated and analyzed for Alternative 5 Undergrounding in the Final EIR, and therefore would not result in a new significant effect nor a substantially more severe significant effect than was analyzed in the Final EIR.

Table A.3.2-2. Total Construction Emissions/SCAQMD Regional Emission Threshold Comparison

	NOx	VOC	CO	PM10	PM2.5	SO_2
Single-Circuit Option Emissions (tons)	16.66	1.85	16.33	8.45	2.40	0.03
Double-Circuit Option Emissions (tons)	21.45	2.37	19.98	11.79	3.16	0.04
Final EIR Alternative 5 Undergrounding Emissions (tons)	142.34	14.14	50.18	18.74	7.69	0.17
Source Appendix 5; CPUC 2009						

Operation

Operation and maintenance activities associated with the underground options involve routine inspection of the system to ensure that structural integrity of the vaults as well as the cables and splices supports. Furthermore, the ROW must be routinely patrolled for intrusions and potential dig-in. As 40 years of operation approaches, SCE would need to perform an evaluation of the underground system to determine if the cable and subsequent accessories must be replaced. In addition, SCE's qualified electrical workers must also check on the condition of the sheath voltage limiters, grounding connection, splices, terminations, corrosion of the metallic supports and restraints, and condition of the cable.

Operations and maintenance of overhead transmission lines would be similar, but would occur above-ground and involve different components. Activities would involve periodic inspection approximately once per year via helicopter, and/or truck, and/or on foot (to access more remote locations). Recurring maintenance identified in the inspection process would include vegetation management, invasive plant survey and control, wood pole management, insulator washing, insulator replacement, repair of ground wires, tighten/repair of hardware, tighten/replacement of guy wires, and adjustments to switch mechanisms.

The Single-Circuit and Double-Circuit Options would require minimal inspection and maintenance activities that would result in insignificant increases in non-attainment pollutants. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant effect nor substantially increase the severity of any significant impacts identified in the Final EIR.

AIR2 Generate emissions of air pollutants that would exceed any SCAQMD localized significance threshold?

Construction

The maximum daily localized construction emissions for the Single-Circuit and Double-Circuit Options are much lower than the Single-Circuit and Double-Circuit Options regional emissions discussed in AIR1, which include offsite traffic emissions and the overlap in several construction phases. Based on the project schedule provided by SCE, it can be assumed that any given construction phase would not

overlap within the same general area, with the exception of the trenching and duct bank installation phases which would occur in close proximity.

The emission calculations, as shown below in Table A.3.2-3, do not exceed the localized significance thresholds (LSTs) for the undergrounding project's Source Receptor Area (SRA 33 – Southwest San Bernardino Valley). Additionally, the maximum daily localized emissions for the Single-Circuit and Double-Circuit Options are lower or equal to those determined for the Approved Project. Finally, the Single-Circuit and Double-Circuit Options emissions would be significantly below those determined for the Alternative 5 undergrounding option. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant effect or substantially increase the severity of any significant effects that were analyzed in the Final EIR. The Single-Circuit and Double-Circuit Options would be subject to the same air quality mitigation measures as the Approved Project, which would mitigate impacts in the same manner as the Approved Project.

Table A.3.2-3. Localized Impact Emissions Comparison

	NOx	PM10	PM2.5
Single-Circuit Maximum Daily Emissions, 1-acre (lbs/day)	32.2	4.2	3.5
Double-Circuit Maximum Daily Emissions, 1-acre (lbs/day)	32.2	4.2	3.5
Localized Significance Threshold SRA 33 (25 meters)	118	5	4
Exceeds (YES/NO)	NO	NO	NO
Final EIR Approved Project Maximum Daily SRA 33 Localized Emissions	47	6.5	3.5
Final EIR Alternative 5 Undergrounding Emissions (1-acre)	494	20	18
Source Appendix 5; CPUC 2009			

Operation

See discussion under "Operation" in AIR1 regarding operation and maintenance activities associated with the underground options and the Approved Project. The Single-Circuit and Double-Circuit Options operations would require minimal inspection and maintenance activities that would be similar in magnitude and impact to the Approved Project analyses in the Final EIR, and so would result in less-than-significant impacts to sensitive receptors. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant effect nor substantially increase the severity of any significant effects analyzed in the Final EIR.

AIR3 Generate toxic air contaminant emissions that would exceed SCAQMD risk thresholds?

The overall Project construction emissions, including toxic air contaminants that are primarily in the form of diesel particulate matter (DPM), would increase due to the Single-Circuit and Double-Circuit Options. However, the toxic air emissions potential from the Single-Circuit and Double-Circuit Options is small and would occur over a limited construction timeframe. The construction would occur over an approximately four mile corridor and over a 3-year and 6.5-year period for the Single-Circuit and Double-Circuit Options, respectively, so the DPM emissions would be spread out over a large area and would not persist over a lifetime. The area of construction reduces the pollutant exposure to any given receptor and the relatively short duration of construction, in comparison to a lifetime, reduces the total pollutant exposure. Therefore, similar to the findings made in the FEIR for Alternative 5, which would have had higher DPM emissions, it can be concluded that the risk from the DPM emissions for the Single-Circuit and Double-Circuit Options would not exceed SCAQMD risk thresholds.. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant effect nor substantially increase the severity of any significant effects analyzed in the Final EIR relative to a risk to public health.

AIR4 Result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) requirements?

The Single-Circuit and Double-Circuit Options do not include any substantial construction activities that require federal approval, and are thus not required to be evaluated under the Federal General Conformity Rule. Therefore, the underground optionsdo not impact the findings made for the Approved Project.

AIR5 Expose a substantial number of people to objectionable odors?

Construction equipment and equipment used during construction activities, such as small areas of asphalt paving (minor hot or cold mix patching); and the operations maintenance/inspection equipment may create mildly objectionable odors. Specific odor sources during construction of the Single and Double Circuit Options would be the same as those expected during construction of the Approved Project, and would include equipment exhaust, asphalt patching, and portable toilet facilities for workers. During operations maintenance/inspection for both the underground options and the Approved Project, odor sources would generally be limited to vehicle exhausts. These odor sources are not overly offensive or objectionable, would be temporary, and would disperse quickly and not persist as perceptible odors over large areas and so would not affect a substantial number of people. No mitigation measures for odor reduction were required for the Approved Project, and none would be necessary for the Single-Circuit and Double-Circuit Options. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant effect nor a substantial increase in the severity of any significant effects identified in the Final EIR.

AIR6 Conflict with air quality provisions of the Angeles National Forest Strategy?

The Single-Circuit and Double-Circuit Options do not include any construction within the Angeles National Forest, and therefore this threshold is not applicable.

AIR7 Be inconsistent with the current approved Air Quality Management Plans?

The Approved Project would be constructed in compliance with applicable federal, State, and local air quality requirements (Page 3.3-43 of Section 3.3 (Air Quality) of the Final EIR. Additionally, the construction mitigation measures for the Approved Project (AQ-1a through AQ-1j) were developed in consultation with SCAQMD personnel to ensure consistency with SCAQMD approved Air Quality Management Plans. The Single-Circuit and Double-Circuit Options construction activities would be subject to the same mitigation measures. Furthermore, the operating emissions for the Single-Circuit and Double-Circuit Options, similar to the Approved Project, would result from minimal inspection and maintenance activities. These emissions would not significantly impact air quality to a greater extent than the Approved Project nor wouldthe Single-Circuit and Double-Circuit Options, like the Approved Project, cause any population growth that is not considered in the current approved air quality plan. Applicable mitigation measures are as follows: AQ-1a (*Implement Construction Fugitive Dust Control Plan*), AQ-1b (*Off-road Diesel-fueled Equipment Standards*), and AQ-1d (*Heavy Duty Diesel Haul Vehicle On-road Equipment Standards*). After mitigation the Single-Circuit and Double-Circuit Options, like the rest of the Approved Project, would be consistent with the currently approved Air Quality Management Plans and would not result in a new significant adverse impact nor increase the severity of any significant impacts identified in the Final EIR.

AIR8 Result in greenhouse gas emissions substantially exceeding baseline greenhouse gas emissions and following construction would not impel a regional reduction in GHGs?

The Single-Circuit and Double-Circuit Options would slightly increase the overall Project construction GHG emissions as compared to the Approved Project, but these emissions would be lower than those evaluated for Alternative 5. As noted in the Final EIR (Page 3.3-44 of Section 3.3 (Air Quality) of the Final EIR), improving the electricity distribution efficiency is part of the Intergovernmental Panel on Climate Change (IPCC) plan to reduce GHG emissions from the electricity sector. The Single-Circuit and Double-Circuit Options conform to these key policies for reducing emissions of greenhouse gases. Therefore, like the Approved Project which also conforms to these policies, impacts are not significant. As a result, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant effect nor substantially increase the severity of any significant effects identified in the Final EIR.

A.3.3 Biological Resources

BIOLOGICAL RESOURCES Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
BIO1	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game [CDFG]) or U.S. Fish and Wildlife Service (FWS)?	☐	☒
BIO2	Have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed or critical habitat for these species?	☐	☒
BIO3	Have a substantial adverse effect, either directly or through habitat modifications on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG, the USDA Forest Service (FS), or FWS?	☐	☒
BIO4	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒
BIO5	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒
BIO6	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances?	☐	☒
BIO7	Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or state HCP?	☐	☒

Criteria for determining impact significance from Section 3.4 of the Final EIR.

A.3.3.1 Setting

The Single-Circuit and Double-Circuit Options alignment, including the underground transmission line and transition stations, consist of Segment 8A of the Approved Project alignment. Segment 8A is located within the Southern Region of the Approved Project as described in the Final Environmental Impact Report (Final EIR) (CPUC, 2009). The Southern Region includes all portions of the Approved Project located south of the Angeles National Forest (ANF) within Los Angeles County and San Bernardino County. This region includes Segments 7 and 8, southern portions of Segment 11, and all associated substation improvements (Gould, Mesa, and Mira Loma).

The Single-Circuit and Double-Circuit Options would require modifications at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation. Modifications at the Vincent and Serrano Substations would occur within the footprints of the existing substations and no new disturbance would occur. Installing the necessary upgrades at Mira Loma substation would require SCE to incorporate approximately 4.5 acres of new land into the northwest corner of the substation. The northern boundary of the station would remain the same, but a 1,136 foot long section of the west fence would be relocated to the west approximately 175 feet. The 4.5 acres of adjacent land that would be developed is previously disturbed lands that currently support weeds and open areas of dirt, and was mapped as Ruderal Grassland during preparation of the Final EIR. A windrow of trees is located near the southern boundary of the substation expansion area.

As described in the Final EIR (Section 3.4, Page 3.4-12), the Southern Region consists of mainly urban and residential housing development, with more natural and open space areas along portions of the Puente and Chino Hills. Much of Segment 8A is located along the spine of the Chino Hills. This area

supports both highly urbanized areas and large sections of wild lands, such as Tonner and Carbon Canyons. Residential communities in some locations directly abut the existing utility corridor (CPUC, 2009).

The Single-Circuit and Double-Circuit Options underground alignment extends along an approximately 3.5-mile portion of the Approved Project right-of-way (ROW) between Pipeline Avenue and the western end of Eucalyptus Avenue. This portion of the ROW traverses largely developed areas in the eastern and central portions of the alignment. Toward the western portion of the alignment the ROW crosses more open space and natural lands. The Single-Circuit and Double-Circuit Options project area consists of the existing ROW which is a minimum of 150 feet wide. Most of the Approved Project 500-kV double-circuit towers have been constructed, but conductor has not been installed on the structures.

Reconnaissance surveys were conducted along the Single-Circuit and Double-Circuit Options alignment by Aspen Environmental Group biologists on April 3, 10, and 26, 2012. While Segment 8A, including the Single-Circuit and Double-Circuit Options area, was described in Sections 3.4.2 of the Final EIR, the following is a detailed description of the alignment as of April 2012.

The eastern end of the Single-Circuit and Double-Circuit Options alignment begins at a lot within the ROW next to the channelized Little Chino Creek (concrete culvert) on the east side of Pipeline Avenue, just west of the SR 71 freeway. The eastern transition station would be located at or near this site within the existing ROW, which is currently barren with a ground cover of dirt and mulch. A few scattered weedy invasive species were observed on the site. A small storm water culvert is located on the site that drains surface water to the adjacent channelized Little Chino Creek. Several ornamental London plane trees (*Platanus hybrida*) occur along the interface between the site and the adjacent parking lot. From this site, the alignment follows the existing ROW west across Pipeline Avenue where it continues adjacent to Little Chino Creek on the south side and a strip mall with a car wash and automotive service station on the north side. This area is dominated by low weedy annuals, various ornamental shrubs, a small maintained section of lawn, and a stand of Mexican fan palms (*Washingtonia robusta*). Aspen biologists noted a pair of killdeer (*Charadrius vociferus*) with a chick near the grove of fan palms, as well as a number of barn swallows (*Hirundo rustica*), house finches (*Carpodacus mexicanus*), and other birds associated with the ornamental shrubs and palms.

The Single-Circuit and Double-Circuit Options ROW continues west into a residential neighborhood. For approximately 0.5 mile, the ROW is approximately 150 feet wide and is bordered by single family homes on either side. The ROW in this area primarily consists of California annual grassland dominated by nonnative oat (*Avena* spp.) and brome grasses (*Bromus* spp.). Weedy herbaceous species such as redstem filaree (*Erodium cicutarium*) and field bindweed (*Convolvulus arvensis*) are also present. Common wildlife observed and detected includes northern mockingbird (*Mimus polyglottos*) and Botta's pocket gopher (*Thomomys bottae*). At various locations along this portion of the ROW, ornamental plants such as citrus trees, fan palms, and cacti have been planted or have recruited along the margins of the ROW that border the back yards of the homes. Many of the adjacent homes in this area have gates accessing the ROW.

Continuing west, the ROW runs adjacent to the parking area for the Chino Valley Community Church to the north and an equestrian facility to the south. A narrow strip of riparian habitat occurs between the two developed areas southeast of the intersection and Peyton Drive and Eucalyptus Avenue. Breeding least Bell's vireos and migrant willow flycatchers of undetermined subspecies have been recorded in this location during project surveys conducted by SCE in 2010 and 2011.

As the alignment continues west across Peyton Drive, it ascends a steep slope of disturbed grassland and some landscaping, and enters another residential area at Lost Trail Drive. In the residential area the

ROW is 150 feet wide, and contains a gravel recreational bike/running path. Between Lost Trail Drive and Chino Hills Parkway, the ROW generally contains well-manicured landscaped areas including both native and nonnative vegetation. In some areas this vegetation is dense (e.g., near Foxwood Drive and Maplewood Drive). Hedges of ornamental bank catclaw (*Acacia redolens*) and rockrose (*Cistus purpureus*) are present, along with several native shrubs such as laurel sumac (*Malosma laurina*). All appear to be subject to routine maintenance activities. Some of the wildlife observed or detected in this portion of the Single-Circuit and Double-Circuit Options alignment includes mourning dove (*Zenaida macroura*), northern mockingbird, and coyote (*Canis latrans*).

At Chino Hills Parkway, the ROW enters Crossroads Park and then continues west through another 150-foot ROW with residential development adjacent to either side. From this point to the western terminus of the Single-Circuit and Double-Circuit Options alignment, the topography transitions to rolling hills and slopes that primarily support California annual grasslands dominated by oat and brome grasses with small inclusions of native shrubs such as laurel sumac. Additional species include redstem filaree, canarygrass (*Phalaris* sp.), horehound (*Marrubium vulgare*), narrow-leaved milkweed (*Asclepias fascicularis*), and field bindweed. A compacted dirt road follows the ROW. Common wildlife observed and detected include western kingbirds (*Tyrannus verticalis*), song sparrows (*Melospiza melodia*), a juvenile red-tailed hawk (*Buteo jamaicensis*) perched and foraging from one of the Approved Project structures, and Botta's pocket gophers.

Traveling west through the residential development, the Single-Circuit and Double-Circuit Options alignment traverses a semi-landscaped area with native and nonnative species. This portion of the alignment ranges from well-manicured and maintained vegetation to wilder areas interspersed with grasslands and ruderal vegetation. Despite the presence of some native species, there is no native intact habitat and native trees and shrubs appear to be cultivated or remnants, depending on the area. Some areas are irrigated. Tree species observed include pines (*Pinus* sp.), Peruvian and Brazilian pepper trees (*Schinus molle* and *S. terebinthifolius* respectively), fan palms, coast live oak (*Quercus agrifolia*), California redbud (*Cercis occidentalis*), and cottonwoods (*Populus fremontii*). Shrubs include laurel sumac and bank catclaw; and herbaceous native and nonnative species include rattlesnake weed (*Chamaesyce albomarginata*), curly dock (*Rumes crispus*), California everlasting (*Gnaphalium californicum*), narrow-leaved milkweed, fiddleneck (*Amsinckia* spp.), and ragweed (*Ambrosia* sp.). Invasive species such as pampasgrass (*Cortaderia selloana*), fountaingrass (*Pennisetum setaceum*), pyracantha (*Pyracantha* sp.), poison-hemlock (*Conium maculatum*), and Italian thistle (*Carduus pycnocephalus*) are abundant. Several large areas spread with mulch are also present among the vegetation.

At Avenida Cabrillo, the Single-Circuit and Double-Circuit Options alignment proceeds west through Coral Ridge Park. Beyond the park, the alignment traverses hillsides generally characterized as annual grasslands. The terminus of the Single-Circuit and Double-Circuit Options alignment and site of the western transition station site is located on a hill approximately 300 feet southwest of the western end of Eucalyptus Avenue. The site is dominated by a mosaic of annual grasses and herbaceous weedy species. Grasslands in this area transition into oak savannah west of the Single-Circuit and Double-Circuit Options alignment.

Several small drainages occur in and near the ROW on the western side of the Single-Circuit and Double-Circuit Options alignment, and would be affected by implementation of the Single-Circuit or Double-Circuit Options. Generally, these consist of narrow ephemeral to intermittent creeks that support remnant patches of mulefat (*Baccharis salicifolia*), while some are lined with concrete. One large drainage occurs within the Single-Circuit and Double-Circuit Options alignment between the golf course at the Western Hills Country Club and the Pine Valley Estates at Canon Lane. This drainage is marked as

an unnamed blue-line stream on the USGS Yorba Linda 7.5' quadrangle. At the time of the April 2012 surveys, this drainage contained slow-moving and ponded water which appeared to primarily be runoff from the nearby residential development and golf course. A small patch of riparian vegetation occurs along this drainage at the bottom of the canyon. At the upstream end of the drainage, flat sedge (*Cyperus* sp.), watercress (*Rorippa nasturtium-aquaticum*) and cattails (*Typha latifolia*) are present. This community transitions into a thin ribbon of willows (*Salix* spp.) interspersed with escaped ornamentals such as fan palms. This area quickly transitions to a more late successional community dominated by southern arroyo willow riparian forest. Large red willow (*Salix laevigata*) and cottonwood trees dominate the canopy and the forest is nearly impenetrable due to lack of scour. The margins of the canopy support a dense thicket of blessed milk thistle, mustard, and other ruderal species. Exotic trees and other invasive species such as pampas grass occur interspersed with native species. The understory is sparse, with thick leaf litter and woody debris. Ponded water occurs throughout the riparian area, which also contains trash and two abandoned corrugated metal water towers adjacent to an old wind-powered water pump. A paved access road runs along the west side of the riparian area. Just beyond the ROW, the drainage is diverted to the southwest by a drop structure that crosses the paved access road and drains into a small flood control basin.

The riparian vegetation supports a diverse assemblage of birds and a single male least Bell's vireo (*Vireo bellii pusillus*), a federally and State-listed endangered species, was heard calling and defending a territory in this location on April 26. In addition, a nesting Cooper's hawk (*Accipiter cooperii*) was also observed in this location on the same day. Previous studies for the Approved Project conducted by SCE detected nesting least Bell's vireos and migrant willow flycatchers in this location as well (ICF, 2011a). Yellow warbler and yellow-breasted chat, both California Species of Special Concern, have also been observed here.

Vegetation

Vegetation along the Single-Circuit and Double-Circuit Options alignment is consistent with the vegetation described in the Final EIR (Section 3.4, Pages 3.4-24 and 3.4-25), although most of the vegetation types along the alignment are ruderal or degraded. Table A.3.3-1 quantifies the types of vegetation along the 3.5-mile long the Single-Circuit and Double-Circuit Options alignment. Consistent with the Final EIR, the corridor evaluated for vegetation mapping consisted of 500 feet on either side of the centerline of the alignment.

Table A.3.3-1. Vegetation Types Occurring Along the Single-Circuit and Double-Circuit Options Alignment[1]

Vegetation Type	Acres	Percentage of Total Acreage within Alignment
Disturbed/Developed	323.6	72.3%
Ruderal Grassland	69.4	15.5%
Nonnative Woodland	22.2	5.0%
California Annual Grassland	14.7	3.3%
Coastal Sage Scrub	7.1	1.6%
Ruderal Wetland	4.8	1.1%
Southern Arroyo Willow Riparian Forest	3.4	0.8%
Bunchgrass Grassland	1.2	0.3%
Coast Live Oak Woodland	1.2	0.3%

Southern Willow Scrub	0.2	0.0%
Total	447.7	100.0%

1 – The proposed Mira Loma Substation expansion area encompasses an additional approximately 4.5 acres of Ruderal Grassland, for a total of 73.9 acres of Ruderal Grassland in the Single-Circuit and Double-Circuit Options project area.

Common Wildlife

Common wildlife observed or expected to occur along the Single-Circuit and Double-Circuit Options alignment are the same as those described in the Final EIR (Section 3.4, Page 3.4-25), and include a broad spectrum of animals adapted to urban conditions such as opossum (*Didelphus virginiana*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), brush rabbit (*Sylvilagus bachmani*), and coyote. Given the proximity to heavily developed areas, domestic cat (*Felis catus*) and dog (*Canis familiaris*) are expected to frequent a majority of the areas throughout the alignment. Many of the bird species occurring in the Southern Region, including mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), American crow (*C. branchyrhyncos*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*) are commonly associated with urbanized areas. However, natural open space and riparian habitat in the western portion of the Single-Circuit and Double-Circuit Options alignment could provide habitat for a number of bird species, such as yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechia*), red-winged blackbird (*Agelaius phoeniceus*), phainopepla (*Phainopepla nitens*), and hooded oriole (*Icterus cucullatus*). Reptile species observed in the alignment include southern pacific rattlesnake (*Crotalus oreganus helleri*), western fence lizard (*Sceloporus occidentalis*), and side-blotched lizard (*Uta stansburiana*).

Special-status Species

While no special-status plant species were identified, nine special-status wildlife species were identified within the Single-Circuit and Double-Circuit Options portion of the Approved Project alignment during surveys conducted for the development of the Final EIR (Tables 3.4-6 and 3.4-7; CPUC, 2009). Canyon live oak and coast live oak, which are trees considered sensitive by local jurisdictions, also occur at the western end of the alignment and in Crossroads Park. San Diego desert woodrat middens were identified at various locations along the alignment, as were potential burrowing owl burrows and potential bat roosting habitat though owls and bats were not observed or detected in the Single-Circuit and Double-Circuit Options alignment. An additional nine special-status plants and 31 special-status animals were considered to have the potential to occur within habitats along the Single-Circuit and Double-Circuit Options alignment. Special-status species possible, likely, or present in Segment 8 (as identified in the Final EIR) and their potential to occur in the Single-Circuit and Double-Circuits Options alignment are identified in Table A.3.3-2. No new species beyond what was considered in the Final EIR have been identified in the Single-Circuit and Double-Circuit Options ROW or Mira Loma Substation expansion area. However, two additional plant species (Santa Barbara morning glory and small-flowered microseris) have been considered for potential to occur based on recent identifications of these species in the region. Both were considered to have a possible potential to occur in the alignment, but have not been detected here during any appropriately timed Project surveys. Likelihood for occurrence is defined as follows:

Present: Species or sign of their presence recently observed on the site

Likely: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.

Possible: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.

Unlikely: Species or sign not observed on the site, and conditions marginal for occurrence

Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Plants			
Brand's phacelia *Phacelia stellaris*	CRPR 1B.1, FC	Sandy substrates within coastal dune and coast scrub communities. Elev. below 1,113 ft. March-June.	Absent. Closest record of this species is from east of the alignment near Riverside. Suitable habitat does not occur within the Single-Circuit and Double-Circuit Options alignment.
Braunton's milk-vetch *Astragalus brauntonii*	CRPR 1B.1, FE	Chaparral, coastal scrub, closed-cone coniferous forests, and scrubby valley and foothill grasslands in recently burned or disturbed areas. Elev. below 2,100 ft. February-June.	Unlikely. Recent record of this species from the Santa Ana Canyon near Coal Canyon. Marginally suitable habitat does occur in the Single-Circuit and Double-Circuit Options alignment.
California satintail *Imperata brevifolia*	CRPR 2.1	Meadows and seeps within chaparral, coastal scrub, and Mojavean desert scrub communities. Elev. below 1,700 ft. September-May.	Unlikely. Although there are no historical records for this species near the alignment, marginally suitable habitat does occur in the Single-Circuit and Double-Circuit Options alignment.
California walnut *Juglans californica*	CRPR 4.2	Alluvial soils within chaparral, cismontane woodland, and coastal scrub communities. Elev. 150-3,000 ft. March-August.	Likely. This species was not observed during the recent site visit but is known from throughout the region and suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Catalina mariposa lily *Calochortus catalinae*	CRPR 4.2	Chaparral , cismontane woodland, coastal scrub, and valley and foothill grassland habitat. Elev. 49-2,297. (February) March-June.	Likely. This species was not observed during the recent site visit but is known from throughout the region and suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Chaparral sand-verbena *Abronia villosa* var. *aurita*	CRPR 1B.1	Chaparral, coastal scrub and desert dune habitat in loose, sandy soils. Elev. 262-5,249 ft. January-September.	Absent. Historic records of this variety from the Santa Ana Canyon, south of the alignment. Suitable habitat does not occur within the Single-Circuit and Double-Circuit Options alignment.
Coulter's matilija poppy *Romneya coulteri*	CRPR 4.2	Chaparral and coastal scrub, often in burns. Elev. 65-3,934 ft. March-July.	Possible: Several records from within Chino Hills State Park to the south of the alignment. Suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Coulter's saltbush *Atriplex coulteri*	CRPR 1B.2	Coastal scrub, and valley and foothill grasslands underlain with clay and alkaline soils. Elev. below 1,509 ft. March-October.	Unlikely. A historical population occurs just east of the alignment in the vicinity of Chino Creek. The Single-Circuit and Double-Circuit Options alignment lacks suitable habitat.
Davidson's bush mallow *Malacothamnus davidsonii*	CRPR 1B.2	Sandy washes and flats within Coastal Scrub and chaparral communities. Elev. 600-2,800 ft. June-January.	Absent. Suitable habitat does not occur within the Single-Circuit and Double-Circuit Options alignment.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	CRPR 1B.2	Coastal scrub and coastal bluff scrub habitats underlain by alkaline soils. Elev. below 656 ft. March-October.	Absent. Suitable habitat does not occur within the Single-Circuit and Double-Circuit Options alignment.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Intermediate mariposa lily *Calochortus weedii* var. *intermedius*	CRPR 1B.2	Rocky soils within chaparral, coastal scrub, and valley and foothill grassland habitats. Elev. 344-2,805 ft. May-July.	Unlikely. This variety is known from several locations within the vicinity of the alignment. Marginally suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Many-stemmed dudleya *Dudleya multicaulis*	CRPR 1B.2	Generally clay soils within chaparral, coastal scrub, and valley and foothill grassland. Elev. 230-2,600 ft. April-July.	Possible: Several records from within the vicinity of the alignment. Suitable habitat is present within the Single-Circuit and Double-Circuit Options 11 alignment.
Mesa horkelia *Horkelia cuneata* ssp. *puberula*	CRPR 1B.1	Sandy or gravelly habitats within chaparral, cismontane woodland, and coastal scrub communities. Elev. 200-2,700 ft. February-July.	Unlikely. Although there are no historical records for this subspecies in the vicinity of the alignment, marginally suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Nevin's barberry *Berberis nevinii*	CRPR 1B.1, SE, FE	Chaparral, cismontane woodland, coastal scrub, and riparian scrub on gravelly wash margins along alluvial scrub; it prefers coarse soils. Elev. 900- 2,000 ft. March-April.	Unlikely. Although there are no historical records of this species within the immediate vicinity of this segment, marginally suitable habitat does exist in the Single-Circuit and Double-Circuits Options alignment.
Ocellated Humboldt lily *Lilium humboldtii* ssp. *ocellatum*	CRPR 4.2	Riparian woodland openings within chaparral, cismontane woodland, coastal scrub, and lower montane coniferous forest communities; generally on gravelly soils within gullies. Elev. below 6,000 ft. March-July.	Unlikely. Although there are no historical records of this species within the immediate vicinity of this segment, marginally suitable habitat does exist in the Single-Circuit and Double-Circuit Options alignment.
Parry's spineflower *Chorizanthe parryi* var. *parryi*	CRPR 1B.1	Sandy or rocky openings within chaparral and coastal scrub communities. Elev. 120-6,000 ft. April-June.	Unlikely. Well outside of known range for this variety. However, marginally suitable habitat does exist within the Single-Circuit and Double-Circuit Options alignment.
Plummer's mariposa lily *Calochortus plummerae*	CRPR 1B.2	Granitic rock outcrops or rocky soils of granitic origin, in lower montane coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland, and chaparral habitats. Elev. 328-5,577 ft. May-July	Unlikely. This species is known from several locations to the north of the alignment. Marginally suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Rayless ragwort *Senecio aphanactis*	CRPR 2.2	Dry alkaline flats within chaparral, cismontane woodland, and coastal scrub communities. Elev. 50-2,624 ft. January-April.	Unlikely. A historic record of this species is known from Puddingstone Canyon, in the Frank G. Bonelli Regional Park. However, suitable habitat is absent from the Single-Circuit and Double-Circuit Options alignment.
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	CRPR 1B.2	Chaparral and coastal scrub habitats. Elev. below 2,903 ft. January-July.	Possible: Records for this species occur east of the alignment near the cities of Montclair and Corona, and west near Diamond Bar. Suitable habitat does occur in the Single-Circuit and Double-Circuit Options alignment.
Round-leaved filaree *Erodium macrophylla* (= *California macrophylla*)	CRPR 1B.1	On clay soils in valley and foothill grasslands or open cismontane woodland habitats. Elev. 49-3,937 ft. March-May.	Possible: A historic record of this species is known from Puddingstone Canyon, in the Frank G. Bonelli Regional Park. Patches of clay soils may occur in the Single-Circuit and Double-Circuit Options alignment.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Salt Spring checkerbloom *Sidalcea neomexicana*	CRPR 2.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playa habitats in alkaline and mesic soils. Elev. 49-5,020 ft. March-June.	Unlikely. A historic record for this species occurs just east of the alignment, in the vicinity of Chino Creek just east of SR 71. Only marginally suitable habitat occurs in the Single-Circuit and Double-Circuit Options alignment.
San Bernardino aster *Aster bernardinus* (=*Symphyotrichum defoliatum*)	CRPR 1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and valley and foothill grass-land habitats within vernally mesic areas near ditches, and streams. Elev. 7-6,693 ft. July- November.	Possible. Two historic records for this species occur within 5 miles of the alignment between Pomona and Ontario. Suitable habitat is present within the Single-Circuit and Double-Circuit Options 11 alignment.
San Fernando Valley spineflower *Chorizanthe parryi* var. f*ernandina*	CRPR 1B.1, FC, SE	Coastal sage scrub, alluvial fan scrub, non-native grassland, and disturbed habitats on sandy or gravelly soils, dry washes, flats and foothills. Elev. 490-4,000 ft. April-June.	Unlikely. Well outside of known range for this variety. However, marginally suitable habitat does exist within the Single-Circuit and Double-Circuit Options alignment.
Santa Barbara morning glory *Calystegia sepium* ssp. *binghamiae*	CRPR 1B.1	Coastal and inland marshes, swamps and riparian woodlands. Elev. 0-600 ft. March-June.	Possible. This species was recently redis-covered growing near Central Ave. in Chino, just east of the Single-Circuit and Double-Circuit Options alignment. Suitable habitat is present.
Slender mariposa lily *Calochortus clavatus* var. *gracilis*	CRPR 1B.2	Valley and foothill grasslands, chap-arral, or coastal scrub habitats; often in shaded canyons. Elev. 1,181-3,281 ft. March-June.	Unlikely. Known from the foothills of the San Gabriel Mtns to the north of the alignment. Marginally suitable habitat for this variety is present in the Single-Circuit and Double-Circuit Options alignment.
Small flowered microseris *Microseris douglasii* ssp. *platycarpha*	CRPR 4.2	Clay soils in valley and foothill grass-lands or open cismontane woodland habitats. Elev. 49-3,510 ft. March-May.	Possible. This subspecies is known from several locations within the vicinity of the alignment. Suitable habitat is present within the Single-Circuit and Double-Circuit Options alignment.
Smooth tarplant *Hemizonia pungens* ssp. *laevis* (=*Centromadia pungens* ssp. *laevis*)	CRPR 1B.1	Chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland habitats in alkaline soils. Elev. below 1,575 ft. April-September.	Unlikely. Although several populations are known to the east of the alignment in San Bernardino and Riverside counties, the Single-Circuit and Double-Circuit Options alignment lacks suitable habitat.
Southern tarplant *Hemizonia parryi* ssp. *australis* (=*Centromadia parryi* ssp. *australis*)	CRPR 1B.1	Margins of marshes and swamps, vernally mesic sites within valley and foothill grassland, vernal pools, and coastal scrub. Elev. below 1,400 ft. May-November.	Unlikely. All known populations of this species are from more costal locations to the west. The Single-Circuit and Double-Circuit Options alignment lacks suitable habitat.
Thread-leaved brodiaea *Brodiaea filifolia*	CRPR 1B.1, SE, FT	Open mesic grasslands within chap-arral, cismontane woodland, or coastal scrub communities, and is frequently associated with playas or vernal pools. Elev. 80-2,900 ft. March-June.	Unlikely. Nearest known occurrence is from the foothills of the San Gabriel Mtns to the north of the alignment. Suitable habitat for this species is absent from the Single-Circuit and Double-Circuit Options alignment.
Amphibians			

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Western Spadefoot *Spea hammondii*	CSSC	Grasslands and occasionally hardwood woodlands, washes, floodplains, and playas. Primarily occurs in lowlands, but also in foothills and mountains. Vernal pools or similar ephemeral pools required for breeding.	Possible. Observed in Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA) lands during surveys conducted in 2005. May occur in undeveloped habitats where suitable breeding pools are present.
Coast Range Newt *Taricha torosa torosa*	CSSC	Inhabits moist uplands surrounding ponds, reservoirs, or slow-moving streams in which they breed.	Unlikely. Marginal but degraded and fragmented habitat exists in the riparian habitat at the Western Hills Country Club.
Reptiles			
Coast Horned Lizard *Phrynosoma blainvillii*	CSSC	A variety of habitats, including coastal sage scrub, chaparral, oak woodland, riparian woodland, and coniferous forest. Friable, sandy soils in areas with an abundant prey base of native ants are key habitat components.	Likely. Observed in the Puente-Chino Hills during surveys for the Approved Project.
Orangethroat Whiptail *Aspidoscelis hyperythra*	CSSC	Chaparral, thornscrub, and frequently sandy areas of washes, streams, and terraces with streamside vegetation. Rocky slopes with patches of brush are often utilized.	Possible. Marginal habitat occurs at the western end of the Single-Circuit and Double-Circuit Options alignment.
Silvery Legless Lizard *Anniella pulchra pulchra*	CSSC	Sandy or loose loamy soils covered by sparse vegetation. Chaparral, pine-oak woodland, washes, streamside terraces utilized. Elevated soil moisture is required.	Likely. May occur across a variety of undeveloped habitats with friable soils and sparse vegetation.
Two-striped Garter Snake *Thamnophis hammondii*	CSSC	In or near permanent freshwater, more commonly in pools of streams with a rocky substrate, bordered by riparian vegetation.	Possible. Suitable but degraded and fragmented habitat exists in the riparian habitat at the Western Hills Country Club.
Coast Patch-nosed Snake *Salvadora hexalepis virgultea*	CSSC	Inhabits chaparral or other habitats relatively sparse, brushy or shrubby vegetation.	Likely. Suitable habitat for this species occurs in undeveloped areas.
Red Diamond Rattlesnake *Crotalus ruber*	CSSC	Inhabits chaparral, coastal sage scrub, desert scrub habitats, and other brushy habitats. Usually found in association with large rocks or boulders.	Likely. Observed in Puente/Chino Hills during surveys conducted in 2002 and 2005 for the Approved Project. Segment 8 of the Approved Project is likely at the far northern extent of this species' range.
Western Pond Turtle *Emys marmorata*	CSSC	In and around a wide variety of permanent or nearly permanent aquatic habitats.	Absent. No suitable habitat within the Single-Circuit and Double-Circuit Options alignment.
Mammals			
American Badger *Taxidea taxus*	CSSC	Occurs in open habitats, including grasslands, desert scrub, agricultural fields and pastures, and sparse coastal scrub.	Likely. Suitable grassland habitat is present in the western portion of the Single-Circuit and Double-Circuit Options alignment.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Ringtail Cat *Bassariscus astutus*	CDFW FP	Occurs primarily in or adjacent to riparian habitats, but also known from forest and shrub habitats at low to mid elevations.	Unlikely. Habitat in the Single-Circuit and Double-Circuit Options alignment is degraded and fragmented. Proximity to urban and residential development further reduces the potential for this species to occur.
San Diego Black-tailed Jackrabbit *Lepus californicus bennettii*	CSSC	Occurs in open areas or semi-open country, typically in grasslands, agricultural fields or sparse coastal scrub.	Likely. Suitable habitat occurs within the western portion of the Single-Circuit and Double-Circuit Options alignment.
San Diego Desert Woodrat *Neotoma lepida intermedia*	CSSC	Occurs in a variety of shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	Present. Recorded in PHLNHPA lands in 2003. Woodrat middens were observed throughout the open space portions of the alignment, especially within the riparian habitat near the west end of the alignment. However, these were not identified to species.
San Diego Pocket Mouse *Chaetodipus fallax*	CSSC	Inhabits coastal sage scrub and grasslands in moderately gravelly or rocky substrates and sandy-loam to loam soils.	Possible. Suitable habitat for this species occurs in undeveloped areas.
Southern Grasshopper Mouse *Onychomys torridus ramona*	CSSC	Occurs primarily in grassland and sparse coastal sage scrub habitats.	Possible. Suitable habitat for this species occurs in undeveloped areas.
Mammals (Bats)			
Pallid Bat *Antrozous pallidus*	CSSC	Primarily roosts in rock crevices, trees, bridges, and buildings, but also uses crevices and cavities in caves and mines. Found in many habitat types with open areas.	Likely. Recorded in Puente Hills in 2004 and in PHLNHPA lands in 2006. Suitable roosting habitat occurs at various locations along the Single-Circuit and Double-Circuit Options alignment.
Pocketed Free-tailed Bat *Nyctinomops femorosaccus*	CSSC	Prefers rock crevices in cliffs as roosting sites. May use buildings for day roosts and also is known to use cavities in trees.	Likely. Recorded in PHLNHPA lands in 2005, 2006 with evidence of nearby roosting in Sycamore and Turnbull Canyons.
Western Mastiff Bat *Eumops perotis*	CSSC	Primarily roosts along cliffs in cracks, crevices, and caves in fractured rock.	Possible. Recorded in PHLNHPA lands in 2005, 2006 but roosting habitat was not observed during previous surveys or reconnaissance-level surveys.
Western Red Bat *Lasiurus blossevillii*	CSSC	Primarily roosts in mature riparian forest but also found in upland forests, woodlands, and orchards.	Likely. Recorded in the Puente Hills in 2005 and 2006 with evidence of nearby roosting. Suitable roosting habitat occurs at various locations along the Single-Circuit and Double-Circuit Options alignment.
Birds			
Bald Eagle *Haliaeetus leucocephalus*	FD, SE, CDFW FP	Nests on large trees in the vicinity of large lakes, reservoirs and rivers. Wintering birds are most often found near large concentrations of waterfowl or fish.	Absent. No suitable habitat within the Single-Circuit and Double-Circuit Options alignment.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Golden Eagle *Aquila chrysaetos* (nesting and wintering)	CDFW WL, CDFW FP	Forages in open grasslands, desert scrub and agricultural fields. Nests on ledges on cliff faces, rock outcrops and occasionally in large trees.	Likely. Species is known to have nested recently in the Puente/Chino Hills and was observed in 2000. Foraging birds observed in PHLNHPA lands, and suitable foraging habitat occurs at the western end of the Single-Circuit and Double-Circuit Options alignment. Likely limited to the westernmost sections of the alignment.
Cooper's Hawk *Accipiter cooperii* (nesting)	CDFW WL	Nests in woodlands, and sometimes, suburban settings if mature trees are present. Forages in many habitats in winter and migration.	Present. This species was observed nesting in the riparian habitat at the western end of the Single-Circuit and Double-Circuit Options alignment in April 2012. Marginal nesting habitat occurs in suburban areas of the alignment with mature trees.
Ferruginous Hawk *Buteo regalis* (wintering)	CDFW WL	Forages in grasslands and agricultural fields.	Possible. Potential foraging habitat for wintering and migrating birds is present in agricultural habitats east of Chino, but is not expected to occur within the Single-Circuit and Double-Circuit Options alignment.
Sharp-shinned Hawk *Accipiter striatus* (nesting)	CDFW WL	Nests in conifer and riparian forests, preferably on north facing slopes near water. Forages in many habitats in winter and migration.	Likely. Observed in PHLNHPA lands (LSA, 2007). Suitable habitat occurs within the western portion of the Single-Circuit and Double-Circuit Options alignment.
Swainson's Hawk *Buteo swainsoni*	ST	Nests in trees near foraging areas that include grasslands and agricultural croplands, especially alfalfa.	Possible. Segment is outside breeding range. There are records of migrating birds within Segment 8 in PHLNHPA lands, but none have been recorded within the Single-Circuit and Double-Circuit Options alignment.
Northern Harrier *Circus cyaneus* (nesting)	CSSC	Breeds and forages in emergent wetlands and nearby open grasslands, fallow fields. Also forages in agricultural fields and desert scrub.	Likely: Observed in PHLNHPA lands during surveys conducted in 2000, 2002, and 2005. Observed in Chino Hills State Park during surveys conducted for Alternative 4 in 2009. Potential habitat occurs at the western end of the Single-Circuit and Double-Circuit Options alignment.
Osprey *Pandion haliaetus* (nesting)	CDFW WL	Breeds in variety of habitats with shallow water and large fish, including boreal forest ponds, desert salt-flat lagoons, temperate lakes, and tropical coasts. Winters along large bodies of water containing fish.	Absent. No suitable habitat within the Single-Circuit and Double-Circuit Options alignment.
Merlin (*Falco columbarius*) (wintering)	CDFW WL	Boreal forests, coastal forests, prairies, and shrub-steppes.	Likely. Observed in PHLNHPA lands. This species is a winter migrant in California and suitable habitat is present within the western end of the Single-Circuit and Double-Circuit Options alignment.
Peregrine Falcon *Falco peregrines* (nesting)	FD, SD, CDFW FP,	Nests on cliff ledges, and forages where there are large concentrations of birds.	Possible. Recorded near Mira Loma substation and observed in 2005 near Harbor Blvd. in PHLNHPA lands. Nesting habitat is absent.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Prairie Falcon *Falco mexicanus* (nesting)	CDFW WL	Forages in desert scrub, grasslands, agricultural fields and Joshua tree woodland. Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands.	Likely. This species has been observed foraging in the Puente/Chino Hills and Chino Hills State Park (CPUC, 2009).
White-tailed Kite *Elanus leucurus* (nesting)	CDFW FP	Forages in open grasslands, desert scrub and agricultural fields. Nests on trees and large shrubs.	Present. Observed near the Western Hills Country Club during project surveys in 2010 and 2011.
Long-eared Owl *Asio otus* (nesting)	CSSC	Breeds in thickly vegetated desert washes and oases, montane coniferous forests and in riparian and pinyon-juniper woodlands. Requires adjacent open habitats for foraging.	Possible. Suitable nesting habitat in the Puente/Chino Hills where there are historical records.
Short-eared Owl *Asio flammeus* (nestimg)	CSSC	Breeds in marshes or in nearby moist grasslands or fallow fields. Forages in the same habitats but may also forage in agricultural fields and dry grasslands.	Possible: Suitable breeding habitat is absent. It is likely to occur as a wintering bird, especially in the grasslands and agricultural fields.
Western Burrowing Owl *Athene cuniculari* (burrowing sites and some wintering sites)	CSSC	Found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals, such as ground squirrels.	Possible. This species has been observed at various locations along Segment 8, but not within the Single-Circuit and Double-Circuit Options alignment. While owls were not detected during focused surveys within the Single-Circuit and Double-Circuit Options portion of Segment 8, potential burrows were recorded at several locations along the alignment.
Bell's Sage Sparrow *Amphispiza belli belli*	CDFW WL	Found in shrubby habitats including coastal sage scrub and chaparral, primarily of the chamise type.	Unlikely. Little to no suitable habitat occurs within the Single-Circuit and Double-Circuit Options alignment.
Southern California Rufous-crowned Sparrow *Aimophila ruficeps canescens*	CDFW WL	Sparse low brush, especially sage, located on grassy hill slopes and rocky hillsides.	Likely. Observed in Chino Hills during surveys conducted in 2000, 2002, 2005, and 2007. Suitable habitat is present within the western end of the Single-Circuit and Double-Circuit Options alignment. Observed in PHLNHPA lands in 2000 and 2005.
Coastal California Gnatcatcher *Polioptila californica californica*	FT, CSSC	Coastal sage scrub habitats of southern California coastal slope, generally below 950 feet.	Possible. Although this species is present along portions of Segment 8, it has not been documented in the Single-Circuit and Double-Circuit Options alignment and potential habitat is very limited in this portion of Segment 8. DESIGNATED CRITICAL HABITAT FOR THIS SPECIES OCCURS IN SEGMENTS 7 AND 8, BUT DOES NOT OCCUR IN THE SINGLE-CIRCUIT AND DOUBLE-CIRCUIT OPTIONS ALIGNMENT.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Least Bell's Vireo *Vireo bellii pusillus*	SE, FE	Dense riparian scrub including willows and mulefat.	Present. A male was observed singing and defending a territory in the riparian habitat at the Western Hills Country Club near the western end of the Single-Circuit and Double-Circuit Options alignment in April 2012. At least one successful breeding pair was recorded in 2009, 2010, and 2011 in this same location. Two territories were mapped here in 2011. Also in 2011, two territories were detected in a narrow strip of riparian habitat between two developed areas southeast of the intersection and Peyton Dr. and Eucalyptus Ave. Two breeding pairs were also identified here in 2010. A CNDDB record from 2009 identifies a breeding pair in the Western Hills Country Club approximately 0.6 mile from the ROW.
California Horned Lark Eremophila alpestris actia	CDFW WL	Occurs in open habitats, forages in bare dirt in short and/or sparse grassland and areas of scattered shrubs.	Likely. Observed in PHLNHPA lands during surveys conducted in 2000. Potential habitat is present within the western end of the alignment.
Loggerhead Shrike *Lanius ludovicianus*	CSSC	Nests in isolated tall shrubs and dense trees (including Joshua trees) in open landscapes. Forages in desert scrub, agricultural fields, grasslands, and Joshua tree woodlands.	Present. Suitable foraging and nesting habitat present at Whittier Narrows, the Puente/ Chino Hills, and much of this segment. A pair was observed on Segment 8C during surveys conducted in 2007. Individual observed in PHLNHPA lands in 2000.
Olive-sided Flycatcher *Contopus cooperi* (nesting)	CSSC	Nests in late-successional coniferous forests with open canopies.	Present. Observed in PHLNHPA lands (LSA, 2007).
Southwestern Willow Flycatcher *Empidonax traillii extimus* (nesting)	SE, FE (all subspecies SE)	Breeds in densely vegetated riparian associations of cottonwoods and willows	Present. One individual of undetermined subspecies, identified as a migrant, was observed in the riparian habitat at the Western Hills Country Club near the western end of the Single-Circuit and Double-Circuit Options in 2010 and again in 2011. Two more migrants were observed in a narrow strip of riparian habitat between two developed areas southeast of the intersection and Peyton Dr. and Eucalyptus Ave. in 2011.
Tricolored Blackbird *Agelaius tricolor* (nesting colony)	CSSC	Nests in freshwater emergent wetlands, nettle, thistle, willow riparian thickets, and in crops such as alfalfa and safflower.	Likely. Observed in agricultural/dairy habitats east of Chino during reconnaissance surveys conducted in 2007. A small fragment of potential habitat exists near the Western Hills Country Club, and this species could forage in adjacent grasslands. CNDDB records of nesting in Tonner Canyon, less than two miles northwest of the western terminus of the Single-Circuit and Double-Circuit Options alignment.
Yellow Warbler *Dendroica petechia* (nesting)	CSSC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.	Present. Observed in the riparian habitats at the Western Hills Country Club and southeast of the intersection and Peyton Dr. and Eucalyptus Ave. in 2010 and 2011.

Table A.3.3-2. Special-Status Species with the Potential to Occur in the Single-Circuit and Double-Circuit Options Project Area

Name	Status	Habitat	Occurrence Within Project Area
Yellow-breasted Chat *Icteria virens (*nesting)	CSSC	Breeds in riparian habitats with dense understory vegetation, such as willow and blackberry.	Present. Observed near the Western Hills Country Club during project surveys in 2010.
Western Yellow-billed Cuckoo *Coccyzus americanus* (nesting)	FC, SE	Breeds in densely vegetated riparian associations of cottonwoods and willows.	Unlikely. One individual was observed at the Rio Hondo in 2009 (M. Benjamins, pers. comm.) Little to no habitat for this species is present in the Single-Circuit and Double-Circuit Options alignment.
Double-Crested Cormorant *Phalacrocorax auritus* (rookery site)	CDFW WL	Found in diverse aquatic habitats, such as ponds, lakes, rivers, lagoons, estuaries, and open coastline; more widespread in winter.	Unlikely. Although observed at Whittier Narrows, potential habitat is not present in the Single-Circuit and Double-Circuit Options alignment.
Least Bittern *Ixobrychus exilis* (nesting)	CSSC	Occurs in marshes and edges of ponds and reservoirs that are covered with tules or cattails.	Possible. There are breeding season records from Legg Lake and Whittier Narrows. A small fragment of potential habitat exists near the Western Hills Country Club.
Redhead *Aythya Americana* (nesting)	CSSC	Inhabits marshes, sloughs, ponds and lakes. Generally prefer deep, open water with emergent vegetation.	Absent. No suitable habitat within the Single-Circuit and Double-Circuit Options alignment.
White-faced Ibis *Plegadis chihi* (rookery site)	CDFW WL	Forage in marshes, mudflats, shallow rivers, and irrigated croplands. Nest in dense emergent vegetation.	Absent. No suitable habitat within the Single-Circuit and Double-Circuit Options alignment.

FE = Federally Endangered Species
FT = Federally Threatened Species
FC = Federal Candidate Species
FD = Federally Delisted
PT = Federally Proposed Threatened Species

ST= State Threatened Species
SE = State Endangered Species
SR = State Rare Species
SD = State Delisted
CDFW FP = State Fully Protected Species
CSSC = California Species of Special Concern
CDFW WL = CDFW Watch List Species

CRPR 1A – Presumed extinct in California
CRPR 1B – Rare or endangered in California and elsewhere
CRPR 2 – Rare or endangered in California, more common elsewhere
CRPR 3 – More information needed (Review List)
CRPR 4 – Limited Distribution (Watch List)
Seriously threatened in California (over 80% of occurrences threatened/ high degree and immediacy of threat)
Fairly threatened in California (20-80% occurrences threatened)
0.3 = Not very threatened in California (<20% of occurrences threatened or no current threats known

Wildlife Movement

As described in the Final EIR (Section 3.4, Page 3.4-26), the Puente-Chino Hills Wildlife Corridor is a peninsula of mostly undeveloped hills that extend from the densely urbanized Los Angeles Basin southeast to the Santa Ana Mountains (CPUC, 2009). The Chino Hills are considered a key geographic unit within the corridor. The Single-Circuit and Double-Circuit Options alignment generally falls within this corridor, but its function with regard to wildlife movement is likely to be much lower in the central and eastern portions of the alignment where the ROW is adjacent to commercial and residential development on both sides. Due to strong edge effects associated with urban development, human presence, and domestic pet activity, corridor function is likely tempered along the Single-Circuit and Double-Circuit Options alignment. Nonetheless, evidence of use of the ROW by species such as coyotes and numerous birds were identified during surveys, and the western portion of the alignment is contiguous with large blocks of open space in the Chino-Puente Hills complex.

Applicable Regulations

Federal, State, and local regulations protecting biological resources are described in the Final EIR (Section 3.4.3; CPUC, 2009). Only additions or changes to these regulations that have occurred since the publication of the Final EIR are described below.

Federal

Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act (16 U.S.C. 668, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act. Take of bald and golden eagles means to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb." (50 CFR 22.3.) Disturb (a form of take under the Act) is defined as follows: "disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.'' (72 FR 31132; 50 CFR 22.3).

On November 10, 2009, USFWS implemented new rules (74 FR 46835) governing the "take" of golden and bald eagles. The new rules were released under the existing Bald and Golden Eagle Protection Act, which has been the primary regulatory protection for unlisted eagle populations since 1940. All activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity must be permitted by the USFWS under this act. The definition of disturb (72 FR 31132) includes interfering with normal breeding, feeding, or sheltering behavior to the degree that it causes or is likely to cause decreased productivity or nest abandonment. As discussed in the Final EIR (Section 3.4, Page 3.4-96) mitigation measures, including clearing vegetation outside of the breeding season, pre-construction nest surveys, disturbance-free buffers, and construction monitoring, would ensure that no take of bald or golden eagles occurs as a result of the implementation of this Project. These mitigation measures (B-1a, B-1b, B-2, B-3a, B-5, and AQ-1a) would also be implemented for Single-Circuit and Double-Circuit Options (including all project components for these Options). Therefore, neither the Approved Project nor the Single-Circuit and Double-Circuit Options would require a take permit from the USFWS under the Bald and Golden Eagle Protection Act as they are not expected to result in take of eagles.

State

Special-Status Plants. Non-listed plants afforded protection under CEQA as special-status species were previously ranked by the California Native Plant Society (CNPS) as CNPS List 1, 2, 3, and 4 species. In March 2010, CDFW changed the name of "CNPS List" to "California Rare Plant Rank" (or CRPR). This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment. The old name gave the false impression that CNPS solely assigned the ranks and had excessive influence on the regulatory process. Nothing about the actual process of rare plant review or rank assignment has changed and the same committee of experts from many organizations in addition to CDFW and CNPS still review each change and ultimately assign the ranks (CDFG, 2012). Species previously ranked as CNPS 1, 2, 3, and 4 species retain the same ranking, but are now labeled as CRPR 1, 2, 3, and 4 species. The California Rare Plant Ranks and associated threat ranks are defined as follows:

1A. Presumed extinct in California

1B. Rare or Endangered in California and elsewhere

2. Rare or Endangered in California, more common elsewhere

3. Plants for which we need more information - Review list

4. Plants of limited distribution - Watch list

Threat Code extensions:

.1 - Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

Note that all List 1A (presumed extinct in California) and some List 3 (need more information- a review list) plants lacking any threat information receive no threat code extension (CDFG, 2012).

Local

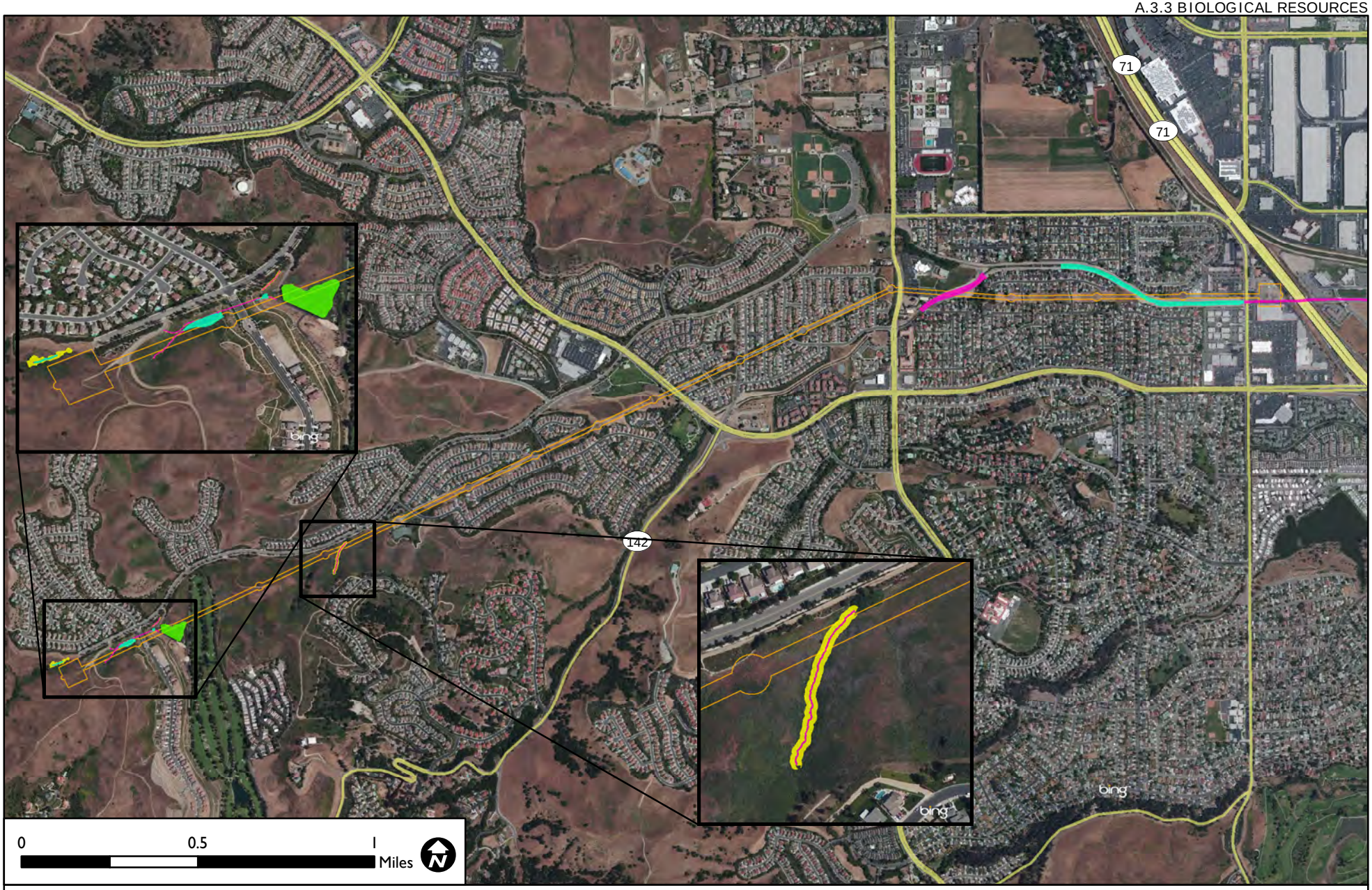
Southern California Association of Governments Regional Comprehensive Plan and Guide. The Final EIR noted that this document was in draft form in 2008 during preparation of the Draft EIR. However, the plan was finalized later in 2008. The Open Space and Habitat section of the Plan addresses natural lands, community open space, and farmlands on a regional level. The intent of this chapter is to plan and provide for the conservation of the region's open space resources focusing on interconnections among resources, future land use decisions that will either strengthen or impair the region's ability to sustain the resources, and opportunities for inter-jurisdictional planning. The intent is to conserve the region's open space resources in a way that will ensure sustainability over time (SCAG, 2008).

A.3.3.2 Environmental Impacts and Mitigation Measures

The Final EIR identified direct and indirect impacts to a variety of biological resources. Impacts to most biological resources were found to be significant for the Approved Project, but were reduced to less-than-significant levels with the implementation of mitigation measures identified in the Final EIR. Generally, impacts to biological resources from implementation of the Approved Project were found to occur in natural habitats project-wide, including portions of the Antelope Valley, the Angeles National Forest, Whittier Narrows Recreation Area, and other natural open-space areas. Segment 8A traverses a wide variety of habitats, and the highest concentrations of special-status species were located in less disturbed natural lands in the Puente and Chino Hills as well as riparian corridors such as Tonner Canyon.

As described in Section A.3.3.1, the Single-Circuit and Double-Circuit Options alignment is located primarily within disturbed and ruderal areas. As shown on Figure A.3.3-1, portions of the western end of the alignment cross small fragments of riparian habitat or run adjacent to larger tracts of open space, but these areas contain a large invasive weed component and are in close proximity to urban development, which generally reduces the potential for the area to support a wide range of special-status species. Nonetheless, least Bell's vireos and willow flycatchers, both listed species, have been recorded in two isolated riparian areas within or near the Single-Circuit and Double-Circuit Options alignment. Several other special-status birds have also been identified in these locations.

The following sections describe biological resources with the potential to be affected by implementation of the Single-Circuit and Double-Circuit Options; compare those impacts to those of the Approved Project; identify whether the Single-Circuit and Double-Circuit Options would result in new or



Aspen Environmental Group

Underground Options Disturbance Area

SCE Juridictional Delineation Data

CDFW Jurisdiction / Riparian

Riparian Habitat Supporting Vireo

USACE Jurisdiction

Wetland

Figure A.3.3-1

Drainages in Project Area

substantially greater impacts than the Approved Project; and recommend mitigation to reduce those impacts.

APMs were identified by SCE in the PEA. Table 3.4-16 of the FEIR (page 3.4-110 to 3.4-111) presents the APMs that are relevant to the issue area of biological resources. APMs are a commitment by the Applicant (SCE) and are considered part of the Approved Project. Therefore, the following discussions of impact analyses assume that all APMs will be implemented as defined in the table. Additional mitigation measures are identified in this section where it was determined in the FEIR that APMs do not fully mitigate the impacts for which they are presented.

BIO1 Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or FWS?

Native Vegetation

The Final EIR (Section 3.4, Impact B-1, beginning at page 3.4-116) identified impacts to 40 different vegetation types and 2 anthropogenic cover types (barren/developed and agriculture) from the implementation of the Approved Project. These vegetation communities support a suite of common and special-status species. For the Approved Project, approximately 350 acres of permanent and 1,263 acres of temporary disturbance to vegetation would occur (see Tables 3.4-17 and 3.4-18 on pages 3.4-118 to 3.4-123 of the Final EIR). The loss of non-native plant communities including California annual grassland, ruderal grassland, non-native woodland, agricultural, and barren/developed habitats was considered an adverse but less-than-significant impact unless these communities supported sensitive plants or wildlife. The loss of native communities from the implementation of the Approved Project was determined to be a significant impact, but was reduced to a less-than-significant level with the implementation of mitigation. These measures included, among others, the restoration of temporary impacts, compensation for permanent impacts through land acquisition and enhancement, and the control of weeds, dust, and erosion.

The Single-Circuit and Double-Circuit Options traverse primarily nonnative and ruderal/disturbed vegetation communities; however, some of these areas could still provide habitat for common and special-status species. In addition, riparian habitat exists in sections of the central and the western portions of the alignment, most notably at the Western Hills Country Club and north of the alignment near the intersection of Peyton Drive and Eucalyptus Avenue.

Construction of the Single-Circuit and Double-Circuit Options would include removing the new 500-kV double-circuit structures constructed for the Approved Project, trenching along most of the 3.5-mile alignment, and construction of two 3-acre transition stations. In addition, the Mira Loma Substation would be expanded, incorporating approximately 4.5 acres of new land in the northwestern corner of the existing substation. SCE estimates that construction of the Single-Circuit Option would result in approximately 36 acres of permanent disturbance and 37 acres of temporary ground disturbance, for a total of 73 acres of disturbance. Ground disturbance from construction of the Double-Circuit Option is estimated at 53 acres of permanent disturbance and 36 acres of temporary disturbance, for a total of 89 acres of disturbance. The locations of the disturbance associated with both Options have not yet been determined, pending final engineering (SCE, 2013).

Overall, impacts to native and nonnative vegetation from the Single-Circuit Option would be 4.5 percent of the total impacts associated with construction of the Approved Project and impacts of the Double-Circuit Option would be 5.5 percent of the total impacts associated with construction of the Approved Project. While loss of native and nonnative vegetation that could provide habitat for special-status

species would be considered significant absent mitigation; these vegetation types are limited on the Single-Circuit and Double-Circuit Options alignment. All vegetation types that occur within the Single-Circuit and Double-Circuit Options alignment were evaluated in the Final EIR, and no new vegetation types would be impacted. Adopted Mitigation Measure B-1a (*Provide restoration/compensation for impacts to native vegetation communities*) requires restoration of temporary impacts to vegetation and off-site compensation for permanent impacts. To further reduce impacts of the Single-Circuit and Double-Circuit Options on native vegetation, SCE shall also implement APMs BIO-1 through BIO-7, and Mitigation Measures B-1b (*Implement a Worker Environmental Awareness Program*), B-1c (*Treat cut tree stumps with Sporax*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*). Consistent with the Final EIR, impacts of the Single-Circuit and Double-Circuit Options on native vegetation would be less than significant with implementation of Approved Project mitigation, and no additional mitigation is required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to vegetation.

Loss of Riparian Habitat or Other Sensitive Natural Community

The Final EIR (Section 3.4, Impact B-2 beginning at page 3.4-134) quantified and discussed impacts to riparian habitats from implementation of the Approved Project. Additional sensitive vegetation types would also be impacted by the Approved Project, as described in the Final EIR. Impacts to sensitive natural communities were found to be significant, but were reduced to less-than-significant levels through implementation of mitigation measures requiring restoration of temporary impacts, compensation for permanent impacts, worker environmental training, dust control, weed control, and erosion control.

As shown in Table A.3.3-1, sensitive native vegetation that has been mapped within the Single-Circuit and Double-Circuit Options ROW include southern arroyo willow riparian forest, bunchgrass grassland, coast live oak woodland, and southern willow scrub.

Most of the sensitive vegetation communities identified in the Final EIR do not occur in the Single-Circuit and Double-Circuit Options portion of Segment 8. However, several portions of the alignment support the following sensitive vegetation communities: coastal sage scrub, southern arroyo willow riparian forest, bunchgrass grassland, coast live oak woodland, and southern willow scrub (see Table A.3.3-1). and one or more of these may be impacted by construction of the Single-Circuit and Double-Circuit Options. Although impacts to riparian habitat could be reduced if horizontal directional drilling is utilized in areas that support this vegetation (particularly the riparian habitat next to the Western Hills Country Club), final engineering has not been conducted and the feasibility of utilizing horizontal directional drilling at this location is currently unknown. Consistent with the Final EIR, to reduce construction impacts to riparian and other sensitive habitat from the implementation of the Single-Circuit and Double-Circuit Options, SCE shall implement Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program), B-2 (Implement RCA Treatment Plan*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*). Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to sensitive vegetation.

Noxious and Invasive Weeds

As described in the Final EIR (Section 3.4, Impact B-3 beginning at page 3.4-140), the potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Approved Project. This was found to be significant absent mitigation for the Approved Project, but was reduced to a less-than-significant level through the implementation of mitigation including restoration of temporary impacts and the development and implementation of a Weed Control Plan. Similar to the Approved Project, for the Single-Circuit and Double-Circuit Options the introduction of noxious and invasive weeds would be related to ground disturbance from clearing, trenching, grading; road construction and maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel.

Construction activities associated with the Single-Circuit and Double-Circuit Options would be similar in type but slightly larger in magnitude when compared to the Approved Project because of the additional disturbance associated with trenching, access roads, tower removal, and the expansion of the Mira Loma Substation. However, on a project level, impacts associated with the introduction and spread of noxious and invasive weeds would be similar in magnitude to those described for the Approved Project. In addition, most of the alignment consists of disturbed or landscaped areas. The risk of spreading weeds in these areas is low. However, the ROW abuts natural lands on the western terminus of the alignment and the establishment or spread of weeds in these areas would be considered significant absent mitigation. Consistent with the Final EIR, implementation of existing Mitigation Measures B-1a (*Provide restoration/ compensation for impacts to native vegetation communities*) and B-3a (*Prepare and implement a Weed Control Plan*) for the Single-Circuit and Double-Circuit Options alignment would reduce the potential for the introduction and spread of weeds in this area. Therefore impacts from the spread of weeds for the Single-Circuit and Double-Circuit Options would remain less than significant. No additional mitigation is required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects associated with noxious and invasive weeds.

Construction Impacts to Common Wildlife

The Final EIR (Section 3.4, Impacts B-4 and B-6 beginning at pages 3.4-149 and 3.4-157 respectively) identified a number of impacts to wildlife that could occur during construction of the Approved Project, including direct injury or mortality; temporary displacement from work areas; disturbance from noise, lighting, and human activity; loss of foraging habitat; and other direct and indirect effects. Impacts to common wildlife were determined to be significant, but reduced to a less-than-significant level with the implementation of mitigation. These measures included pre-construction clearance surveys; reduced vehicle speeds on unpaved access roads; worker environmental education; restoration of temporary impacts; compensation for permanent impacts; and control of weeds, erosion, and dust.

Construction of the Single-Circuit and Double-Circuit Options would include the removal of the new towers constructed for the Approved Project and the placement of the underground ductbank and two transition stations. Construction of the ductbank would require clearing and grading of the ROW to support trenching for installation of the ductbank. Horizontal directional drilling would be used at some locations to cross drainages, roads, or other features. Access roads, staging areas, and two approximately 3-acre transition stations would also be required.

Construction impacts to common wildlife would be similar to those described in the Final EIR, and could include direct impacts such as mortality from trampling or crushing; increased noise levels due to heavy

equipment and helicopter use; light impacts from construction during low-light periods; increased vehicular and human presence along existing access roads and riparian areas; displacement due to habitat modifications, including vegetation removal; alterations of existing soil conditions; fugitive dust; and increased erosion and sediment transport. Indirect effects to wildlife as a result of the Single-Circuit and Double-Circuit Options could include the introduction of non-native, invasive plant species; alterations to existing hydrological conditions; and exposure to contaminants.

Construction of the Single-Circuit and Double-Circuit Options would require a localized increase in the amount of ground disturbance compared with the Approved Project in order to support the placement of the ductbank in the ROW. These impacts would be greater in magnitude for the Single-Circuit and Double-Circuit Options. However, the Single-Circuit and Double-Circuit Options alignment is located primarily within disturbed and developed habitats in the existing utility corridor. Most of the wildlife expected to be impacted by construction in the alignment are common, wide-ranging urban adapted species. The effects to common species from the underground options would be minimized through the implementation of Approved Project mitigation measures designed to educate workers of the presence and sensitivity of wildlife that may occur in or near the Project area; pre-construction surveys; reducing the effect of fugitive dust on adjacent areas through dust control and reduced vehicle speeds; the restoration of habitat at the conclusion of construction; and the control of invasive weeds. The implementation of erosion control measures would also reduce the potential off-site transport of sediment to both aquatic and upland habitats.

Applicable adopted measures include Approved Project APM BIO-1 which requires SCE to conduct pre-construction clearance surveys for wildlife and Mitigation Measure B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), Mitigation Measure B-1b (*Implement a Worker Environmental Awareness Program*), Mitigation Measure B-2 (*Implement RCA Treatment Plan*), Mitigation Measure B-3a (*Prepare and implement a Weed Control Plan*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), and Mitigation Measure AQ-1a (*Dust Control*). Consistent with the Final EIR, construction impacts of the Single-Circuit and Double-Circuit Options would be reduced to less than significant with the implementation of mitigation measures and no additional mitigation would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to wildlife.

Construction Impacts to Nesting Birds and Raptors

The Final EIR (Section 3.4, Impact B-5 beginning at page 3.4-155) described impacts to nesting birds and raptors from vegetation removal and other construction-related activities that may occur during the breeding season. Impacts could include disruption of breeding activities, nest failure, accidental destruction of well hidden nests, and general disturbance from noise, human presence, dust, and lighting. Impacts to nesting birds from the Approved Project was determined to be less than significant with the implementation of mitigation measures including restoration of temporary impacts, worker environmental training, pre-construction surveys and monitoring for breeding birds, minimization of dust, and weed control.

The Single-Circuit and Double-Circuit Options alignment supports habitat for a variety of nesting birds. Although most of the vegetation that is present in the ROW consists of disturbed or landscaped vegetation, the area is expected to support a number of common, urban-associated species that are fairly tolerant of human activity. For example, at the eastern end of the alignment next to a car wash, a pair of killdeer with a chick was observed. However, where the ROW supports more natural vegetation, such as the riparian woodland that occurs at the Western Hills Country Club, rarer species such as

Cooper's hawk and the listed least Bell's vireo were detected. A number of raptor nests were also documented along the underground alignment during surveys conducted in preparation for the Final EIR, and nesting least Bell's vireo and other birds have been recorded in the riparian habitats at the Western Hills Country Club and southeast of the intersection of Peyton Drive and Eucalyptus Avenue. Nonnative woodlands, grasslands, coastal sage scrub, riparian woodlands, and oak woodlands occur at various locations along the alignment and all of these habitats likely support a suite of nesting common and special-status birds and raptors during the nesting season.

As described in the Final EIR, direct impacts to nesting birds or raptors could include the removal or disturbance of vegetation that supports nesting birds, increased noise levels from heavy equipment and helicopter operations (if helicopters are required for the removal of existing towers), increased human presence, and exposure to fugitive dust. Indirect impacts could include the degradation of habitat due to the further establishment of noxious weeds and a disruption of breeding or foraging activity due to human presence. The removal of vegetation and grading during the breeding season would likely result in the displacement of breeding birds and the abandonment of active nests. Breeding birds and other wildlife may temporarily or permanently leave their territories to avoid construction activities, which could lead to reduced reproductive success and increased mortality. However, construction-related impacts to nesting birds from the implementation of the Single-Circuit and Double-Circuit Options would be similar to the impacts described for the Approved Project. Although the Single-Circuit and Double-Circuit Options would require more intense construction activity for a longer period of time within the 3.5-mile alignment, due to the largely disturbed area proposed for construction, impacts of the Single-Circuit and Double-Circuit Options alternative would not be substantially greater than those described for the Approved Project.

Nonetheless many species of birds found within or near the Single-Circuit and Double-Circuit Options project area are protected under the federal Migratory Bird Treaty Act. Nesting birds are also protected under the California Fish and Game Code (Fish and Game Code Sections 3503, 3503.5.). All construction and operations/maintenance activities that may affect these species would be considered significant absent mitigation.

To reduce effects of the Single-Circuit and Double-Circuit Options on nesting birds SCE shall implement the mitigation measures adopted for the Approved Project. These include Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-3a (*Prepare and implement a Weed Control Plan*), B-5 (*Conduct pre-construction surveys and monitoring for breeding birds*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*) which require preconstruction sweeps for nesting birds during the breeding season, establishment of disturbance-free buffers around active nests, restoration and compensation for impacts to habitat, worker environmental training, weed control, and fugitive dust control. Consistent with the conclusions adopted in the Final EIR, implementation of these mitigation measures would reduce impacts of the Single-Circuit and Double-Circuit Options on nesting birds to less than significant and no additional mitigation would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to nesting birds.

BIO2 Would the project have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed or critical habitat for these species?

Threatened and Endangered Plants

The Final EIR (Section 3.4, Impact B-7 beginning at page 3.4-159) identified six listed plants that could potentially occur in portions of the Segment 8A alignment: Braunton's milk-vetch, Nevin's barberry,

slender-horned spineflower, Brand's phacelia, San Fernando Valley spineflower, and thread-leaved brodiaea. However, no natural occurrences of any listed species have been found, although multiple surveys have been conducted in the area, including reconnaissance surveys in April, 2012, discussed above. If present, impacts to listed plants could include direct loss of plants, loss of habitat, impacts from fugitive dust and erosion, and impacts from the introduction and spread of nonnative and invasive weeds. Potential impacts to listed plants from the Approved Project were found to be less than significant with the implementation of mitigation. The potential for State or federally listed plant species to occur on the Single-Circuit and Double-Circuit Options alignment is low. Most of the habitat in this area consists of landscaped, disturbed, or ruderal areas. In addition, these areas contain a large weed component. Surveys in support of the Approved Project have not detected any State or federally listed plant species during multiple years of surveys. However, should they occur, impacts to listed plants from implementation of the Single-Circuit and Double-Circuit Options would be similar to those described for the Approved Project in the Final EIR. Consistent with the Final EIR, implementation of Approved Project Mitigation Measures AQ-1a (*Implement Construction Fugitive Dust Control Plan*), B-1a (*Provide restoration/ compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-3a (*Prepare and implement a Weed Control Plan*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), B-7 (*Conduct preconstruction surveys for State and federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants and avoid any located occurrences of listed plants*), and B-23 (*Preserve off-site habitat/management of existing populations of special-status plants*) would reduce the impacts of the Single-Circuit and Double-Circuit Options on listed plants to less than significant, and additional mitigation is not required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to listed plants.

Threatened and Endangered Wildlife

The Final EIR (Section 3.4, Impacts B-8 through B-22 beginning at page 3.4-167) disclosed that habitat in and near the Approved Project area has the potential to support a variety of State and federally listed wildlife species. These included thirteen State or federally listed species or species proposed for listing:

- California red-legged frog
- Mountain yellow-legged frog
- Arroyo toad
- Desert tortoise
- Santa Ana sucker
- Unarmored threespine stickleback
- California condor
- Southwestern willow flycatcher
- Least Bell's vireo
- Yellow-billed cuckoo
- Coastal California gnatcatcher
- Swainson's hawk
- Mohave ground squirrel

Ground-disturbing activity from the Approved Project, including tower pad preparation and construction, grading of new access roads, tower removal, and use or improvement of existing access roads has the potential to disturb listed wildlife species. In addition, helicopter construction would generate noise, vibration, dust, and air turbulence. Impacts to these species from the Approved Project were determined to be significant, but were reduced to less-than-significant levels with the implementation of mitigation measures identified in the Final EIR.

Of the thirteen listed wildlife species addressed in the Final EIR, only the least Bell's vireo and southwestern willow flycatcher are known to occur in the Single-Circuit and Double-Circuit Options

alignment. Two additional species, coastal California gnatcatcher and Swainson's hawk, could occasionally fly through the area but are not expected to occur as resident or nesting species. The Single-Circuit and Double-Circuit Options alignment does not support nesting habitat for Swainson's hawk, and the region is outside of the known breeding range for this species. Swainson's hawks are not expected to forage in the Single-Circuit and Double-Circuit Options alignment, as habitats are disturbed and in close proximity to development. This species has been observed flying over more natural areas of Segment 8A west of the Single-Circuit and Double-Circuit Options alignment, and has also been recorded foraging in agricultural areas to the east of the project area. Coastal sage scrub in the Single-Circuit and Double-Circuit Options alignment is highly fragmented and degraded, and is not likely to support coastal California gnatcatcher. This species is concentrated in areas west of the alignment. Numerous surveys have been conducted for the Approved Project EIR (protocol surveys conducted in August 2007 through January 2008 and in April through June 2009) and during the Approved Project construction monitoring period (2010 through 2012), and it has not been identified in or near the Single-Circuit and Double-Circuit Options portion of Segment 8A. All surveys have been conducted according to USFWS protocol, and were appropriately timed to detect California gnatcatchers should they be present. There is no suitable habitat in the Single-Circuit and Double-Circuit Options alignment for any of the other listed wildlife species potentially affected by the Approved Project.

Least Bell's vireo, a federally and State-listed species, has been recorded nesting in the ROW in the isolated riparian habitat located at the Western Hills Country Club. This species has also been documented just north of the ROW near the intersection of Peyton Drive and Eucalyptus Avenue. Construction activities may result in the loss of least Bell's vireo habitat due to installation of permanent structures and roads and disturbance from construction activities. Although not documented breeding in or near the Single-Circuit and Double-Circuit Options area, migrant willow flycatchers (undetermined subspecies) have also been observed at these locations. Impacts to listed riparian birds would be of the same type but potentially of greater magnitude than those described in the Final EIR, depending on whether these areas would be trenched or largely avoided through the use of horizontal directional drilling (HDD). Trenching would result in more noise, habitat loss, and general disturbance, but these impact mechanisms would remain consistent with the types of construction-related disturbances considered in the analysis conducted for the Approved Project in the Final EIR. HDD technology would likely reduce the direct loss of vegetation but can still result in increased levels of noise and human intrusion required when tracking the drill head. Consistent with the Final EIR, impacts to listed birds in the Single-Circuit and Double-Circuit Options alignment would be reduced to a less-than-significant level through the implementation of Approved Project Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-3a (*Prepare and implement a Weed Control Plan*), B-5 (*Conduct pre-construction surveys and monitoring for breeding birds*), B-15 (*Conduct protocol or focused surveys for listed riparian birds and avoid occupied habitat*), B-16 (*Conduct protocol or focused surveys for coastal California gnatcatcher and implement avoidance measures*), B-17 (*Preserve off-site habitat and/or habitat restoration for the coastal California gnatcatcher*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*). These measures require surveys for listed, special-status, and common birds prior to construction in the breeding season; establishment of disturbance-free buffers around active nests; monitoring of nests to ensure breeding birds are not disturbed by construction activities; compensation for permanent impacts to habitat and restoration of temporary impacts; worker environmental training; weed control; and erosion and dust control. No additional mitigation would be required. Implementation of the Single-Circuit or Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to listed birds.

Avian Electrocution and Collisions

The Final EIR (Section 3.4, Impacts B-20 and B-21 beginning at page 3.4-205) assessed the potential for the Approved Project to result in injury or mortality of birds and possibly bats through collisions with the transmission towers and conductors, as well as the potential for large aerially perching bird species to be electrocuted on the transmission lines. These impacts were determined to be less than significant because the transmission line would be built to Avian Power Line interaction Committee (APLIC) recommendations for reducing risk of avian collisions and electrocution. Although birds, including special-status species, may be subject to electrocution and/or collision with the Approved Project structures, with APLIC standards incorporated into the Approved Project design these impacts were considered to be less than significant. The Single-Circuit and Double-Circuit Options would further reduce the Approved Project's potential to result in electrocution or collision because the 3.5-mile underground portion of the transmission line would no longer pose a risk to birds or bats, and impacts would be incrementally reduced. The Approved Project with the Single-Circuit and Double-Circuit Options would still present a risk of electrocution and collision along the remaining above-ground portion of the Project (including the eastern and western transition stations), but this impact would remain less than significant as determined in the Final EIR. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to birds or bats.

BIO3 Would the project have a substantial adverse effect, either directly or through habitat modifications on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, FS, or FWS?

Special-status Plants

At least seventy candidate, FS Sensitive, or special-status plant species have the potential to occur in areas of suitable habitat in and adjacent to the Approved Project area. Direct and indirect impacts to special-status plants were identified in the Final EIR (Section 3.4, Impact B-23), and include direct loss of plants, loss of habitat, impacts from fugitive dust and erosion, and impacts from the introduction and spread of nonnative and invasive weeds. Impacts to special-status plants from implementation of the Approved Project were found to be less than significant with the implementation of mitigation.

Nine special-status plants have the potential to occur in or near the Single-Circuit and Double-Circuit Options alignment (see Table A.3.3-2). Direct and indirect impacts to special-status plants, should they occur, would be of the same type as impacts described for the Approved Project in the Final EIR. However, because of the requirement for trenching it may not be possible to avoid impacts by shifting the tower location, as was possible for the Approved Project. Direct impacts to special-status plant species could occur from construction activities that remove vegetation, grade soils, or cause sedimentation, including tower removal, clearing staging and transition station areas, trenching, and the construction, grading, and widening of new and existing access roads. Indirect impacts could include the disruption of native seed banks through soil alterations, the accumulation of fugitive dust, compaction of soils, increased erosion and sediment transport, and the colonization of non-native, invasive plant species. Operational impacts could include trampling or crushing due to public use of the ROW, increased erosion, and the spread and colonization of noxious weeds.

Special-status plants have not been identified in this portion of Segment 8 during multiple years of surveys, both for the preparation of the EIR and during pre-construction surveys for the Approved Project (ICF, 2010a and 2012; AMEC, 2009a). Impacts to special-status plants, if present, would be reduced through implementation of Approved Project mitigation measures such as pre-construction surveys for special-status plants, compensation for impacts to 10 percent or more of a population of a

non-listed special-status plant, general habitat compensation for permanent impacts to vegetation and restoration of temporary impacts, worker environmental training, weed control measures, and fugitive dust and erosion control measures. Consistent with the Final EIR, implementation of Approved Project Mitigation Measures AQ-1a (*Implement Construction Fugitive Dust Control Plan*), B-1a (*Provide restoration/ compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-3a (*Prepare and implement a Weed Control Plan*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), B-7 (*Conduct preconstruction surveys for State and federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants and avoid any located occurrences of listed plants*), and B-23 (*Preserve off-site habitat/management of existing populations of special-status plants*) would reduce the impacts of the Single-Circuit and Double-Circuit Options on special-status plants to less than significant, and additional mitigation is not required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to special-status plants.

Special-status Wildlife

A number of special-status species have been identified in or near the Approved Project area at various locations in the Final EIR (Section 3.4, Impact B-24 through B-27). While these species are more concentrated in natural, open space areas of the alignment, several special-status species are known from or have the potential to occur in the Single-Circuit and Double-Circuit Options portion of Segment 8 (see Table A.3.3-2). These species may be subject to disturbance by construction and operation of the Single-Circuit and Double-Circuit Options. For all of the species discussed below, impacts of the Approved Project were found to be less than significant with the implementation of mitigation.

Non-listed, special-status birds observed at the riparian habitats within the Single-Circuit and Double-Circuit Options project area include a nesting Cooper's hawk, yellow warbler, and yellow-breasted chat. Impacts to special-status riparian birds would be the same as described above for listed riparian birds, and the same mitigation measures would be required to reduce impacts to less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to special-status birds.

Burrowing owls, although not documented in the Single-Circuit and Double-Circuit Options alignment, may occur in areas of ruderal and California annual grasslands. A number of potential owl burrows (mainly ground squirrel burrows) were documented along the Single-Circuit and Double-Circuit Options portion of Segment 8 during both focused (2007, 2009, 2010) and pre-construction (2010) surveys conducted for the Approved Project, but owls have not been identified in the Single-Circuit and Double-Circuit Options alignment to date. Burrowing owls were identified in Segment 8 both in the more open and natural habitats within the Puente-Chino Hills west of the Single-Circuit and Double-Circuit Options alignment as well as within agricultural areas located east of the alignment. The Single-Circuit and Double-Circuit Options alignment itself, while supporting numerous small mammal burrows that could be used by owls, is not expected to support many owls (if any) due to its location within a highly urbanized area, extensive use of the ROW by domestic dogs and cats, the fragmented nature of the habitats along most of the ROW. In addition, burrowing owls have not been identified in this alignment during numerous surveys (AMEC, 2009b; ICF, 2010b, 2010c, 2010d, 2011b, 2011c). Nonetheless, impacts to burrowing owls, should they occur along the underground alignment, would be similar in type but larger in magnitude than those described in the Final EIR. Direct impacts to burrowing owls as a result of construction activities could include the crushing of burrows, removal or disturbance of vegetation, increased noise levels from heavy equipment and helicopter operations (if required for the removal of

the new towers), increased human presence, and exposure to fugitive dust. Construction during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Indirect impacts could include the loss of habitat due to the colonization of noxious weeds and a disruption of breeding activity due to facilitated use of new or improved spur and access roads by the public. Operational impacts include increased human presence from maintenance personnel that could flush or otherwise disturb burrowing owls.

If present, these impacts would be consistent with the analysis conducted for the Approved Project in the Final EIR because on a Project-wide level, they would not constitute a substantial increase in magnitude. Consistent with the Final EIR, impacts to burrowing owls in the Single-Circuit and Double-Circuit Options alignment would be reduced to a less-than-significant level through the implementation of Approved Project Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-3a (*Prepare and implement a Weed Control Plan*), B-29 (*Implement CDFG protocol for burrowing owls*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*). These measures require surveys for burrowing owls prior to construction; establishment of disturbance-free buffers around active burrows; compensation for permanent impacts to habitat and restoration of temporary impacts; worker environmental training; weed control; and dust control. No additional mitigation would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to burrowing owls.

Special-status herpetofauna (reptiles and amphibians; see Table A.3.3-2) could occur in a variety of habitats along the Single-Circuit and Double-Circuit Options alignment, particularly in riparian habitats and open space areas in the western portion of the route. However, as described above for burrowing owls, the highly disturbed and degraded nature of the habitats along the alignment, coupled with the fragmented nature of the habitats and the extensive edge effects experienced in the ROW, likely limits the presence and distribution of special-status reptiles and amphibians. As described in the Final EIR (Section 3.4, Impact B-27), direct impacts to special-status herpetofauna include mechanical crushing or road kill during construction, human trampling, loss of breeding sites due to water quality degradation or vegetation removal and soil disturbance, fugitive dust, and loss of foraging habitat. Indirect impacts include degradation of water quality through siltation caused by vehicles using wet ford stream crossings (potentially at the western edge of the Western Hills Country Club); removal of vegetation; and grading tower pads, staging areas, helicopter pads, roads, and pulling sites. Other indirect effects include compaction of soils and introduction of exotic plant species. Operational impacts include risk of mortality by vehicles and disturbance on access roads due to increased use by the public and maintenance personnel. Operational impacts also include removal and trimming of vegetation during maintenance activities. These impacts would remain consistent with the analysis conducted for the Approved Project in the Final EIR because on a Project-wide level, they would not constitute a substantial increase in magnitude. Consistent with the Final EIR, impacts to special-status herpetofauna in the Single-Circuit and Double-Circuit Options alignment would be reduced to a less-than-significant level through the implementation of Approved Project Mitigation Measures. These include Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), Mitigation Measure B-1b (*Implement a Worker Environmental Awareness Program*), Mitigation Measure B-3a (*Prepare and implement a Weed Control Plan*), Mitigation Measure B-12 (*Implement avoidance and minimization measures for fish and aquatic organisms*), Mitigation Measure B-24 (*Conduct focused presence/absence surveys for southwestern pond turtle and implement monitoring, avoidance, and minimization measures*), Mitigation Measure B-25 (*Conduct focused surveys for two-striped garter snakes and south coast garter snakes and implement monitoring, avoidance, and minimization measures*), Mitigation Measure B-26 (*Conduct focused surveys for coast range newts and implement*

monitoring, avoidance, and minimization measures), Mitigation Measure B-27 (*Monitoring, avoidance, and minimization measures for special-status terrestrial herpetofauna*), Mitigation Measure H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), Mitigation Measure H-1b (*Dry weather construction*), and Mitigation Measure AQ-1a (*Implement Construction Fugitive Dust Control Plan*). These measures require surveys for special-status herpetofauna prior to construction; relocation of animals out of the work area; compensation for permanent impacts to habitat and restoration of temporary impacts; worker environmental training; weed control; no work during wet weather; and dust and erosion control. No additional mitigation would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to special-status herpetofauna.

While not recorded in the Single-Circuit and Double-Circuit Options alignment, American badger, San Diego pocket mouse, Southern grasshopper mouse, and San Diego black-tailed jackrabbit are all California Species of Special Concern that have the potential to occur along portions of the Single-Circuit and Double-Circuit Options alignment. As described above for burrowing owls and special-status herpetofauna, habitats along the ROW are degraded and fragmented and are used extensively by domestic dogs and cats that prey on small mammals. Therefore, these species are not expected to be widely distributed within this portion of Segment 8; and are most likely to occur in other areas outside of the Single-Circuit and Double-Circuit Options alignment. Should they occur, impacts to these species would be similar in type but slightly greater in magnitude as those disclosed in the Final EIR. However, these impacts would remain consistent with the analysis conducted for the Approved Project in the Final EIR because on a Project-wide level, they would not constitute a substantial increase in magnitude. Consistent with the Final EIR, impacts to badgers and other small mammals in the Single-Circuit and Double-Circuit Options alignment would be reduced to a less-than-significant level through the implementation of Approved Project Mitigation Measure B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), Mitigation Measure B-1b (*Implement a Worker Environmental Awareness Program*), Mitigation Measure B-2 (*Implement RCA Treatment Plan*), Mitigation Measure B-3a (*Prepare and implement a Weed Control Plan*), B-38 (*Conduct focused surveys for American badgers and passively relocate during the non-breeding season*), and Mitigation Measure AQ-1a (*Implement Construction Fugitive Dust Control Plan*). No additional mitigation measures would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to small mammals.

A number of potential San Diego desert woodrat middens were recorded along the Single-Circuit and Double-Circuit Options alignment. Impacts to woodrats would be similar as described above for special-status herpetofauna. As described in the Final EIR, the primary mechanism for reducing impacts to this species would be through the identification of nests, avoidance where possible, or through the passive relocation of the animals prior to ground disturbance. Consistent with the Final EIR, to reduce effects of the Single-Circuit and Double-Circuit Options SCE shall implement Mitigation Measure B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), Mitigation Measure B-1b (*Implement a Worker Environmental Awareness Program*), Mitigation Measure B-3a (*Prepare and implement a Weed Control Plan*), Mitigation Measure B-36 (*Conduct focused surveys for San Diego desert woodrats and passively relocate*), and Mitigation Measure AQ-1a (*Implement Construction Fugitive Dust Control Plan*). With implementation of these measures, impacts to San Diego desert woodrats from the Single-Circuit and Double-Circuit Options would remain less than significant as determined for the Approved Project. Implementation of the Single-Circuit and Double-Circuit Options

would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to San Diego desert woodrats.

Several special-status bat species have the potential to occur in the Single-Circuit and Double-Circuit Options alignment (see Table A.3.3-2). Although no bats have been recorded within the alignment, potential roosting habitat was mapped a several locations (primarily consisting of large trees with sloughing bark or crevices as well as palm trees). Impacts to bats would be the same as described in the Final EIR (Impact B-33 beginning at page 3.4-234). Consistent with the Final EIR, implementation of Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-2 (*Implement RCA Treatment Plan*), B-3a (*Prepare and implement a Weed Control Plan*), AQ-1a (*Implement Construction Fugitive Dust Control Plan*), B-33a (*Maternity colony or hibernaculum surveys for roosting bats*), B-33b (*Provision of substitute roosting bat habitat*), and B-33c (*Exclude bats prior to demolition of roosts*) would reduce impacts of the Single-Circuit and Double-Circuit Options on bats to less than significant and no additional mitigation is required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to special-status bats.

BIO4 Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Drainages that likely fall under State and federal jurisdiction occur within and near the Single-Circuit and Double-Circuit Options alignment (see Figure A.3.3-1). These features are primarily limited to channelized, concrete-lined ditches or degraded natural drainages that convey runoff from the neighboring developments. As described in the Final EIR, as required by law SCE would comply with the regulations regarding conducting Project activities in water bodies under the jurisdiction of the State and federal government. As such SCE would obtain required permits pursuant to Section 401 and 404 of the CWA and the State Porter-Cologne Act and California Fish and Game Code 1602. In accordance with the Clean Water Act, there would be no net loss of wetlands from the implementation of the Single-Circuit and Double-Circuit Options. As such, SCE would mitigate permanent and temporary impacts at a minimum 1:1 ratio for riparian vegetation (Mitigation Measure B-1a). Mitigation would include restoration, enhancement, and/or compensation, as appropriate. As required for the Approved Project, SCE would implement Mitigation Measures B-1a (*Provide restoration/compensation for impacts to native vegetation communities*), B-1b (*Implement a Worker Environmental Awareness Program*), B-2 (*Implement RCA Treatment Plan*), B-3a (*Prepare and implement a Weed Control Plan*), H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), B-12 (*Implement avoidance and minimization measures for fish and aquatic organisms*), and AQ-1a (*Implement Construction Fugitive Dust Control Plan*). These measures would ensure that impacts from erosion and sedimentation that could occur during tower removal, trenching, or road construction upslope of a jurisdictional waterway would be minimized, and would also ensure that SCE obtain all appropriate permits. Where avoidance of impacts is not feasible, SCE shall mitigate through the restoration, enhancement, and/or preservation of existing wetlands in accordance with the Final EIR. Consistent with the Final EIR, implementation of these mitigation measures would reduce impacts of the Single-Circuit and Double-Circuit Options on State and/or federally protected wetlands to less than significant and no additional mitigation would be required. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects to wetland habitats.

BIO5 Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

As described on pages 3.4-247 to 3.4-248 of the Final EIR, the Approved Project would not substantially interfere with the movement of any native resident or migratory fish, reptile, or amphibian species. The Single-Circuit and Double-Circuit Options do not support habitat for native fish species, and aquatic reptiles and amphibians, should they occur, would be limited to the riparian habitat at the Western Hills Country Club. This area likely does not support suitable habitat year-round; sufficient water to support these species is likely highly variable across the seasons. Therefore, the Single-Circuit and Double-Circuit Options would not substantially interfere with the movement of any native resident or migratory fish, reptile, or amphibian species.

Interference with Wildlife Movement and Corridors

As described in the Final EIR (Section 3.4, Impacts B-40 through B-42 beginning at page 3.4-249), ground-disturbing activity could interfere with terrestrial wildlife movement during construction, but this disturbance would be localized and temporary. Implementation of mitigation that requires worker training such as Mitigation Measure B-1b (Implement a Worker Environmental Awareness Program) would ensure impacts of the Single-Circuit and Double-Circuit Options remain less than significant, as determined for the Approved Project.

Once constructed, the Single-Circuit and Double-Circuit Options would not present a barrier to movement as above-ground facilities would be widely spaced. Although determined to be a less-than-significant impact, the Final EIR noted that the overhead lines of the Approved Project could interfere with bird and bat flights. No known concentrated movement or migration corridors are known from the project area. Nonetheless, the placement of the transmission line underground would slightly decrease the Approved Project's potential to interfere with avian and bat movements. Considered on a Project-wide level, impacts to wildlife movement and migration corridors from implementation of the Single-Circuit and Double-Circuit Options would remain less than significant and no mitigation is required.

Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects associated with interference with wildlife movement.

Interference with Wildlife Nursery Sites

No known wildlife nursery sites occur in the Single-Circuit and Double-Circuit Options alignment. Potential impacts to nesting birds and roosting bats, and mitigation measures to reduce or avoid those impacts, are described above. With implementation of mitigation for nesting birds and roosting bats, impacts would remain less than significant as described in the Final EIR. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects associated with interference with wildlife nursery sites.

Corona Noise

The Final EIR described corona noise produced by the transmission lines and noted that it could potentially impact wildlife, although its effects on wildlife are poorly understood. Because most areas along the Approved Project already contained transmission lines, wildlife were expected to be habituated to the noise and impacts were determined to be less than significant and did not warrant mitigation. The Single-Circuit and Double-Circuit Options would place the transmission lines

underground through the 3.5-mile portion of the alignment through Chino Hills, and therefore would eliminate corona noise in this location. However, because the remainder of the project would still be above-ground, corona noise would continue to occur along the rest of the project and impacts would remain less than significant as determined in the Final EIR. Implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects from corona noise.

BIO6 Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances?

Local and regional policy documents were reviewed for consistency with the Approved Project in the Final EIR, and the Approved Project was found to be consistent with these plans and policies. As the Single-Circuit and Double-Circuit Options would be similar in nature to the Approved Project (transmission line construction and operation), they would also be consistent with these plans and policies. Therefore, as determined in the Final EIR, no impact would occur, and the implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects.

BIO7 Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan?

The only habitat conservation plan applicable to the Approved Project is the West Mojave Plan Habitat Conservation Plan, which is pending but not yet approved on non-federal lands. If approved, it would only apply to lands in the Northern Region of the Approved Project, but the Approved Project was found to be consistent with this pending plan. There are no adopted Habitat Conservation Plans, Natural Communities Conservation Plans, or other approved local, regional, or State habitat conservation plans applicable to the Single-Circuit and Double-Circuit Options alignment. Therefore, as determined in the Final EIR, no impacts would occur, and the implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant effects or a substantial increase in the severity of previously identified significant effects.

Mitigation Measures for Impacts to Biological Resources

No new mitigation measures would be required for the Single-Circuit and Double-Circuit Options. The following measures required for the Approved Project would mitigate impacts to biological resources from the Single-Circuit and Double-Circuit Options. The full text of these measures can be found in the Final EIR.

B-1a Provide restoration/compensation for impacts to native vegetation communities.

B-1b Implement a Worker Environmental Awareness Program.

B-3a Prepare and implement a Weed Control Plan.

B-5 Conduct pre-construction surveys and monitoring for breeding birds.

B-7 Conduct preconstruction surveys for State and federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants and avoid any located occurrences of listed plants.

B-8b Conduct biological monitoring.

B-12 Implement avoidance and minimization measures for Santa Ana sucker and other aquatic organisms.

B-15 Conduct protocol or focused surveys for listed riparian birds and avoid occupied habitat.

B-16 Conduct protocol or focused surveys for coastal California gnatcatcher and implement avoidance measures.

B-17 Preserve off-site habitat and/or habitat restoration for the coastal California gnatcatcher.

B-23 Preserve off-site habitat/management of existing populations of special-status plants.

B-24 Conduct focused presence/absence surveys for southwestern pond turtle and implement monitoring, avoidance, and minimization measures.

B-25 Conduct focused surveys for two-striped garter snakes and south coast garter snakes and implement monitoring, avoidance, and minimization measures.

B-26 Conduct focused surveys for coast range newts and implement monitoring, avoidance, and minimization measures.

B-27 Monitoring, avoidance, and minimization measures for special-status terrestrial herpetofauna.

B-29 Implement CDFG protocol for burrowing owls.

B-33a Maternity colony or hibernaculum surveys for roosting bats.

B-33b Provision of substitute roosting bat habitat.

B-33c Exclude bats prior to demolition of roosts.

B-36 Conduct focused surveys for San Diego desert woodrats and passively relocate.

B-38 Conduct focused surveys for American badgers and passively relocate during the non-breeding season.

AQ-1a Implement Construction Fugitive Dust Control Plan.

H-1a Implement an Erosion Control Plan and demonstrate compliance with water quality permits.

H-1b Dry weather construction.

A.3.4 Cultural Resources

CULTURAL RESOURCES Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
CR1	Cause an adverse effect on a historic property or Traditional Cultural Property as defined by federal guidelines? (Note 1)	☐	☒
CR2	Cause a substantial adverse change in the characteristics of a cultural resource included in a local register of historical resources?	☐	☒
CR3	Uncover, expose, and/or damage Native American human remains?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

Note: (1) The ANF, USACE, and CPUC agreed that the federal guidelines shall apply to all aspects of the Project and shall supersede State criteria for historical significance. To be eligible for the National Register of Historic Places (NRHP), a resource must meet one or more of the criteria of significance (36 CFR 60.4) and retain integrity; such resources must be managed in compliance with the Advisory Council's regulations implementing Section 106 of the National Historic Preservation Act (NHPA), found at 36 CFR 800. State CEQA Guidelines §15064.5 also requires consideration of unique archaeological sites.

A.3.4.1 Setting

The cultural resources regional setting of the Single-Circuit and Double-Circuit Options is identical to that of the Approved Project in the Chino and Chino Hills area. The setting, which includes a detailed description of both the prehistoric and historical cultural setting, is described in Section 3.5.2.1. of the Final EIR.

Cultural Resources

Archival research and pedestrian surveys from the Final EIR (CPUC, 2009) conducted by Pacific Legacy (2007, 2010a, 2010b) and augmented by Applied Earthworks, Inc. (2009) identified one cultural resource within the Right of Way (ROW) for the Single-Circuit and Double-Circuit Options. The resource (P-36-021494) is an isolated prehistoric flake. An isolate is not eligible for listing on the California Register of Historical Resources (CRHR) and, therefore, P-36-021494 is not a historical resource.

Applicable Regulations

There are several applicable federal, State, and local laws and regulations guiding the preservation and management of cultural resources. These are discussed in detail in Section 3.5.3 of the Final EIR. There have been no new regulations or changes to these regulations since the approval of the Final EIR.

A.3.4.2 Environmental Impacts and Mitigation Measures

CR1 Would the project cause an adverse effect on a historic property or Traditional Cultural Property as defined by federal regulations?

As described in Section 3.5 (Cultural Resources) of the Final EIR, impacts include ground-disturbing activities that have the potential to disturb known cultural resources. These activities include tower site preparation and construction, grading of new access or spur roads, reconductoring, tower removal, transportation, storage, and maintenance of construction equipment and supplies, staging area and material yard preparation and use, and use or improvement of existing access roads. The Final EIR (Section 3.5, Page 3.5-36) concludes that impacts to historic resources, specifically properties eligible for inclusion in the NRHP, would be reduced to a less-than-significant level with implementation of avoidance and protection mitigation measures.

Since the construction of the Single-Circuit and Double-Circuit Options would include trenching and ground disturbance, the potential exists for archaeological resources to be discovered during construction. The direct and indirect impacts of construction activities on archaeological resources associated with the Single-Circuit and Double-Circuit Options, as well as subsequent mitigation measures, are substantially similar to those presented in the Final EIR. While the increase in ground disturbance increases the chance of encountering archaeological resources, the mitigation measures included in the Final EIR, identified below, would be equally as effective in mitigating impacts, i.e. their efficacy is not affected by the amount of disturbance. Therefore, although the Single-Circuit and Double-Circuit Options would involve more trenching activity, the same mitigation measures would apply, and the severity of the impact would not change due to the increase in ground disturbance, as the implementation of mitigation is required to identify resources during disturbance. The following mitigation measures from the Final EIR would reduce impacts to less-than-significant levels with the amount of ground disturbance contemplated by the Single-Circuit and Double-Circuit Options:

- C-1a (*Development and Execution of a Programmatic Agreement*)
- C-1b (*Inventory cultural resources in the APE*)
- C-1c (*Avoid and protect resources*)
- C-1d (*Evaluate the significance of cultural resources that cannot be avoided*)
- C-1e (*Develop and implement Historic Properties/Historical Resources Treatment Plan*)
- C-1f (*Conduct data recovery excavation or other actions to reduce adverse effects*)
- C-1g (*Conduct cultural resources monitoring*)
- C-1h (*Workers Environmental Awareness Program*)
- C-1i (*Protect and monitor NRHP-eligible properties*)

Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact to cultural resources nor increase the severity of any significant impacts identified in the Final EIR.

CR2 Would the project cause a substantial adverse change in the characteristics of a cultural resource included in a local register of historical resources?

As described in Section 3.5 (Cultural Resources) of the Final EIR, impacts include ground-disturbing activities that have the potential to disturb known cultural resources. These activities include tower site preparation and construction, grading of new access or spur roads, reconductoring, tower removal, transportation, storage, and maintenance of construction equipment and supplies, staging area and material yard preparation and use, and use or improvement of existing access roads. As discussed in the Final EIR, background research and local policy screening revealed that no properties listed on local registers of historical resources would be affected by the Approved Project, such that no impact would occur to resources included in a local register. Construction and operation of the Single-Circuit and Double-Circuit Options would occur within the same area as the Approved Project; therefore, no new impact would occur.

CR3 Could the project uncover, expose, and/or damage Native American human remains?

As described in Section 3.5 (Cultural Resources) of the Final EIR, the potential exists for Native American human remains or sacred features, in the form of primary inhumations, cremations, ceremonial bundles, or mourning ceremony features, to be inadvertently uncovered, exposed, and/or otherwise damaged during construction. However, the Final EIR (Section 3.5, Page 3.5-42) concludes that impacts to Native American human remains would be less than significant with implementation of Mitigation Measure C-2 (*Treatment of human remains discovered during construction*). The construction of the Single-Circuit and Double-Circuit Options has similar potential for encountering human remains because the construction activities and methods proposed for the Single-Circuit and Double-Circuit Options would also involve excavation and other ground disturbance. Although the Single-Circuit and Double-Circuit Options would involve more ground-disturbing activity in comparison to the Approved Project, this activity would not result in a substantial increase in impacts because the implementation of Mitigation Measure C-2 does not depend on the amount of disturbance (rather the identification of human remains during disturbance) and would be applied in the same manner should human remains be discovered. Implementation of Mitigation Measure C-2 as presented in the Final EIR would reduce impacts to a less-than-significant level. With this mitigation, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor increase the severity of any significant impacts identified in the Final EIR.

A.3.5 Environmental Contamination and Hazards

ENVIRONMENTAL CONTAMINATION AND HAZARDS Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
ECH1	Result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR Part 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24?	☐	☒
ECH2	Result in mobilization of contaminants currently existing in the soil, creating potential pathways of exposure to humans or other sensitive receptors. Contaminants may include leaking munitions and explosives of concern (MEC) and the ordnance itself?	☐	☒
ECH3	Cause contamination of soils or groundwater within the Project area during operation of the Project, resulting in exposure of workers and/or the public to contaminated hazardous materials at levels in excess of those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR Part 1910?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.5.1 Setting

The environmental setting for the Single-Circuit and Double-Circuit Options is identical to that of the Approved Project, presented as Alternative 2 in Section 3.6.2 of the Final EIR (CPUC, 2009). The underground construction for the Single-Circuit and Double-Circuit Options would occur within an existing SCE transmission line ROW that passes through primarily vacant rural land and residential areas; commercial land use occurs along Pipeline Avenue near the eastern transition station. Modifications will be required at three existing substations: Mira Loma Substation (City of Ontario), Vincent Substation (near City of Action), and Serrano Substation (City of Orange). These substations are located in areas of residential, recreational, and commercial development.

The Single-Circuit and Double-Circuit Options referred to in this analysis include all project components, including substation modifications, overhead transmission modifications, and the construction of transition stations.

Applicable Regulations

There are several applicable federal, State, and local laws to hazards and hazardous materials. These are discussed in detail in Section 3.6.3 of the Final EIR (CPUC, 2009). There have been no new regulations or changes to these regulations since the approval of the Final EIR.

A.3.5.2 Environmental Impacts and Mitigation Measures

ECH1 Would the project result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR Part 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24?

Impacts related to soil contamination during construction of the Approved Project were found to be less than significant in the Final EIR (Section 3.6, Pages 3.6-37 - 3.6-39). During construction of the Single-Circuit and Double-Circuit Options, similar to the Approved Project, hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used and stored in construction staging yards. Gasoline, diesel fuel, oil, hydraulic fluid, lubricants paints, solvents, adhesives, and

cleaning chemicals used in construction activities, equipment, and vehicles can be released during construction as a result of accidents, and/or leaking equipment or vehicles. Spills and leaks of hazardous materials during construction activities could result in soil or groundwater contamination.

An accidental release of a potentially harmful or hazardous material into a dry stream bed or wash would not directly impact water quality. Similarly, an accidental spill or release of hazardous materials outside of a stream channel would not directly impact water quality. However, accidental spills or releases of hazardous materials into a dry stream bed or wash, or on the banks of a stream channel, could indirectly impact water quality through runoff during a subsequent storm event, when the spilled material would be washed into a stream or waterbody. Accidental spills or releases of hazardous materials could indirectly impact groundwater through leaching. Hazardous material spills that are left on the ground surface for an extended period or that are followed quickly by a storm event could leach through the soil and into the groundwater, thereby resulting in the degradation of groundwater quality.

SCE's APM HAZ-2 (*Hazardous Materials and Waste Handling Management Program*) from the Final EIR (Section 3.6, page 3.6-35) would also be implemented for the Single-Circuit and Double-Circuit Options in order to reduce the likelihood of spills through implementation of several measures including: proper storage and handling procedures; standard hazardous waste transport; Project-specific training for personnel; procedures for fueling and maintaining construction equipment and helicopters; and an emergency response program to ensure quick and safe cleanup of accidental spills (SCE, 2007). The measures provided in APM HAZ-2 would reduce the potential for spills to occur and provide for the prompt response and safe cleanup of any release or spill of hazardous materials. No mitigation measures were recommended in the Final EIR.

Through the implementation of APM HAZ-2, there would be no new significant impacts or substantial increases in impacts related to soil contamination from the Single-Circuit and Double-Circuit Options as compared to the Approved Project. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

ECH2 Would the project result in mobilization of contaminants currently existing in the soil, creating potential pathways of exposure to humans or other sensitive receptors. Contaminants may include leaking munitions and explosives of concern (MEC) and the ordnance itself?

As discussed in the Final EIR (Section 3.6, Page 3.6-39 – 3.6-43), many areas of the Approved Project, such as the undeveloped lands along Segments 4, 5, 6, 10, and 11, are unlikely to have existing soil or groundwater contamination; however, in developed urban areas along Segments 7, 8, and 11 (south of S11 MP26), environmental contamination may be present. SCE has committed to implementation of Phase I Environmental Site Assessments (ESAs) under APM HAZ-1 (*Phase I Environmental Site Assessment*), which would further investigate the potential for existing contamination at each new or expanded substation location and along newly acquired ROWs. However, contamination may also be present along existing transmission line ROWs due to the nature of the industrial/commercial setting of adjacent sites. Unanticipated soil and/or groundwater contamination could exist along the project alignment due to illegal dumping or other historical activities (e.g., mining). In addition, potential areas of concern, including leaking underground storage tanks (LUST) and industrial sites with on-going investigations and clean-up, landfills, oil fields, and abandoned oil and natural gas wells, would need to be evaluated for possible further assessment. Implementation of Mitigation Measures E-2a (*Perform Phase I ESAs along existing transmission line ROWs*), E-3a (*Determine if landfill gases are present*) E-2b (*Perform Phase II Investigations for potentially contaminated sites*), E-3b (*Implement personnel safety and monitoring measures*), and E-3c (*Verify location and status of abandoned oil and natural gas wells*)

would reduce this impact to a less-than-significant level. Additionally, implementation of Mitigation Measures E-4a (*Appoint individuals with correct training for sampling, data review, and regulatory coordination*) and E-4b (*Document compliance with APM HAZ-3*) would ensure that laboratory data is properly interpreted by trained personnel regarding contamination levels for reporting to the appropriate regulatory agency and documentation that these measures are properly implemented, which would reduce the impact from encountering unknown contamination to less than significant. With implementation of SCE's APMs and mitigation measures, impacts associated with the Single-Circuit and Double-Circuit Options would also be reduced to a less-than-significant level, such that the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

ECH3 Would the project cause contamination of soils or groundwater within the Project area during operation of the Project, resulting in exposure of workers and/or the public to contaminated hazardous materials at levels in excess of those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR Part 1910?

As discussed in the Final EIR (Section 3.6, Page 3.6-43), soil or groundwater contamination would result from accidental spill or release of hazardous materials at the substations during facility operation or along the transmission line during maintenance operations. SCE's APM HAZ-5 (*Spill Prevention, Countermeasure, and Control Plan, and Hazardous Materials Business Plan*) would be implemented to reduce impacts to a less-than-significant level. The Single-Circuit and Double-Circuit Options would place transmission line facilities underground. Qualified electrical workers must routinely inspect the vaults for the Single-Circuit and Double-Circuit Options to ensure the structural integrity of the vaults as well as the cable and splice supports. In addition to routine checks and maintenance to the vaults, SCE's qualified electrical workers would also check on the condition of the sheath voltage limiters, grounding connection, splices, terminations, corrosion of the metallic supports and restraints and condition of the cable. Operation and maintenance activities (see Section A.1.11 for a discussion of operation and maintenance activities for the underground options) related to undergrounding facilities would be similar to overhead facilities and would not increase the use of hazardous materials or the likelihood of soil or groundwater contamination from accidental spills during operations. If a repair is necessary, the likelihood of soil or groundwater contamination would be greater as underground repair activities would be closer to the presence of groundwater. However, with the implementation of APM HAZ-5 mentioned above, impacts would be less than significant. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.6 Geology, Soils, and Paleontology

GEOLOGY, SOILS, AND PALEONTOLOGY Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
GEO1	Result in disturbance or otherwise adverse effects on unique geologic features or geologic features of unusual scientific value for study or interpretation?	☐	☒
GEO2	Result in known mineral and/or energy resources being rendered inaccessible?	☐	☒
GEO3	Result in triggering or acceleration of geologic processes, such as landslides, substantial soil erosion, or loss of topsoil during construction?	☐	☒
GEO4	Expose people or structures to potential risk of loss or injury where there is high potential for earthquake-related ground rupture in the vicinity of major fault crossings?	☐	☒
GEO5	Expose people or structures to potential risk of loss or injury where there is high potential for seismically induced ground shaking, landslides, liquefaction, settlement, lateral spreading, and/or surface cracking?	☐	☒
GEO6	Expose people or structures to potential risk of loss or injury where corrosive soils or other unsuitable soils are present?	☐	☒
GEO7	Result in damage to Project structures where there is potential for future slope failures on existing unstable slopes?	☐	☒
GEO8	Result in the destruction of scientifically important paleontological resources?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.6.1 Setting

The geology, soils, and seismicity setting for the Approved Project with the Single-Circuit and Double-Circuit Options would be identical to the Approved Project. The Single-Circuit and Double-Circuit Options referred to in this analysis include all project components, including substation modifications, overhead transmission modifications, and the construction of transition stations.

See Section 3.7.2.2 of the Final EIR (CPUC, 2009) for detailed discussions of geologic setting along the varying segments of the Approved Project alignment. A general description of geology, soils, and seismic conditions along the Approved Project is presented below, with detailed discussion of the local conditions along the route of the Single-Circuit and Double-Circuit Options, which corresponds to Segment 8A from approximately MP 21.9 to approximately MP 25.4.

Geology

The TRTP is located within the Mojave Desert and Transverse Ranges and geomorphic provinces of southern California, which is characterized by a complex series of mountain ranges and valleys with dominant east-west trends. The TRTP traverses six distinct geographic areas, the Antelope Valley, the Leona Valley (the San Andreas Rift Zone), the Liebre-Sierra Pelona Mountains, the San Gabriel Mountains, San Gabriel Valley, the Montebello and Puente and Chino Hills, and the Chino Valley. The Antelope Valley consists of approximately 1200 square miles of elevated desert terrain, located along the western edge of the Mojave Desert. The Leona Valley is a small, northwest-southeast trending longitudinal valley formed by movement on multiple overlapping strands of the San Andreas Fault in the San Andreas Rift Zone, and in the Project area is bounded on the northeast by the Portal Hills and on the southwest by foothills of the Sierra Pelona. The Liebre-Sierra Pelona Mountains are a small northwest-southeast trending mountain range within the central Transverse Ranges. The San Gabriel Mountains are comprised of Precambrian to Cretaceous igneous and metamorphic rock. The San Gabriel and Chino

Valleys are deep structural basins predominantly filled with semi- to unconsolidated Quaternary alluvial deposits. The Montebello Hills consist predominantly of Pliocene marine and nonmarine sedimentary rock, whereas the Puente and Chino Hills are composed of older (Miocene and Pliocene) marine sedimentary rock units.

The route of the Single-Circuit and Double-Circuit Options primarily traverses moderate to steep slopes of the Chino Hills. The eastern end of the Single-Circuit and Double-Circuit Options crosses alluvial deposits of the Chino Basin. Geologic units crossed by these segments of the Project are younger alluvium, older alluvium, and sandstone, shale, siltstone, and conglomerate of the Puente Formation. Figure 3.7-8 (Regional Geologic Map C) of the Final EIR (CPUC, 2009) presents the geology along the Single-Circuit and Double-Circuit Options where it corresponds to Segment 8A.

Slope Stability

Important factors that affect the slope stability of an area include the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium. The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris flows.

Most of the Approved Project route does not cross any areas mapped as identified existing landslides; however, where the alignments cross mountainous and hilly areas they are partially underlain by landslide prone metamorphic (Pelona Schist and weathered gneiss), sheared igneous and metamorphic (along the San Gabriel fault), and sedimentary (Puente Formation) rocks that are susceptible to slope failures in areas with moderate to steep slopes and unfavorable bedding dip directions. Mapped landslides are present along and near the Project alignments where they cross these units. Unmapped landslides and areas of localized slope instability may also be encountered in the hills and mountains traversed by the Approved Project route. Areas underlain by granitic rocks are generally only susceptible to surficial soil creep, or to rockfall in over-steepened areas.

Numerous small to large landslides are mapped in the hillside areas of the Chino Hills where the Puente Formation is distinctly prone to landslides and slope failure. Several mapped landslides underlie the Single-Circuit and Double-Circuit Options alignment from between approximately MP 22 to 23.5 (CPUC, 2009); landslides are mapped at MP 22.0 – 22.1, MP 23.1 – 23.2, and MP 23.3 – 23.5 (GTC, 2009). Unmapped landslides and areas of slope instability may also be encountered along the Single-Circuit and Double-Circuit Options alignment where it traverses hills underlain by the landslide prone Puente Formation.

Soils

The soils along the proposed route reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. The route crosses undeveloped desert and forest land, agricultural and rural residential land, light industrial and commercial areas, and suburban residential areas. The Approved Project route crosses areas included in multiple National Resource Conservation Service (NRCS) soil surveys including the Kern County, Southeastern Part – CA670; Antelope Valley Area – CA675; the Angeles National Forest Area – CA776; and San Bernardino County, Southwestern Part, California - CA677. The STATSGO databases for California (1994 and 2006) were reviewed for areas not covered by more detailed surveys. More than 50 soil units/types are located along the Project alignment, and a summary of the major soil units traversed by the Approved Project is presented in Table 2-1 of the Geology, Soils, and Paleontology Specialist Report (GTC, 2009).

Potential soil erosion hazards vary depending on the use, conditions, and textures of the soils. For the purposes of the Single-Circuit and Double-Circuit Options, erosion hazard potential was extracted from the Hazard of Erosion and Suitability for Roads tables from the National Resource Conservation Service (NRCS) GIS SSURGO soil databases and the GIS STATSGO databases for California (in areas not covered by more detailed surveys). Two types of potential erosion hazards are presented in this document: hazard of erosion on roads and trails[1] and hazard of erosion off-road and off-trail[2]. These two types of hazards represent the potential for soil erosion along the route of the Single-Circuit and Double-Circuit Options from ground disturbance due to construction.

The properties of soil which influence erosion by rainfall and runoff are ones that affect the infiltration capacity of a soil, and those which affect the resistance of a soil to detachment and being carried away by falling or flowing water. Additionally, soils on steeper slopes would be more susceptible to erosion due to the effects of increased surface flow (runoff) on slopes where there is little time for water to infiltrate before runoff occurs.

Soils containing high percentages of fine sands and silt and that are low in density, are generally the most erodible. These soil types generally coincide with soils such as young alluvium and other surficial deposits, which likely occur in areas throughout the Single-Circuit and Double-Circuit Options area. As the clay and organic matter content of these soils increases, the potential for erosion decreases. Clays act as a binder to soil particles, thus reducing the potential for erosion. However, while clays have a tendency to resist erosion, once eroded, they are easily transported by water. Clean, well-drained, and well-graded gravels and gravel-sand mixtures are usually the least erodible soils. Soils with high infiltration rates and permeabilities reduce the amount of runoff.

Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Linear extensibility is the method used by the NRCS to determine the shrink-swell potential of soils. Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. The volume change is reported as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed in areas with expansive soils.

The Single-Circuit and Double-Circuit Options are located within the San Bernardino County, Southwestern Part soil survey (NRCS, 1980). Three soil units are mapped along the Single-Circuit and

[1] Erosion hazard ratings for "Roads and Trails" apply to the potential for erosion on unsurfaced roads and trails and are ranked as follows: Slight – little or no erosion is likely; Moderate – some erosion is likely and simple erosion-control measures are needed; Severe – significant erosion is expected and major erosion control measures may be needed.

[2] "Off-Road and Off-Trail" erosion hazard ratings apply to the potential for sheet or rill erosion in areas where 50 to 75 percent of the areas has been exposed by ground disturbance (i.e., grading) and are ranked as follows: Slight – erosion is unlikely under ordinary climate conditions; Moderate – some erosion is likely and erosion-control measures may be needed; Severe – erosion is very likely and erosion-control measures are advised; and Very severe – significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion control measures would generally be costly and impractical.

Double-Circuit Options, listed in order of approximate first occurrence along the alignment from west to east: Fontana, Chualar, and Sorrento. Each soil unit/association may occur numerous times along the the Single-Circuit and Double-Circuit Options alignment. Locations of these soils along the corresponding section of Segment 8A is presented in Appendix A of the Geology, Soils, and Paleontology Specialist Report (GTC, 2009). The Fontana, Chualar, and Sorrento soils are primarily formed on hills or sloping terrain in material weathered from the sedimentary bedrock of the Chino Hills. Erosion hazard for these soils for both "off-road and off-trail" and "roads and trails" range from slight to severe. The shrink/swell (expansive) potential of the soils varies from low to moderate.

Faulting and Seismicity

The seismicity of southern California is dominated by the intersection of the north-northwest trending San Andreas Fault system and the east-west trending Transverse Ranges fault system. Both systems are responding to strain produced by the relative motions of the Pacific and North American Tectonic Plates. This strain is relieved by right-lateral strike-slip faulting on the San Andreas and related faults, left-lateral strike slip on the Garlock fault, and by vertical, reverse-slip or left-lateral strike-slip displacement on faults in the Transverse Ranges. The effects of this deformation include mountain building, basin development, deformation of Quaternary marine terraces, widespread regional uplift, and generation of earthquakes. Both the Transverse Ranges and northern Los Angeles County area are characterized by numerous geologically young faults. These faults can be classified as historically active, active, potentially active, or inactive, based on the following criteria (CGS, 1999):

- Faults that have generated earthquakes accompanied by surface rupture during historic time (approximately the last 200 years) and faults that exhibit aseismic fault creep are defined as Historically Active.
- Faults that show geologic evidence of movement within Holocene time (approximately the last 11,000 years) are defined as Active.
- Faults that show geologic evidence of movement during the Quaternary time (approximately the last 1.6 million years) are defined as Potentially Active.
- Faults that show direct geologic evidence of inactivity during all of Quaternary time or longer are classified as Inactive.

Although it is difficult to quantify the probability that an earthquake will occur on a specific fault, this classification is based on the assumption that if a fault has moved during the Holocene epoch, it is likely to produce earthquakes in the future. Blind thrust faults do not intersect the ground surface, and thus they are not classified as active or potentially active in the same manner as faults that are present at the earth's surface. Blind thrust faults are seismogenic structures with no surface expression and thus the activity classification of these faults is predominantly based on geologic data from deep oil wells, geophysical profiles, historic earthquakes, and microseismic activity along the fault.

The Single-Circuit and Double-Circuit Options area is subject to ground shaking associated with earthquakes on faults of the San Andreas, Garlock, and Transverse Ranges fault systems. Active faults of the San Andreas system are predominantly strike-slip faults accommodating translational movement. Active reverse or thrust faults in the Transverse Ranges include blind thrust faults responsible for the 1987 Whittier Narrows Earthquake and 1994 Northridge Earthquake, and the range-front faults responsible for uplift of the Santa Susana and San Gabriel Mountains. The Transverse Ranges fault system consists primarily of blind, reverse, and thrust faults accommodating tectonic compressional stresses in the region. Blind faults have no surface expression and have been located using subsurface geologic and geophysical methods. This combination of translational and compressional stresses gives

rise to diffuse seismicity across the region. Locations of active and potentially active faults (representing possible seismic sources) are presented in Figure 3.7-1 (Regional Active Faults and Historic Earthquakes) of the Final EIR (CPUC, 2009). Active and potentially active faults within 50 miles of the Project alignments that are significant potential seismic sources are presented in Table 3.7-2 of the Final EIR (CPUC, 2009).

Since periodic earthquakes accompanied by surface displacement can be expected to continue in the study area through the lifetime of the Approved Project, the effects of strong groundshaking and fault rupture are of primary concern to safe operation of the proposed transmission line and associated facilities.

Fault Rupture. The mapped active trace of the Chino fault and its associated Alquist-Priolo zone are located just less than a mile south of the Single-Circuit and Double-Circuit Options alignment, with the fault projecting northwest towards the eastern end of the Single-Circuit and Double-Circuit Options alignment, corresponding approximately to S8A MP 25.4-24.5, at the proposed underground to overhead transition station location. The location of the Chino Fault relevant to Segment 8A is shown in Figure 3.7-9 (Segment 8A Fault Crossings) of the TRTP Final EIR (CPUC, 2009). The Chino Fault is a primarily right-lateral strike-slip fault at the northern end of the Elsinore fault system and extends approximately 13 miles (21 kilometers) from Chino Hills to Corona. A magnitude M4.1 earthquake in February, 1989, had an epicenter located southwest of the surface trace of the fault, consistent with fault plane solutions for the Chino Fault (SCEC, 2001). This fault is an active Alquist-Priolo zoned fault, and is considered capable of producing earthquakes of up to magnitude M 6.7.

Strong Groundshaking

An earthquake is classified by the amount of energy released, which traditionally has been quantified using the Richter scale. Recently, seismologists have begun using a Moment Magnitude (M) scale because it provides a more accurate measurement of the size of major and great earthquakes. For earthquakes of less than M 7.0, the Moment and Richter Magnitude scales are nearly identical. For earthquake magnitudes greater than M 7.0, readings on the Moment Magnitude scale are slightly greater than a corresponding Richter Magnitude.

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between the Single-Circuit and Double-Circuit Options area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the Single-Circuit and Double-Circuit Options area. Earthquakes occurring on faults closest to the Single-Circuit and Double-Circuit Options area would most likely generate the largest ground motion.

The intensity of earthquake induced ground motions can be described using peak site accelerations, represented as a fraction of the acceleration of gravity (g). GIS data based on the USGS National Seismic Hazard Maps was used to estimate peak ground accelerations (PGAs) along the Project alignment (USGS, 2009). The maps used depict peak ground accelerations with a 2 percent probability of exceedance in 50 years, this corresponds to a return interval of 2,475 years for a maximum considered earthquake. Peak ground acceleration is the maximum acceleration experienced by a particle on the Earth's surface during the course of an earthquake, and the units of acceleration are most commonly measured in terms of fractions of g, the acceleration due to gravity (980 cm/sec2). Peak ground accelerations along the TRTP alignment range from 0.5 to 1.6 g (USGS, 2009), with the PGA ranging from approximately 0.77 to 0.85 g along the route of the Single-Circuit and Double-Circuit Options.

The Single-Circuit and Double-Circuit Options are located in close proximity to numerous active faults of the southern Transverse Ranges and San Andreas Fault system, with the Whittier and Chino faults being

the closest, 4.3 miles southwest and 1 mile south of the Single-Circuit and Double-Circuit Options, respectively. Additionally, the Puente Hills Blind Thrust and the Upper Elysian Park Thrust are located west of but in close proximity to the Single-Circuit and Double-Circuit Options. These blind thrust faults are capable of producing large earthquakes and very strong groundshaking, as demonstrated by the Whittier Narrows M6.0 earthquake which occurred on the Puente Hills Blind Thrust and caused substantial damage in the Los Angeles area. Moderate to strong groundshaking should be expected from an earthquake on any of the faults in the vicinity of the Single-Circuit and Double-Circuit Options.

Liquefaction

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong groundshaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects. In addition, densification of the soil resulting in vertical settlement of the ground can also occur. In order to determine liquefaction susceptibility of a region, three major factors must be analyzed. These include: (a) the density and textural characteristics of the alluvial sediments; (b) the intensity and duration of groundshaking; and (c) the depth to groundwater. Older consolidated sedimentary deposits, fine or coarse grained deposits, and/or well-drained sedimentary materials are less susceptible to liquefaction.

Portions of the Single-Circuit and Double-Circuit Options ROW would meet the criteria for liquefaction in areas underlain by young alluvial deposits. However, the potential for liquefaction along most of the Single-Circuit and Double-Circuit Options in the Chino Hills is low to nonexistent due to the presence of non-liquefiable bedrock, Puente Formation, underlying the alignment in this area. Potentially liquefiable sediments are located where the Single-Circuit and Double-Circuit Options cross young alluvial and creek deposits of intervening drainages and the alluvial sediments located near the eastern end of the Single-Circuit and Double-Circuit Options near the confluence of Little Chino Creek and an unnamed creek from the northwest; areas within shallow alluvial deposits along creeks and drainages with shallow seasonal and localized perched groundwater may have the most potential for liquefaction susceptibility. The alluvial fan deposits that are located along the eastern end of the Single-Circuit and Double-Circuit Options, at the edge of the Chino Hills/Chino Basin are mapped as having high liquefaction susceptibility (City of Chino Hills, 1994).

Seismic Slope Instability

Other forms of seismically-induced ground failures which may affect the Single-Circuit and Double-Circuit Options include ground cracking, shattered ridgetops, and seismically-induced landslides. Landslides triggered by earthquakes have been a considerable cause of earthquake damage; in southern California large earthquakes such as the 1971 San Fernando and 1994 Northridge earthquakes triggered landslides that were responsible for destroying or damaging numerous structures, blocking major transportation corridors, and damaging life-line infrastructure. Areas that are most susceptible to earthquake-induced landslides are steep slopes in poorly cemented or highly fractured rocks, areas underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits. Areas that are underlain by landslide prone Puente Formation along the Single-Circuit and Double-Circuit Options, with moderate to steep slopes, and previously existing landslides, both mapped and unmapped, are particularly susceptible to this type of ground failure. Shattered ridgetop features consist of fractures, fissures, and minor slumps that are concentrated on narrow ridgelines. Studies suggest that

amplification of ground motion at ridge tops is frequency dependent, potentially leading to differential motion at the top of the ridge, which produces cracks and fissures at the crest.

Paleontological Resources

The paleontologic setting for the Single-Circuit and Double-Circuit Options would be identical to the Approved Project; therefore, refer to Section 3.7.2.2 of the Final EIR (CPUC, 2009) for detailed discussions of paleontologic setting along the segments of the Approved Project alignment.

The Single-Circuit and Double-Circuit Options alignment is located along and corresponds to a section of Segment 8A that is underlain by Holocene Younger Alluvium, Pleistocene Older Alluvium, and Miocene Puente Formation (GTC, 2009). The Puente Formation, which underlies a large portion of the Single-Circuit and Double-Circuit Options, contains marine microfossils (benthic foraminifers); fossilized fish scales; the fossilized remains of extinct species of marine algae, clams, crabs, fishes, sharks, and mammals (whales, desmostylids); the fossilized wood and leaves of land plants; fossilized coral remains; fragments of mollusk shells and marine vertebrate bones; and shark teeth and fish scales in the Chino Hills (PEAI, 2007). The TRTP 4-11 Paleontological Resources Management Plan (PRMP) prepared for SCE by Gust and Scott in 2009 indicates numerous fossil finds in the Puente Formation within one mile of the Approved Project, which include sabertooth salmon, fish, and a new species of dolphin found in the Puente Formation in the city of Chino Hills (SCE, 2012). The Puente Formation is considered to have a very high potential for yielding significant paleontological resources and requires full-time monitoring per requirements of the Paleontologic Resource Management Plan (PRMP) (SCE, 2012).

Older Alluvium mantles the lower slopes of Chino Hills and is considered to be of undetermined (but no more than moderate) paleontological importance locally (PEAI, 2007). However, the older alluvial sediments in this area have yielded mammoth, horse, camel, bison, sloth and other Pleistocene terrestrial vertebrate fossils. The eastern portion of the Single-Circuit and Double-Circuit Options alignment passes through areas (along drainages in the Chino Hills and on the western edge of the Chino Valley) surficially mapped as Younger or Holocene alluvium which is generally not considered paleo-sensitive. However, the younger alluvium is likely to shallowly overlie the Puente Formation and/or Quaternary Older alluvium, so the excavations in this area should be monitored per the PRMP. Holocene age Younger Alluvium and is considered to be of undetermined (but possibly high) importance locally.

Paleontological monitors observed a portion of fossilized large mammal rib (likely whale) near a planned structure site located at Canon Lane and Eucalyptus Avenue during a survey of the alignment of Segment 8 in the Chino Hills area. During the work on aboveground structures for Segment 8 in the Chino Hills area, numerous examples of fish scales, fish bones (non-significant; unidentifiable) have also been located at structure sites along this alignment; however, no significant fossils have been discovered in these areas (SCE, 2012).

Applicable Regulations

There are several applicable federal, State, and local laws and regulations related to geology and soils. These are discussed in detail in Section 3.7.3 of the Final EIR. There have been no new regulations or changes to these regulations since the approval of the Final EIR.

A.3.6.2 Environmental Impacts and Mitigation Measures

GEO1 Would the project result in disturbance or otherwise adverse effects on unique geologic features or geologic features of unusual scientific value for study or interpretation?

As discussed in the Final EIR (Section 3.7, page 3.7-62), no unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the Approved Project. Therefore, the Final EIR concluded that no impact would occur. The Single-Circuit and Double-Circuit Options would occur within the existing ROW for the Approved Project; therefore, no new geologic features would be affected by the Single-Circuit and Double-Circuit Options. Since the underground options would be located within the same ROW that was evaluated in the Final EIR, and no unique geologic features or geologic features of unusual scientific value occur along the ROW, there would be no difference between undergrounding the transmission line as opposed to aboveground installation in regards to impacts associated with unique geologic features or geologic features of unusual scientific value. Additionally, modifications associated with existing substations, as part of the underground options, would not encounter or disturb unique geologic features or geologic features of unusual scientific value for study or interpretation. As a result, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO2 Would the project result in known mineral and/or energy resources being rendered inaccessible?

As discussed in the Final EIR, while known sand and gravel resources, limestone and dolomite, and stone quarries are located within the vicinity of the Approved Project, only Segment 7 is located within or adjacent to areas of active production of these resources. Given the distance of these sites from the ROW and the ability of mining-related equipment and vehicles to cross the ROW if necessary, construction and operation of the TRTP transmission line would not interfere with future access to any mineral resources. Therefore, the Final EIR (Section 3.7, Page 3.7-63) concluded that no impact would occur. The Single-Circuit and Double-Circuit Options would occur within Segment 8 and no mineral and/or energy resources have been identified in this area. As a result, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO3 Would the project result in triggering or acceleration of geologic processes, such as landslides, substantial soil erosion, or loss of topsoil during construction?

As discussed in the Final EIR (Section 3.7, Page 3.7-65), Segments 5, 6, 11, and 8A traverse moderate to steep mountains and hills underlain by landslide prone sedimentary and metamorphic rocks. The alignments also cross numerous mapped landslides. Destabilization of the natural or constructed slopes could occur as a result of construction activities due to excavation and/or grading. However, impacts would be reduced to a less-than-significant level with implementation of SCE's APMs (APM GEO-2) and Mitigation Measure G-3 (*Conduct geological surveys for landslides and protect against slope instability*).

For the Single-Circuit and Double-Circuit Options, destabilization of natural or constructed slopes would occur as a result of construction activities due to excavation and/or grading operations for trenches, vaults, and transition stations. Grading operations for temporary and permanent access roads and staging and work areas could also result in slope instability. Construction of the Single-Circuit and Double-Circuit Options underground transmission line and associated facilities would trigger slope instability resulting in landslides, soil creep, or debris flows. The hill slope area underlain by landslide-prone Puente Formation along the Single-Circuit and Double-Circuit Options would also be susceptible

to seismically induced slope failures, such as landslides, in the event of a large earthquake in the area. Areas underlain by Puente Formation have a high possibility of seismic-induced ground failure in the form of landsliding or ground-cracking that would result in damage to Project structures. Implementation of Mitigation Measure G-3 (*Conduct geological surveys for landslides and protect against slope instability*) would be required to reduce impacts to a less-than-significant level. Geological surveys for landslides will allow identification of specific areas with the potential for unstable slopes, landslides, earth flows, and debris flows along the project route and in other areas of ground disturbance, such as access and spur roads and staging and work areas. The geotechnical investigations would provide information for development of excavation plans and procedures. If the results of the geotechnical survey indicate the presence of unstable slopes at or adjacent to Project structures, appropriate support and protection measures shall be designed and implemented to maintain the stability of slopes adjacent to newly graded or re-graded access and spur roads, work areas, and Project structures during and after construction, and to minimize potential for damage to Project facilities. With this mitigation, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to the triggering of landslides nor substantially increase the severity of any significant impacts identified in the Final EIR.

Impacts related to soil erosion due to construction of the Approved Project were found to be less than significant with mitigation in the Final EIR (Section 3.7, Pages 3.7-63 and 3.7-64). Soils along the route of the Single-Circuit and Double-Circuit Options have the same potential hazards of erosion for off-road/off-trail and on-road/on-trail, both ranging from slight to severe, as the corresponding section of the Approved Project. However, due to the larger amount of ground disturbance associated with the Single-Circuit and Double-Circuit Options for the underground construction, there is a higher potential for soil erosion than for the equivalent section of the Approved Project. Excavation and grading for the underground transmission line and associated vaults, transition stations, staging and work areas, access roads, spur roads, and for removal of the foundations from the existing Tubular Steel Poles (TSPs) and Lattice Steel Towers (LSTs) with the Single-Circuit and Double-Circuit Options ROW could loosen soil and trigger or accelerate erosion.

Although the underground options have a higher potential for soil erosion than the Approved Project, proper planning and compliance with permit requirements would reduce significant impacts. SCE's APMs GEO-3 (*Construction SWPPP*) and HYD-1 (*Construction SWPPP*) from the Final EIR (Table 3.7-9; CPUC, 2009) specify that SCE would implement Project-specific Construction SWPPPs as required by the Clean Water Act. The SWPPPs would include a plan that designates Best Management Practices (BMPs) to be adhered to during construction to reduce erosion that would result from construction. Mitigation Measure H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*), as described in Section 3.8.6.1 (Hydrology and Water Quality) of the Final EIR, would require that pre-construction plans be developed to identify and properly implement any necessary BMPs to control erosion and/or sedimentation, and minimize disturbances to drainages and/or riparian areas. Implementation of these measures would ensure impacts from soil erosion due to construction of the Single-Circuit and Double-Circuit Options would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to the triggering of substantial soil erosion or loss of topsoil nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO4 Would the project expose people or structures to potential risk of loss or injury where there is high potential for earthquake-related ground rupture in the vicinity of major fault crossings?

Impacts related to fault rupture along the Approved Project were found to be less than significant with mitigation in the Final EIR (Section 3.7, Page 3.7-66). The fault rupture hazards for the Single-Circuit and

Double-Circuit Options would be the same as for the Approved Project with the exception that the trend to the active Alquist-Priolo zoned Chino fault trends toward the eastern underground to overhead transition station at the end of the Single-Circuit and Double-Circuit Options. In the vicinity of the transition station, the Chino Fault is obscured by young alluvial sediment and is not mapped in this area. While the Chino Fault is not currently mapped at the proposed location for the Single-Circuit and Double-Circuit Options transition station, the trend of the mapped trace, as shown on Figure A3.6-1 (below), passes through the proposed transition station. The trend of the active Chino Fault toward the transition station potentially places the fault across or adjacent to the eastern transition station which results in a potential for damage at these facilities due to surface fault rupture. Due to the uncertainty in the location of the active Chino Fault at the proposed transition station location, the potential for fault rupture at this site cannot be ruled out and implementation of Mitigation Measures G-4 (*Avoid placement of Project structures within active fault zones*) would be required to reduce potential impacts to less than significant. Prior to final project design, SCE would perform a fault evaluation study to confirm the location of mapped traces of active and potentially active faults crossed by the underground options (including transition stations). For crossings of active faults, the project design would be planned so as not to locate project structures on the traces of active faults; and in addition, project components shall be placed as far as feasible outside the areas of mapped fault traces. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact to geology and soils nor substantially increase the severity of any significant impacts identified in the Final EIR.

Figure A.3.6-1 Chino Fault in the Area of the Single-Circuit and Double-Circuit Options

Fault Data Source: CGS 2003, GIS files of Revised Official Map of Alquist-Priolo Earthquake Fault Zones, Prado Dam Quadrangle, dated May 1, 2003.

GEO5 Would the project expose people or structures to potential risk of loss or injury where there is high potential for seismically induced ground shaking, landslides, liquefaction, settlement, lateral spreading, and/or surface cracking?

Impacts related to damage to project structures from strong seismic groundshaking along the Approved Project route were found to be less than significant with mitigation in the Final EIR (Section 3.7, Pages 3.7-67 and 3.7-68. Moderate to very strong groundshaking would be expected in the event of an earthquake on the faults near the Single-Circuit and Double-Circuit Options and from other major faults in the region, with estimated PGAs ranging from 0.77 to 0.85 g. It is likely that the Single-Circuit and Double-Circuit Options Project facilities would be subjected to at least one moderate or larger earthquake occurring close enough to produce local strong to very strong groundshaking. The underground options would be buried horizontally below the ground surface, and the affects of ground shaking on shallow buried semi-rigid concrete duct bank or flexible conduit within directionally drilled bores would be less than the unrestrained, tall above-ground tower structures of the Approved Project that can sway during seismic shaking and potentially buckle or collapse. Consequently, the Single-Circuit and Double-Circuit Options would be less susceptible to damage due to strong groundshaking than the towers and poles of the equivalent overhead section of the Approved Project. The transition points from underground to overhead would be particularly susceptible to shearing damaging in the event of strong groundshaking, as lattice steel structures would be required above-ground. Local strong to severe groundshaking with vertical and horizontal ground accelerations that could exceed standard design stresses could result in damage to Project structures. Structural damage could result in power outages, damage to nearby roads of structures, and injury or death to nearby people, a significant impact. Implementation of Mitigation Measure G-5a (*Reduce effects of groundshaking*) would be required to reduce impacts to less than significant. The design-level geotechnical investigations performed by SCE would include site-specific seismic analyses to evaluate ground accelerations for design of Project components. Based on these findings, Project structure designs would be modified/strengthened, as deemed appropriate by the Project engineer, if the anticipated seismic forces are found to be greater than standard design load stresses on Project structures. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to strong seismic groundshaking nor substantially increase the severity of any significant impacts identified in the Final EIR.

Impacts related to damage to project structures from landslides along the Approved Project were found to be less than significant with mitigation incorporated in the Final EIR. Most of the Single-Circuit and Double-Circuit Options crosses hills underlain by landslide prone Puente Formation, with several mapped landslides along the route (corresponding to Segment 8A MP 22.0 – 22.1, MP 23.1 – 23.2, and MP 23.3 – 23.5). As discussed above (GEO3), destabilization of natural or constructed slopes would occur as a result of construction activities due to excavation and/or grading operations for trenches, vaults, and transition stations. Grading operations for temporary and permanent access roads and staging and work areas would also result in slope instability. Construction of the Single-Circuit and Double-Circuit Options underground transmission line and associated facilities would trigger slope instability resulting in landslides, soil creep, or debris flows. The hillside area underlain by landslide prone Puente Formation along the Single-Circuit and Double-Circuit Options would also be susceptible to seismically induced slope failures such as landslides in the event of a large earthquake in the Project area. Seismically-induced ground failure in the form of landsliding or ground-cracking resulting in damage to Project structures and without mitigation would result in a greater impact than the Approved Project due to the greater amount of ground disturbance in the hillside areas required for these options.

Implementation of Mitigation Measure G-3 (*Conduct geological surveys for landslides and protect against slope instability*) would be required to reduce impacts to less than significant. Geological surveys for landslides will allow identification of specific areas with the potential for unstable slopes, landslides, earth flows, and debris flows along the project route and in other areas of ground disturbance, such as access and spur roads and staging and work areas. The geotechnical investigations would provide information for development of excavation plans and procedures. If the results of the geotechnical survey indicate the presence of unstable slopes at or adjacent to Project structures, appropriate support and protection measures shall be designed and implemented to maintain the stability of slopes adjacent to newly graded or re-graded access and spur roads, work areas, and Project structures during and after construction, and to minimize potential for damage to Project facilities. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to landslides nor substantially increase the severity of any significant impacts identified in the Final EIR.

Impacts related to damage to project structures from liquefaction for the Approved Project were found to be less than significant with mitigation in the Final EIR. Liquefaction potential along the Single-Circuit and Double-Circuit Options is the same as for the corresponding section of the Approved Project. The potential for damage to project structures from liquefaction would be slightly greater along the Single-Circuit and Double-Circuit Options than along the Approved Project because the underground transmission line would cross a greater amount of potentially liquefiable materials than the few towers that would be located within the same materials for the Approved Project. Strong to very strong groundshaking could result in liquefaction-related phenomena along portions of the Single-Circuit and Double-Circuit Options where it crosses young alluvial and creek deposits of intervening drainages where lenses and pockets of loose seasonally saturated sand may be present and the alluvial sediments located near the eastern end of the Single-Circuit and Double-Circuit Options that are mapped as having high liquefaction susceptibility (City of Chino Hills, 1994). This could result in damage to Project structures should a large earthquake occur during the periods when these soils are saturated, a significant impact. Although the potential for damage to Project structures from liquefaction is slightly greater with the Single-Circuit and Double-Circuit Options, because there is slightly more structure (conduit and associated structures) within the liquefiable zones than with the overhead transmission line where individual towers may be within liquefiable areas, standard engineering practices associated with the geotechnical investigations (as part of mitigation measures) would be implemented to ensure that Project structures would be properly installed to mitigate for damage from liquefaction. Implementation of Mitigation Measure G-5b (*Conduct geotechnical investigations for liquefaction*) would be required to reduce potential impacts to less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to liquefaction nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO6 Would the project expose people or structures to potential risk of loss or injury where corrosive soils or other unsuitable soils are present?

Impacts related to damage to project structures from expansive soils along the Approved Project route were found to be less than significant with mitigation in the Final EIR. Expansive soils can cause problems for structures in contact with these soils because they react to changes in moisture content by expanding or contracting. This expansion or contraction can cause differential and cyclical foundation and component movements which can damage and/or distress structures and equipment. The expansion potential for soils along the route of the Single-Circuit and Double-Circuit Options is identical to the corresponding Approved Project section; however, the underground construction of the Single-Circuit and Double-Circuit Options places slightly more project components in contact with potentially expansive surface soils. Similar to the Approved Project, some of the natural soil types identified along

the Single-Circuit and Double-Circuit Options have moderate shrink-swell potential. Implementation of Mitigation Measure G-6 (*Conduct geotechnical studies to assess soil characteristics and aid in appropriate foundation design*) would reduce impacts to a less-than-significant level. Although the Single-Circuit and Double-Circuit Options place more Project components in contact with potentially expansive soils, standard engineering practices associated with the geotechnical studies (as part of mitigation measures) would be implemented to ensure that Project structures would be properly designed and installed to mitigate for damage from expansive soils. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to corrosive or unsuitable soils nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO7 Result in damage to Project structures where there is potential for future slope failures on existing unstable slopes?

The Final EIR (Section 3.7, Page 3.7-69) concludes that slope instability, including landslides, earth flows, and debris flows, has the potential to undermine foundations, cause distortion and distress to overlying structures, and displace or destroy Project components. As discussed above (see GEO3), Segment 8A (the location of the Single-Circuit and Double-Circuit Options) traverses moderate to steep mountains and hills underlain by landslide prone sedimentary and metamorphic rocks. The alignment also crosses mapped landslides. Implementation of SCE's APMs (APM GEO-2) and Mitigation Measure G-3 (*Conduct geological surveys for landslides and protect against slope instability*) would reduce this impact to a less-than-significant level. Geological surveys for landslides will allow identification of specific areas with the potential for unstable slopes, landslides, earth flows, and debris flows along the project route and in other areas of ground disturbance, such as access and spur roads and staging and work areas. The geotechnical investigations would provide information for development of excavation plans and procedures. If the results of the geotechnical survey indicate the presence of unstable slopes at or adjacent to Project structures, appropriate support and protection measures shall be designed and implemented to maintain the stability of slopes adjacent to newly graded or re-graded access and spur roads, work areas, and Project structures during and after construction, and to minimize potential for damage to Project facilities. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact related to future slope failures nor substantially increase the severity of any significant impacts identified in the Final EIR.

GEO8 Would the project result in the destruction of scientifically important paleontological resources?

The Final EIR (Section 3.7, Pages 3.7-70) concludes that grading and excavation during construction could destroy paleontological resources; however, implementation of SCE's APMs (APM PALEO-1 through PALEO-9) would reduce this impact to a less-than-significant level. The transmission line route for the Single-Circuit and Double-Circuit Options would be the same as the Approved Project, with the exception that the line would be installed underground for approximately 3.5 miles through Chino Hills along Segment 8A from approximately MP 21.9 to approximately MP 25.4. New underground facilities would replace the aboveground facilities of the Approved Project and existing TSPs and LSTs would be removed along the route of the Single-Circuit and Double-Circuit Options. Transition stations of approximately three acres each would be required at each end of the underground segment to transfer the transmission lines from overheard to underground and vice versa, and splice and restraining vaults would be required at set intervals along the alignment. Additionally, at each transition station, installation of lattice double-circuit 500-kV dead-end structures would be required to bring the overhead transmission lines into the transition stations. The underground transmission line would be installed using a combination of trenching and directional drilling. The foundations of the existing TSPs and LSTs

along the route of the Single-Circuit and Double-Circuit Options would be removed to depths of 20 feet below ground surface or deeper as needed for trenching and tunneling activities for the Single-Circuit and Double-Circuit Options. This modified infrastructure and type of construction for the Single-Circuit and Double-Circuit Options would result in greater ground disturbance in a paleontologically sensitive area and would result in increased opportunity to destroy scientifically important paleontologic resources.

Grading activities for new access and spur roads, and excavation for tower and substation building foundations for the remainder of the Approved Project would remain the same and could encounter potentially fossil-bearing deposits throughout nearly all of the Project segments underlain by Quaternary alluvial deposits (Segments 4, 5, 7, 8, 9, 10, and 11) and Tertiary sedimentary rock in the Montebello, Puente, and Chino Hills (Segment 8). Construction activities could destroy the fossils contained in the earth materials and the opportunity to properly retrieve, study, catalog, and archive them would be lost.

The potential for grading and excavation under the Single-Circuit and Double-Circuit Options to destroy paleontological resources would be greater than it would be for the Approved Project (discussed in Section 3.7.6.1 of the Final EIR) due to the greater amount of ground disturbance. However, as with the Approved Project, SCE would implement APMs PALEO-1 through PALEO-9 which would reduce the potential to destroy scientifically important fossils and would provide for the systematic collection, analysis, and documentation of any such discoveries. SCE's APM PALEO-1 (*Retention of Paleontologist*), APM PALEO-2 (*Conduct Pre-construction survey*), and APM PALEO-3 (*Prepare and implement a Paleontological Resource Management Plan [PRMP]*) were completed prior to construction of the Approved Project to allow a certified paleontologist to plan for and supervise the pre-construction planning and field surveys. SCE's APM PALEO-4 (*Environmental training*), APM PALEO-5 (*Construction monitoring*), APM PALEO-6 (*Recovery and testing*), and APM PALEO-7 (*Prepare monthly progress reports*) would occur during construction. These activities would train construction supervisors and crews to be aware of paleontologic resources and provide procedures to follow in the event fossils are encountered during excavation. In addition, the construction-related paleontology APMs would require a paleontologic monitor, under the supervision of the Project's certified paleontologist, to monitor ground-disturbing activities on a part-time or full-time basis in areas with rock units of moderate to high sensitivity. At the conclusion of construction, SCE's APM PALEO-8 (*Analysis and prepare final Paleontologic Resource Recovery Report*) and APM PALEO-9 (*Curation*) would provide for documenting and preserving all of the paleontologic resources discovered during construction. The final report and fossil collections would be placed the museum repository identified before the start of construction in the PRMP.

These measures would reduce the potential for paleontological resources to be destroyed to a less-than-significant level by ensuring any resources encountered would be identified, documented, and preserved. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.7 Hydrology and Water Quality

HYDROLOGY AND WATER QUALITY Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
HYD1	Violate any water quality standards or waste discharge requirements, create any substantial new sources of polluted runoff, or otherwise degrade water quality?	☐	☒
HYD2	Substantially deplete groundwater supplies or interfere with groundwater discharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒
HYD3	Place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or other flood-related damage on or off site?	☐	☒
HYD4	Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems?	☐	☒
HYD5	Result in or be subject to damage from inundation by mudflow?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.7.1 Setting

Like the Approved Project, the Single-Circuit and Double-Circuit Options are located within the Santa Ana River Hydrologic Unit of the South Coast Hydrologic Region. Water quality regulation for this area is governed by the Santa Ana Regional Water Quality Control Board (RWQCB), and the area is subject to the management direction of the Water Quality Control Plan for the Santa Ana Region (Basin Plan).

As described in the Final EIR (Section 3.8.2, multiple pages describing the Northern, Central, and Southern Regions), topography in the area is variable, but is generally formed by flat or gently sloping coastal plains and valleys with areas of rolling hills. Differences in topography are responsible for large variations in temperature, humidity, precipitation, and cloud cover throughout the area, although the climate is general characterized as subtropical Mediterranean. With prevailing winds from the west and northwest, moist air from the Pacific Ocean is carried inland until it is forced upward by the mountains. The resulting storms, common from November through March, are followed by dry periods during summer months. Most precipitation occurs during just a few major storms.

As discussed in the Final EIR (Section 3.8.2, page 3.8-7), most of the Southern Region of the Approved Project area, where the Single-Circuit and Double-Circuit Options are located, is a highly developed urban landscape, with a mix of industrial, commercial, and residential land uses. Residential development is nearly continuous throughout the Greater Los Angeles Basin, and is only broken by a few preserved open spaces, such as the Chino Hills and Puente Hills.

The Single-Circuit and Double-Circuit Options involve the underground installation of approximately 3.5 miles of transmission line and associated infrastructure along Segment 8A of the Approved Project. This would include the installation of a transition station at both the west and east ends of the underground segment in order to guide the transmission line between overhead and underground alignments. As described in Section A.1 (page A.1-23), both transition stations would be approximately three acres in size. The western transition station would be mostly surrounded by open space, while the eastern transition station would be located near improvements that are close to or within the proposed ROW.

Two potential locations are under consideration for the eastern transition station, one on the east side of Pipeline Avenue, and one on the west side. The site to the west of Pipeline Avenue was analyzed in the Final EIR for the Approved Project, and would require displacement of existing businesses, whereas the site to the east of Pipeline Avenue is closer to the edge of Chino Hills city limits and would require trenching across Pipeline Avenue, but would not displace existing businesses. The hydrology and water quality settings relevant to each transition station site are consistent with the setting described for Segment 8A in the same areas. The transition stations are described below as relevant.

The Approved Project would also result in expansion and upgrades to five existing substations, including the expansion of Mira Loma Substation by approximately 4.5 acres; Mira Loma Substation is the terminus for Segment 8, which would be affected by the Single-Circuit and Double-Circuit Options. All substations affected by these actions are included in the environmental setting provided in this section and considered in the impact analysis presented in Section A.3.7.2.

Surface Waters

The western transition station for the underground segment would be located in an undeveloped area, with no existing manmade stormwater drainage features. The eastern transition station (both west and east of Pipeline Avenue) would be located in an already paved area, where pipes and gutters convey surface runoff away from the property. No named or defined drainages are located across or within any of the proposed transition site locations.

The *Tehachapi Renewable Transmission Project Hydrology and Water Quality Specialist Report* that was incorporated by reference in the Final EIR for the approved TRTP included a table which identified all surface water features traversed by the approved transmission line alignment. This table indicates that the portion of the approved TRTP that would be placed underground with implementation of the Single-Circuit and Double-Circuit Options crosses several surface water features, including tributaries to Carbon Canyon Creek, a tributary to Little Chino Creek (upstream of Prado Flood Control Basin), and Little Chino Creek (upstream of Prado Flood Control Basin). Based on field work conducted by Aspen Environmental Group in April of 2012 in support of this Initial Study, stream crossings identified in the aforementioned table are still applicable. Streams in the Single-Circuit and Double-Circuit Options area are generally dry in the summer months, but it is common for perennial flows to be present, especially in the larger streams, which are fed by the San Gabriel Mountains or urban runoff.

The most recent approved Clean Water Act Section 303(d) List of Water Quality Limited Segments is the 2006 List, which was used in support of the analysis provided in the Final EIR for the approved TRTP. Little Chino Creek and Carbon Canyon Creek are not listed as impaired on the 2006 303(d) List.

Flood Hazard Areas

The majority of the Single-Circuit and Double-Circuit Options is located outside of the Flood Hazard Area designated by the Federal Emergency Management Agency (FEMA), or an area that would be inundated by the magnitude flood associated with a storm event that has a one percent chance of occurring each year, or once every one hundred years. There is one very small, isolated Flood Hazard Area located roughly 1.5 miles west of Highway 71, along the Single-Circuit and Double-Circuit Options route. Development is permitted within and adjacent to Flood Hazard Areas provided that it complies with local floodplain management ordinances. All applicable floodplain management ordinances would be fully complied with for both the Approved Project and the Single-Circuit and Double-Circuit Options in accordance with FEMA's regulations on development in Flood Hazard Areas.

Groundwater

The easternmost portion of the Single-Circuit and Double-Circuit Options is partially underlain by the Chino Subbasin of the Upper Santa Ana Valley Groundwater Basin. As described in the Final EIR, the Chino Subbasin underlies 240 square miles of the northwestern portion of the upper Santa Ana River Watershed in San Bernardino County and portions of western Riverside and northern Los Angeles Counties. Groundwater recharge to this subbasin occurs by direct infiltration or precipitation on the subbasin floor, by infiltration of surface flow, and by underflow of ground water from adjacent basins. Depth to groundwater near the Single-Circuit and Double-Circuit Options route is approximately 75 feet or more below ground surface. Water quality in this subbasin is characterized by high levels of total dissolved solids (TDS), inorganics, radiology, nitrates, pesticides, VOCs, and perchlorate. (CPUC, 2009)

Applicable Regulations

Federal

Federal hydrology and water quality regulations presented in the Final EIR (Section 3.8.3, page 3.8-19) for the approved TRTP are applicable to the Single-Circuit and Double-Circuit Options; these regulations are comprised of the following: the Clean Water Act (Sections 404, 402, and 401), and the Wild and Scenic Rivers Act. The USDA Forest Service Land Management Plan was also addressed in the Final EIR for the approved TRTP, but is not applicable to the Single-Circuit and Double-Circuit Options. No additional federal regulations relevant to hydrology and water quality have been identified as applicable to the Single-Circuit and Double-Circuit Options.

State

Hydrology and water quality regulations are presented in the Final EIR (Section 3.8.3, page 3.8-21) and are applicable to the Single-Circuit and Double-Circuit Options, including the following: the California Fish and Game Code (Section 1602), the Porter Cologne Water Quality Control Act, and California Water Code. Each of these bodies of law are applicable to the Single-Circuit and Double-Circuit Options.

The California Water Code was amended in 2002 by the passing of Senate Bill (SB) 610 and later in 2012 by the passing of SB 267. SB 610 was passed into law on January 1, 2002, amending California law to require detailed analysis of water supply availability for certain types of large development projects. The primary purpose of SB 610 is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies, and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB 610 requires the preparation of a Water Supply Assessment (WSA) for a project that meets certain requirements, and specifies that the WSA must assess water supply availability for the project over a 20-year projection under varying climatic (drought) conditions.

Although SB 610 revised California Water Code prior to publication of the Final EIR, it was not addressed in the EIR because it was not considered applicable to that project. However, in recent years, the applicability of SB 610 to various types of development and infrastructure projects has been challenged, as the original wording of the bill was somewhat ambiguous. Therefore, the criteria which are used to determine whether a proposed project is subject to SB 610 and requires a WSA are addressed below, with regards to both the Approved Project and the Single-Circuit and Double-Circuit Options.

- *Is the project proposed residential development of more than 500 dwelling units?*

  No, neither the Approved Project nor the Single-Circuit and Double-Circuit Options are a residential development.

- *Is the project a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space?*

  No, neither the Approved Project nor the Single-Circuit and Double-Circuit Options are a shopping center or business establishment.

- *Is the project a proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space?*

  No, neither the Approved Project nor the Single-Circuit and Double-Circuit Options are a commercial office building.

- *Is the project a proposed hotel or motel, or both, having more than 500 rooms?*

  No, neither the Approved Project nor the Single-Circuit and Double-Circuit Options are a hotel or motel.

- *Is the project a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;*

  No, neither the Approved Project nor the Single-Circuit and Double-Circuit Options is an industrial plant, manufacturing plant, or industrial park. Although both projects may be considered industrial in nature, they are both linear projects, not a plant or park as specified in SB 610.

- *Would the project demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project?*

  A 500-dwelling unit project would require approximately 250 acre-feet per year (afy) of water, or 0.5 afy per unit; the use of 0.5 afy per household is a commonly accepted average (Isaac, 2008). It is important to note that a dwelling unit project is concentrated on one site, where water demand is concentrated and permanent, whereas both the Approved Project and the Single-Circuit and Double-Circuit Options are linear projects with temporary water use. Operation and maintenance of the Approved Project as well as the Single-Circuit and Double-Circuit Options are not anticipated to require a water supply. Water demand associated with both the Approved Project and the Single-Circuit and Double-Circuit Options is limited to the construction period, and characterized primarily by water needed for dust abatement during ground-disturbing activities, and for concrete manufacturing. Due to the limited and temporary characteristics of water demand associated with both the Approved Project and the Single-Circuit and Double-Circuit Options, neither project would introduce water demand of 250 afy in any given area along the project routes.

In response to uncertainty regarding what types of infrastructure projects are subject to the SB 610 requirements for a WSA, SB 267 was signed into law on October 8, 2011, further amending California's Water Law. Under SB 267, wind energy and photovoltaic projects which consume less than 75 afy of water are not subject to the requirements of SB 610, and a WSA would not be required for this type of project. SB 267 does not state that renewable energy projects which use more than 75 afy are subject to SB 610 and must prepare a WSA; rather, it clarifies that those renewable projects which use less than 75 afy are not subject to such requirements.

Neither the Approved Project nor the Single-Circuit and Double-Circuit Options are a renewable energy project described under SB 267 as exempt from SB 610. However, neither project meets the criteria used to determine whether a project is subject to SB 610. Therefore, SB 610 and SB 267 are not applicable to the Approved Project or the Single-Circuit and Double-Circuit Options, and no WSA is necessary. No additional state regulations relevant to hydrology and water quality have been identified as applicable to the Single-Circuit and Double-Circuit Options.

Local

The Single-Circuit and Double-Circuit Options are located primarily within the City of Chino Hills in the County of San Bernardino. Within San Bernardino County, surface water and groundwater quality and use are regulated by the San Bernardino County Department of Public Works (SBCDPW) in addition to the Santa Ana RWQCB. The Single-Circuit and Double-Circuit Options are located within the County's Flood Control District 1, which encompasses approximately 275 square miles of the westerly portion of the San Bernardino Valley (SBCDPW, 2007). There are six zones in total, and each zone has interests, responsibilities, or geographical divisions distinctive of that particular zone (SBCDPW, 2007).

The Santa Ana RWQCB implements the Santa Ana Region Basin Plan and regulates the sources of water quality problems which could result in the impairment of beneficial uses or degradation of water quality, including both point sources of pollution and non-point sources of pollution. These pollution sources are regulated through the issuance of National Pollution Discharge Elimination System (NPDES) permits.

A.3.7.2 Environmental Impacts and Mitigation Measures

HYD1 Would the project violate any water quality standards or waste discharge requirements, create any substantial new sources of polluted runoff, or otherwise degrade water quality?

The Final EIR (Section 3.8, pages 3.8-26 – 3.8-33, Impacts H-1 through H-3) concluded that the potential for construction to degrade water quality resulting from erosion and sedimentation or accidental release of potentially harmful or hazardous materials would be less than significant with implementation of mitigation measures. During operations, the Final EIR concluded that the potential to degrade water quality through the accidental release of potentially harmful or hazardous materials would be less than significant with application of SCE's APMs and mitigation measures, as discussed below. Construction of the Single-Circuit and Double-Circuit Options would involve a substantial amount of earth movement associated with installing transmission infrastructure underground. This disturbance would introduce potential for localized, short-term degradation of surface water quality to occur through erosion and sedimentation, particularly if precipitation event(s) occur during the active construction period. Water quality degradation could also occur if hazardous materials such as vehicle- and equipment-related fuels are accidentally spilled or leaked during the construction period, either directly into a water body, or onto the ground where it is then transported to a water body, such as through surface water runoff. The Single-Circuit and Double-Circuit Options alignment crosses several stream channels. Water quality degradation associated with erosion and sedimentation, as well as the leaking or release of hazardous materials, are more likely to occur at surface water crossings, and in areas where surface drainages are crossed by construction vehicles and equipment.

Applicant Proposed Measure (APM) HYD-1 (*Construction SWPPP*) and APM HYD-2 (*Environmental Training Program*) would be implemented as part of the Single-Circuit and Double-Circuit Options in order to ensure compliance with water quality standards and waste discharge requirements. APM HYD-1 requires implementation of a Construction SWPPP for compliance with the federal Clean Water Act, and specifies that specific best management practices (BMPs) to avoid or minimize water quality degradation are implemented. APM HYD-2 requires establishment of an environmental training program

to ensure that workers appropriately implement BMPs and mitigation measures. In addition, Mitigation Measure H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*) ensures compliance with water quality standards and waste discharge requirements by requiring that all applicable permits are provided to the CPUC at least 30 days before engaging in soil-disturbing construction/demolition activities, before entering flowing or ponded water, or before constructing a crossing at flowing or ponded water. These requirements would ensure that all permits are in place prior to construction activities, including as related to installing underground infrastructure across stream channels that intersect the route of the Single-Circuit and Double-Circuit Options. Reporting requirements associated with the USDA Forest Service which are specified in Mitigation Measure H-1a would not be required for the Single-Circuit and Double-Circuit Options, as Forest Service lands would not be affected under the Single-Circuit and Double-Circuit Options. No additional mitigation measures are required, because the APMs and Mitigation Measure H-1a would effectively ensure that no water quality standards or waste discharge requirements would be violated, and potential effects associated with polluted runoff would be less than significant.

It is possible that some amount of water quality degradation could occur during construction of the Single-Circuit and Double-Circuit Options; however, with implementation of APMs HYD-1 and HYD-2, as well as Mitigation Measure H-1a, impacts associated with violation of water quality standards or waste discharge requirements would be less than significant. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

HYD2 Would the project substantially deplete groundwater supplies or interfere with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

The Final EIR (Section 3.8, pages 3.8-34 – 3.8-35) concluded that the Approved Project construction would not cause or contribute to the depletion of groundwater supplies or interfere with groundwater recharge in the vicinity of the Approved Project; however, it is possible that construction-related excavation could encounter areas of perched groundwater, especially when drilling or when constructing during the wet season. While construction-related excavation activities may encounter perched groundwater, thus requiring dewatering activities, such activities were determined not to contribute to the depletion of groundwater supplies or interfere with groundwater recharge.

The easternmost portion of the Single-Circuit and Double-Circuit Options is partially underlain by the Chino Subbasin of the Upper Santa Ana Valley Groundwater Basin, where the depth to groundwater is approximately 75 feet or more. It is considered highly unlikely that excavation associated with the installation of underground infrastructure and facilities would occur to this depth. In addition, as noted, only a small portion of the Single-Circuit and Double-Circuit Options is underlain by a defined groundwater basin. However, it is possible that unconfined groundwater is present along the route of the Single-Circuit and Double-Circuit Options, and/or that shallow areas of perched groundwater may be encountered during excavation activities. This is most likely to occur where the alignment crosses surface water features; several small drainages are traversed by and/or adjacent to the route of the Single-Circuit and Double-Circuit Options.

Should groundwater be encountered during construction-related excavation, dewatering of the construction site would be required. APM HYD-6 (*Drilling and Construction Site Dewatering Management*) would be implemented as part of the Single-Circuit and Double-Circuit Options to ensure

that where groundwater is unexpectedly encountered, dewatering operations would occur and would include, as applicable, the use of sediment traps and sediment basins per BMP NS-2 (*Dewatering Operations*) from the California Stormwater Quality Association's (CASQA) California Stormwater BMP Handbook – Construction (CASQA, 2012). Any groundwater encountered during construction would be returned to the subsurface as a part of the dewatering process. Dewatering activities would not contribute to the depletion of groundwater supplies or the interference with groundwater recharge.

The introduction of new impervious surfaces such as concrete, and decreased permeability associated with soil compaction through vehicle and equipment use, would interfere with groundwater recharge by reducing the amount of surface area through which precipitation and surface water percolates to underground aquifers, and by reducing the rate at which such water percolates to the subsurface. The Single-Circuit and Double-Circuit Options would introduce new impervious surfaces in the form of underground concrete encasements and vaults. However, the vast majority of the Single-Circuit and Double-Circuit Options alignment is not underlain by a defined groundwater basin, and in comparison with the size of the surrounding area and nearby groundwater basins, the 3.5-mile-long alignment of the Single-Circuit and Double-Circuit Options would not substantially interfere with groundwater recharge as a result of new impervious surfaces.

Construction of the Single-Circuit and Double-Circuit Options would require a water supply for dust suppression and for concrete manufacturing. The Single-Circuit and Double-Circuit Options are not subject to SB 610 and SB 267 and no Water Supply Assessment is required. The water supply required during construction of the Single-Circuit and Double-Circuit Options would be obtained in accordance with applicable permits and regulation, and would not have the potential to substantially deplete groundwater supplies. No water supply would be required during operation of the Single-Circuit and Double-Circuit Options.

Implementation of APM HYD-6, which is included as part of the Approved Project, would ensure that impacts associated with the depletion of groundwater supplies or interference with groundwater recharge would be less than significant. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

HYD3 Would the project place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or other flood-related damage on or off site?

The Final EIR (Section 3.8, page 3.8-37) concluded that while encroachment of a Project structure into a stream channel or floodplain could result in flooding of the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent properties, implementation of mitigation measures would reduce this impact to a less-than-significant level.

Temporary alterations to existing drainage patterns on and surrounding the Single-Circuit and Double-Circuit Options alignment would occur during the construction period, due to the underground installation of transmission infrastructure and facilities, removal of existing transmission towers along the Single-Circuit and Double-Circuit Options alignment, and restoration of construction-disturbed areas. For instance, during trenching for duct bank installation, it is anticipated that soil will be stockpiled in the project area in order to be used for compacting back into the trench, to the proper grade, if it has suitable thermal properties. Any stockpiled soil would be protected against erosion and sedimentation through the implementation of standard stormwater BMPs to be included in the project's

SWPPP; however, stockpiles would also introduce site-specific drainage pattern alterations that could concentrate stormwater flows and potentially result in erosion and siltation. Impacts to habitat type and quality that would occur as a result of these activities are discussed in Section A.3 (Biological Resources).

APM HYD-1 (*Construction SWPPP*) would include BMPs to reduce or avoid impacts associated with erosion and sedimentation, including those associated with temporary drainage pattern alterations. This APM would be included as part of the project design, and would ensure that a silting basin(s) would be established, as necessary, to capture silt and other materials, which might otherwise be carried from the site by rainwater surface runoff. Although construction of the Single-Circuit and Double-Circuit Options would introduce site-specific drainage pattern alterations, the effects would be temporary and would be minimized through implementation of APM HYD-1.

As previously mentioned, several surface drainages would be traversed by the Single-Circuit and Double-Circuit Options alignment. In order to install underground infrastructure in these areas, water within the drainages would need to be temporarily diverted. BMPs included in the SWPPP required per APM HYD-1 would be implemented to avoid potential erosion- and siltation-related effects associated with diverting surface waters during construction. In addition, Mitigation Measure H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*) ensures compliance with water quality standards and waste discharge requirements by requiring that all applicable permits are provided to the CPUC at least 30 days before entering flowing or ponded water, or before constructing a crossing at flowing or ponded water; such permits are anticipated to include a Streambed Alteration Agreement for crossings of existing surface drainages. Due to the implementation of BMPs included in APM HYD-1 and the permitting requirements that would be implemented per Mitigation Measure H-1a, as well as the temporary nature of water diversion activities, construction of the Single-Circuit and Double-Circuit Options would not result in substantial erosion or siltation on or off site associated with drainage pattern alterations. The Single-Circuit and Double-Circuit Options would not result in the permanent alteration of any stream or river.

Existing transmission towers along the Single-Circuit and Double-Circuit Options alignment would be removed during the construction period, thereby also removing any site-specific drainage pattern alterations associated with those towers. Therefore, the Single-Circuit and Double-Circuit Options would reduce current potential for erosion and sedimentation from drainage pattern alterations associated with the existing transmission towers. Overall, the potential for the Single-Circuit and Double-Circuit Options to cause substantial erosion or siltation on or off site as a result of drainage pattern alterations would be less than significant, and no mitigation measures are required. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

HYD4 Would the project substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems?

The rate and amount of surface runoff is determined by multiple factors, including the following: amount and intensity of precipitation; amount of other imported water that enters a watershed; and amount of precipitation and imported water that infiltrates to the groundwater. Infiltration is determined by several factors, including soil type, antecedent soil moisture, rainfall intensity, the amount of impervious surfaces within a watershed, and topography. The rate of surface runoff is largely determined by topography and the storm hydrograph (the intensity of rainfall over a given period of time). The Final EIR (Section 3.8, pages 3.8-37 and 3.8-38) concluded that the Approved Project would not alter any precipitation amounts or intensities, nor would it require any additional water to be

imported. Although grading would occur as part of the Approved Project, this ground disturbance would be spread over a large geographic area and would not alter the overall topography of the area. Impervious surfaces created by the Approved Project, such as tower footings and concrete pads at substations would cover very small areas and would be distributed over a large geographic region; therefore, the Approved Project would not substantially interfere with groundwater infiltration. Similarly, impervious areas that would be introduced under the Single-Circuit and Double-Circuit Options would encompass a small area of the overall watershed and would not result in flooding on- or off-site. Furthermore, the rate or amount of surface runoff resulting from the Approved Project would not change relative to existing conditions, and the Approved Project would not create or contribute to runoff water that could exceed the capacity of existing or planned stormwater drainage systems.

As described above, alterations to existing drainage patterns on and surrounding the Single-Circuit and Double-Circuit Options alignment would occur during the construction period. Some alterations, such as the presence of impervious underground facilities, would be present during operation and maintenance activities, but would not alter flooding on- or off-site, as the size of these impervious areas would represent a small portion of the overall watershed and would not introduce wide-spread changes to drainage or flooding patterns. BMPs included in the project-specific SWPPP required per APM HYD-1 would minimize or avoid potential effects associated with flooding on- or off-site resulting from drainage pattern alterations. Also as mentioned above, Mitigation Measure H-1a (*Implement an Erosion Control Plan and demonstrate compliance with water quality permits*) ensures compliance with water quality standards and waste discharge requirements by requiring that all applicable permits are provided to the CPUC at least 30 days before entering flowing or ponded water, or before constructing a crossing at flowing or ponded water; such permits are anticipated to include a Streambed Alteration Agreement for crossings of existing surface drainages. Due to the implementation of BMPs included in APM HYD-1 and the permitting requirements that would be implemented per Mitigation Measure H-1a, as well as the temporary nature of water diversion activities, construction of the Single-Circuit and Double-Circuit Options would not result in substantial flooding on- or off-site associated with drainage pattern alterations. The Single-Circuit and Double-Circuit Options would not result in the permanent alteration of any stream or river.

Construction of the Single-Circuit and Double-Circuit Options would include the application of water to the ground surfaces in order to suppress dust, but such water would only be applied in quantities and rates necessary to achieve dust abatement goals, and would not result in flooding on or off site. The Single-Circuit and Double-Circuit Options would not permanently divert the course of any stream or river. Impacts associated with altering existing drainage patterns such that flooding occurs on- or off-site would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

The Single-Circuit and Double-Circuit Options alignment is surrounded by developed residential areas within the City of Chino Hills, where existing stormwater drainage channels transmit flow to a municipal stormwater system. As noted above, implementation of the Single-Circuit and Double-Circuit Options would not result in significant effects associated with increased flood flow or surface water runoff. The Single-Circuit and Double-Circuit Options would not create or contribute runoff water with the potential to exceed the capacity of existing or planned stormwater drainage systems. Regarding the potential to introduce polluted runoff, as described above, BMPs would be implemented through SCE's APMs and mitigation measures to minimize or avoid potential water quality impacts associated with erosion, sedimentation, and the accidental release of hazardous materials; as a result, implementation of the Single-Circuit and Double-Circuit Options would not provide substantial additional sources of polluted

runoff. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

HYD5 Would the project result in or be subject to damage from inundation by mudflow?

Mudflows are a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity. Mudflow events are caused by a combination of factors, including soil type, precipitation, and slope. Mudflow may be triggered by heavy rainfall that the soil is not able to sufficiently drain or absorb. As a result of this super-saturation, soil and rock materials become unstable and eventually slide away from their existing location. The Final EIR (Section 3.8, pages 3.8-38 and 3.8-39) concluded that the potential for inundation by mudflow would be reduced to a less-than-significant level through implementation of APMs and mitigation measures, which include several BMPs to reduce erosion and soil movement; require aboveground Project features to be designed and engineered to withstand potential flooding and erosion hazards, such as specially designed footings to withstand flooding due to either a 100-year flood event or failure of a nearby upstream dam or reservoir; and avoid placement of structures in locations prone to landslide and/or mudslide without proper protection. APM HYD-1 (Construction SWPPP) requires implementation of a Construction SWPPP, which would include several BMPs to reduce erosion and soil movement, such as straw wattles, water bars, covered stockpiles, silt fences, silting basins, and mulching or seeding to protect exposed areas as well as monitoring to ensure that the BMPs are implemented. APM HYD-7 would require that aboveground features such as transmission line towers and substation facilities be designed and engineered to withstand potential flooding and erosion hazards. Measures would include specially designed footings to withstand flooding due either to a 100-year flood event or failure of a nearby upstream dam or reservoir. These design features would also help structures withstand inundation by mudflow.

Some steeper portions of hills in the general vicinity of the Single-Circuit and Double-Circuit Options may contain soils that could form a mudflow under heavy precipitation; however, the potential for the Single-Circuit and Double-Circuit Options alignment to be inundated by mudflow is considered low due to a general lack of steep slopes. In addition, the Single-Circuit and Double-Circuit Options would place infrastructure and facilities underground, and would remove existing transmission towers from the area. No impact associated with inundation by mudflow would occur. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.8 Land Use

LAND USE Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
LU1	Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use?	☐	☒
LU2	Conflict with any applicable federal, State or local land use plans, goals, or policies?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.8.1 Setting

The route of the Single-Circuit and Double-Circuit Options is located in the Cities of Chino Hills and Chino in San Bernardino County. The route of the Single-Circuit and Double-Circuit Options traverses the following Chino Hills General Plan designations: Agriculture Ranch, Commercial Recreation, Medium Density Residential, Low Density Residential, Institutional, Public Open Space, and Parcel 2008. Within the City of Chino, the route of the Single-Circuit and Double-Circuit Options traverses the Residential (RD4.5) land use designation.

The route of the Single-Circuit and Double-Circuit Options traverses the following Chino Hills Zoning designations: Planned Development, Commercial Recreation, Rural Residential, Medium Density Residential, Low Density Residential, Commercial Office, General Commercial, Institutional Private, and Institutional Public. Within the City of Chino, the route of the Single-Circuit and Double-Circuit Options traverses the RD2 (Residential-Agriculture) zoning designation and is adjacent to the RD4.5 zoning designation.

As with the Approved Project, sensitive land uses in the vicinity of the route of the Single-Circuit and Double-Circuit Options include residences, parks, and schools. During the preparation of the Final EIR, the Pine Valley Estates were in the planning stages, but were not yet built. However, this planned residential development adjacent to the west end of the Single-Circuit and Double-Circuit Options is now partially built and occupied; and as a result of the Approved Project, there is a 500-kV double-circuit LST at the entrance of the development on the corner of Eucalyptus Avenue and Canon Lane.

The route of the Single-Circuit and Double-Circuit Options does not traverse any habitat conservation plan or natural community conservation plan boundaries. The closest conservation plans frame the southern boundary of the city of Chino Hills, which include the Orange County Transportation Authority Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) and the Central Orange Coast HCP/NCCP.

The components of the Single-Circuit and Double-Circuit Options are addressed in the setting provided for the Approved Project, with the exception of the modifications to the substations. The modifications proposed for the Vincent and Serrano Substations would occur within in the existing substation site, and therefore will not result in significant new effects or substantially more sever effects to land use. The modifications to the Mira Loma Substation are analyzed below. The modifications to the Mira Loma Substation would require SCE to incorporate approximately 4.5 acres of new land into the northwest corner of the substation. The northern boundary of the station would remain the same, but a 1,136-foot section of the west fence would be relocated to the west approximately 175 feet. This expansion area is located within the City of Ontario's approved Rich-Haven Specific Plan, which consists of 510.6 gross acres that has been approved to be developed with residential, regional commercial, and community

facility land uses. According to the existing conditions report in the Specific Plan, on-site land uses currently include agricultural activities such as the raising of livestock, cultivated lands, and fallow lands (Ontario, 2007). Based on a recent site visit, the expansion site is currently fallow land. Under the Specific Plan, the southern portion of the expansion site is designated for low-density residential development and the northern portion is within an SCE easement.
*Applicable Regulations*There are several applicable federal, State, and local laws and regulations guiding land use and planning. These are discussed in detail in Section 3.9 of the Final EIR.

The CPUC has exclusive permitting authority regarding the Single-Circuit and Double-Circuit Options, and no local use permit would be required. Absent CPUC involvement, the Single-Circuit and Double-Circuit Options would otherwise be considered a conditional use under the site's land use designation and zoning, and would require compliance with the following land use plans and policies:

City of Chino Hills – General Plan. The Land Use Element sets forth goals and policies concerning the city's character, quality of life, economic base, and natural environment. The following land use goals and policies are relevant to the Single-Circuit and Double-Circuit Options:

> Major Goal 1 – Preserve Rural Character
>
> Policy 1-1 – Permit project development only in accordance with the Specific Plan and the Development Code. Implementation of this goal for individual projects will begin at the Preliminary Development Plan stage and continue to be refined throughout the development review process.
>
> Policy 1-8 – Require underground utilities for all new development.

City of Chino Hills – Development Code. Title 16 of the Chino Hills Code of Ordinances is the city's Development Code. Appendix A (Regulation of Uses by Zoning District) of the Development Code provides a matrix listing the land uses that are permitted by right, are subject to a conditional use permit review, are subject to temporary use permit review, are permitted as an accessory use, or are prohibited. Uses not shown in the matrix are prohibited in the zoning district unless the Community Development Director makes a determination that a proposed use closely corresponds to a listed use which is permitted by right or which is subject to the granting of a conditional use permit. The list of land uses does not include utility transmission lines or pipelines, and therefore, these uses would require a conditional use permit.

City of Chino – General Plan. Under the City of Chino's General Plan, the Land Use Element states that the RD4.5 land use designation is a single-family suburban designation, expected to be primarily detached units. It allows 3 to 4.5 dwelling units per adjusted gross acre, and the purpose of this designation is to preserve existing single-family suburban residential neighborhoods. (Chino, 2010)

The General Plan's Public Facilities and Services Element provides information and policy guidance to ensure public facilities and services to support existing and new development in the city of Chino.

City of Chino – Zoning Ordinance. The City of Chino's Zoning Ordinance considers "major utilities" to be services of a regional nature that normally entail the construction of new buildings or structures such as generating plants and sources, electrical switching facilities, stations or substations. Title 20 of the Chino Municipal Code is the city's Zoning Ordinance. As stated above, the portion of Option that is located within the City of Chino traverses the RD2 zoning designation and is adjacent to the RD4.5 zoning designation. Within Chapter 20.04 (Residential Zoning Districts), major utilities are conditionally permitted uses, which require approval of a special conditional use permit. (Chino, 2011)

City of Ontario – Rich-Haven Specific Plan. The Rich-Haven Specific Plan applies to 510.6 acres of land that will be developed as a cohesive community, incorporating a series of well-integrated neighborhoods, including residential, regional commercial, and community facility land uses (Ontario, 2007). The Mira Loma Substation expansion site is within the boundaries of the Rich-Haven Specific Plan, and is designated for low-density residential development.

City of Ontario – Development Code. The Mira Loma Substation expansion site is within the Specific Plan designation of the City's Development Code. Under this designation, permitted and conditional uses included as part of specific plans shall be compatible with permitted and conditional uses established within the Development Code. The expansion site is designated as low density residential by the Rich-Haven Specific Plan.

A.3.8.2 Environmental Impacts and Mitigation Measures

LU1 Would the project preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use?

The Final EIR (Section 3.9, Impacts L-1 and L-2) concluded that construction of the Approved Project would have the potential to temporarily disrupt, displace, or preclude many existing land uses (residential and non-residential); however, with implementation of mitigation measures, construction-related impacts would be mitigated to a less-than-significant level. Like the Approved Project, construction of the Single-Circuit and Double-Circuit Options would affect residential areas, including the new residential development of Pine Valley Estates, as well as the non-residential development surrounding the route of the Single-Circuit and Double-Circuit Options, which includes commercial, recreation, and institutional uses. Many properties are located less than 250 feet away and would be subject to construction-related activity, including but not limited to tower removal, trenching, construction of the ductbank systems, the need for temporary access roads, and road detours and closures. Considering these construction activities in conjunction with the workforce and equipment needed for the duration of construction, the impacts to the communities of Chino Hills and Chino would be considered significant. Therefore, as with the Approved Project, the following mitigation measures would also be required for the Single-Circuit and Double-Circuit Options : L-1a (*Construction liaison – Property owners*); L-1b (*Advance notification of construction – Property owners*); L-1c (*Quarterly construction updates – Property owners*); and L-2a (*Construction plan provisions – Non-residential property owners*). These mitigation measures would require coordination with property owners to reduce the potential of temporarily disrupting, displacing, or precluding many existing land uses (residential and non-residential). With implementation of these measures, these temporary impacts would be less than significant and, therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Final EIR concluded that the Approved Project would not result in significant impacts related to the preclusion of a permitted land use or incompatibility with current and future residential land uses. The Final EIR also concluded that with implementation of Mitigation Measure L-4 (*Consult with federal, State, and local agencies*), the Approved Project would not result in any significant preclusion of, or restriction to, the management and uses of nearby public lands.

The Single-Circuit and Double-Circuit Options would use the existing ROW within portions of the cities of Chino Hills and Chino. Since utility transmission is the intended use for this ROW, the Single-Circuit and Double-Circuit Options would not preclude current or future land uses within the ROW. Maintenance of the Approved Project includes periodic inspection approximately once per year via helicopter, truck,

and/or on foot (to access more remote locations). Recurring maintenance identified in the inspection process for the Approved Project would include vegetation management, invasive plant survey and control, wood pole management, insulator washing, insulator replacement, repair of ground wires, tighten/repair of hardware, tighten/replacement of guy wires, and adjustments to switch mechanisms. Maintenance activities associated with the Single-Circuit and Double-Circuit Options would be similar to the Approved Project, although they would include routine inspections of the vaults to ensure the structural integrity of the vaults as well as the cable and splice supports. The ROW must also be routinely patrolled for intrusions and potential dig-ins. However, as with the Approved Project, these types of maintenance inspections would be temporary, and any potential disruptions to adjacent land uses would not be significant. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Mira Loma Substation expansion site is proposed on agricultural land that is currently fallow. As discussed in Section A.3.1, Agricultural Resources, the conversion of the expansion site would be less than 10 acres and there are no current agricultural operations; therefore, construction of the expansion site would not create a new significant impact. In addition, with implementation of the Mitigation Measure L-4 (*Consult with federal, State, and local agencies*), prior to construction, SCE will consult with the City of Ontario to avoid potential conflicts with the current landowner. As such, construction of the expansion site would not result in a new significant land use impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

In regard to future land uses, the northern portion of the expansion site is within an SCE easement, which accounts for approximately one acre of the 4.5-acre expansion site, and is not designated for development in the Specific Plan. The southern portion of the expansion site (approximately 3.5 acres) is designated for low density residential development by the Rich-Haven Specific Plan. As stated in the setting above, the specific plan was approved in 2007 but construction of has not yet occurred. Nonetheless, it is assumed that at some point in the future, the Specific Plan will be realized and single-family homes will be developed in this area. Construction of the expansion site would preclude future residential development at the expansion site; however, the 3.5 acres represents 0.6 percent of the land within the Specific Plan boundaries, which would result in a minimal land use impact to the overall proposed Specific Plan development. In addition, Mitigation Measure L-4 (*Consult with federal, State, and local agencies*) would ensure that SCE coordinates with the City of Ontario in order to minimize impacts to future development plans. Therefore, this impact would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

LU2 Would the project conflict with any applicable federal, State or local land use plans, goals, or policies?

The Final EIR (Section 3.9, Page 3.9-73) concludes that with the USDA Forest Service's issuance of a Special Use Easement, which amends the 2005 ANF Land Management Plan, and with implementation of recommended mitigation measures, which require SCE to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies occur, impacts related to potential conflicts with applicable land use plans, goals, or policies would be mitigated to a less-than-significant level. For compliance with the cities of Chino Hills and Chino's land use documents (i.e., the general plans and zoning ordinances), the route of the Single-Circuit and Double-Circuit Options would require permits from both cities if local policies and regulations were applicable. However, as stated under the regulatory setting section, the CPUC has exclusive permitting authority regarding the Single-Circuit and Double-Circuit Options, and no local use permit would be required. Nonetheless, as with the

Approved Project, implementation of Mitigation Measures L-2b (*Construction plan provisions – Non-residential property*) and L-4 (*Consult with federal, State and local agencies*) would require SCE to coordinate with applicable agencies to minimize conflicts with land use plans and policies. Impacts related to potential conflicts with applicable land use plans, goals, or policies would be mitigated to a less-than-significant level and, therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Mira Loma Substation expansion site is located within the boundaries of the approved Rich-Haven Specific Plan. Based on the City of Ontario's zoning map, the southern portion of the expansion site is designated as Specific Plan, and under the Rich-Haven Specific plan, the site is within a low density residential district. According to the City's Development Code, a public utility/service structure requires a conditional use permit (CUP) within the residential zoning districts. As such, for compliance with the City's Development Code, a CUP would be required for the Mira Loma Substation expansion site. However, as stated above, the CPUC has exclusive permitting authority so no local use permit would be required, although implementation of Mitigation Measures L-2b (*Construction plan provisions – Non-residential property*) and L-4 (*Consult with federal, State and local agencies*) would be required. With implementation of these mitigation measures, the expansion site would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

A.3.9 Noise

NOISE Would the Project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
NOI1	Result in a substantial temporary or periodic increase in ambient noise levels during construction in the vicinity of sensitive receptors above levels existing without the Project?	☐	☒
NOI2	Result in a permanent and substantially higher level of ambient noise source in the vicinity of sensitive receptors?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.9.1 Setting

Terminology. The assessment of noise impacts uses specific terminology and fundamental descriptors not commonly used in everyday conversation. Therefore, in order to assist in a thorough understanding of the subsequent analysis, technical terms utilized in this discussion are summarized in Table A.3.9-1.

Table A.3.9-1. Summary of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level (dBA)	The sound level in decibels as measured on a sound level meter using the A weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (Leq)	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (Ln)	The noise level exceeded during 'n' percent of the measurement period, where 'n' is a number between 0 and 100 (e.g., L90)
Day-Night Average Level (Ldn)	The energy average A-weighted noise level during a 24-hour day, obtained after the addition of 10 decibels between the hours of 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level (CNEL)	Represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for people's lower tolerance of noise during the evening and nighttime hours. Because community receptors are considered to be more sensitive to unwanted noise intrusion during the evening and night, an artificial decibel increment is added to quiet-time noise levels. Sound levels are increased by 5 dBA during the evening, from 7:00 p.m. to 10:00 p.m. and by 10 dBA during the nighttime, from 10:00 p.m. to 7:00 a.m.
Ambient Noise Level	The composite noise from all sources resulting in the normal, existing level of environmental noise at a given location. The ambient level is typically defined by the Leq level.
Background Noise Level	The underlying ever-present lower level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically makeup the background. The background level is generally defined by the L90 percentile noise level.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient noise level, and the sensitivity of the receiver. The intrusive level is generally defined by the L10 percentile noise level.

One additional way to describe noise is to measure the maximum sound level (Lmax). The Lmax measurement does not account for the duration of the sound, but merely the peak sound level recorded during an observation period. Studies have shown that human response to noise involves the maximum level and its duration. Thus, the maximum sound level alone is not sufficient to predict a receptors

reaction to environmental noise. The minimum sound level (Lmin) is the converse of Lmax, meaning it is the minimum sound level occurrence during a recorded period.

Noise-Sensitive Receptors. Land uses near the route of the Single-Circuit and Double-Circuit Options consists of residences, recreation, undeveloped open space, educational facilities, and commercial businesses within the cities of Chino and Chino Hills. Sensitive receptors are not located within 0.5 mile of Mira Loma, Vincent, or Serrano Substations, where land uses surrounding these substations includes open space, agricultural, and roadways.

Subsequent to publication of the Final EIR (October, 2009), an observed change in residential receptors has occurred within the area of the Single-Circuit and Double-Circuit Options. Specifically, the planned residential development off of Eucalyptus Avenue in Chino Hills, called Pine Valley Estates, located just west of the Western Hills Country Club golf course is now partially built and occupied. At the time of publication of the Final EIR, this development was planned and undergoing initial construction, but not occupied.

Ambient Noise Levels. Recorded ambient noise conditions within the route area of the Single-Circuit and Double-Circuit Options are presented within Table A.3.9-2 (Ambient Noise Levels along Proposed route of the Single-Circuit and Double-Circuit Options). This data was obtained from the Final EIR. The locations of these ambient noise measurements are shown in Figures 5.2-1 and Figure 5.2-2 of Final EIR Appendix K. In addition to presenting the recorded ambient noise levels, Table A.3.9-2 provides an overview description of the existing noise sources at these locations. These ambient readings are considered representative of existing noise conditions at sensitive receptor locations along the route of the Single-Circuit and Double-Circuit Options as the baseline for analysis of impacts is the previously approved project and no new significant sources of ambient noise are known to have been developed proximate to the Single-Circuit and Double-Circuit Options and related substations for improvement since publication of the Final EIR.

Table A.3.9-2. Ambient Noise Levels along the Proposed Route of the Single-Circuit and Double-Circuit Options

Segment	Noise Measurement Location	Leq (24-hour)	Lmax	Lmin	Primary Noise Sources and Nearby Transmission Lines
8	Crossroads Park, City of Chino Hills	55.0	60.0	45.0	Traffic from Chino Hills Parkway and park activities. One 220-kV transmission line is located near the ambient noise reading location.
8	Edam Street and Avila Avenue, City of Chino	53.0	60.0	43.0	Traffic from residential street use. Two 220-kV transmission lines are located near the ambient noise reading location.

Source: CPUC, 2009

Attenuation of Noise

Line sources of noise, such as roadway traffic, attenuate (lessen) at a rate of 3.0 dBA to 4.5 dBA per doubling of distance from the source, based on the inverse square law and the equation for cylindrical spreading of noise waves over hard and soft surfaces. Point sources of noise, including stationary and idle mobile sources (such as idling vehicles or onsite construction equipment), attenuate at a rate of 6.0 dBA to 7.5 dBA per doubling of distance from the source, based on the inverse square law and the equations for spherical spreading of noise waves over hard and soft surfaces.

Applicable Regulations

Federal

Regulations and guidelines applicable to Noise are presented in Section 3.10.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

State

Regulations and guidelines applicable to Noise are presented in Section 3.10.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

Local

Each local government aims to protect its residents from intrusive noise during both construction and operational activities. Many local General Plan policies and Municipal Code ordinances aim to reduce noise impacts and can apply to both construction and operational noise. The following municipalities and applicable noise control documents have policies and regulations relevant to the Single-Circuit and Double-Circuit Options that have been updated since publication of the Final EIR and/or require new compliance analysis based on the proposed Single-Circuit and Double-Circuit Options:

- City of Chino General Plan Noise Element
- City of Chino Municipal Code Noise Ordinance
- City of Chino Hills Municipal Code Noise Ordinance

The new and updated policies and ordinances of these documents are identified and analyzed for the Single-Circuit and Double-Circuit Options consistency below in impact discussion (a).

A.3.9.2 Environmental Impacts and Mitigation Measures

NOI1 Would the project result in a substantial temporary or periodic increase in ambient noise levels during construction in the vicinity of sensitive receptors above levels existing without the project?

Vibration Summary

The only piece of construction equipment associated with the Single-Circuit and Double-Circuit Options not analyzed within the Final EIR for use by the Approved Project is the horizontal directional drilling (HDD) rig. Table A.3.9-3 displays typical vibration levels associated with HDD. Sturdy buildings constructed with reinforced concrete, steel or timber can typically be exposed to PPV levels of up to 0.50 inches per second without being damaged; however, more fragile buildings can be damaged by a PPV level of 0.12 inches per second (FTA, 2006). As shown, HDD would not have the potential to cause damage to sturdy structures, but could damage fragile structures within 100 feet of the construction site.

The nearest residential receptors to HDD sites are located between 75 and 125 feet away. For purposes of this analysis, permanent residential structures are not considered fragile as they are habitable and subject to applicable building codes. Because Mitigation Measure L-1b (Advance notification of construction - Property owners) would require that all property owners located within 300 feet of HDD construction-related activities be sent a written notice, any potential disruption to structures that either the City of Chino Hills, SCE, construction contractor, or the homeowner may consider fragile and located within 100 feet of an HDD rig could be determined and addressed. As such, HDD activities would have a less than significant impact in regards to vibration.

Table A.3.9-3. Vibration Velocities for HDD

Distance (Feet)	Peak Particle Velocity (Inches Per Second)
25	0.089
50	0.031
75	0.017
100	0.011
150	0.006

Source: FTA, 2006.

Noise Summary

As discussed earlier, no sensitive receptors are located adjacent to Mira Loma Substation, Vincent Substation, or Serrano Substation. As such, the following analysis is limited to construction of the Single-Circuit and Double-Circuit Option route area only, which includes the construction of the transition stations and all transmission line infrastructure between. The Final EIR (Impact N-1) determined that the Approved Project would result in a significant unavoidable impact during construction with respect to a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project. The Final EIR (Impact N-2) also determined that the Approved Project would result in a significant unavoidable impact during construction with respect to generation of noise levels in excess of standards established in a local general plan or noise ordinance, or applicable standards of other agencies.

Table A.3.9-4, below, provides sound levels for typical construction equipment types utilized during construction of the Single-Circuit and Double-Circuit Options. APMs NOI-1 (*Limit Hours and Days for Construction*), NOI-3 (*Advance Notification*), NOI-4 (*Establish Toll Free Number*) and Mitigation Measures N-1a (*Implement Best Management Practices for construction noise*) and N-1b (*Avoid sensitive receptors during mobile construction equipment use*), as identified within the Final EIR for the Approved Project, would reduce these levels (and impacts associated with construction noise). However, when dBA levels of construction equipment (as discussed above for HDD and presented in Table A.3.9-4) are compared to ambient conditions of the Single-Circuit and Double-Circuit Options route (as presented in Table A.3.9-2), sensitive receptors adjacent to the Single-Circuit and Double-Circuit Options ROW and along construction traffic access points and routes would be subject to a substantial temporary increase in ambient noise levels due to construction of the Single-Circuit and Double-Circuit Options. Similar to the Approved Project, this noise impact is considered significant and unavoidable.

Due to the increased duration of construction, amount of ground disturbance, and heavy equipment utilized for the Single-Circuit and Double-Circuit Options, there would be an increase in construction noise within the route of the Single-Circuit and Double-Circuit Options when compared to the Approved Project. The following summarizes the construction noise impacts on receptors located along the ROW of the Single-Circuit and Double-Circuit Options:

- As shown in Table A.3.9-4, noise levels of equipment utilized for construction of the Single-Circuit and Double-Circuit Options would not be substantially greater than that of equipment utilized for construction of the Approved Project. The only piece of construction equipment associated with construction of the Single-Circuit and Double-Circuit Options and not analyzed within the Final EIR for use by the Approved Project is the HDD drill rig. As shown, HDD does not introduce dB levels greater than that generated by graders and scrapers, which were analyzed in the Final EIR for use during construction of the Approved Project.
- Construction of the Single-Circuit and Double-Circuit Options would result in an increase to the number of residential receptors subjected to construction noise because more construction activities would take

place adjacent to residential properties. However, this increase is not considered substantial when compared to the total number of receptors subjected to construction noise for the Approved Project.

- Construction of the Single-Circuit and Double-Circuit Options would result in an increase to the duration of time (both cumulative hours in a day and total days) that residential receptors along the ROW would be subject to construction noise. This increase is primarily limited to HDD locations and not considered substantial when compared to the total number of construction equipment use hours associated with the Approved Project.

Substantial temporary or periodic increase in ambient noise levels during construction in the vicinity of sensitive receptors

Methodology for Analysis

Noise impacts due to construction activities can be significant even though construction activities are temporary. Noise levels for typical pieces of construction equipment possibly used during construction of the Single-Circuit and Double-Circuit Options (at 50 feet) are listed in Table A.3.9-4.

Table A.3.9-4. Typical Noise Levels for Construction Equipment

Equipment	dBA at 50 Feet
Backhoes	80
Shovel	82
Compactors	82
Concrete Pumps, Mixers	82-85
Cranes (movable)	83
Dozers	85
Front Loader	85
Generator	71-82
Graders, Scrapers	85-89
Trucks	88
Horizontal Directional Drill[1]	70-89

Source: FTA, 2006; [1] Level based on a review of other CEQA documents with projects utilizing HDD methods.

Construction Equipment Noise Levels

The peak noise levels of the equipment types utilized for the Single-Circuit and Double-Circuit Options trenching construction would not be substantially greater than that utilized for construction of the Approved Project. Both would utilize the typical equipment identified in Table A.3.9-4. A description of the Single-Circuit and Double-Circuit Options construction activities is provided in Section A.1.10, Project Construction. However, the Single-Circuit and Double-Circuit Options would utilize a HDD rig for two segments of the ROW. HDD activity would also include other heavy construction equipment at the drilling site, such as graders, pumps, generators, and trucks. However, those pieces of equipment were included as being utilized by the Approved Project.

As shown, the only piece of construction equipment not analyzed within the Final EIR for use by the Approved Project is the HDD drill rig, which does not introduce dB levels beyond those of graders and scrapers (which are utilized for the approved project). At 50 feet, continuous noise levels would be about 85 dBA. At 100 feet, the noise would spread and levels would be about 79 dBA, and at 200 feet, about 73 dBA. Based on the noise levels of other utilized construction equipment, as identified in Table

A.3.9-4, the use of HDD is not expected to generate peak noise levels substantially greater than those of the Approved Project.

Mitigation Measures N-1a (*Implement Best Management Practices for construction noise*) and N-1b (*Avoid sensitive receptors during mobile construction equipment use*), as identified within the Final EIR for the Approved Project, would be applied to all construction equipment and activities associated with the Single-Circuit and Double-Circuit Options to reduce the overall levels of construction noise.

Increase in Residential Receptors

Along the Single-Circuit and Double-Circuit Option ROW, the primary location of continuous heavy equipment construction noise associated with the Approved Project was limited to tower locations. Therefore, during Approved Project construction, receptors between tower locations would only be subject to periodic and momentary short-term temporary noise (helicopter use during conductor stringing, vehicle travel between tower locations within the ROW, etc.). However, the Single-Circuit and Double-Circuit Options would include continuous heavy construction equipment use along the majority of the ROW. While these activities would not result in a substantial increase to peak construction noise levels, they would result in an increase to the number of residential receptors subject to continuous construction noise along the ROW of the Single-Circuit and Double-Circuit Options when compared to the Approved Project.

Prior to construction of the Approved Project, consistent with the requirements of APM NOI-3 (*Advanced Notification*) and Mitigation Measure L-1b (*Advance notification of construction - Property owners*), all property owners located within 300 feet of construction-related activities were sent a written notice. This effort required the notification of over 10,000 property owners along alignment of the Approved Project. This mitigation requirement was for all property owners and, therefore, the number of residential receptors (homes) within this boundary is fewer than the total number of property owners notified. For comparative purposes, based on Google Earth imagery, the total number of residential receptors that would be subjected to construction noise along the ROW of the Single-Circuit and Double-Circuit Options is estimated to be approximately 400-600.

APMs NOI-1 (*Limit Hours and Days for Construction*), NOI-3 (*Advance Notification*), NOI-4 (*Establish Toll Free Number*) and Mitigation Measures N-1a (*Implement Best Management Practices for construction noise*) and N-1b (*Avoid sensitive receptors during mobile construction equipment use*), as identified within the Final EIR for the Approved Project, would reduce this impact. Additionally, adherence to Mitigation Measures L-1a (*Construction liaison – Property owners*), L-1b (*Advance notification of construction - Property owners*), and L-1c (*Quarterly construction updates - Property owners*) as part of the Single-Circuit and Double-Circuit Options would help reduce temporary construction noise impacts to sensitive receptors along the ROW. Due to the relatively small increase in residential receptors subjected to construction noise when compared to the Approved Project, as well as the reduction in impact associated with applicable APMs and mitigation measures, the increase in the number of residential receptors affected by construction noise of the Single-Circuit and Double-Circuit Options does not represent a substantial increase in the Approved Project's overall noise impact.

Increase in Construction Duration

Appendix 6 of the Final EIR provides a detailed breakdown of equipment type and quantity, hours of operation per day, and total days of operation associated with construction of the Approved Project, as well as EIR Alternative 5 (Partial Underground) and the Single-Circuit and Double-Circuit Options. The information contained within Appendix 6 has been used as the basis for assumptions in the following analysis.

As shown in Appendix 5, construction activities associated with the Single-Circuit Option is assumed to occur for approximately 35 months and construction of the Double-Circuit Option would last approximately 74 months, whereas construction of the Approved Project was estimated to occur for a period of approximately 59 months. For comparison, construction of Approved Project Segment 8 (500 kV Chino to Mira Loma - 8A/8C) was estimated to take approximately 47 months, while construction of EIR Alternative 5 (Partial Underground) was assumed to occur for a period of approximately 48 months (refer to Appendix 5). Therefore, the Single-Circuit and Double-Circuit Options would increase the duration of overall construction for Segment 8A/8C.

Construction of the Single-Circuit and Double-Circuit Options would require heavy equipment operation along almost the entire length of the ROW. As discussed above, while these activities would not result in a substantial increase to peak construction noise levels, they would result in an increase to the total duration of construction along the ROW compared to the Approved Project. As shown in Appendix 6, with the exception of HDD equipment, the hours of heavy construction equipment operation are not substantially different than those estimated for the Approved Project as a whole, Segment 8, or EIR Alternative 5.

The increase in construction noise duration is greatest at HDD locations. Additional time would be necessary for HDD drill site preparation and cleanup. However, preparation and cleanup would be a short-term activity and would create both intermittent and continuous noises during normal work hours assumed for construction of the Approved Project. When in place, HDD drilling would occur continuously (up to 24-hours daily) for 37 weeks per location. As discussed in Section A.1.8 (Project Overview), the Single Circuit Option includes 14,500 feet of HDD installation, and the Double Circuit Option includes 17,000 feet of HDD installation. HDD locations include both east and west of Peyton Drive and west of Pipeline Avenue. While equipment other than the drill rig and pumps or generators would not be continuously operated, noise from this equipment would occur during 24-hour HDD operations.

The nearest residential receptors to HDD sites are located between 75 and 125 feet away. As discussed earlier, residential receptors at these locations would be exposed to continuous HDD-related noise levels ranging from the mid 80s to upper 70s dBA, respectively. While the dB levels generated by HDD operations would not exceed dB levels generated by Approved Project equipment use, receptors adjacent to HDD locations would be subject to near continuous daily noise during the entire duration of drilling activities. As shown in Appendix 5, the total number of hours assumed for Single Circuit Option HDD activity is 19,212, which accounts for more than one-third of the total construction equipment hours (51,545). As also shown in Appendix 5, the total number of hours assumed for Double Circuit Option HDD activity is 19,212, which accounts for more than one-quarter of the total construction equipment hours (63,297). However, the number of estimated construction equipment operational hours associated with the Single-Circuit and Double-Circuit Options accounts for only a small fraction of the total number of construction equipment hours associated with the Approved Project as a whole (408,839). Of the total construction equipment use hours estimated for the Approved Project, approximately 89,189 hours would occur within Segment 8. Therefore, while the Single-Circuit and Double-Circuit Options would increase the total hours of construction equipment operation compared to the Approved Project, this increase would not be substantial as HDD drilling would account for 4.7 percent of the total Approved Project construction hours**.**

As further discussed below in Table A.3.9-5, SCE would be required to obtain a variance from the City of Chino Hills for all construction work inconsistent with requirements of the City of Chino Hills Municipal Code Noise Ordinance (assumed to be HDD operations outside of allowable construction equipment use hours). Any mitigation conditions attached to the variance (for example: sound attenuation walls and

additional attenuation methods, temporary relocations of residents, etc.) is unknown at this time and would be determined by the City of Chino Hills.

Additional locations of increased construction duration would occur at receptor locations proximate to transition station and duct bank locations. Due to the increased duration of construction, amount of ground disturbance, and amount of heavy equipment use for the Single-Circuit and Double-Circuit Options, there would be an increase in the frequency of construction noise along the route of the Single-Circuit and Double-Circuit Options when compared to the Approved Project as analyzed in the Final EIR. However, the dB levels generated by these activities would not exceed dB levels generated by Approved Project equipment use at the same location. The increase in daily frequency of this noise is not considered significant, as these activities would comply with City of Chino Hills Municipal Code Noise Ordinance restrictions by occurring within allowable construction hours.

Additionally, there would be an increase in the number of large truck trip ingress/egress at proposed access points to the Single-Circuit and Double-Circuit Option ROW as well as along the ROW for transport of excavated soil from trenching. However, the locations of construction vehicle access points and routes to the ROW would be the same as that evaluated for the Approved Project in the Final EIR. As such, no new receptors are expected to be subject to construction vehicles accessing the work area when compared to the Approved Project. The dB levels generated by these activities would not exceed dB levels generated by Approved Project equipment use of similar activities. The increase in daily frequency of this noise is not considered significant, as these activities would comply with City of Chino Hills Municipal Code Noise Ordinance restrictions by occurring within allowable construction hours.

All construction noise impacts of the Single-Circuit and Double-Circuit Options would be reduced by implementing APMs NOI-1 (*Limit Hours and Days for Construction*), NOI-3 (*Advance Notification*), NOI-4 (*Establish Toll Free Number*) and Mitigation Measures N-1a (*Implement Best Management Practices for construction noise*) and N-1b (*Avoid sensitive receptors during mobile construction equipment use*), as identified in the Final EIR for the Approved Project. Additionally, adherence to Mitigation Measures L-1a (*Construction liaison – Property owners*), L-1b (*Advance notification of construction - Property owners*), and L-1c (*Quarterly construction updates - Property owners*) would further reduce temporary construction noise impacts to sensitive receptors along the ROW. As further discussed below in Table A.3.9-5, SCE would be required to obtain a variance from the City of Chino Hills for all construction work inconsistent with requirements of the City of Chino Hills Municipal Code Noise Ordinance (assumed to be HDD operations occurring outside of allowable construction equipment use hours). Any mitigation conditions attached to the variance (for example: sound attenuation walls and additional attenuation methods, temporary relocations of residents, etc.) is unknown at this time and would be determined by the City of Chino Hills.

Generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

Table A.3.9-5 provides a compliance analysis with the applicable noise regulations for the cities of Chino and Chino Hills. As shown, only the Chino Municipal Code Noise Ordinance provides any construction noise thresholds. However, as discussed in Final EIR Section 3.10 (Table 3.10-9), the Approved Project was found to be inconsistent with a number of applicable noise plans and policies for jurisdictions traversed by the Approved Project. Implementation of APMs NOI-1 (*Limit Hours and Days for Construction*), NOI-3 (*Advance Notification*), NOI-4 (*Establish Toll Free Number*), and Mitigation Measures N-1a (*Implement Best Management Practices for construction noise*) and N-1b (*Avoid sensitive receptors during mobile construction equipment use*) would reduce this impact.

Table A.3.9-5. Noise Policy Compliance Table – Construction

Applicable Policy	Compliance Analysis
City of Chino General Plan	
Objective N-1.3 Control sources of construction noise. Policy P1. The City shall require a noise monitoring plan to be prepared and submitted prior to starting all construction projects. The noise monitoring plan shall identify monitoring locations and frequency, instrumentation to be used, and appropriate noise control measures that will be incorporated	APM's NOI-1, NOI-3, NOI-4 and Mitigation Measures N-1a and N-1b, as identified within the Final EIR for the Approved Project, were included within the Mitigation Monitoring and Report Program as included with the Final EIR and associated with the Approved Project. As the Single-Circuit and Double-Circuit Options would utilize these same APMs and Mitigation Measures, the Single-Circuit and Double-Circuit Options are considered compliant with this city of Chino Hills General Plan objective and policy.
Objective N-1.3 Control sources of construction noise. Policy P2. The City shall limit all construction in the vicinity of noise sensitive land uses, such as residences, hospitals, or senior centers, to daylight hours or 7:00 a.m. to 7:00 p.m. In addition, the following construction noise control measures shall be included as requirements at construction sites to minimize construction noise impacts: • Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment. • Ensure that during construction, trucks and equipment are running only when necessary. • Shield all construction equipment with temporary noise barriers to reduce construction-related noise impacts. • Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area. • Utilize "quiet" air compressors and similar equipment, where available.	With implementation of APM NOI-1 as identified within the Final EIR for the Approved Project, SCE would ensure that construction activities would either comply with local noise ordinances pertaining to daily construction activity timing, or SCE would obtain a variance from each affected jurisdiction, if there is a need to work outside of normal daytime, weekday hours. Additionally, with implementation of Mitigation Measures N-1a and N-1b as identified within the Final EIR for the Approved Project, SCE would ensure that construction activities would utilize best management practices consistent with this General Plan policy. Construction activities would be compliant with this city of Chino General Plan objective and policy.
City of Chino Municipal Code Noise Ordinance	
Per Section 9.40.060, Construction noise is exempt if the noise sources associated with or vibration created by construction, repair, remodeling or grading of any real property or during authorized seismic surveys, provided said activities do not take place outside the hours for construction as defined in Section 15.44.030 of this code, and provided the noise standard of sixty-five dBA plus the limits specified in Section 9.40.040(B) as measured on residential property and any vibration created does not endanger the public health, welfare and safety.	Based on the sound levels shown in Table A.3.9-3, for point source noise in the absence of any intervening terrain, a noise reading of 86 dBA at 50 feet would attenuate to 75 dBA at 200 feet. This sound level is utilized for purpose of evaluating 75 dBA construction noise levels (cumulative for more than 30 minutes) at 200 feet from the source. Horizontal directional drilling is not expected to occur within 1,000 feet of any city of Chino residence. Based on this distance, noise would attenuate to below any applicable Chino Municipal Code Noise Ordinance threshold. Therefore, the compliance analysis for the city of Chino Municipal Code Noise Ordinance includes only construction activities capable of generating at least 86 dBA at fifty feet that would occur within 200 feet of any city of Chino receptor. Noise With implementation of APM NOI-1, as identified within the Final EIR for the Approved Project, SCE would ensure that construction activities would either comply with local noise ordinances pertaining to daily construction activity timing, or SCE would obtain a variance from each affected jurisdiction, if there is a need to work outside of normal daytime, weekday hours. However, this does not exempt construction noise if it were to exceed the noise specifications identified in Municipal Code Section

Table A.3.9-5. Noise Policy Compliance Table – Construction

Applicable Policy	Compliance Analysis
	9.40.040(B) applicable to the Single-Circuit and Double-Circuit Options, which include: • 75 dBA Lmax between the hours of 7:00 a.m. and 10:00 p.m. A. The noise standard for a cumulative period of more than thirty minutes in any hour Based on the estimated average peak construction sound level (Lmax) of 86 dBA at 50-feet, outdoor noise at sensitive receptor locations within 200 feet of any construction location could be subject to an Lmax exceeding 75 dBA for more than 30 minutes cumulative within one hour. This level would exceed this City of Chino threshold. It should be noted that the determination of whether this noise could "endanger the public health, welfare and safety", per the Municipal Code, is not determined. This analysis can only recognize that the potential for construction noise associated with the Single-Circuit and Double-Circuit Options to exceed the noise specifications identified in Municipal Code Section 9.40.040(B) is significant. <u>Vibration</u> As identified in Municipal Code Section 9.40.110 the applicable vibration threshold to the Single-Circuit and Double-Circuit Options is: • Notwithstanding other sections of this chapter, it is unlawful for any person to create, maintain or cause any ground vibration which is perceptible without instruments at any point on any affected property adjoining the property on which the vibration source is located. For the purpose of this chapter, the perception threshold shall be presumed to be more than 0.05 inches per second RMS vertical velocity. Based on the analysis provided for NOI1 (refer to Table A.3.9-3), it is assumed that only HDD construction equipment use may exceed this threshold for any structures located approximately 30 feet or nearer to any HDD activities within the city of Chino. However, HDD use would be greater than 1,000 feet from any city of Chino receptor. Therefore, the Single-Circuit and Double-Circuit Options are considered to be consistent with this City of Chino Municipal Code Ordinance.
Construction shall occur only between the hours of 7 a.m. and 8 p.m. Monday through Saturday, with no construction allowed on Sundays and Federal holidays.	With implementation of APM NOI-1, as identified within the Final EIR for the Approved Project, SCE would ensure that construction activities would either comply with local noise ordinances pertaining to daily construction activity timing, or SCE would obtain a variance from each affected jurisdiction, if there is a need to work outside of normal daytime, weekday hours. Construction activities would be compliant with this City of Chino ordinance.
City of Chino Hills Municipal Code Noise Ordinance	
Construction shall only take place between 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 6:00 p.m. on Saturdays, excluding federal holidays.	HDD locations would occur within the City of Chino Hills and be inconsistent with this requirement. However, with implementation of APM NOI-1, as identified within the Final EIR for the Approved Project, SCE would ensure that construction activities would either comply with local noise ordinances pertaining to daily construction activity timing or would obtain a variance from the City of Chino Hills for work occurring outside of allowable construction hours. Upon receipt of a variance, construction activities would be compliant with

Table A.3.9-5. Noise Policy Compliance Table – Construction

Applicable Policy	Compliance Analysis
	this City of Chino Hills ordinance.

Source: City of Chino, 2012; City of Chino, 2010; City of Chino Hills, 2012.

NOI2 Would the project result in a permanent and substantially higher level of ambient noise source in the vicinity of sensitive receptors?

As discussed earlier, no sensitive receptors are located adjacent to Mira Loma Substation, Vincent Substation, or Serrano Substation. As such, the following analysis is limited to operation of the Single-Circuit and Double-Circuit Option route area only, which includes the transition stations and all transmission line infrastructure between. The Final EIR (Impact N-3) determined that the Approved Project would result in a significant unavoidable impact during operation due to noise associated with corona discharge, resulting in a substantial permanent increase in ambient noise levels in the Project vicinity above existing levels. Because the Single-Circuit and Double-Circuit Options would place the transmission line underground, no corona discharge noise would occur along the route of the Single-Circuit and Double-Circuit Options. Therefore, the placement of transmission line underground within the route of the Single-Circuit and Double-Circuit Options would result in a decrease in impact compared to the Approved Project. Furthermore, operation of the transition stations is expected to generate corona discharge noise similar or identical to that of the Approved Project above ground 500 kV transmission line. Therefore, operation of transition stations would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

Other operational noise impacts associated with the Single-Circuit and Double-Circuit Options would be limited to noise associated with short-term O&M activities, as described in Section A.1.11, Operations and Maintenance. Infrequent noise would be generated by routine inspection and maintenance activities. For the Approved Project, the Final EIR determined that the short-term and intermittent noise increases associated with O&M activities would not cause a permanent increase ambient noise levels and, therefore, noise impacts associated with O&M would not be significant. Because O&M activities for the Single-Circuit and Double-Circuit Options would also be short-term and intermittent in nature, and would not generate noise levels greater than those associated with O&M activities for the Approved Project, these activities would not result in a permanent increase in ambient noise levels (24-hour Leq) along the route of the Single-Circuit and Double-Circuit Options. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

Table A.3.9-6. Noise Policy Compliance Table – Operation

Applicable Policy	Compliance Analysis
City of Chino General Plan	
Objective N-1.1 Ensure appropriate exterior and interior noise levels for existing and new land uses. Policy P3. The City shall require measures that attenuate exterior and/or interior noise levels to acceptable levels to be incorporated into all development projects where current and/or future noise levels may be unacceptable.	The Single-Circuit and Double-Circuit Options would result in minimal noise during O&M activities and not generate corona noise. Therefore, the Single-Circuit and Double-Circuit Options would be in compliance with the city of Chino General Plan.
City of Chino Municipal Code Noise Ordinance	
Exterior noise standards for residential land use during operation. ▪ Maximum of 30 minute exposure: Exterior Noise Level not to exceed 55 dBA from 7 am to 10 pm and 50 dBA from 10 pm to 7 am ▪ Maximum of 15 minute exposure: Exterior Noise Level not to exceed 60 dBA from 7am to 10pm and 55 dBA from 10 pm to 7 am	The Single-Circuit and Double-Circuit Options would result in minimal noise during O&M activities and not generate corona noise. Therefore, the Single-Circuit and Double-Circuit Options would be in compliance with the city of

Table A.3.9-6. Noise Policy Compliance Table – Operation

Applicable Policy	Compliance Analysis
▪ Maximum of 5 minute exposure: Exterior Noise Level not to exceed 65 dBA from 7 am to 10 pm and 60 dBA from 10 pm to 7 am ▪ Maximum of 1 minute exposure: Exterior Noise Level not to exceed 70 dBA from 7 am to 10 pm and 65 dBA from 10 pm to 7 am ▪ Any time period exposure: Exterior Noise Level not to exceed 75 dBA from 7 am to 10 pm and 70 dBA from 10 pm to 7 am	Chino Municipal Code Noise Ordinance.
Section 9.40.040(B) states it is unlawful for any person at any location within the incorporated area of the city to create any noise on property controlled by such person which causes the noise level when measured on any other property to exceed the noise standard plus 5 dBA for a cumulative period of more than fifteen minutes in any hour.	The Single-Circuit and Double-Circuit Options would result in minimal noise during O&M activities and not generate corona noise. Therefore, the Single-Circuit and Double-Circuit Options would be in compliance with the city of Chino Municipal Code Noise Ordinance.
City of Chino Hills Municipal Code Noise Ordinance	
A significant noise impact is any noise that exceeds the City standard "Zone C" noise standard for that receiving land use specified in Table N-1 of the General Plan Noise Element by 5 dBA for a cumulative period of more than five minutes in any hour; or by 10 dBA for a cumulative period of more than five minutes in any hour; or by 15 dBA for a cumulative period of more than one minute in any hour; or by 20 dBA for any period of time.	The Single-Circuit and Double-Circuit Options would result in minimal noise during O&M activities and not generate corona noise. Therefore, the Single-Circuit and Double-Circuit Options would be in compliance with the city of Chino Hills Municipal Code Noise Ordinance.

Source: City of Chino, 2012; City of Chino, 2010; City of Chino Hills, 2012.

A.3.10 Public Services and Utilities

PUBLIC SERVICES AND UTILITIES		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
PSU1	Increase demand for public services that cannot be readily met by existing public service providers and facilities	☐	☒
PSU2	Impede or interfere with existing public services emergency access	☐	☒
PSU3	Result in a major reduction or interruption of existing utility systems or cause a collocation accident	☐	☒
PSU4	Substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater	☐	☒
PSU5	Require new or expanded water entitlements and resources	☐	☒
PSU6	Conflict with or be unable to adhere to federal, State, and/or local laws, regulations, or standards relating to solid waste	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.10.1 Setting

A variety of regional and local purveyors in and around the Cites of Chino Hills and Chino provide and maintain public services associated with fire and police protection and schools.

Fire Protection

The Chino Valley Independent Fire District (CHVID) provides fire protection for the cities of Chino and Chino Hills. The CHVID's Operations Division oversees the day-to-day emergency operations for the District, responding out of six fire stations located strategically throughout the District. Operating on three shifts, the suppression staff works a 48/96-hour schedule (48 hours on duty, followed by 96 hours off duty). Responding on seven medic engines, one ladder truck and a shift Battalion Chief, this compliment of 29 personnel provide emergency and non-emergency responses for the District approximately 9,000 times per year. (CHVID, 2012)

Police Protection

The City of Chino Hills has contracted with the San Bernardino County Sheriff's Department for law enforcement services since incorporation in 1991. The Chino Hills Police/Sheriff's Department includes one police station located in the Chino Hills Government Center on Peyton Drive. The Chino Police Department provides police protection services for the City of Chino.

Schools

The Chino Valley Unified School District includes 22 elementary schools, seven middle schools, six high schools, and three alternative/adult schools. The closest public schools to the route of the Single-Circuit and Double-Circuit Options are the Gerald F. Litel Elementary School, which is within 0.25 mile of the ROW; and the Hidden Trails Elementary School, which is approximately 0.3 mile from the ROW.

The private schools located near the route of the Single-Circuit and Double-Circuit Options include the following from west to east: the Montessori Pre-School is located within 800 feet north of the route; the Loving Savior of the Hills is within 600 feet south of the ROW; the Child Karousel Pre-School is approximately 800 feet north of the ROW; and at the east end of the route, on the border of the cities of

Chino and Chino Hills, the Montessori School of Chino Hills and the KinderCare Learning Center are within 500 feet of the ROW.

Other components of the Single-Circuit and Double-Circuit Options are addressed in the setting provided for the Approved Project, with the exception of the modifications to the substations. The modifications proposed for the Vincent and Serrano Substations would occur within in the existing substation site; however, modifications to the Mira Loma Substation would require SCE to incorporate approximately 4.5 acres of new land into the northwest corner of the substation. Colony High School is located approximately 1,000 feet north of the expansion site, which includes a track/football, baseball diamonds, basketball courts, and tennis courts.

Utility Systems

Utility networks and facilities associated with natural gas, electricity, wastewater, domestic (potable) water, solid waste, and disposal facilities are typically provided and maintained by a variety of local purveyors, including cities, counties, special districts, water agencies, and private companies. Utilities such as domestic water, wastewater and stormwater sewers, and natural gas are usually transmitted via underground pipelines or conduits. Electricity services can also be installed underground or overhead on utility poles. The vast majority of the urban utility and public service infrastructure exists within public ROWs.

Government agencies have recently categorized data pertaining to utility systems as sensitive critical infrastructure information (including location, capacity, and type). As a national security measure, public access to specific information is generally restricted, and the exact locations of underground lines are not publicized. Therefore, only information that is publicly accessible is presented in this section.

Table A.3.10-1. Utility Providers

Natural Gas	Southern California Gas Company
Electricity	Southern California Edison
Wastewater	Chino Hills Sanitation Maintenance, City of Chino Public Works Department
Solid Waste	Chino Hills Disposal, Waste Management (City of Chino)

Water

The City of Chino Hills has multiple sources of water supply: groundwater, the Monte Vista Water District (MVWD), the Water Facilities Authority (WFA), Chino Desalter Authority (CDA), and the Inland Empire Utilities Agency (IEUA). These five sources provide over 41 million gallons per day capacity (MGD). The WFA source obtains its water from the Metropolitan Water District of Southern California (MWD). (City of Chino Hills, 2011) The IEUA is also the water supplier for the City of Chino.

Disposal Facilities

Sanitary landfills are facilities that accept typical municipal solid waste as well as other wastes high in organic materials. Unclassified landfills accept only inert waste that is chemically and physically stable and does not undergo decomposition, including soil, concrete, asphalt, and other construction and demolition debris, as defined by California Code of Regulations, Title 23, Section 2554. Table A.3.10-2 lists the disposal facilities available for the construction activities of the Single-Circuit and Double-Circuit Options.

Table A.3.10-2. Disposal Facilities

Landfill Name	Total Capacity	Remaining Capacity (cubic yards)	Remaining Capacity (percent)	Maximum Throughput (tons/day)

Chino Valley Rock	460,500 tons	N/A*	N/A	1,500
Mid-Valley Sanitary Landfill	101.3 million cubic yards	67.5 million	66.6	7,500
San Timoteo Sanitary Landfill	20.4 million cubic yards	11.3 million	55.4	1,000

Sources: CalRecyce 2012a, 2012b, 2012c
*N/A: Data is not available

Applicable Regulations

There are several applicable federal, State, and local laws and regulations guiding public services and utility systems. These are discussed in detail in Section 3.11.3 of the Final EIR. The following is an update to the City of Chino's General Plan that was adopted after the Final EIR was published.

City of Chino General Plan – Public Facilities and Services Element. The Public Facilities and Services Element provides information and policy guidance to ensure public facilities and services to support existing and new development in the City of Chino. This Element addresses the changing public services and infrastructure needs of Chino and provides for the logical and timely extension of these services to keep pace with growth. Policies supporting quality schools and libraries, excellent police and fire services and well maintained infrastructure are essential to achieve the City's development objectives and to support the future envisioned by the residents of Chino. The Element also includes objectives and policies supporting water service, availability, and conservation; sewers; stormwater; and solid waste and recycling. (Chino, 2010)

A.3.10.2 Environmental Impacts and Mitigation Measures

PSU1 Increase demand for public services that cannot be readily met by existing public service providers and facilities.

The Final EIR (Section 3.11, Page 3.11-22) determined that fire hazards presented by the Approved Project would not pose significant impacts with the implementation of mitigation measures. Emergency response services would be necessary if a construction accident or other emergency incidents were to occur during construction of the Single-Circuit and Double-Circuit Options. As with the Approved Project, potential hazards could be the accidental ignition of a fire within the dry vegetation along the construction zone, particularly in areas along the ROW where vegetation is prevalent. As described in the Section 3.3 (Air Quality) of the Final EIR, the Approved Project includes APM AQ-7 (*Implement feasible fugitive dust control measures as provided in KCAPCD's Rule 402 and AVAQMD and SCAQMD Rule 403*), which requires implementation of control measures provided by the South Coast Air Quality Management District. These rules require watering as a fugitive dust control measure, which would also reduce the potential for accidental ignition in hazardous areas. In addition, as with the Approved Project, the SCE's Fire Management Plan would be need to be implemented under the Single-Circuit and Double-Circuit Options, which would prevent, control, and extinguish fire during the construction period. Therefore, the following mitigation measures from the Approved Project would also apply to the Single-Circuit and Double-Circuit Options: PSU-1b (*Review of construction methods by county fire departments*); PSU-1c (*Practice safe welding procedures*); and PSU-1d (*Fire preventive construction equipment requirements*). Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

PSU2 Impede or interfere with existing public services emergency access.

The Final EIR (Section 3.11, Page 3.11-22) determined that with the implementation of mitigation measures, impacts to the response time of emergency vehicles would be less than significant. As with the Approved Project, construction along the proposed route could interfere with the regular flow of traffic due to temporary lane closures. In the case of an emergency, this would also have an effect on the response time of emergency vehicles passing through the construction zone. In order to minimize adverse impacts, Mitigation Measure T-1a (*Prepare Traffic Control Plans*) requires SCE to inform emergency service agencies of road closures, detours, and delays. This measure also includes provisions to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, short detours, and alternate routes developed in conjunction with local agencies. In addition, Mitigation Measure T-2 (*Prepare Construction Transportation Plan*) requires SCE to describe alternate traffic routes, the timing of commutes, reduce crew-related traffic, and other mitigation methods for reducing construction-generated additional traffic on regional and local roadways. As with the Approved Project, implementation of Mitigation Measures T-1a and T-2 would mitigate this impact to a less-than-significant level and, therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Final EIR (Section 3.11, Page 3.11-23) determined that construction and operation of the Approved Project would not impede emergency aircraft response services. This impact was analyzed in the Final EIR since the average height of the transmission lines and towers with the Approved Project would increase by approximately 50 feet, which would decrease the effectiveness of emergency response operations utilizing aircraft. However, this impact would be reduced with the Single-Circuit and Double-Circuit Options since the transmission line would be located underground rather than aboveground. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

PSU3 Result in a major reduction or interruption of existing utility systems or cause a collocation accident.

The Final EIR (Section 3.11, Page 3.11-24) determined that disruptions in the flow of water and/or gas utility services are likely during the construction period, but impacts would be less than significant with the implementation of mitigation measures. As described in Section 3.11 of the Final EIR, during construction, there is potential for accidental disruption of other utility systems located in the construction zone. This could include overhead utility lines, such as telephone and cable television, and buried utility lines, such as water, wastewater, and natural gas lines. Buried lines are more likely to be accidentally disrupted because their exact locations are sometimes difficult to determine and, therefore, can be unintentionally disrupted by construction activities involving ground disturbance, such as excavation. The Final EIR determined that temporary disruption of utility systems during the construction period could be avoided with the implementation of mitigation measures. As with the Approved Project, Mitigation Measure PSU-4 (*Notification of utility service interruption*) would be required so that SCE would notify neighborhoods that may be affected. Given that any utility disruption would be temporary, and the public would be provided with sufficient notice to prepare for such an outage, implementation of Mitigation Measure PSU-4 would reduce this impact to a less-than-significant level. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Final EIR (Section 3.11, Page 3.11-25) determined that construction activity would limit access to Public Works maintenance yards, but this impact would be less than significant with the implementation of mitigation measures. As described in Section 3.11 of the Final EIR, Los Angeles County Public Works maintenance yards are located in the vicinity of the project route. However, no public works yards are located in the vicinity of the Single-Circuit and Double-Circuit Options. Therefore, no impact would occur, and implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

PSU4 Substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater.

The Final EIR (Section 3.11, Page 3.11-26) determined that the project would have sufficient water supplies available to the serve the project and no new entitlements would be needed. During construction, similar to the Approved Project, the Single-Circuit and Double-Circuit Options would generate minimal water demand, which would primarily be from water use for dust control and concrete manufacturing. As discussed in Section A.3-9 (Hydrology and Water Quality), the water supply required during construction of the Single-Circuit and Double-Circuit Options would be obtained in accordance with applicable permits and regulation, and would not substantially deplete water supplies. Upon completion of construction, no water supply would be required during operation of the Single-Circuit and Double-Circuit Options. Therefore, the Single-Circuit and Double-Circuit Options would not exceed the existing available water supplies, and, similar to the Approved Project, this impact would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Final EIR (Section 3.11, Page 3.11-26) determined that wastewater generation associated with the Approved Project would not place a significant burden on wastewater facilities serving the area and would not necessitate expansion of wastewater collection or treatment facilities serving the area. Similar to the Approved Project, the Single-Circuit and Double-Circuit Options would generate minimal wastewater during construction. As discussed in the setting above, existing wastewater facilities would adequately accommodate the minor demand caused by Project construction while serving existing commitments. Therefore, like the Approved Project, this impact would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

The Final EIR (Section 3.11, Page 3.11-27) determined that the project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and no significant impact would occur to waste facilities. Similar to the Approved Project, the Single-Circuit and Double-Circuit Options would generate construction-related debris including green waste, excavated soil, and demolition waste. SCE would recycle all materials as appropriate, and materials that could not be recycled would be disposed of in accordance with federal, State, and local regulations. The Chino Valley Rock, Mid-Valley Sanitary Landfill, and San Timoteo Sanitary Landfill would be available for disposal of solid waste during construction and operation of the Proposed Project. As shown in Table A.3.11-2 (above), the capacity for these landfills has not been met. The amount of solid waste generated by construction and operation of the Single-Circuit and Double-Circuit Options is not expected to exceed the capacity of these landfills. Therefore, the impact of solid waste disposal, like the Approved Project, would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

PSU5 Require new or expanded water entitlements and resources.

The Final EIR (Section 3.11, Page 3.11-27) determined that water used during construction for the Approved Project would not increase the demands of the water suppliers, and would not require new or expanded water facilities, sources, or entitlements. As with the Approved Project, the Single-Circuit and Double-Circuit Options would connect with existing water services and would not require expanded resources. The Single-Circuit and Double-Circuit Options would require negligible amounts of water for maintenance activities, therefore water demands of the Single-Circuit and Double-Circuit Options, like the Approved Project would have no impact on water entitlements and resources. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

PSU6 Conflict with or be unable to adhere to federal, State, and/or local laws, regulations, or standards relating to solid waste.

The Final EIR (Section 3.11, Page 3.11-28) determined that the Approved Project would comply with federal, State, and local statutes and regulations related to solid waste, and impacts would be less than significant with the implementation of mitigation measures. The California Integrated Waste Management Act of 1989 emphasizes resource conservation through reduction, recycling, and reuse of solid waste, and guides solid waste management. This regulation requires that localities conduct a Solid Waste Generation Study (SWGS) and develop a Source Reduction Recycling Element (SRRE). As with the Approved Project, the Single-Circuit and Double-Circuit Options would operate in accordance with these applicable Solid Waste Management Policy Plans by including recycling activities where feasible. It is assumed that as with the Approved Project, during construction all materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws. In addition, as identified in the setting above, the landfill serving the site would have sufficient capacity to accommodate the Project's construction solid waste disposal needs, and would not require the need for new or expanded landfill facilities. Therefore, the Single-Circuit and Double-Circuit Options would comply with federal, State, and local statutes and regulations related to solid waste disposal limits and landfill capacities. Similar to the Approved Project, a less than significant impact would occur under the Single-Circuit and Double-Circuit Options with the implementation of Mitigation Measure PSU-9 (Recycle construction waste) to ensure compliance with the Integrated Waste Management Act of 1989. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor a substantial increase in the severity of any significant impacts identified in the Final EIR.

A.3.11 Traffic and Transportation

TRANSPORTATION AND TRAFFIC Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
TRA1	Result in a temporary substantial disruption to traffic flow and/or substantial increased traffic congestion due to a major roadway (arterial or collector classification) being closed to through traffic as a result of construction activities with no suitable alternative route available; or the installation of the transmission line within, adjacent to, or across a roadway would reduce the number of, or the available width of, one or more travel lanes during the peak traffic periods?	☐	☒
TRA2	Result in an unacceptable reduction in level of service on the roadways in the project vicinity due to an increase in vehicle trips associated with construction workers or equipment?	☐	☒
TRA3	Temporarily restrict access to or from adjacent land uses with no suitable alternative access during construction?	☐	☒
TRA4	Restrict the movements of emergency vehicles (police cars, fire trucks, ambulances, paramedic units) with no reasonable alternative access routes available during construction or operations?	☐	☒
TRA5	Disrupt bus transit service with no suitable alternative routes or stops during construction?	☐	☒
TRA6	Temporarily disrupt rail traffic due to construction activities within, adjacent to, or across a railroad right-of-way?	☐	☒
TRA7	Impede pedestrian movements or bike trails in the construction area with no suitable alternative pedestrian/bicycle access routes?	☐	☒
TRA8	Increase the demand for and/or reduce the supply of parking spaces with no provisions for accommodating the resulting parking deficiencies during construction or staging activities?	☐	☒
TRA 9	Result in inconsistencies with regional and local transportation plans during construction?	☐	☒
TRA10	Result in an increase in roadway wear in the vicinity of the construction zone as a result of heavy truck or construction equipment movements, resulting in noticeable deterioration of a roadway surface or other features in the road ROW?	☐	☒
TRA11	Adversely affect aviation activities due to a project structure, crane, or wires?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.11.1 Setting

The route of the Single-Circuit and Double-Circuit Options mirrors the alignment of Eucalyptus Avenue and is located south of this street in the cities of Chino and Chino Hills. It generally traverses from southwest to northeast, with the southwest end concluding at the end of Eucalyptus Avenue and the northeast end concluding at SR 71 (Chino Valley Freeway). The proposed route is located approximately 2.7 miles south of the SR 60 and traverses underground in SCE's existing ROW through Pipeline Avenue, Peyton Drive, Chino Hills Parkway, and Canon Lane. Figure A.1-1 (Project Location Map) in Section A.1, Project Description, depicts the existing roadways in the vicinity of the Single-Circuit and Double-Circuit Options. As part of the underground options, modifications will be required at three existing substations: Mira Loma Substation (City of Ontario), Vincent Substation (near City of Action), and Serrano Substation (City of Orange). These substations are located in areas of residential, recreational, and commercial development.

Below is a brief discussion of the setting and applicable regulations for the Single-Circuit and Double-Circuit Options. This information has not changed from what was discussed in the Final EIR. For a complete discussion of the setting in the vicinity of the Single-Circuit and Double-Circuit Options, please see Section 3.13 (Traffic and Transportation) of the Final EIR.

Roadway Network

SR 71 (Chino Valley Freeway) is a six-lane freeway that is located on the east end of the route of the Single-Circuit and Double-Circuit Options. This freeway connects Los Angeles and San Bernardino Counties to the Chino Valley. SR 60 is an eight-lane divided highway located south of the route of the Single-Circuit and Double-Circuit Options that connects Riverside County to downtown Los Angeles. A number of local area roadways in the cities of Chino and Chino Hills would be utilized by construction-related traffic, including Chino Hills Parkway, Eucalyptus Avenue, Peyton Drive, Pipeline Avenue, Central Avenue, Edison Avenue, Brea Canyon Road, and Tonner Canyon Road. Please see Appendix 4 for a figure showing access routes in the Single-Circuit and Double-Circuit Options area.

Transit and Rail Services

Transit service in the Option 11 area is provided by Omnitrans and other local providers in San Bernardino County.

Air Transportation

The LA/Ontario International Airport is located in the City of Ontario just south of Interstate 10 (I-10) and approximately two miles east of the I-15 freeway. This airport is a regional and international airport that serves San Bernardino County with daily commercial air service. Chino Airport is a regional aviation airport located in Chino Hills approximately one mile south of Edison Boulevard along SR 83. Chino Airport is owned and operated by San Bernardino County and provides general aviation service.

Applicable Regulations

Regulations and guidelines applicable to Traffic and Transportation are presented in Section 3.13.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

A.3.11.2 Environmental Impacts and Mitigation Measures

TRA1 Would the project result in a temporary substantial disruption to traffic flow and/or substantial increased traffic congestion due to a major roadway (arterial or collector classification) being closed to through traffic as a result of construction activities with no suitable alternative route available; or the installation of the transmission line within, adjacent to, or across a roadway would reduce the number of, or the available width of, one or more travel lanes during the peak traffic periods?

Construction. Daily truck movements associated with the Single and Double Circuit Options would include movement of construction materials and equipment to work locations and removal of waste materials from work locations. Excavated materials may be hauled throughout the day depending upon the timing of activities. Additionally, construction-related vehicle trips would be associated with daily workers commuting to and from the work site. As described in Section A.1.10, Project Construction, it is estimated that a maximum total of approximately 104 construction personnel (accounting for construction phase overlap) would be working on any given day. It is assumed that workers would generate a maximum of 208 daily vehicle round trips (accounting for construction phase overlap) on any

given day. This amount of construction worker daily vehicle trips is small in comparison to the overall construction traffic generated by the Approved Project.

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-1), construction vehicles would be added to several roadways throughout the Project area that currently experience high traffic volumes. Construction-related trips would be distributed throughout the day, with worker truck trips occurring between worker arrival and departure times. With mitigation, the Final EIR determined that the temporary addition of construction vehicles to the roadway system would not result in a significant impact.

Construction of the Single-Circuit and Double-Circuit Options would require a substantial number of construction-related trips to area roadways, due to haul trips necessary to transport excavation spoils from the site as well as additional equipment and materials required for underground construction. Temporary closure of travel lanes would affect the performance of the local circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and transit. SCE would be required to obtain encroachment permits from the local jurisdictions and Caltrans, as appropriate, for construction activities that would encroach within any public ROWs or easement. As obtaining encroachment permits does not ensure avoidance of construction impacts related to temporary lane closures or reduction of travel lanes, additional measures were recommended in the Final EIR including implementation of SCE's APMs TRA-1 (*Minimize Street Use*), TRA-2 (*Obtain Permits*), TRA-3 (*Incorporate Protective Measures*), TRA-4 (*Prepare Traffic Management Plans*), as supplemented by Mitigation Measures T-1a (*Prepare Traffic Control Plans*) and T-1b (*Restrict lane closures*). With implementation of these measures, the Single-Circuit and Double-Circuit Options would not result in a new significant environmental effect or a substantial increase in the severity of a significant transportation impacts from temporary lane closures or reduction of travel lanes.

TRA2 Would the project result in an unacceptable reduction in level of service on the roadways in the project vicinity due to an increase in vehicle trips associated with construction workers or equipment?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-2), although Project-related commute traffic and construction truck/equipment activity is expected to be dispersed over the entire Project area and also dispersed over time, given the dense development of this area and the high volumes of traffic on major roadways, construction traffic would contribute to congestion. This impact, as well as the duration for which it would occur, would be increased with the construction. The Final EIR determined that the increase in construction traffic would not result in a significant impact with the implementation of mitigation measures.

Roadways that would be affected by construction that currently experience high traffic volumes include SR60 and SR71. Construction of the Single-Circuit and Double-Circuit Options would temporarily add a substantial number of construction-related trips to area roadways, due to haul trips necessary to transport excavation spoils from the site as well as additional equipment and materials required for underground construction (e.g., concrete and other infrastructure) to the site. However, this increase in construction-related trips would not be substantial in comparison to the amount of construction-related trips for the Approved Project as a whole. The additional trips associated with equipment and materials required for underground construction would not result in an impact greater than the Approved Project. The Final EIR concluded that the Approved Project would have a less-than-significant impact with the implementation of mitigation. The Single-Circuit and Double-Circuit Options would also implement Mitigation Measure T-2 (*Prepare Construction Transportation Plan*) from the Final EIR, which would ensure that impacts are less-than-significant. Mitigation Measure T-2 would reduce the number of

construction-related vehicles traveling to areas of active construction along the ROW and would require construction vehicles to be parked within the Project ROW or on ROW access roads to the maximum extent possible, thereby reducing the number of vehicles parked on public roadways. Therefore, with mitigation, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to conflict with an applicable congestion management program identified in the Final EIR.

TRA3 Would the project temporarily restrict access to or from adjacent land uses with no suitable alternative access during construction?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR, the Approved Project would not restrict access to driveways or otherwise affect access for the adjacent residences, institutions, businesses, or other uses. The Approved Project does not include any trenching or other excavation in road ROWs that would impede access to adjacent uses; therefore, the Final EIR concluded that no impacts associated with restricted access to properties would occur. However, for the Single-Circuit and Double-Circuit Options, trenching would occur along most of the underground segment and, in the remaining areas, HDD would be utilized. HDD would occur at the crossing of Peyton Drive and Lost Trails Drive. Trenching would occur at the crossings of several streets along SCE's existing ROW, including Pipeline Avenue, Lobelia Drive, Cork Drive, Morningfield Drive, Foxwood Drive, Maplewood Drive, Little Bend Road, Calle Madrid, Avenue Cabrillo, Cannon Lane, and Chino Hills Parkway. As such, implementation of the Single-Circuit and Double-Circuit Options would result in temporary restrictions to access of adjacent land uses. However, although the underground options would create a temporary impact during construction, it would not be substantial in comparison to the temporary impact caused by the Approved Project as a whole. Additionally, mitigation measures and APMs from the Final EIR would be implemented by the underground options to reduce significant impacts. These measures include the restriction of lane closures (T-1b) which would minimize traffic congestion and delays during construction to the extent feasible. Implementation of SCE's APMs and existing Final EIR mitigation measures would reduce this impact to a less-than-significant level. These include Mitigation Measures T-1a, T-1b, T-2, L-1a (*Construction liaison – Property owners*), L-1b (*Advance notification of construction – Property owners*), L-1c (*Quarterly construction updates – Property owners*), and L-2a (*Construction plan provisions – Non-residential property owners*). Therefore, with implementation of these mitigation measures, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to temporary restrictions to access of adjacent land uses identified in the Final EIR.

TRA4 Would the project restrict the movements of emergency vehicles (police cars, fire trucks, ambulances, paramedic units) with no reasonable alternative access routes available during construction or operations?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-3), overhead construction activities would interfere with emergency response by ambulance, fire, paramedic, and police vehicles. Potential roadway segments that would be most impacted would be two-lane roadways, which provide one lane of travel per direction. On roadways with multiple lanes, the loss of a lane and the resulting increase in congestion could lengthen the response time for emergency vehicles to pass through the construction zone. Additionally, there is a possibility that emergency services would be needed at a location where access is temporarily blocked by the construction zone. The Final EIR determined that the Approved Project would not result in inadequate emergency access with the implementation of mitigation measures. Mitigation Measure T-1a (*Prepare Traffic Control Plans*) from the Final EIR includes measures, such as keeping emergency service agencies fully informed of road closures, detours, and delays and making ready at all times provisions to accommodate emergency

vehicles. Additionally, Mitigation Measure T-1b (*Restrict lane closures*) from the Final EIR would reduce the potential for roadway congestion to occur, which would also reduce the potential for interference with emergency services. Implementation of Mitigation Measures T-1a and T-1b would reduce this impact for the Single-Circuit and Double-Circuit Options to a less-than-significant level. Implementation of the underground options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to inadequate emergency access identified in the Final EIR.

TRA5 Would the project disrupt bus transit service with no suitable alternative routes or stops during construction?

The Final EIR determined that while construction of the Approved Project would disrupt bus transit routes, Mitigation Measure T-4 (*Avoid disruption of bus service*) would reduce this impact to a less-than-significant level. Within the vicinity of the Single-Circuit and Double-Circuit Options, transit route Omni 65 operates. Impacts related to construction of the Single-Circuit and Double-Circuit Options would be avoided or minimized with implementation of Mitigation Measure T-4; therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant traffic impacts related to disruptions in bus transit service identified in the Final EIR.

TRA6 Would the project temporarily disrupt rail traffic due to construction activities within, adjacent to, or across a railroad right-of-way?

The Final EIR determined that while construction of the Approved Project would interfere with rail traffic, Mitigation Measure T-5 (*Obtain and comply with railroad permits*) would reduce this impact to a less-than-significant level. Within the vicinity of the Single-Circuit and Double-Circuit Options, there are no railroad lines. As a result, the Single-Circuit and Double-Circuit Options would not result in an impact on rail traffic. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant traffic impacts related to disruptions in rail traffic identified in the Final EIR.

TRA7 Would the project impede pedestrian movements or bike trails in the construction area with no suitable alternative pedestrian/bicycle access routes?

The Final EIR determined that while construction of the Approved Project would disrupt pedestrian and bicycle routes, Mitigation Measure T-6 (*Ensure pedestrian and bicycle circulation and safety*) includes provisions such as providing pedestrian and bicycle access and detours to avoid such disruption, which would reduce this impact to a less-than-significant level. While there are no designated bike routes identified in the vicinity of the Single-Circuit and Double-Circuit Options, there are several pedestrian paths within and along the SCE's ROW through Chino Hills. Impacts would be reduced with implementation of Mitigation Measure T-6. Therefore, with implementation of mitigation, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to interference with use of pedestrian and bicycle paths identified in the Final EIR.

TRA8 Would the project increase the demand for and/or reduce the supply of parking spaces with no provisions for accommodating the resulting parking deficiencies during construction or staging activities?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-7), construction workers would be expected to park vehicles within the ROW or on existing ROW access roads. The Single-Circuit and Double-Circuit Options would be located in an area of dense residential development in the cities of Chino and Chino Hills. Depending on the intensity and physical logistics of specific

construction activities, construction workers may be required to park along local residential roadways and major collector roads directly crossed by the Single-Circuit and Double-Circuit Options in these areas. Such activities would result in the temporary reduction of residential parking spaces in these areas. Although the duration of construction activities at any one location along the ROW would be short term and the reduction of parking spaces at any location would be temporary, impacts would be significant. Implementation of Mitigation Measure T-2 (*Prepare Construction Transportation Plan*) from the Final EIR would reduce the number of construction-related vehicles traveling to areas of active construction along the ROW and would require construction vehicles to be parked within the Project ROW or on ROW access roads to the maximum extent possible, thereby reducing the number of vehicles parked on public roadways. Similar to the Final EIR, implementation of this measure would reduce this impact for the Single-Circuit and Double-Circuit Options to a less-than-significant level. Therefore, with implementation of mitigation, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to the supply of parking spaces identified in the Final EIR.

TRA9 Would the project result in inconsistencies with regional and local transportation plans during construction?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-8), the Approved Project would conflict with a new travel lane within SR14 if SCE were to place structures within the existing or planned SR14 ROW, resulting in a significant impact. Implementation of Mitigation Measure T-8 (*Avoid conflicts with planned transportation improvements*) requires coordination with Caltrans and the Los Angeles County Metropolitan Transit Authority to ensure Project structure locations would not conflict with the future travel lane, such that impacts would be reduced to a less-than-significant level.

No transportation projects have been identified in the vicinity that would be affected by implementation of the Single-Circuit and Double-Circuit Options. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to the supply of parking spaces identified in the Final EIR.

TRA10 Would the project result in an increase in roadway wear in the vicinity of the construction zone as a result of heavy truck or construction equipment movements, resulting in noticeable deterioration of a roadway surface or other features in the road ROW?

As discussed in Section 3.13 (Traffic and Transportation) of the Final EIR (Impact T-9), implementation of the Approved Project would only cause minimal physical damage to roads, sidewalks, medians, etc., within public roads or sidewalks. There is the potential for unintended damage to occur to features in road ROWs due to the operation of construction vehicles and equipment. APM TRA-5 (*Repair Damaged Streets*) requires any damage to local streets to be repaired, and streets to be restored to their pre-Project condition. As such, the Final EIR determined that the Approved Project's impacts related to physical damage of roads, sidewalks, and medians was less than significant. The Single-Circuit and Double-Circuit Options would include trenching through various roadways along the 3.5-mile underground segment; however, roads would be restored immediately following construction activities per APM TRA-5. Therefore, impacts would remain less than significant. As a result, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant traffic impacts related to increased hazards because of a design feature or incompatible use identified in the Final EIR.

TRA11 Would the project adversely affect aviation activities due to a project structure, crane, or wires?

The Final EIR determined that there would be a less-than-significant impact to air traffic patterns in the Segment 8 area with implementation of FAA recommendations, which would result from FAA consultation required by Mitigation Measure L-2b (*Aircraft flight path and safety provisions and consultations*). The Single-Circuit and Double-Circuit Options are located approximately 3.8 miles southeast of the Ontario International Airport and approximately two miles west of the Chino Airport. The entire 3.5-mile route of the Single-Circuit and Double-Circuit Options would be located underground, with the exception of the transition stations at each end. The transition stations would include dead-end structures approximately 90 feet in height. Overhead shield wires would connect the dead-end structures to existing dead-end transmission structures located outside of the transition station boundaries. Because the structures associated with the Single-Circuit and Double-Circuit Options would be shorter than those of the Approved Project, the Single-Circuit and Double-Circuit Options would not result in a new significant impact to air traffic patterns or aviation safety or substantially increase the severity of any significant air traffic impacts identified in the Final EIR.

A.3.12 Visual Resources

VISUAL RESOURCES Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
VIS1	Have a substantial adverse effect on the existing landscape character and visual quality of the site and its surroundings?	☐	☒
VIS2	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☒
VIS3	Substantially damage scenic resources within a scenic highway viewshed or a national scenic trail viewshed (including, but not limited to, trees, rock outcroppings, and historic buildings)?	☐	☒
VIS4	Conflict with applicable adopted city, county, State, or federal plans, policies, regulations, or standards applicable to the protection and management of visual quality in the landscape.	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.12.1 Setting

The Single-Circuit and Double-Circuit Options traverse areas of suburban development in the cities of Chino Hills and Chino. The majority of areas along each side of the ROW are developed with residential, recreational, and commercial development. There are also several areas along the route of the Single-Circuit and Double-Circuit Options that consist of hillsides and grasslands interspersed with trees and shrubs. Recently installed transmission structures (including tubular steel poles and partially constructed lattice steel towers) currently exist within the ROW where the Single-Circuit and Double-Circuit Options would be located. These above-ground portions of these structures would be removed prior to construction of the Single-Circuit and Double-Circuit Options. A fuller description of visual resources along the ROW in the cities of Chino Hills and Chino is presented in Section 3.14 (Visual Resources) of the Final EIR (CPUC, 2009).

Modifications will be required at three existing substations: Mira Loma Substation (City of Ontario), Vincent Substation (near City of Action), and Serrano Substation (City of Orange). These substations are located in areas of residential, recreational, and commercial development. SCE would be required to install inductive reactance (opposition to a change in alternating current flow) at Mira Loma Substation to compensate for capacitive reactance (opposition to alternating current due to the capacitance of a capacitor, cable, or circuit) in the underground cable segment of the transmission line. Protective relay system changes would be implemented at Vincent Substation. To compensate for the capacitive reactance in the underground cable segment of the transmission line during low load conditions, SCE would add inductive reactance at Serrano Substation.

Below is a brief discussion of the applicable regulations for the Single-Circuit and Double-Circuit Options.

Applicable Regulations

State

Regulations and guidelines applicable to Visual Resources are presented in Section 3.14.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR. ***Local***

No changes in applicable local regulations have occurred since the certification of the Final EIR.

A.3.12.2 Environmental Impacts and Mitigation Measures

VIS1 Would the project have a substantial adverse effect on the existing landscape character or visual quality of the site and its surroundings?

The Final EIR (Section 3.14, Page 3.14-105) described temporary visual effects associated with the Approved Project that would occur during construction from the presence of equipment, materials, and work force along the ROW and concluded that these effects would not be significant. Similar temporary visual impacts would occur with the construction of the Single-Circuit and Double-Circuit Options, except that construction activities would occur along the entire length of the ROW where the underground line would be installed, whereas construction activities associated with the Approved Project are more limited and occur primarily around the locations where new aboveground transmission structures are installed. Construction impacts on visual resources would also result from the temporary alteration of landforms and vegetation within the ROW. Vehicles, heavy equipment, materials, and workers would be visible during site clearing, grading, construction of the ductbank and transition stations, and site/ROW clean-up and restoration. These construction impacts would be temporary and, with restoration, the ROW would eventually return to a condition similar to what existed prior to construction.

Construction of the Single-Circuit and Double-Circuit Options would include compliance with Mitigation Measures V-1 (*Clean up staging areas, storage areas, marshalling yards, helicopter staging areas, access and spur roads, and structure locations on a regular periodic basis*), V-4a (*Construct, operate, and maintain the Project using existing access and spur roads where feasible*), V-4b (*Slope-round and re-contour in areas as prescribed*), and V-4d (*Dispose of excavated materials as prescribed*) of the Final EIR. Similar to the Approved Project, compliance with these mitigation measures would reduce the adverse visual impacts associated with the construction phase of the Single-Circuit and Double-Circuit Options to a less-than-significant level.

The Final EIR (Section 3.14, Impacts V-2 and V-3) concluded that the long-term visual impacts of the Approved Project would be significant due to the size, visual contrast, and prominence of the 500-kV transmission structures. Implementation of the Single-Circuit and Double-Circuit Options would include removal of overhead transmission structures from the 3.5-mile length of the ROW where the transmission line would be placed underground. At each end of the underground segment, transition stations would be constructed, which would include aboveground components and equipment as the conductors (cables) are transitioned from an above-ground configuration to an underground ductbank and vice versa. At each transition station, SCE would need to install a lattice double-circuit 500-kV dead-end structure to bring the overhead transmission lines into the transition stations. The transition stations would be shorter in appearance compared to the overhead transmission structures that would be removed and would have a reduced presence visually in comparison to the number of structures that would be removed. There would only be one 500-kV dead-end structure at each transition station and it would still represent a reduced impact in comparison to the existing 16 constructed or partially constructed overhead transmission structures that would be removed.

Modifications will be required at three existing substations: Mira Loma Substation, Vincent Substation, and Serrano Substation. SCE would be required to install inductive reactance at Mira Loma Substation to compensate for capacitive reactance in the underground cable segment of the transmission line. Approximately one 500-kV lattice steel structure would be removed, and approximately one lattice steel structure and one tubular steel structure would require erection associated with the Rancho Vista 500-kV line rework. Also one lattice steel structure would require demolition and approximately one tubular steel structure and a steel H-frame structure will be required in connection with the Vincent 500-kV line rework. Protective relay system changes would be implemented at Vincent Substation. To compensate

for the capacitive reactance in the underground cable segment of the transmission line during low load conditions, SCE would add inductive reactance at Serrano Substation.

Because the transmission infrastructure associated with the Single-Circuit and Double-Circuit Options would be located underground and generally out of sight (with the exception of the two transition stations and 500-kV dead-end structures, and four structures associated with substation modifications), visual impacts would be reduced compared to the Approved Project. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant adverse impact nor substantially increase the severity of any significant impacts identified in the Final EIR. Rather, with the Single-Circuit and Double-Circuit Options, visual impacts would be reduced compared to the Approved Project along the portion of the ROW where the lines would be placed underground.

VIS2 Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Impact V-5 in the Final EIR (Section 3.14) described potential glint and glare impacts from the metal surfaces of new aboveground transmission infrastructure, and concluded that this impact could be reduced to a less-than-significant level with implementation of APM AES-1 (*Transmission Lines – Reduce Light Reflection off Towers/Poles*) and Mitigation Measure V-2b (*Treat surfaces with appropriate colors, textures, and finishes*). In addition, aviation safety lights sometimes need to be installed on transmission structures as directed by the Federal Aviation Administration, which can add a new source of lighting that affects nighttime views.

With the implementation of the Single-Circuit and Double-Circuit Options, the overhead transmission infrastructure associated with the Approved Project would be removed along the 3.5-mile length of the Single-Circuit and Double-Circuit Options and instead the transmission line would be installed underground (with the exception of two transition stations and 500-kV dead-end structures, and four structures associated with substation modifications). This results in the elimination of overhead transmission structures in the 3.5-mile segment of the ROW associated with the Single-Circuit and Double-Circuit Options and, therefore, removes most of the potential for glint and glare impacts from metal surfaces and effects on nighttime views caused by aviation safety lighting. The transition stations could present glint and glare impacts, but they would be reduced in comparison to the Approved Project because of the reduced amount of above-ground transmission infrastructure. As a result, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant visual impact nor substantially increase the severity of any significant visual impacts identified in the Final EIR. Rather, with the Single-Circuit and Double-Circuit Options, light and glare conditions would be improved compared to the Approved Project along the portion of the ROW where the lines would be placed underground.

VIS3 Would the project substantially damage scenic resources within a scenic highway viewshed or a national scenic trail viewshed (including, but not limited to, trees, rock outcroppings, and historic buildings)?

The Final EIR (Section 3.14, Page 3.14-129) concluded that the introduction of new 500-kV transmission line crossing over scenic highways and trails would create a significant impact; however, implementation of Mitigation Measure V-3b (*On NFS lands, provide restoration/compensation for impacts to landscape character and visual quality*) would help to minimize and compensate for the adverse visual effects resulting in a less-than-significant impact.

As described in the Final EIR (Section 3.14, Impact V-6), no State-designated or eligible scenic highways or national scenic trails are located in the immediate vicinity of the Single-Circuit and Double-Circuit

Options. Therefore, similar to the Approved Project, the Single-Circuit and Double-Circuit Options would not damage scenic resources within a scenic highway or national scenic trail viewshed and no impact would occur. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

VIS4 Would the project conflict with applicable adopted city, county, State, or federal plans, policies, regulations, or standards applicable to the protection and management of visual quality in the landscape?

The Approved Project required Project-specific amendments to the Forest Service's Land Management Plan (Forest Plan) for the ANF, specifically Forest Plan (Part 3) Standards 9 and 10 regarding Scenic Integrity Objectives. As concluded in the Final EIR (Section 3.14, Page 3.14-132), the Approved Project also conflicts with Goal Visual-1 and Objective Visual-1.2 of the Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA) Resource Management Plan. As such, the Final EIR concluded that the Approved Project would result in a significant and unavoidable impact, even after implementation of Mitigation Measure V-3b. The Single-Circuit and Double-Circuit Options would occur within Chino and Chino Hills; therefore, it would not result in additional conflicts with the Forest Plan or PHLNHPA Resource Management Plan. The Single-Circuit and Double-Circuit Options would not conflict with adopted plans, policies, regulations, or standards related to the protection and management of visual quality in the landscape. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.13 Wilderness and Recreation

RECREATION		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
REC1	Would the project directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas or wilderness areas?	☐	☒
REC2	Would the project substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities or wilderness areas?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.13.1 Setting

The Single-Circuit and Double-Circuit Options would place the Approved Project transmission line underground through a portion of Chino Hills and Chino, in largely residential areas. There are a variety of small parks in this vicinity. These resources are summarized below, from west to east.

- **Western Hills Country Club.** This private 18-hole golf club stretches between Eucalyptus Avenue to the north and Carbon Canyon Road to the South, between Canon Lane to the west and Fairway Drive to the east. The Single-Circuit and Double-Circuit Options traverse the northern-most portion of the golf course.
- **Coral Ridge Park.** This is a 6.5-acre community park with a playground, picnic area, basketball half-court, barbeque area, and lighted tennis courts. From Coral Ridge Park, a bike-pedestrian pathway continues to the northeast, within the ROW. The Single-Circuit and Double-Circuit Options traverse this park in a southwest-northeast direction, between the tennis courts to the north and the playground area to the south.
- **Pedestrian/Bicycle Trail.** This trail is located within the ROW approximately between Coral Ridge Park and Morning Field Park, traversing across Chino Hills Parkway and connecting at Lost Trail Drive.
- **Crossroads Park.** This is a 12.8-acre park with trail access, par course, basketball court, grass area, summer concert-in-the-park series, playground, picnic areas, exercise course, two tennis courts, BBQ area, and a gazebo. The Single-Circuit and Double-Circuit Options traverse this park in a southwest-northeast direction, primarily with open space and trails to the north and open space and tennis courts to the south.
- **Oak Ridge Park.** This is a 3.7-acre park with playground soccer field, football field, and trailhead. Oak Ridge Park is located within one half-mile to the southeast of the Single-Circuit and Double-Circuit Options.
- **Morningside Park.** This is a 3.5-acre park with open space, grassy areas, and picnic tables. Morningside Park is located within 0.4 mile to the southeast of the Single-Circuit and Double-Circuit Options.
- **Morningfield Park.** This park is the terminus for the pedestrian/bicycle trail summarized above. Morningfield Park includes a playground and picnic area with barbeque facilities, and is located adjacent (within 0.05 mile) to the south of the Single-Circuit and Double-Circuit Options.
- **Glenmeade Park.** This 3.2-acre park includes a playground, volleyball court, picnic tables, and barbeque facilities. Glenmeade Park is located within 0.4 mile to the south of the Single-Circuit and Double-Circuit Options.

A small portion of the Single-Circuit and Double-Circuit Options would be placed within the city of Chino, and there are a number of recreational opportunities and resources available within Chino; however, none are within the vicinity of the Single-Circuit and Double-Circuit Options. All of the recreational resources and opportunities summarized above are located within the city of Chino Hills.

The Single-Circuit and Double-Circuit Options involve the underground installation of approximately 3.5 miles of transmission line and associated infrastructure along Segment 8A of the Approved Project. This would include the installation of a transition station at both the west and east ends of the underground segment in order to guide the transmission line between overhead and underground alignments. As described in Section A.1 (page A.1-23), both transition stations would be approximately three acres in size. The western transition station would be mostly surrounded by open space, while the eastern transition station would be located near improvements that are close to or within the proposed ROW. Two potential locations are under consideration for the eastern transition station, one on the east side of Pipeline Avenue, and one on the west side. The site to the west of Pipeline Avenue was analyzed in the Final EIR for the Approved Project, and would require displacement of existing businesses, whereas the site to the east of Pipeline Avenue is closer to the edge of Chino Hills city limits and would require trenching across Pipeline Avenue, but would not displace existing businesses. The wilderness and recreation settings relevant to each transition station site are consistent with the setting described for Segment 8A in the same areas. The transition stations are described below as relevant.

The Approved Project would also result in expansion and upgrades to five existing substations, including the expansion of Mira Loma Substation by approximately 4.5 acres; Mira Loma Substation is the terminus for Segment 8, which would be affected by the Single-Circuit and Double-Circuit Options. All substations affected by these actions are included in the environmental setting provided in this section and considered in the impact analysis presented in Section A.3.13.2.

Applicable Regulations

Federal, State, and local laws and regulation guiding the preservation and management of wilderness and recreation are described in Section 3.15.3 of the Final EIR. The Single-Circuit and Double-Circuit Options would cross lands within the cities of Chino Hills and Chino of San Bernardino County, and is subject to the applicable General Plan(s). As required by the State of California, each General Plan includes the following seven mandatory elements: Circulation, Conservation, Housing, Land Use, Noise, Open Space, Safety, and Seismic Safety. Although it is not mandatory that General Plans include an element for Recreation, some cities may choose to include additional elements to address such issue areas. In addition, some aspects of Recreation may be addressed in the Conservation or Open Space elements of a General Plan. No additional regulations are applicable to the Single-Circuit and Double-Circuit Options with respect to wilderness and recreation.

A.3.13.2 Environmental Impacts and Mitigation Measures

REC1 Would the project directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas or wilderness areas?

As discussed in Section 3.15 (Wilderness and Recreation) of the Final EIR (Impacts R-1 and R-2), temporary access restrictions to established recreational areas or disruption of activities within such areas as a result of Project construction, operation, and maintenance would negatively affect members of the public who would otherwise use these resources. The Final EIR concluded that with implementation of SCE's APMs and mitigation measures, impacts related to the disruption or restriction of recreational areas would be reduced to a less-than-significant level.

As discussed in Section 3.15 (Wilderness and Recreation) of the Final EIR, the Approved Project traverses the Coral Ridge Park in a southwest-northeast direction, between the tennis courts to the north and the playground area to the south, and there is a pedestrian/bicycle trail located within the ROW approximately between Coral Ridge Park and Morning Field Park, traversing across Chino Hills Parkway and connecting at Lost Trail Drive. Also, the Approved Project traverses the Crossroads Park in a

southwest-northeast direction, primarily with open space and trails to the north and open space and tennis courts to the south. Construction of the Single-Circuit and Double-Circuit Options would temporarily disturb recreation activities at these parks. In particular, the construction crews and equipment required for demolition of the existing structures already built as part of the Approved Project, trenching for the Single-Circuit and Double-Circuit Options, and construction of the ductbank systems would interfere with recreation activities. While these impacts would be temporary, they are expected to be of a longer duration than under the Approved Project due to the greater intensity of construction for the Single-Circuit and Double-Circuit Options. In order avoid potential disruptions to recreationalists, compliance with Mitigation Measures R-1a (*Coordinate construction schedule and maintenance activities with managing officer(s) for affected recreation areas*) and R-1b (*Identify and provide noticing of alternative recreation areas*) would be required. With implementation of these measures, impacts would be less than significant. Implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

REC2 Would the project substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities or wilderness areas?

As discussed in the Final EIR (Section 3.15, Impact R-3), the Approved Project only affects one identified wilderness area, the San Gabriel Wilderness which is located adjacent and east of Segment 6, within the Angeles National Forest and more than 20 miles north of the Single-Circuit and Double-Circuit Options on Segment 8. The Final EIR concludes that while the Approved Project activities would have the potential to degrade the qualities of solitude and unconfined recreation in the remote southwestern portion of the San Gabriel Wilderness, as well as the more intensely visited southern portions of the San Gabriel Wilderness, due to the low volume of recreationists that would experience this impact in the southwest, and the lower prominence of these characteristics in the south, impacts would be less than significant and no mitigation is required. The Single-Circuit and Double-Circuit Options would occur within Segment 8 and would have no impact on the San Gabriel Wilderness or any other wilderness areas, including as relevant to the transition stations and the substations.

The Approved Project's impacts related to long-term loss or degradation of recreational facilities or wilderness areas include contributing to the degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-4); degradation of off-highway vehicle (OHV) trails or open riding areas, or loss of recreational opportunities for OHV users (Impact R-5); and facilitating unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-6). The Final EIR (Section 3.15, Impacts R-4 through R-6) concludes that implementation of mitigation measures would reduce temporary and permanent impacts to the recreational experience of the PCT, OHV opportunities, and unmanaged recreational uses to a less-than-significant level. The Single-Circuit and Double-Circuit Options would occur in a highly developed and largely urbanized area within SCE's existing ROW and is not in the vicinity of the PCT or in an area with OHV recreational opportunities. Furthermore, this area has an extensive network of existing roadways that provide access to recreational resources such that it is not expected that roadways associated with the Project would be used for unauthorized recreational purposes. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.14 Wildfire Prevention and Suppression

WILDFIRE PREVENTION AND SUPPRESSION Would the project:		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
WPS1	Adversely affect fire prevention and suppression activities?	☐	☒
WPS2	Expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire?	☐	☒
WPS3	Result in a fuel vegetation matrix with an increased ignition potential and rate of fire spread as a result of Project construction or maintenance activities?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.14.1 Setting

The wildfire influence area of the Approved Project is defined by two, unique wildfire risk areas: the high-risk Tehachapi Fireshed, as shown in Figure 3.16-1 of the Final EIR (CPUC, 2009); and a low-risk area. Modification would be conducted at the Mira Loma, Vincent, and Serrano Substations. The Vincent Substation is located within the Tehachapi Fireshed, and the Mira Loma and Serrano Substations are located outside of the Fireshed. The 3.5-mile segment of underground transmission line that would be installed under the Single-Circuit and Double-Circuit Options through Segment 8A would fall within the Tehachapi Fireshed. The behavior and characteristics of wildfires are dependent on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and ignitions (e.g., lightning). The anthropogenic variables are ignitions (e.g., arson, smoking, power lines) and management (wildfire prevention and suppression efforts). Section 3.16.2 of the Final EIR (CPUC, 2009) presents the environmental setting for wildfire prevention and suppression.

Applicable Regulations

Regulations and guidelines applicable to wildfire prevention and suppression are presented in Section 3.16.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

A.3.14.2 Environmental Impacts and Mitigation Measures

WPS1 Would the project adversely affect fire prevention and suppression activities?

As described in Section 3.16 (Wildfire Prevention and Suppression) in the Final EIR, Project construction and maintenance activities have the potential to interfere with fire engine access to wildfires in remote, wildland areas, which would reduce the effectiveness of firefighting. Construction and maintenance of the Approved Project through the low-fire risk Project area do not have the potential to interfere with firefighting operations due to the low risk of fire, flat terrain, and the presence of sufficient paved roads for emergency vehicle access during a wildfire. Within the high-risk Tehachapi Fireshed area, the Approved Project would be accessed by several narrow, unpaved roads in the Angeles National Forest (ANF) and Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA) lands, and construction activities could hinder emergency vehicle access. The Final EIR recommended the implementation of APM HAZ-4 (*Fire Management Plan, Specification E-2005-104*; February 21, 2006) to cover fire safety provisions, equipment, communication, and reporting during construction; and Mitigation Measure F-1 (*Prepare wildland traffic control plans*) to reduce the interruption of ground-based firefighting operations. Implementation of these measures would reduce impacts to a less-than-significant level.

The ANF and PHLNHPA lands are not crossed by the Single-Circuit and Double-Circuit Options. Modifications to the Vincent Substation would take place within the ANF. Impacts related to the interruption of ground-based firefighting operations would still exist for the underground options (including modifications to the substations) because construction activities associated would still have the potential to hinder emergency vehicle access. Therefore, with implementation of APM HAZ-4 and Mitigation Measure F-1, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR related to fire prevention and suppression activities.

WPS2 Would the project expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire?

The Final EIR (Section 3.16, Pages 3.16-25 through 3.16-28) explains that construction activities associated with the Approved Project would include excavation, grading, blasting, and the use of vehicles and heavy equipment. The use of heavy equipment along with the personnel required to construct, repair, and maintain the transmission line would introduce a variety of potential wildfire ignition sources to surrounding vegetation fuels. Construction activities would also introduce additional combustible materials to the construction areas, such as diesel fuel and herbicides. To reduce the significance of these impacts, the following mitigation measures were identified in the Final EIR: Mitigation Measure F-3a (*Revise SCE's Fire Management Plan for maintenance activities*); F-3b (*Cease work during Red Flag Warning events*); F-3c (*Ensure open communication pathways*); F-3d (*Remove hazards from the work area*); and F-3e (*Comply with non-smoking policy on PHLNHPA lands*).

As discussed in the Final EIR (Section 3.16, Pages 3.16-28 and 3.16-29), construction and maintenance personnel would be exposed to an increased risk of injury or death in the event of a fire in the vicinity of construction areas if sufficient emergency evacuation routes were not available, or if safe emergency evacuation routes were not known to personnel prior to an incident. To reduce the significance of this impact, the Final EIR identifies the following mitigation measures: Mitigation Measure F-3b (*Cease work during Red Flag Warning events*) and F-4 (*Prepare and implement Emergency Evacuation Plan*).

As discussed in the Final EIR (Section 3.16, Page 3.16-30), the presence of an overhead transmission line in areas where a transmission line does not currently exist would create a new source of potential wildfire ignitions for the life of the Project. Although the Single-Circuit and Double-Circuit Options do not involve overhead transmission lines along the length of the route, short segments will be required at the transition stations. The Final EIR concluded that the transmission lines constructed within the Tehachapi Fireshed would have the same potential for igniting a wildfire as the existing transmission lines the project would replace; therefore, impacts would be less than significant. The Single-Circuit and Double-Circuit Options would place the transmission lines underground and reduce the risk of wildfire that exists with overhead transmission lines. Therefore, the Single-Circuit and Double-Circuit Options would not increase the risk of wildfire and compromise firefighter safety.The Single-Circuit and Double-Circuit Options would result in the same impacts as the Approved Project and be required to implement the same mitigation measures to reduce the increase in the risk of wildfire from construction and maintenance activities and the increase in the risk of personnel injury or death in the event of a fire from construction and maintenance activities. With the implementation of the mitigation measures described above, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR related to an increased risk of wildfire.

WPS3 Would the project result in a fuel vegetation matrix with an increased ignition potential and rate of fire spread as a result of Project construction or maintenance activities?

As described in the Final EIR (Section 3.16, Page 3.16-31), Project construction and maintenance activities create the potential for the introduction and spread of non-native, invasive plants. Non-native plants are often spread by human and vehicle vectors in areas of large-scale soil disturbance and importation. Construction and maintenance of the Approved Project and the Single-Circuit and Double-Circuit Options would contribute to the introduction and proliferation of non-native, invasive plants. The introduction and spread of specific invasive plants within the Approved Project ROW would adversely influence fire behavior by increasing the fuel load, fire frequency and fire spread. To reduce the significance of this impact, the Final EIR included Mitigation Measure B-3a (*Prepare and implement a Weed Control Plan*), Mitigation Measure B-3b (Remove weed seed sources from construction access routes), and Mitigation Measure B-3c (Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads) (see full description in Section 3.4, Biological Resources of the Final EIR (CPUC, 2009)). Implementation of these mitigation measures for the Single-Circuit and Double-Circuit Options would reduce this impact to a less-than-significant level. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact nor substantially increase the severity of any significant impacts identified in the Final EIR related to increased ignition potential and rate of fire spread.

A.3.15 Electrical Interference and Hazards

ELECTRICAL INTERFERENCE AND HAZARDS		Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
EIH1	Would the project result in harmful interference with radio, television, communications, or electronic equipment (Federal Communication Commission regulations, Section 15.25)?	☐	☒
EIH2	Would the project result in induced currents or shock hazards to the public which would not be in compliance with applicable regulations, including: CPUC General Order 95, which provides guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated equipment?	☐	☒
EIH3	Would the project interfere with cardiac pacemakers?	☐	☒
EIH4	Would the project introduces hazards related to wind or earthquakes, or fail to comply with applicable guidelines including: CPUC General Order No. 95 (Rules for Overhead Electric Line Construction) and NESC requirements?	☐	☒

Significance criteria as established in the Final EIR (CPUC, 2009).

A.3.15.1 Setting

Corona, gap discharges, and audible noise from transmission lines consist of high frequency energy; however, they are transmitted at a low power level as compared to radio and television broadcasts. Therefore, these transmissions attenuate within a short distance from the transmission line. As a result, elevated electric and magnetic field levels usually exist only within and immediately adjacent to the transmission line right-of-way.

Section 3.17.2 of the Final EIR (CPUC, 2009) presents the environmental setting for electrical interference and electrical hazards and describes electric and magnetic field characteristics as they relate to:

- Radio, television, communication, and electronic equipment interference;
- Induced currents and shock hazards;
- Cardiac pacemakers; and
- Wind and earthquake hazards.

Applicable Regulations

Regulations and guidelines applicable to electrical interference and electrical hazards are presented in Section 3.17.3 of the Final EIR (CPUC, 2009) and have not changed since the publication of the Final EIR.

A.3.15.2 Environmental Impacts and Mitigation Measures

EIH1 Would the project result in harmful interference with radio, television, communications, or electronic equipment (Federal Communication Commission regulations, Section 15.25)?

As described in Section 3.17 (Electrical Interference and Hazards) in the Final EIR, electric and magnetic fields from power lines occur at a frequency level that is substantially below the frequency range of communications systems and do not typically pose interference problems for communication equipment. However, corona or gap discharges can cause high frequency radio and television interference, but are dependent upon several factors, including the strength of broadcast signals and localized conditions. Causes of such interference can be located and corrected. The potential electrical

interference effects associated with the Single-Circuit and Double-Circuit Options, including substation modifications would be similar to those of the Approved Project, although the potential for gap discharges into the air would be substantially reduced with a resultant reduction in potential for electrical interference as a result of placing the 500-kV conductor underground. The Final EIR recommended implementation of Mitigation Measures EIH-1a (*Limit the conductor surface electric gradient*) and EIH-1b (*Document and resolve electronic interference complaints*) to avoid significant impacts related to interference from the Approved Project. With implementation of Mitigation Measures EIH-1a and EIH-1b, the Single-Circuit and Double-Circuit Options, including substation modifications, would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR related to electrical interference.

The pattern and intensity of electric and magnetic fields associated with the Single-Circuit and Double-Circuit Options would be different than those of the Approved Project. This is because the underground conductors of the Single-Circuit and Double-Circuit Options would be placed in close proximity to each other, resulting in much tighter spacing than an overhead installation. This results in a greater phase cancellation effect[1], which results in more effective attenuation or reduction of the electric and magnetic fields, causing the intensity of the fields to fall off more rapidly with distance. However, with an underground installation, such as the Single-Circuit and Double-Circuit Options, the electric and magnetic fields would be greater at the ground surface directly above the buried conductors than would exist at the ground surface directly below an overhead line, as the distance between the conductors and the ground surface would be substantially less than for an overhead line, allowing less opportunity of the electric and magnetic fields to attenuate. Despite the differences in electric and magnetic field intensity levels and attenuation rates/properties, the general effects related to potential electrical interference for the Single-Circuit and Double-Circuit Options would be similar to those of the Approved Project, in so much as the potential to cause interference would continue to exist. Therefore, with implementation of Mitigation Measures EIH-1a and EIH-1b, the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR related to electrical interference.

EIH2 Would the project result in induced currents or shock hazards to the public which would not be in compliance with applicable regulations, including: CPUC General Order 95, which provides guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated equipment?

The Final EIR (Section 3.17, Pages 3.17-7 and 3.17-8) indicates that induced currents and voltages on conducting objects near the proposed transmission lines represents a potential hazard. This type of hazard can be avoided if conducting objects are properly grounded; therefore, Mitigation Measure EIH-2 (*Implement grounding measures*) was recommended, which requires SCE to identify objects (such as fences, metal buildings, and pipelines) within and near the ROW that have the potential for induced currents and voltages and to implement electrical grounding of such metallic objects, to avoid a

[1] Electromagnetic waves (sinewaves) are produced by the motion of electrically charged particles. When two or more waves are superimposed (combined), the resultant wave may be of greater or lower magnitude. The principle of superposition of waves states that when two or more waves are occur on the same point, the total displacement at that point is equal to the vector sum of the displacements of the individual waves. For example, if the crest of one wave meets the crest of another wave of the same frequency at the same point, then the magnitude of the displacement is the sum of the individual magnitudes. If the crest of one wave meets the trough of another wave, then the magnitude of the displacements is equal to the difference in the individual magnitudes and is referred to as “phase cancellation”.

significant impact. Similarly, if induced currents and voltages on conducting objects were to occur in the vicinity of the underground lines, Mitigation Measure EIH-2 would be implemented. As such, the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR related to induced currents and shock hazards.

EIH3 Would the project interfere with cardiac pacemakers?

As described in the Final EIR (Section 3.17, Pages 3.17-8 and 3.17-9), the electric fields associated with the Approved Project may be of sufficient magnitude to affect the operation of a few older model pacemakers resulting in them reverting to an asynchronous pacing (fixed rate, independent of underlying cardiac activity). Cardiovascular specialists do not consider prolonged asynchronous pacing to be a problem; periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. However, with the more recent dual-chamber pacemakers, inappropriate pacing has been documented before unit reversion to asynchronous mode. The function of some pacemakers could be altered by exposure to electric fields that would be generated in the immediate vicinity of the Approved Project (i.e., adjacent to the transmission line ROW), potentially resulting in inaccurate detections by the pacemaker of normal cardiac signals or resulting in inappropriate behavior, until the field strength is reduced by the individual leaving the immediate area. However, the biological consequences of transient, reversible pacemaker malfunction are mostly benign because most modern units revert to a fixed-rate pacing mode, which is life-sustaining. Therefore, this impact was not considered significant and no mitigation was proposed.

The pattern and intensity of electric and magnetic fields associated with the Single-Circuit and Double-Circuit Options would be different than those of the Approved Project. This is because the underground conductors of the Single-Circuit and Double-Circuit Options would be placed in close proximity to each other, resulting in much tighter spacing than an overhead installation. This results in a greater phase cancellation effect, which results in more effective attenuation or reduction of the electric and magnetic fields, causing the intensity of the fields to fall off more rapidly with distance. However, with an underground installation such as the Single-Circuit and Double-Circuit Options, the electric and magnetic fields would be greater at the ground surface directly above the buried conductors than would exist at the ground surface directly below an overhead line, as the distance between the conductors and the ground surface would be substantially less than for an overhead line, allowing less opportunity of the electric and magnetic fields to attenuate. Despite the differences in electric and magnetic field intensity levels and attenuation rates/properties, the potential to effect pacemaker operation would be very similar and no significant impacts would occur. Therefore, the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR related to pacemaker operation.

EIH4 Would the project introduce hazards related to wind or earthquakes, or fail to comply with applicable guidelines including: CPUC General Order No. 95 (Rules for Overhead Electric Line Construction) and NESC requirements?

The Final EIR (Section 3.17, Page 3.17-9) described how the Approved Project's transmission structures are designed for dynamic loading that makes them very unlikely to fail in high wind conditions or during earthquake events. Therefore, the Final EIR (Section 3.17, Page 3.17-9) concluded that the risk that high winds or an earthquake would cause transmission line structures to threaten public safety was not significant. Under the Single-Circuit and Double-Circuit Options, the transmission structures along a 3.5-mile portion of Segment 8 in Chino Hills and Chino would be removed and the transmission line would be placed underground. With the Single-Circuit and Double-Circuit Options, there would not be any

overhead structures along the aforementioned 3.5-mile portion of Segment 8A such that there would be no impacts related to wind. In addition, there would be no earthquake hazards for the public where the line is placed underground. As such, the underground transmission line would reduce any potential hazards related to wind or earthquakes; therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in a new significant impact or substantially increase the severity of any significant impacts identified in the Final EIR.

A.3.16 Cumulative Impacts

CUMULATIVE IMPACTS	Subsequent/Supplemental EIR: New Significant Effects or Substantially More Severe Effects	Addendum: None of These Conditions Have Occurred
a. Does the project have impacts that are individually limited, but cumulatively considerable? (*Cumulatively considerable* means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

a. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, effects of other current projects, and the effects of probable future projects.)

CEQA defines a cumulative impact as "two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines Section 15355.) Under CEQA Guidelines Section 15130, an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, meaning that its incremental effects are significant when viewed in connection with the effects of past, present and reasonably foreseeable future projects.

As discussed in preceding Sections A.3.1 through A.3.15, many of the impacts of implementation of the Single-Circuit and Double-Circuit Options would occur during construction. Because the construction-related impacts of the Single-Circuit and Double-Circuit Options would be temporary and localized, they would only combine with similar impacts of other projects if they occur at the same time and in close proximity. As previously discussed, however, implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant impacts nor substantially increase the severity of any significant construction impacts analyzed in the Final EIR.

As shown in Final EIR Table ES-3, significant and unavoidable cumulative construction-related impacts for the Approved Project would occur for the following resource areas: agricultural resources; air quality; biological resources; cultural resources; hydrology and water quality; noise; visual resources; wilderness and recreation; and wildfire prevention and suppression. Also, as shown in Final EIR Table ES-3, significant and unavoidable cumulative impacts related to operations and maintenance activities for the Approved Project include the following resource areas: agricultural resources; biological resources; noise; visual resources; wilderness and recreation; and wildfire prevention and suppression.

Agricultural Resources

Agricultural impacts of the Approved Project would combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Even with the implementation of mitigation measures, construction activities would temporarily preclude the agricultural use of some Farmland and interfere with agricultural operations. Operation of the Approved Project would also interfere with agricultural operations. As indicated in Section A.3.1 of this Environmental Evaluation, the underground options would not contribute to these impacts, as construction and operation activities would not preclude the agricultural use of Farmland or interfere with agricultural operations. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts

nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Air Quality

Air Quality impacts of the Approved Project would combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Even with the implementation of mitigation measures, construction emissions would exceed daily regional emission thresholds for air quality management and pollution control districts. As indicated in Section A.3.2 of this Environmental Evaluation, the underground options would contribute to these impacts, but construction emissions would be below emissions generated by the Approved Project and the Alternative 5 underground option from the Final EIR. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Biological Resources

The Single-Circuit and Double-Circuit Options lie within the Southern Region of the Approved Project as analyzed in the Final EIR. This regional geographic scope is appropriate for analyzing cumulative impacts to biological resources because, although impacts of the Approved Project and Single-Circuit and Double-Circuit Options are primarily localized to the limited impact areas, losses of vegetation types or fragmentation of wildlife corridors would combine with similar impacts of other projects beyond these limited impact areas. As shown in Table 3.4-24 on page 3.4-262 of the Final EIR, most impacts to biological resources were considered to be cumulatively considerable for the Approved Project. Construction of the Single-Circuit or Double-Circuit Option would occur in a localized area that represents a small portion of the Approved Project within the Southern Region. Further, this portion of the ROW supports primarily landscaped, degraded, or disturbed lands adjacent to development, and with the exception of the small patch of riparian habitat at the Western Hills Country Club, is not expected to provide high-quality habitat for most sensitive species. While wildlife use the ROW, most are disturbance-tolerant species. In addition, risks to birds from collision or electrocution on overhead lines would be eliminated in this portion of the ROW. Therefore, cumulative impacts would be no greater than the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Cultural Resources

Cultural Resources impacts of the Approved Project would not combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Adverse effects to individual sites cannot be precisely identified until the final underground project locations are defined, specific structure sites are determined, detailed engineering plans for all project roads and facilities are completed, the precise relationship of these project elements to known sites is determined, and the final NRHP eligibility of cultural resources has been evaluated. Impacts of the Approved Project would not be significant with the implementation of mitigation measures. As indicated in Section A.3.4 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create cumulatively considerable impacts. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts.

Environmental Contamination and Hazards

With regard to cumulative environmental contamination impacts, the Approved Project's contribution to a cumulative impact would only be considered significant if it combined with other projects to result in substantial volumes of contaminated soil that require off-site treatment and that, as a combined volume, exceeded the capacity of available treatment facilities or resulted in substantial exposure of hazardous materials to the public. The Final EIR concluded that no significant cumulative effects related to environmental contamination were associated with the Approved Project. As indicated in Section A.3.5 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create a cumulatively considerable impact. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Geology, Soils, and Paleontology

Impacts of the Approved Project associated with geology, soils, and paleontology would not combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Mitigation measures would reduce the impact of Project structures being damaged by surface fault rupture, seismically induced groundshaking, problematic soils, and landslides. Additionally, paleontologic resources would not be significantly affected by grading and excavation. As indicated in Section A.3.6 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create a cumulatively considerable impact. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Hydrology and Water Quality

Hydrology and water quality impacts of the Approved Project would to combine with similar impacts of other projects that occur within the same geographic and temporal scope (see Appendix 6 – Cumulative Projects). Construction activities could degrade surface water quality through erosion and accelerated sedimentation, as well as accidental release of potentially harmful or hazardous materials. Mitigation measures would reduce this potential, but would not eliminate it entirely. As indicated in Section A.3.7 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce impacts and impacts would not be greater than the Approved Project. Mitigation would help to reduce the incremental contribution to cumulative impacts by the underground options. However, no additional mitigation measures have been identified that would reduce cumulative impacts to be less than significant. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Land Use

Impacts of the Approved Project associated with land use would not combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Construction, operation, and maintenance of the Approved Project would not temporarily disrupt, displace or preclude existing residential land uses and non-residential land uses or cause long-term disruption; or conflict with applicable federal, State or local

land use plans, goals, or policies. Impacts of the Approved Project would not be significant with the implementation of mitigation measures. As indicated in Section A.3.8 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create a cumulatively considerable impact. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Noise

Noise impacts of the Approved Project would combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Construction noise from the Approved Project would create a cumulative significant effect on sensitive receptors and violate local noise standards. Permanent noise levels would also violate local noise standards and increase corona noise levels along the ROW. Mitigation measures would reduce cumulative noise impacts, but impacts would remain cumulatively significant.

Sensitive receptors located adjacent to multiple project sites constructed simultaneously would experience increased temporary noise impacts over those only created by Single-Circuit and Double-Circuit Options activities. Because noise is site-specific, only cumulative projects within 0.25 mile of Single-Circuit and Double-Circuit Options activities (and potentially occurring at the same time) have the potential to cumulatively increase temporary noise level impacts. A review of current cumulative projects (see Appendix 6 – Cumulative Projects) indicates that 1,123 single- and multi-family residential units and four commercial developments are planned/approved within the City of Chino Hills. It is unknown how many of these developments would occur within 0.25 mile of the Single-Circuit and Double-Circuit Options route. However, these developments would all be subject to the same City of Chino Hills Municipal Code Noise Ordinance requirements as the Single-Circuit and Double-Circuit Options. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction.

Public Services and Utilities

Impacts of the Approved Project associated with public services and utilities would not combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). Utility systems and services, along with emergency access and response would not be cumulatively impacted by the Approved Project with the implementation of mitigation measures. As indicated in Section A.3.10 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not contribute to cumulative impacts of the Approved Project. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant cumulative impacts nor substantially increase the severity of any significant cumulative impacts during construction or operation.

Traffic and Transportation

Traffic impacts of the Approved Project would not combine with similar impacts of other projects (see Appendix 6 – Cumulative Projects). After construction, the Approved Project and underground options

would have little transportation or traffic associated with it other than for routine inspection and maintenance activities and operations. Impacts of the Approved Project would be less than significant with the implementation of mitigation measures. As indicated in Section A.3.11 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create a cumulatively considerable impact. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to significant cumulative impacts during construction or operation.

Visual Resources

The Approved Project would alter the landscape character and visual quality of landscape views temporarily during construction and permanently during operation. Additionally, light and glare impacts would be cumulatively considerable. Even with the implementation of mitigation measures, impacts of the Approved Project would be cumulatively considerable. The underground options would reduce visual impacts as transmission lines would be placed underground. Therefore, as indicated in Section A.3.12 of this Environmental Evaluation, the underground options would not contribute further to the already considerable contribution of the Approved Project impacts. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new significant cumulative impacts nor substantially increase the severity of any significant cumulative impacts during construction or operation.

Wilderness and Recreation

Impacts of the Approved Project associated with wilderness and recreation would combine with similar impacts of other projects related to temporary access restrictions to recreational resources and opportunities (see Appendix 6 – Cumulative Projects). However, impacts of the Approved Project would be less than significant with the implementation of mitigation measures and, as indicated in Section A.3.13 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all wilderness and recreation impacts to a less-than-significant level. With the implementation of mitigation measures, the underground options would not create a cumulatively considerable impact. Therefore, implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to any significant cumulative impacts during construction or operation.

Wildfire Prevention and Suppression

Approved Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread. Even with the implementation of mitigation measures, impacts of the Approved Project would be cumulatively considerable. As indicated in Section A.3.14 of this Environmental Evaluation, the underground options would implement mitigation measures to reduce all impacts and impacts would not be greater than the Approved Project. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of the project's contribution to any significant cumulative impacts during construction or operation.

Electrical Interference and Hazards

The pattern and intensity of electric and magnetic fields associated with the underground options would be different than those of the Approved Project. This is because the underground conductors would be placed in close proximity to each other, resulting in much tighter spacing than an overhead installation. This results in a greater phase cancellation effect, which results in more effective attenuation or reduction of the electric and magnetic fields, causing the intensity of the fields to fall off more rapidly with distance. However, with an underground installation, the electric and magnetic fields would be greater at the ground surface directly above the buried conductors than would exist at the ground surface directly below an overhead line, as the distance between the conductors and the ground surface would be substantially less than for an overhead line, allowing less opportunity of the electric and magnetic fields to attenuate. The general effects related to potential electrical interference for the underground options would be similar to those of the Approved Project, in so much as the potential to cause interference would continue to exist. Therefore, cumulative impacts would be the same as the Approved Project, and implementation of the Single-Circuit and Double-Circuit Options would not result in any new cumulatively considerable impacts nor substantially increase the severity of any significant cumulative impacts during construction or operation.

Appendix 1

List of Preparers

Appendix 1. List of Preparers

A consultant team headed by Aspen Environmental Group prepared this document under the direction of the California Public Utilities Commission. The preparers and technical reviewers of this document are presented below.

Lead Agency

California Public Utilities Commission, Energy Division

John Boccio ..... Lead Agency CEQA Project Manager

Project Management and Document Production

Aspen Environmental Group – Prime Contractor

Jon Davidson, Vice President ..... Project Manager
Stanley Yeh, Senior Environmental Scientist ..... Project Description, Visual Resources, Transportation and Traffic, Wildfire Prevention and Suppression
Will Walters, Senior Engineer ..... Air Quality
Jordanne Gregorio, Staff Engineer ..... Air Quality
Chris Huntley, Senior Biologist..... Biological Resources
Jennifer Lancaster, Biologist ..... Biological Resources
Susanne Huerta, Planner ..... Agriculture & Forestry Resources, Land Use, Public Services and Utilities
Aubrey Mescher, Planner ..... Hydrology & Water Quality, Population & Housing, Wilderness and Recreation
Lisa Blewitt, Senior Associate..... Electrical Interference and Hazards
Scott Debauche, Planner..... Noise
Judy Spicer, Senior Editor ..... Document Production
Kati Simpson, Graphic Artist ..... Graphics

Applied Earthworks – Subcontractor

Barry Price, Senior Archaeologist..... Cultural Resources
Mary Baloian, Archaeologist..... Cultural Resources

Granite Financial Services (Geotechnical Consultants) – Subcontractor

James Thurber, Senior Geologist ..... Geology & Soils, Environmental Contamination and Hazards
Aurie Patterson, Senior Geologist..... Geology & Soils, Environmental Contamination and Hazards

Appendix 2

References

Appendix 2. References

Section A.1 – Project Description

Power Delivery Consultants, Inc. 2012. Southern California Edison Company Tehachapi Renewable Transmission Project. Potential Underground Transmission Options in the Chino Hills Area. January 4.

Southern California Edison (SCE). 2012. Southern California Edison Company's Supplemental Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP). February 1.

Section A.3.1 – Agricultural Resources

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Chino, 2008. City of Chino. Williamson Act Map. Online: http://www.cityofchino.org/Modules/ShowDocument.aspx?documentid=233. Accessed 5/22/13.

DOC (California Department of Conservation). 2010. Department of Conservation – Farmland Mapping and Monitoring Program. San Bernardino County Important Farmland 2010. Online: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/sbd10_so.pdf. Accessed May 1, 2013.

_____. 2006. "Williamson Act: Questions and Answers" Fact Sheet. http://www.conservation.ca.gov/dlrp/lca/pubs/Documents/WA%20fact%20sheet%2006.pdf. Accessed February 27.

_____. 2007a. "Farmland Mapping and Monitoring Program Map Categories, Criteria and Uses: Important Farmland Categories." http://www.conservation.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx. Accessed February 4, 2008.

_____. 2007b. Williamson Act Program – Basic Contract Provisions. http://www.consrv.ca.gov/dlrp/lca/basic_contract_provisions/Pages/Index.aspx. Accessed April 30,2012.

_____. 2007c. Williamson Act Program – Farmland Security Zone. http://www.consrv.ca.gov/dlrp/lca/farmland_security_zones/Pages/Index.aspx. Accessed April 30,2012.

_____. 2004a. A Guide to the Farmland Mapping and Monitoring Program. 2004 Edition.

_____. 2004b. Department of Conservation – Williamson Act Program. FTP Download Site – San Bernardino 2004. Accessed Online: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/WA%20GIS%20to%202009/shapefile/.

NRCS (Natural Resources Conservation Service). 2012. Farmland Protection Policy Act (FPPA). Accessed Online: http://www.ca.nrcs.usda.gov/programs/fppa.html. Accessed April 30, 2012.

Ontario 2010. City of Ontario. Status of Williamson Act Contracts in the New Model Colony (Map). Online: http://www.ci.ontario.ca.us/modules/showdocument.aspx?documentid=1863. Accessed 4/29/13.

_____. 2007a. Rich Haven Specific Plan. Online: http://www.ci.ontario.ca.us/index.aspx?page=635. Accessed 4/29/13

_____. 2007b. Rich Haven Specific Plan EIR. Online: http://www.ci.ontario.ca.us/index.aspx?page=566. Accessed 4/30/13.

Section A.3.2 – Air Quality

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Section A.3.3 – Biological Resources

AMEC (AMEC Earth & Environmental). 2009a. Special-Status Plant Species Survey Rpeort for the Southern California Edison Tehachapi Renewable Transmission Project, Segments 7 and 8. Prepared for Southern California Edison. December.

_____. 2009b. Final 2009 Burrowing Owl Focused Survey Report for Segments 7 and 8 of the Southern California Edison Tehachapi Renewable Transmission Project. Prepared for Southern California Edison. October.

CDFG (California Department of Fish and Game). 2012. Special Vascular Plants, Bryophytes, and Lichens List. May.

_____. 2010. Natural Communities List. September. [online]: http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp. Accessed 21 May 2012.

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

ICF (ICF International). 2012. 2011 Focused Survey Report – Special-Status Plant Species, Segments 7 and 8. Prepared for Southern California Edison. January.

_____. 2011a. 2011 Focused Survey Report – Riparian Birds, Segments 7 and 8. Prepared for Southern California Edison. November.

_____. 2011b. Preconstruction Biological Survey Report for a portion of Southern California Edison's Segment 8 Phase 1 (M59-T3 to M64-T5), San Bernardino County, California. Memorandum submitted to Southern California Edison. January 13.

_____. 2011c. Results of a Preconstruction Survey for Burrowing Owl (*Athene cunicularia*) for Southern California Edison's Segment 8 Chino Hills (M61-T3, M62-T1, M62-TT2, M62-T4, M29-T1, M31-T1, and M63-T3), Los Angeles and San Bernardino Counties, California. Memorandum submitted to Southern California Edison. January 14.

_____. 2010a. 2010 Focused Survey Report – Special-Status Plant Species, Segments 7 and 8. Prepared for Southern California Edison. September.

_____. 2010b. 2010 Focused Survey Report – Burrowing Owl, Segments 7 and 8. Prepared for Southern California Edison. August.

_____. 2010c. Results of a Pre-Construction Survey for Burrowing Owl (*Athene cunicularia*) for Southern California Edison's Segment 8 Chino Hills, Los Angeles and San Bernardino Counties, California. Memorandum submitted to Southern California Edison. October 4.

_____. 2010d. Results of a Pre-Construction Survey for Burrowing Owl (*Athene cunicularia*) for Southern California Edison's Segment 8 Chino Hills (Phase 1) located in Los Angeles County and San Bernardino County, California. Memorandum submitted to Southern California Edison. September 2.

SCAG (Southern California Association of Governments). 2008. Final 2008 Regional Comprehensive Plan. October 2.

Section A.3.4 – Cultural Resources

Applied EarthWorks, 2009. *Confidential Cultural Resources Specialist Report for the Tehachapi Renewable Transmission Project.* Submitted to California Public Utilities Commission (Sacramento) and USDA Angeles National Forest (Arcadia).

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Pacific Legacy, 2010a. *TRTP Cultural Resources Survey Report with Negative Findings: Segment 8 Transmission Line Chino Hills (Phase 1), City of Chino Hills, San Bernardino County, California.* Submitted to Southern California Edison Company, Rosemead, CA.

_____. 2010b. *TRTP Cultural Resources Survey Report with Negative Findings: Segment 8 Transmission Line Phase 1 (Chino Hills; Additional Access Roads), City of Chino Hills, San Bernardino County, California.* Submitted to Southern California Edison Company, Rosemead, CA.

_____. 2007. *Cultural Resources Inventory of the Southern California Edison Company Tehachapi Renewable Transmission Project, Kern, Los Angeles, and San Bernardino Counties, California*. Submitted to Southern California Edison Company, Rosemead, CA.

Section A.3.5 – Environmental Contamination and Hazards

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

SCE (Southern California Edison). 2007. Proponent's Environmental Assessment for the Tehachapi Renewable Transmission Project. Application No. A.07-06-031. June 29.

Section A.3.6 – Geology, Soils, and Paleontology

California Public Utilities Commission (CPUC). 2011. General Order 128, Rules For Construction of Underground Electric Supply and Communication Systems. [On-line]: http://docs.cpuc.ca.gov/gos/index.html. Accessed June 2011.

_____. 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

City of Chino Hills. 1994. City of Chino Hills General Plan. Adopted September 13. Figure S-2, Seismic Hazards Fault Rupture and Liquefaction Susceptibility from Chapter 5 – Safety Element.

CGS (California Geological Survey [formerly California Division of Mines and Geology, CDMG]). 1999. Seismic Hazard Zone Map, El Monte 7.5-Minute Quadrangle.

Geotechnical Consultants, Inc. (GTC). 2009. Geology, Soils, and Paleontology Specialist Report for the Tehachapi Renewal Transmission Project, REVISED. Prepared under contract to Aspen Environmental Group. August 2009. Lake Forest, California.

NRCS (National Resources Conservation Service). 1980. San Bernardino County, Southwestern Part, California. CA677. Soil Survey Geographic (SSURGO) GIS database.

Paleo Environmental Associates, Inc. (PEAI). 2007. Paleontologic Resources. Tehachapi Renewable Transmission Project: Segments 4-11, Transmission Lines, Substations, and New and Replacement Facilities, Kern, Los Angeles, and San Bernardino Counties, California. PEA Appendix Q. June.

Southern California Edison (SCE), 2012. Option 11 to the Approved TRTP, Data Request Set #1.

SCEC (Southern California Earthquake Center), Working Group C. 2001. Active Faults in the Los Angeles Metropolitan Region. SCEC Special Pub. Series, No. 001, September 2001.

USGS (United States Geological Survey). 2009. GIS data for the 2008 Update of the United States National Seismic Hazard Maps, downloaded from http://gldims.cr.usgs.gov/nshmp2008/viewer.htm in May 2009.

Section A.3.7 – Hydrology and Water Quality

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

CASQA (California Stormwater Quality Association). 2012. Stormwater Best Management Practice (BMP) Handbooks / Portal. [online]: http://www.cabmphandbooks.com/. Accessed May 4, 2012.

Isaac, Rani. 2008. Estimated Water Use on Large Projects in 2004 – 2006; Projects affected by Senate Bills 221 and 610, signed into law in 2001. August. [online]: http://www.library.ca.gov/crb/08/08-012.pdf. Accessed May 2, 2012.

Santa Ana RWQCB (Regional Water Quality Control Board). 2007. 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs. USEPA Approval Date: June 28. [online]: http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r8_06_303d_reqtmdls.pdf. Accessed May 3, 2012.

SBCDPW (San Bernardino County Department of Public Works). 2007. Flood Control District Zones. [online]: http://www.sbcounty.gov/dpw/floodcontrol/district_zones.asp. Accessed May 3, 2012.

Section A.3.8 – Land Use

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Chino, 2011. City of Chino – Zoning Ordinance. Online: http://library.municode.com/index.aspx?clientId=16002 . Access 4/30/12.

____. 2010. City of Chino – General Plan 2025. July 2010. Online: http://www.cityofchino.org/index.aspx?page=69. Accessed 4/30/12.

Ontario, 2007. City of Ontario. Rich-Haven Specific Plan. Online: http://www.ci.ontario.ca.us/modules/showdocument.aspx?documentid=6293. Accessed 4/29/13.

Section A.3.9 – Noise

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

City of Chino. 2012. City of Chino Municipal Code. Adopted by the City of Chino City Council. [online]: http://municipalcodes.lexisnexis.com/codes/chino/. Accessed May 11.

_____. 2010. City of Chino 2010 General Plan Noise Element. Adopted by the City of Chino City Council. [online]: http://www.cityofchino.org/index.aspx?page=69. Accessed May 11, 2012.

City of Chino Hills. 2012. City of Chino Hills Municipal Code. Adopted by the City of Chino Hills City Council. [online]: http://municipalcodes.lexisnexis.com/codes/chinohills/. Accessed May 11.

USEPA (US Environmental Protection Agency). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. http://www.epa.gov/history/topics/noise/01.html. Accessed August 30, 2011.

FTA (Federal Transit Administration). 2006. Transit Noise and Vibration Impact Assessment. Final Report, May.

OPR (California Governor's Office of Planning and Research). 2003. General Plan Guidelines. Appendix C, Noise Element Guidelines. October.

Section A.3.10 – Public Services and Utilities

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Cal Recycle, 2012a. Solid Waste Facility Listing/Details – Chino Valley Rock. http://www.calrecycle.ca.gove/SWFacilities/Directory/36-AA-0447/Detail/. Accessed May 1, 2012.

_____. 2012b. Cal Recycle. Solid Waste Facility Listing/Details – Mid-Valley Sanitary Landfill. http://www.calrecycle.ca.gove/SWFacilities/Directory/36-AA-0055/Detail/. Accessed May 1, 2012.

_____. 2012c. Cal Recycle. Solid Waste Facility Listing/Details – San Timoteo Sanitary Landfill. http://www.calrecycle.ca.gove/SWFacilities/Directory/36-AA-0087/Detail/. Accessed May 1, 2012.

Chino, 2010. City of Chino – General Plan. Public Facilities and Services Element. Online: http://www.cityofchino.org/Modules/ShowDocument.aspx?documentid=3431. Accessed 4/15/12.

Chino Hills, 2012. City of Chino Hills – Trash Services. Online: http://www.chinohills.org/index.aspx?NID=79. Accessed 4/14/12

____. 2011. Water Cost of Service and Rate Design Study – Executive Summary. Dated March 3, 2011. Online: http://www.chinohills.org/DocumentView.aspx?DID=2496. Accessed 4/14/12

CVIFD, 2012. Chino Valley Independent Fire District – Operations, Fire Suppression. Online: http://www.chinovalleyfire.org/Fire_Suppression.512.0.html. Accessed 4/14/12

Section A.3.11 – Transportation and Traffic

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Section A.3.12 – Visual Resources

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Section A.3.13 – Wilderness and Recreation

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Section A.3.14 – Wildfire Prevention and Suppression

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Section A.3.15 – Electrical Interference and Hazards

California Public Utilities Commission (CPUC). 2009. Final Environmental Impact Report, Tehachapi Renewable Transmission Project. Report prepared for the California Public Utilities Commission. October 2009. Agoura Hills, California.

Appendix 3

Horizontal Directional Drilling Locations

HDD Location (West of Pipeline Avenue)

REDACTED

Figure 1 - 7 of 7
CHINO HILLS
San Diego Desert Woodrat High Sensitivity Area Map

HDD Location (West and East of Peyton Drive)

REDACTED

Figure 1 - 6 of 7
CHINO HILLS
San Diego Desert Woodrat High Sensitivity Area Map

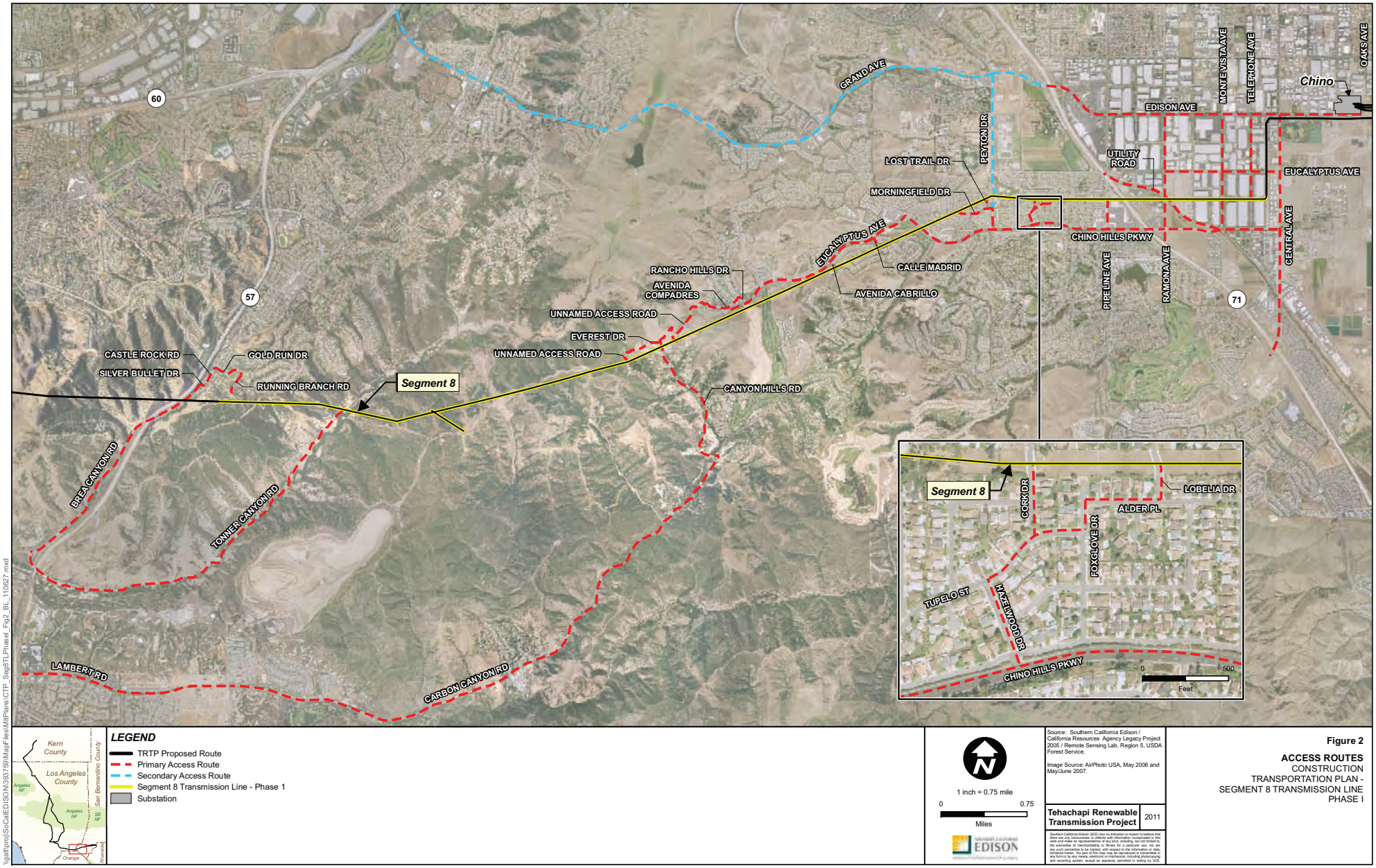
HDD Location (West of Peyton Drive)

REDACTED

Figure 1 - 5 of 7
CHINO HILLS
San Diego Desert Woodrat High Sensitivity Area Map

Appendix 4

Access Routes



LEGEND

- TRTP Proposed Route
- Primary Access Route
- Secondary Access Route
- Segment 8 Transmission Line - Phase 1
- Substation

1 inch = 0.75 mile

0 0.75

Miles

Source: Southern California Edison / California Resources Agency Legacy Project 2005 / Remote Sensing Lab, Region 5, USDA Forest Service.

Image Source: AirPhoto USA, May 2006 and May/June 2007.

Tehachapi Renewable Transmission Project 2011

Figure 2

ACCESS ROUTES
CONSTRUCTION
TRANSPORTATION PLAN -
SEGMENT 8 TRANSMISSION LINE
PHASE I

\\galt\proj\SoCalEDISON\393759\MapFiles\MitPlans\CTP_Seg8TLPhaseI_Fig2_BL_110627.mxd

Appendix 5

Air Quality Emission Calculations

TRTP Schedule

Major Elements					22	20	22	22	21	22	23	21	22	22	21	23	21	20	23	22	21	22	22	22	22	21	22	23	22	20	23	21	22	22	21	23	22	21	22	22	22	21	22	21	23	21	22	23	20	23	22	21	23	20	21	22	23	20	23	22	21	23	21	22	21	19	21	22	21	21	21	21	21	21	18	22							
# Days in Full Month (6 days/week)					25	23	26	26	25	26	26	26	25	26	23	26	24	23	27	26	25	26	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	25	26	26	25	27	24	26	24	25	25	23	26	26	26	25	26	27	24	26	24	25	25	23	26	26	26	25	25	26	25	26	23	26							
Onsite Construction Elements Begin in 2009					2009												2010												2011												2012												2013												2014												**Totals days in each year**						
Segment 4	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Construction of Marshalling Yards	6	192	6-Mar-09	20-Oct-09			22	26	25	26	26	26	25	16																																																																	192	0	0	0	0	0	192
Marshalling Yards, -5 & +5 other elements	4	250	31-Mar-10	27-Jan-11															1	26	25	26	26	26	25	25	24	25	21																																																0	229	21	0	0	0	250
Road Maintenance	2	235	12-Apr-10	21-Jan-11																17	25	26	26	26	25	25	24	25	16																																																0	219	16	0	0	0	235
500 kV T/L Antelope-Whirlwind																																																																																				
Road Construction (-5)	8	39	6-Apr-10	20-May-10																22	17																																																										0	39	0	0	0	0	39
Foundation Construction	24	53	20-May-10	22-Jul-10																	9	26	18																																																								0	53	0	0	0	0	53
Tower Construction	48	135	25-Jun-10	4-Dec-10																		5	26	26	25	25	24	4																																																	0	135	0	0	0	0	135
String Cable	40	54	5-Nov-10	11-Jan-11																							20	25	9																																																0	45	9	0	0	0	54
Restoration/Guard Poles +3	7	16	23-Dec-10	14-Jan-11																								6	10																																																0	6	10	0	0	0	16
IT/Communications -Antelope to Whirlwind	6	36	2-Feb-11	16-Mar-11																											22	14																																														0	0	36	0	0	0	36
230 kV T/L Drycreek-Whirlwind																																																																																				
Road Construction	7	38	20-May-10	5-Jul-10																	9	26	3																																																								0	38	0	0	0	0	38
Foundation Construction	24	55	26-Aug-10	29-Oct-10																				5	25	25																																																					0	55	0	0	0	0	55
Tower Construction	48	71	1-Oct-10	27-Dec-10																						25	24	22																																																	0	71	0	0	0	0	71
String Cable	40	35	4-Dec-10	18-Jan-11																								22	13																																																0	22	13	0	0	0	35
Restoration/Guard Poles	7	4	18-Jan-11	21-Jan-11																									4																																																0	0	4	0	0	0	4
IT/Communications - Drycreek to Whirlwind	6	36	16-Feb-11	30-Mar-11																											10	26																																														0	0	36	0	0	0	36
Path 26 Loop																																																																																				
Road Construction	7	39	6-Apr-10	20-May-10																22	17																																																										0	39	0	0	0	0	39
Foundation Construction	24	30	23-Jul-10	26-Aug-10																			8	22																																																					0	30	0	0	0	0	30
Tower Construction	48	19	26-Aug-10	17-Sep-10																				5	14																																																				0	19	0	0	0	0	19
String Cable	40	13	17-Sep-10	1-Oct-10																					12	1																																																			0	13	0	0	0	0	13
Restoration/Guard Poles	7	2	30-Sep-10	1-Oct-10																					2																																																				0	2	0	0	0	0	2
IT/Communications	6	37	19-Aug-10	1-Oct-10																				11	25	1																																																			0	37	0	0	0	0	37
66 kV Relocate at Antelope																																																																																				
Construction - Relocate 66 kV at Antelope	6	142	17-Nov-09	6-May-10											11	26	24	23	27	26	5																																																																	37	105	0	0	0	0	142
Segment 5	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Construction of Marshalling Yards	6	308	11-Jul-09	16-Jul-10							18	26	25	26	23	26	24	23	27	26	25	26	13																																																														144	164	0	0	0	0	308
Marshalling Yards	4	497	10-Nov-09	2-Jul-11											16	26	24	23	27	26	25	26	26	26	25	25	24	25	24	23	27	26	25	26	2																																										42	302	153	0	0	0	497
Road Maintenance	2	364	13-Apr-10	24-Jun-11																16	25	26	26	26	25	25	24	25	24	23	27	26	25	21																																											0	218	146	0	0	0	364
230 kV Removal T/L Antelope-Vincent																																																																																				
Wreckout - Antelope-Mesa	26	7	6-Dec-11	13-Dec-11																																				7																																					0	0	7	0	0	0	7
Wreckout - Antelope-Vincent	26	7	6-Dec-11	13-Dec-11																																				7																																					0	0	7	0	0	0	7
500 kV T/L Antelope-Vincent (#2 - 3a, b, &c)																																																																																						
Road Construction	8	39	6-Apr-10	20-May-10																22	17																																																										0	39	0	0	0	0	39
Foundation Construction	24	58	11-Sep-10	20-Nov-10																					16	25	17																																																		0	58	0	0	0	0	58
Tower Construction	48	141	23-Oct-10	13-Apr-11																						7	24	25	24	23	27	11																																												0	56	85	0	0	0	141
String Cable	40	72	16-Mar-11	23-Jun-11																												14	26	25	7																																									0	0	72	0	0	0	72
Restoration/Guard Poles	7	18	7-Jun-11	27-Jun-11																															18																																											0	0	18	0	0	0	18
Remove 18-mi 230kV T/L Antelope-Mesa	26	96	20-May-10	11-Sep-10																	9	26	26	26	9																																																						0	96	0	0	0	0	96
Remove 18-mi 230kV T/L Antelope-Vincent	26	96	20-May-10	11-Sep-10																	9	26	26	26	9																																																						0	96	0	0	0	0	96
IT/Communications	6	72	23-Feb-11	17-May-11																											5	27	26	14																																												0	0	72	0	0	0	72
500 kV T/L Antelope-Vincent (#1)																																																																																				
Reconfigure 500kV T/L Antelope-Vincent	6	12	16-Jan-12	30-Jan-12																																					12																																				0	0	0	12	0	0	12
Test/Energize	3	3	30-Jan-12	1-Feb-12																																					2	1																																			0	0	0	3	0	0	3
Shoe Fly - Sagebrush Vincent	6	24	17-Nov-09	15-Dec-09											11	13																																																																									24	0	0	0	0	0	24
Construction - Sagebrush Vincent	6	47	16-Dec-09	11-Feb-10												13	24	10																																																																						13	34	0	0	0	0	47
Cutover of Sagebrush Vincent	6	19	1-Apr-10	22-Apr-10																19																																																											0	19	0	0	0	0	19
Relocate Sagebrush - Antelope																																																																																				
Shoe Fly - Sagebrush Antelope	6	24	17-Nov-09	15-Dec-09											11	13																																																																									24	0	0	0	0	0	24
Construction - Sagebrush Antelope	6	70	16-Dec-09	11-Mar-10												13	24	23	10																																																																					13	57	0	0	0	0	70
Cutover of Sagebrush Antelope	6	18	12-Mar-10	1-Apr-10															17	1																																																										0	18	0	0	0	0	18
Segment 6	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Construction of Marshalling/Heli Yards	6	468	13-Jun-09	30-Dec-10						15	26	26	25	26	23	26	24	23	26	26	25	26	26	26	25	25	24	25																																																	167	301	0	0	0	0	468
Marshalling Yards	4	667	31-Mar-10	11-Jun-12															1	26	25	26	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	25	26	9																															0	229	303	135	0	0	667
Road Maintenance	2	533	5-Jan-10	5-Jun-12																				26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	22	3	24	24	27	25	26	4																															0	125	278	130	0	0	533
230 kV Removal Ant-Mesa																																																																																				
Wreckout - Antelope-Mesa	26	133	6-Apr-10	22-Sep-10																22	25	26	26	26	8																																																						0	133	0	0	0	0	133
500 kV T/L Vincent-Duarte																																																																																				
Road Construction	12	139	1-Jul-10	15-Dec-10																			26	26	25	25	24	13																																																	0	139	0	0	0	0	139
Foundation Construction	24	104	23-Sep-10	29-Jan-11																					7	25	24	25	23																																																0	81	23	0	0	0	104
Tower Construction	48	238	10-Dec-10	22-Sep-11																								17	24	23	27	26	25	26	25	27	18																																							0	17	221	0	0	0	238
String Cable	40	99	13-Jul-11	23-Nov-11																															16	27	25	25	6																																							0	0	99	0	0	0	99
Restoration/Guard Poles	7	27	26-Oct-11	28-Nov-11																																			5	22																																							0	0	27	0	0	0	27
IT/Communications	6	65	31-Jan-11	16-Apr-11																									1	23	27	14																																														0	0	65	0	0	0	65
230 kV Removal Rio Hondo-Vincent																																																																																				
Wreckout - Antelope-Mesa	26	17	12-Jan-12	9-Feb-12																																					9	8																																			0	0	0	17	0	0	17
500 kV T/L Vincent-Mira Loma																																																																																				
Foundation Construction	24	24	9-Feb-12	8-Mar-12																																						17	7																																		0	0	0	24	0	0	24
Tower Construction	28	73	23-Feb-12	17-May-12																																						6	27	25	15																																0	0	0	73	0	0	73
String Cable	40	25	3-May-12	1-Jun-12																																									24	1																															0	0	0	25	0	0	25
Restoration/Guard Poles	7	5	31-May-12	5-Jun-12																																									1	4																															0	0	0	5	0	0	5
Segment 7	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Construction of Marshalling Yards	6	95	4-Jun-10	24-Sep-10																		23	26	26	20																																																					0	95	0	0	0	0	95
Marshalling Yards	4	649	24-Jun-10	14-Aug-12																		6	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	25	26	26	25	12																													0	157	303	189	0	0	649
230 kV Removal Ant-Mesa																																																																																				
Wreckout - Antelope-Mesa	26	94	30-Jun-10	20-Oct-10																		1	26	26	25	16																																																				0	94	0	0	0	0	94
500 kV Vincent-Rio Hondo																																																																																				
Road Construction	3	39	14-Sep-10	28-Oct-10																					15	24																																																				0	39	0	0	0	0	39
Foundation Construction	24	30	28-Oct-10	3-Dec-10																						3	24	3																																																	0	30	0	0	0	0	30
Tower Construction	48	13	3-Dec-10	17-Dec-10																								13																																																	0	13	0	0	0	0	13
Restoration/Guard Poles	7	2	18-Dec-10	19-Dec-10																								2																																																	0	2	0	0	0	0	2
IT/Communications	6	69	30-Sep-10	24-Dec-10																					1	24	24	20																																																	0	69	0	0	0	0	69
500 kV Duarte-Mesa																																																																																				
Foundation Construction	24	100	3-Dec-10	4-Apr-11																								23	24	23	27	3																																												0	23	77	0	0	0	100
Tower Construction	48	376	10-Feb-11	17-May-12																											9	27	26	25	26	25	27	25	25	24	26	24	24	27	25	11																																0	0	265	111	0	0	376
String Cable	40	156	2-Feb-12	4-Aug-12																																						23	27	25	26	26	25	4																													0	0	0	156	0	0	156
Restoration/Guard Poles	7	16	21-Jul-12	8-Aug-12																																											9	7																													0	0	0	16	0	0	16
IT/Communications	6	73	10-May-12	4-Aug-12																																									18	26	25	4																													0	0	0	73	0	0	73
66 kV North of Rio Hondo																																																																																				
Construction	6	146	6-Apr-10	25-Sep-10																22	25	26	26	26	21																																																						0	146	0	0	0	0	146
Removal	6	47	29-Sep-10	24-Nov-10																					2	25	20																																																		0	47	0	0	0	0	47
66 kV Rio Hondo-SG River																																																																																				
Construction	6	142	3-Oct-10	26-Mar-11																						23	24	25	24	23	23																																														0	72	70	0	0	0	142
Removal	6	49	26-Mar-11	21-May-11																												5	26	18																																												0	0	49	0	0	0	49
66 kV SG River to Mesa																																																																																				
Construction	6	150	26-Mar-11	20-Sep-11																												5	26	25	26	25	27	16																																								0	0	150	0	0	0	150
Removal	6	47	20-Sep-11	15-Nov-11																																	10	25	12																																								0	0	47	0	0	0	47
66 kV Underground																																																																																				
Construction	12	7	26-Sep-10	2-Oct-10																					5	2																																																			0	7	0	0	0	0	7
Segment 8	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Construction of Marshalling Yards	6	188	9-Sep-09	23-Apr-10									19	26	23	26	24	23	27	20																																																																	94	94	0	0	0	0	188
Marshalling Yards	4	631	31-Mar-10	28-Apr-12															1	26	25	26	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	24																																	0	229	303	99	0	0	631
Road Maintenance	2	616	12-Apr-10	23-Apr-12																17	25	26	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	19																																	0	219	303	94	0	0	616
230kV Removal																																																																																				
Remove 230 kV Rose Hills	26	7	2-Aug-10	9-Aug-10																				7																																																						0	7	0	0	0	0	7
Remove 230 kV at Fullerton Rd	26	6	27-Aug-10	2-Sep-10																				4	2																																																					0	6	0	0	0	0	6
Remove 230 kV Chino-Mesa (8A)	26	96	17-Apr-10	9-Aug-10																12	25	26	26	7																																																						0	96	0	0	0	0	96
Remove 230 kV on North ROW (8B)	26	48	6-Apr-10	1-Jun-10																22	25	1																																																								0	48	0	0	0	0	48
Remove 230 kV Chino-Mira Loma (8A)	26	25	24-Aug-10	22-Sep-10																				7	18																																																					0	25	0	0	0	0	25
220 kV Rose Hills																																																																																				
Road Construction	3	39	6-Apr-10	20-May-10																22	17																																																										0	39	0	0	0	0	39
Foundation Construction	24	37	20-May-10	2-Jul-10																	9	26	2																																																								0	37	0	0	0	0	37
Tower Construction	48	24	18-Jun-10	16-Jul-10																		11	13																																																							0	24	0	0	0	0	24
String Cable	40	13	16-Jul-10	30-Jul-10																			13																																																							0	13	0	0	0	0	13
Restoration/Guard Poles	7	2	29-Jul-10	30-Jul-10																			2																																																							0	2	0	0	0	0	2
Test/Energize	3	3	30-Jul-10	2-Aug-10																			2	1																																																						0	3	0	0	0	0	3
230 kV Fullerton Road																																																																																				
Road Construction	3	39	6-Apr-10	20-May-10																22	17																																																										0	39	0	0	0	0	39
Foundation Construction	24	37	20-May-10	2-Jul-10																	9	26	2																																																								0	37	0	0	0	0	37
Tower Construction	48	29	18-Jun-10	16-Jul-10																		16	13																																																							0	29	0	0	0	0	29
String Cable	40	12	23-Jul-10	5-Aug-10																			8	4																																																						0	12	0	0	0	0	12
Restoration/Guard Poles	7	1	5-Aug-10	5-Aug-10																				1																																																						0	1	0	0	0	0	1
Test/Energize	3	12	6-Aug-10	19-Aug-10																				12																																																						0	12	0	0	0	0	12
230 kV Chino-Mira Loma (8B)																																																																																				
Road Construction	3	32	22-Dec-09	29-Jan-10												8	24																																																																								8	24	0	0	0	0	32
Foundation Construction	24	61	29-Jan-10	10-Apr-10													2	23	27	9																																																										0	61	0	0	0	0	61
Tower Construction	48	80	18-Mar-10	19-Jun-10															12	26	25	17																																																							0	80	0	0	0	0	80
String Cable	40	41	2-Jun-10	20-Jul-10																		25	16																																																							0	41	0	0	0	0	41
Restoration/Guard Poles	7	7	16-Jul-10	23-Jul-10																			7																																																							0	7	0	0	0	0	7
Test/Energize	3	7	17-Aug-10	24-Aug-10																				7																																																						0	7	0	0	0	0	7
500 kV Mesa to Chino (8A)																																																																																				
Road Construction	3	13	23-Jun-10	6-Aug-10																		7	6																																																							0	13	0	0	0	0	13
Foundation Construction	24	175	9-Aug-10	25-Mar-11																				7	25	25	24	25	24	23	22																																														0	106	69	0	0	0	175
Tower Construction	48	290	30-Dec-10	13-Dec-11																								1	24	23	27	26	25	26	25	27	25	25	25	11																																					0	1	289	0	0	0	290
String Cable	40	285	13-May-11	19-Apr-12																													15	26	27	25	25	25	25	26	24	24	27	16																																	0	0	194	91	0	0	285
Restoration/Guard Poles	7	27	23-Mar-12	23-Apr-12																																							9	18																																	0	0	0	27	0	0	27
500 kV Chino to Mira Loma (8A/8C)																																																																																				
Road Construction	3	38	26-Jun-10	10-Aug-10																		4	26	8																																																						0	38	0	0	0	0	38
Foundation Construction	24	71	22-Sep-10	16-Dec-10																					8	25	24	14																																																	0	71	0	0	0	0	71
Tower Construction	48	94	24-Nov-10	19-Mar-11																							5	25	24	23	17																																														0	30	64	0	0	0	94
String Cable	40	48	28-Feb-11	23-Apr-11																										1	27	20																																													0	0	48	0	0	0	48
Restoration/Guard Poles	7	6	21-Apr-11	27-Apr-11																												6																																													0	0	6	0	0	0	6
Connect Chino-Mira Loma 500 kV	6	72	16-Feb-12	10-May-12																																						11	27	25	9																																0	0	0	72	0	0	72
66 kV Construction/Removal																																																																																				
Construction Chino	6	83	6-Apr-10	13-Jul-10																22	21																																																										0	43	0	0	0	0	43
Construction Mesa	6	25	11-Jul-10	4-Aug-10																			19	3																																																						0	22	0	0	0	0	22
Construction Mira Loma	6	25	7-Jul-10	4-Aug-10																			22	3																																																						0	25	0	0	0	0	25
Removal	6	48	14-Jul-10	8-Sep-10																			16	26	6																																																					0	48	0	0	0	0	48
66 kV Underground																																																																																				
Construction	12	43	27-May-10	16-Jul-10																	4	26	13																																																								0	43	0	0	0	0	43
Segment 9	**Crew Size**	**Total Days**	**Start Date**	**End Date**	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2009	2010	2011	2012	2013	2014	Totals
Whirlwind Substation																																																																																				
Grading Element	15	71	22-Jan-10	15-Apr-10													8	23	27	13																																																											0	71	0	0	0	0	71
Civil Element	25	107	16-Apr-10	20-Aug-10																13	25	26	26	17																																																						0	107	0	0	0	0	107
Electrical Element	25	199	21-Aug-10	20-Aug-11																				9	25	25	24	25	24	23	27	17																																												0	108	91	0	0	0	199

Transformer Assembly*	6	161	4 different durations																									
Testing	4	48	21-Apr-11	16-Jun-11																								
Antelope Substation																												
Grading Element	8	71	17-Nov-09	11-Feb-10											11	26	24	10										
Civil Element	15	160	12-Feb-10	20-Aug-10														13	27	26	25	26	26	17				
Electrical Element*	25	204	2 different durations																		18	26	26	26	25	25	11	
Transformer Element*	6	236	4 different durations																								14	43
Testing*	4	145	2 different durations																									
Construct SVC Antelope	6	74	7-Dec-10	8-Mar-12																								20
Vincent Substation																												
Electrical Element	25	59	9-Jan-12	19-Mar-12																								
Transformer Element*	6	261	3 different durations																							18	24	25
Testing*	4	107	2 different durations																						6			
Construct SVC Vincent	6	297	1-Aug-12	24-Jul-13																								
Reconductor Line Riser on Existing Rio Hond	6	12	10-Jul-09	23-Jul-09							12																	
Gould Substation																												
Transformer Element*	6	59	2 different durations																									
Testing	4	6	26-Nov-11	2-Dec-11																								
Mira Loma Substation																												
Transformer Element	6	54	2 different durations																					11	14				
Chino Substation																												
Transformer Element	6	53	11-May-10	13-Jul-10																	17	26	10					
Segment 10	**Crew Size**	**Total Days**	**Start Date**	**End Date**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Marshalling Yards	4	245	31-Mar-10	21-Jan-11															1	26	25	26	26	26	25	25	24	25
Road Maintenance	2	230	12-Apr-10	14-Jan-11																17	25	26	26	26	25	25	24	25
500 kV Whirlwind to Windhub																												
Road Construction	10	39	6-Apr-10	20-May-10																22	17							
Foundation Construction	24	53	20-May-10	22-Jul-10																	9	26	18					
Tower Construction	48	135	25-Jun-10	4-Dec-10																		5	26	26	25	25	24	4
String Cable	40	59	30-Oct-10	11-Jan-11																						1	24	25
Restoration/Guard Poles	7	17	23-Dec-10	14-Jan-11																								5
IT/Communications	6	68	16-Oct-10	11-Jan-11																						10	24	25
Segment 11	**Crew Size**	**Total Days**	**Start Date**	**End Date**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Construction of Marshalling/Heli Yards	6	264	2 different durations							6	26	26	25	26	23	26	24	7										
Marshalling Yards	4	428	18-Apr-11	18-Jan-13																								
Road Maintenance	2	320	22-Dec-11	12-Jan-13																								
Removal 230 kV Eagle-Pardee																												
Wreckout	26	59	23-Dec-11	5-Mar-12																								
500 kV 2nd Circuit Vincent-Gould																												
Road Construction	12	98	3-Nov-11	2-Mar-12																								
Foundation Construction	24	49	5-Mar-12	30-Apr-12																								
Tower Construction	48	136	30-Apr-12	9-Oct-12																								
String Cable	40	57	1-Nov-12	9-Jan-13																								
Restoration/Guard Poles	7	19	20-Dec-12	12-Jan-13																								
IT/Communications	6	72	13-Oct-12	9-Jan-13																								
230 kV Mesa-Gould																												
String Cable	40	54	8-Aug-12	11-Oct-12																								
IT/Communications	6	72	18-Jul-12	11-Oct-12																								
Test/Energize	3	7	11-Oct-12	18-Oct-12																								
230 kV Pardee-Vincent																												
Road Construction	6	2	22-Apr-11	23-Apr-11																								
Foundation Construction	24	6	25-Apr-11	30-Apr-11																								
Tower Construction	48	6	7-Jun-11	13-Jun-11																								
String Cable	40	7	13-Jun-11	20-Jun-11																								
Restoration/Guard Poles	7	1	20-Jun-11	20-Jun-11																								
Test/Energize	3	7	19-Mar-12	26-Mar-12																								
230 kV Eagle Rock-Gould																												
Road Construction	6	2	23-Apr-11	8-Jun-11																								
Foundation Construction	24	7	8-Jun-11	15-Jun-11																								
Tower Construction	48	7	21-Jul-11	28-Jul-11																								
String Cable	40	7	29-Jul-11	5-Aug-11																								
Restoration/Guard Poles	7	1	6-Aug-11	6-Aug-11																								

Transformer Assembly*	23	33	58	26	21																			
Testing				9	25	14																		
Antelope Substation																								
Grading Element																								
Civil Element																								
Electrical Element*														17	27	3								
Transformer Element*	72	44	41	22																				
Testing*						7	25	17								22	26	26	22					
Construct SVC Antelope	24	23	7																					
Vincent Substation																								
Electrical Element													19	24	16									
Transformer Element*	3											19	6										9	25
Testing*																								
Construct SVC Vincent																				27	24	26	24	25
Reconductor Line Riser on Existing Rio Hond																								
Gould Substation																								
Transformer Element*						8	26	3		3	19													
Testing											4	2												
Mira Loma Substation																								
Transformer Element																		25	4					
Chino Substation																								
Transformer Element																								
Segment 10	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Marshalling Yards	16																							
Road Maintenance	11																							
500 kV Whirlwind to Windhub																								
Road Construction																								
Foundation Construction																								
Tower Construction																								
String Cable	9																							
Restoration/Guard Poles	12																							
IT/Communications	9																							
Segment 11	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Construction of Marshalling/Heli Yards													24	24	27									
Marshalling Yards				12	25	26	25	10				12	24	24	27	25	26	26	25	27	24	26	24	25
Road Maintenance												7	24	24	27	25	26	26	25	27	24	26	24	25
Removal 230 kV Eagle-Pardee																								
Wreckout												7	24	24	4									
500 kV 2nd Circuit Vincent-Gould																								
Road Construction											22	26	24	24	2									
Foundation Construction															24	25								
Tower Construction																1	26	26	25	27	24	7		
String Cable																							24	25
Restoration/Guard Poles																								9
IT/Communications																						15	24	25
230 kV Mesa-Gould																								
String Cable																				21	24	9		
IT/Communications																			12	27	24	9		
Test/Energize																						7		
230 kV Pardee-Vincent																								
Road Construction				2																				
Foundation Construction				6																				
Tower Construction					6																			
String Cable					7																			
Restoration/Guard Poles						1																		
Test/Energize															7									
230 kV Eagle Rock-Gould																								
Road Construction						2																		
Foundation Construction						7																		
Tower Construction							7																	
String Cable							2	5																
Restoration/Guard Poles								1																

Transformer Element* (Vincent Substation)	25	23	26	26	26	6																		
Testing* (Vincent Substation)							7	27	24	26	11													
Construct SVC Vincent	25	23	26	26	26	25	20																	
Segment 10	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Segment 11	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Marshalling Yards	15																							
Road Maintenance	10																							
String Cable (500 kV 2nd Circuit Vincent-Gould)	8																							
Restoration/Guard Poles (500 kV 2nd Circuit Vincent-Gould)	10																							
IT/Communications (500 kV 2nd Circuit Vincent-Gould)	8																							

Transformer Assembly*	0	0	161	0	0	0	**161**
Testing	0	0	48	0	0	0	**48**
Antelope Substation							
Grading Element	37	34	0	0	0	0	**71**
Civil Element	0	160	0	0	0	0	**160**
Electrical Element*	0	157	0	47	0	0	**204**
Transformer Element*	0	57	179	0	0	0	**236**
Testing*	0	0	49	96	0	0	**145**
Construct SVC Antelope	0	20	54	0	0	0	**74**
Vincent Substation							
Electrical Element	0	0	0	59	0	0	**59**
Transformer Element*	0	67	22	40	132	0	**261**
Testing*	0	6	0	0	95	0	**101**
Construct SVC Vincent	0	0	0	126	171	0	**297**
Reconductor Line Riser on Existing Rio Hond	12	0	0	0	0	0	**12**
Gould Substation							
Transformer Element*	0	0	59	0	0	0	**59**
Testing	0	0	6	0	0	0	**6**
Mira Loma Substation							
Transformer Element	0	25	0	29	0	0	**54**
Chino Substation							
Transformer Element	0	53	0	0	0	0	**53**
						0	
Segment 10	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Totals**
Marshalling Yards	0	229	16	0	0	0	**245**
Road Maintenance	0	219	11	0	0	0	**230**
500 kV Whirlwind to Windhub							
Road Construction	0	39	0	0	0	0	**39**
Foundation Construction	0	53	0	0	0	0	**53**
Tower Construction	0	135	0	0	0	0	**135**
String Cable	0	50	9	0	0	0	**59**
Restoration/Guard Poles	0	5	12	0	0	0	**17**
IT/Communications	0	59	9	0	0	0	**68**
Segment 11	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Totals**
Construction of Marshalling/Heli Yards	158	31	0	75	0	0	**264**
Marshalling Yards	0	0	110	303	15	0	**428**
Road Maintenance	0	0	7	303	10	0	**320**
Removal 230 kV Eagle-Pardee							
Wreckout	0	0	7	52	0	0	**59**
500 kV 2nd Circuit Vincent-Gould							
Road Construction	0	0	48	50	0	0	**98**
Foundation Construction	0	0	0	49	0	0	**49**
Tower Construction	0	0	0	136	0	0	**136**
String Cable	0	0	0	49	8	0	**57**
Restoration/Guard Poles	0	0	0	9	10	0	**19**
IT/Communications	0	0	0	64	8	0	**72**
230 kV Mesa-Gould							
String Cable	0	0	0	54	0	0	**54**
IT/Communications	0	0	0	72	0	0	**72**
Test/Energize	0	0	0	7	0	0	**7**
230 kV Pardee-Vincent							
Road Construction	0	0	2	0	0	0	**2**
Foundation Construction	0	0	6	0	0	0	**6**
Tower Construction	0	0	6	0	0	0	**6**
String Cable	0	0	7	0	0	0	**7**
Restoration/Guard Poles	0	0	1	0	0	0	**1**
Test/Energize	0	0	0	7	0	0	**7**
230 kV Eagle Rock-Gould							
Road Construction	0	0	2	0	0	0	**2**
Foundation Construction	0	0	7	0	0	0	**7**
Tower Construction	0	0	7	0	0	0	**7**
String Cable	0	0	7	0	0	0	**7**
Restoration/Guard Poles	0	0	1	0	0	0	**1**

TRTP

		HP	Number	Hours/day	Days
Segment 4	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	192
	Forklift, 5 ton	75	1	6	192
	Forklift, 10 ton	85	1	6	192
	Motor, Auxilary Power	5	1	1	192
Segment 5	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	308
	Forklift, 5 ton	75	1	6	308
	Forklift, 10 ton	85	1	6	308
	Motor, Auxilary Power	5	1	1	308
Segment 6	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	468
	Forklift, 5 ton	75	1	6	468
	Forklift, 10 ton	85	1	6	468
	Motor, Auxilary Power	5	1	1	468
Segment 7	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	95
	Forklift, 5 ton	75	1	6	95
	Forklift, 10 ton	85	1	6	95
	Motor, Auxilary Power	5	1	1	95
Segment 8	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	188
	Forklift, 5 ton	75	1	6	188
	Forklift, 10 ton	85	1	6	188
	Motor, Auxilary Power	5	1	1	188
Segment 11	Crane, Hydraulic, Rough Terrain 35 ton	155	1	2	264
	Forklift, 5 ton	75	1	6	264
	Forklift, 10 ton	85	1	6	264
	Motor, Auxilary Power	5	1	1	264
Segment 4	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	250
	Forklift, 5 ton	75	1	5	250
	Forklift, 10 ton	85	1	5	250
Segment 5	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	497
	Forklift, 5 ton	75	1	5	497
	Forklift, 10 ton	85	1	5	497
Segment 6	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	667
	Forklift, 5 ton	75	1	5	667
	Forklift, 10 ton	85	1	5	667
Segment 7	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	649
	Forklift, 5 ton	75	1	5	649
	Forklift, 10 ton	85	1	5	649
Segment 8	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	631
	Forklift, 5 ton	75	1	5	631
	Forklift, 10 ton	85	1	5	631
Segment 10	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	245
	Forklift, 5 ton	75	1	5	245
	Forklift, 10 ton	85	1	5	245
Segment 11	Crane, Hydraulic, Rough Terrain 35 ton	155	1	3	428
	Forklift, 5 ton	75	1	5	428
	Forklift, 10 ton	85	1	5	428
Segment 4	Crawler, Track Type, w/ blade (D8 type)	305	1	9	116
	Crawler, Track Type, w/ blade (D6 Type)	185	1	9	116

	Motor Grader	140	1	5	116	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	116	
Segment 5	Crawler, Track Type, w/ blade (D8 type)	305	1	9	39	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	9	39	
	Motor Grader	140	1	5	39	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	39	
Segment 6	Crawler, Track Type, w/ blade (D8 type)	305	2	8	139	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	8	139	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	3	139	
	Excavator, Grade - All	165	2	8	139	
	Motor Grader	140	1	5	139	
Segment 7	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	39	
	Excavator, Grade - All	165	1	3	39	
	Motor Grader	140	1	3	39	
Segment 8	Crawler, Track Type, w/ blade (D8 type)	305	1	9	8	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	9	8	
	Motor Grader	140	1	5	8	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	8	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	153	Separate period with different equipment needs
	Motor Grader	140	1	3	153	
	Excavator, Grade - All	165	1	3	153	
Segment 10	Crawler, Track Type, w/ blade (D8 type)	305	1	9	39	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	9	39	
	Motor Grader	140	1	5	39	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	39	
Segment 11	Crawler, Track Type, w/ blade (D8 type)	305	2	8	98	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	8	98	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	3	98	
	Excavator, Grade - All	165	2	8	98	
	Motor Grader	140	1	5	98	
Segment 4	Motor Grader	140	1	2	235	
	Crawler, Track Type, w/ blade (D6 Type)	300	1	2	235	
Segment 5	Motor Grader	140	1	2	364	
	Crawler, Track Type, w/ blade (D6 Type)	300	1	2	364	
Segment 6	Motor Grader	140	1	2	533	
	Crawler, Track Type, w/ blade (D6 Type)	300	1	2	533	
Segment 8	Motor Grader	140	1	2	616	
	Crawler, Track Type, w/ blade (D6 Type)	300	1	2	616	
Segment 10	Motor Grader	140	1	2	230	
	Crawler, Track Type, w/ blade (D6 Type)	300	1	2	230	
Segment 11	Motor Grader	140	1	2	320	
	Crawler, Track Type, w/ blade (D6 Type)	185	1	2	320	
Segment 4	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	138	
	Excavator, Grade - All	165	1	4	138	
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	138	
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	138	
	Motor, Auxilary Power	5	2	2	138	
Segment 5	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	58	
	Excavator, Grade - All	165	1	4	58	

	Crawler, track type, drill dig, Pheumatic D8	305	1	8	58
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	58
	Motor, Auxilary Power	5	2	2	58
Segment 6	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	128
	Excavator, Grade - All	165	1	4	128
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	128
	Generator, Concrete Batch Plant	50	1	6	128
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	128
	Motor, Auxilary Power	5	2	2	128
Segment 7	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	130
	Excavator, Grade - All	165	1	4	130
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	130
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	130
	Motor, Auxilary Power	5	2	2	130
Segment 8	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	381
	Excavator, Grade - All	165	1	4	381
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	381
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	381
	Motor, Auxilary Power	5	2	2	381
Segment 10	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	53
	Excavator, Grade - All	165	1	4	53
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	53
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	53
	Motor, Auxilary Power	5	2	2	53
Segment 11	Crawler, Track Type, w/ blade (D6 Type)	185	1	3	62
	Crawler, track type, drill dig, Pheumatic D8	305	1	8	62
	Generator, Concrete Batch Plant	50	1	6	62
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	2	4	62
	Motor, Auxilary Power	5	2	2	62
	Excavator, Grade - All	165	1	4	62
Segment 4	Crane, Hydraulic, 150/300 Ton	450	1	8	225
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	225
	Compressor, Air	75	5	7.5	225
	Motor, Auxilary Power	5	2	2	225
Segment 5	Crane, Hydraulic, 150/300 Ton	450	1	8	141
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	141
	Compressor, Air	75	5	7.5	141
	Motor, Auxilary Power	5	2	2	141
Segment 6	Crane, Hydraulic, 150/300 Ton	450	1	8	311
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	311
	Compressor, Air	75	5	7.5	311
	Motor, Auxilary Power	5	2	2	311
Segment 7	Crane, Hydraulic, 150/300 Ton	450	1	8	389
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	389
	Compressor, Air	75	5	7.5	389
	Motor, Auxilary Power	5	2	2	389
Segment 8	Crane, Hydraulic, 150/300 Ton	450	1	8	517
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	517
	Compressor, Air	75	5	7.5	517

	Motor, Auxilary Power	5	2	2	517
Segment 10	Crane, Hydraulic, 150/300 Ton	450	1	8	135
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	135
	Compressor, Air	75	5	7.5	135
	Motor, Auxilary Power	5	2	2	135
Segment 11	Crane, Hydraulic, 150/300 Ton	450	1	8	149
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	8	149
	Compressor, Air	75	5	7.5	149
	Motor, Auxilary Power	5	2	2	149
Segment 4	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	80
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	80
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	80
	Crawler, Track Type, Sagging (D8 type)	305	2	2	80
	Motor, Auxilary Power	5	4	2	80
	Tension machine, conductor	135	2	3	80
	Tension machine, static	135	1	2	80
Segment 5	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	72
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	72
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	72
	Crawler, Track Type, Sagging (D8 type)	305	2	2	72
	Motor, Auxilary Power	5	4	2	72
	Tension machine, conductor	135	2	3	72
	Tension machine, static	135	1	2	72
Segment 6	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	124
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	124
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	124
	Crawler, Track Type, Sagging (D8 type)	305	2	2	124
	Motor, Auxilary Power	5	4	2	124
	Tension machine, conductor	135	2	3	124
	Tension machine, static	135	1	2	124
Segment 7	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	156
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	156
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	156
	Crawler, Track Type, Sagging (D8 type)	305	2	2	156
	Motor, Auxilary Power	5	4	2	156
	Tension machine, conductor	135	2	3	156
	Tension machine, static	135	1	2	156
Segment 8	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	399
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	399
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	399
	Crawler, Track Type, Sagging (D8 type)	305	2	2	399
	Motor, Auxilary Power	5	4	2	399
	Tension machine, conductor	135	2	3	399
	Tension machine, static	135	1	2	399
Segment 10	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	59
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	59
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	59
	Crawler, Track Type, Sagging (D8 type)	305	2	2	59
	Motor, Auxilary Power	5	4	2	59

	Tension machine, conductor	135	2	3	59
	Tension machine, static	135	1	2	59
Segment 11	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	1	3	124
	Crane, Hydraulic, Rough Terrain 35 ton	155	3	3	124
	Crawler, Track Type, w/ blade (D8 type)	305	1	2	124
	Crawler, Track Type, Sagging (D8 type)	305	2	2	124
	Motor, Auxilary Power	5	4	2	124
	Tension machine, conductor	135	2	3	124
	Tension machine, static	135	1	2	124
Segment 4	Backhoe	85	1	5	22
	Motor Grader	140	1	8	22
Segment 5	Backhoe	85	1	5	18
	Motor Grader	140	1	8	18
Segment 6	Backhoe	85	1	5	32
	Motor Grader	140	1	8	32
Segment 7	Backhoe	85	1	5	18
	Motor Grader	140	1	8	18
Segment 8	Backhoe	85	1	5	43
	Motor Grader	140	1	8	43
Segment 10	Backhoe	85	1	5	17
	Motor Grader	140	1	8	17
Segment 11	Backhoe	85	1	5	21
	Motor Grader	140	1	8	21
Segment 5	Tension Machine	135	2	3	206
	Crawler, Track Type, w/ blade (D8 type)	305	1	8	206
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	4	8	206
	Crane, Hydraulic, Rough Terrain 35 ton	155	2	4	206
	Motor, Auxilary Power	5	3	2	206
Segment 6	Tension Machine, Conductor or Static	135	2	3	150
	Crawler, Track Type, w/ blade (D8 type)	305	1	8	150
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	4	8	150
	Crane, Hydraulic, Rough Terrain 35 ton	155	2	4	150
	Motor, Auxilary Power	5	3	2	150
Segment 7	Tension Machine, Conductor or Static	135	2	3	94
	Crawler, Track Type, w/ blade (D8 type)	305	1	8	94
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	4	8	94
	Crane, Hydraulic, Rough Terrain 35 ton	155	2	4	94
	Motor, Auxilary Power	5	3	2	94
Segment 8	Tension Machine, Conductor or Static	135	2	3	182
	Crawler, Track Type, w/ blade (D8 type)	305	1	8	182
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	4	8	182
	Crane, Hydraulic, Rough Terrain 35 ton	155	2	4	182
	Motor, Auxilary Power	5	3	2	182
Segment 11	Tension Machine	135	2	3	59
	Crawler, Track Type, w/ blade (D8 type)	305	1	8	59
	Backhoe w/ Bucket; backhoe w/ concrete hammer	85	4	8	59
	Crane, Hydraulic, Rough Terrain 35 ton	155	2	4	59
	Motor, Auxilary Power	5	3	2	59
Segment 4 - Relocate at Antelope	Drill Rig	250	1	4	107

	Backhoe	85	1	4	107
Segment 5 - Sagebrush/Ant. & Sagebrush Vincent	Drill Rig	250	1	4	155
	Backhoe	85	1	4	155
Segment 7 - Rio Hondo/SG River & SG River to Mesa	Drill Rig	250	1	4	220
	Backhoe	85	1	4	220
Segment 7	Drill Rig	250	1	4	218
	Backhoe	85	1	4	218
Segment 8	Drill Rig	250	1	4	90
	Backhoe	85	1	4	90
Trenching	Excavator Cat 320	138	1	8	3
	Forklift - 10 ton	85	1	4	3
	Backhoe	85	1	4	3
	Water Pumps - 100 hp	100	1	4	3
	Loader, Front End w/ Bucket	145	1	4	3
Vault Construction	Excavator Cat 320	138	1	0	0
	Water Pumps - 100 hp	100	1	0	0
	Forklift, 10 ton	85	1	0	0
	Loader, Front End w/ Bucket	145	1	0	0
End Structures	Drill Rig	250	1	4	4
	Loader, Front End w/ Bucket	145	1	2	4
	Backhoe	85	1	2	4
Trenching	Excavator Cat 320	138	1	8	27
	Forklift - 10 ton	85	1	4	27
	Backhoe	85	1	4	27
	Water Pumps - 100 hp	100	1	4	27
	Loader, Front End w/ Bucket	145	1	4	27
Vault Construction	Excavator Cat 320	138	1	6	6
	Water Pumps - 100 hp	100	1	6	6
	Forklift, 10 ton	85	1	2	6
	Loader, Front End w/ Bucket	145	1	1	6
End Structures	Drill Rig	250	1	4	10
	Loader, Front End w/ Bucket	145	1	2	10
	Backhoe	85	1	2	10
Segment 4 - Relocate at Antelope	Puller, Wire Puller 1 Drum	310	1	4	131
	Backhoe	85	1	4	131
Segment 5 - Sagebrush/Ant. & Sagebrush Vincent	Puller, Wire Puller 1 Drum	310	1	4	37
	Backhoe	85	1	4	37
Segment 7	Puller, Wire Puller 1 Drum	310	1	4	47
	Backhoe	85	1	4	47
Segment 8	Puller, Wire Puller 1 Drum	310	1	4	48
	Backhoe	85	1	4	48
Segment 9 - Whirlwind Substation	980 Loader	318	3	8	71
	Grader	285	2	8	71
	Compactor	80	2	6	71
Segment 9 - Antelope Substation	980 Loader	318	3	8	71
	Grader	285	2	8	71
	Compactor	80	2	5	71
Segment 9 - Whirlwind Substation	14 ton Crane	180	1	4	107
	Driller	305	2	8	107

	Ditch Digger	75	2	6	107
	Forklift	75	1	4	107
	Tractors	85	2	6	107
Segment 9 - Antelope Substation	14 ton Crane	180	1	4	160
	Driller	305	2	8	160
	Ditch Digger	75	1	6	160
	Forklift	75	1	4	160
	Tractors	85	2	6	160
Segment 9 - Whirlwind Substation	14 ton Crane	180	2	6	199
	Crane, Hydraulic, 150 Ton (150 ton crane)	350	2	6	199
	Forklift	75	1	6	199
	Manlifts	75	4	6	199
Segment 9 - Antelope Substation	14 ton Crane	180	2	6	194
	Crane, Hydraulic, 150 Ton (150 ton crane)	350	2	6	194
	Forklift	75	1	6	194
	Manlifts	75	4	6	194
Segment 9 - Vincent Substation	14 ton Crane	180	2	6	59
	Crane, Hydraulic, 150 Ton (150 ton crane)	350	2	6	59
	Forklift	75	1	6	59
	Manlifts	75	4	6	59
Segment 9 - Whirlwind Substation	50 ton Crane	200	2	6	161
	Forklift	75	1	6	161
	Manlifts	75	2	6	161
Segment 9 - Antelope Substation	50 ton Crane	200	2	6	236
	Forklift	75	1	6	236
	Manlifts	75	1	6	236
Segment 9 - Vincent Substation	50 ton Crane	200	2	6	261
	Forklift	75	1	6	261
	Manlifts	75	1	6	261
Segment 9 - Mira Loma Substation	50 ton Crane	200	2	6	54
	Forklift	75	1	6	54
	Manlifts	75	1	6	54
Segment 9 - Chino Substation	50 ton Crane	200	2	6	53
	Forklift	75	1	6	53
	Manlifts	75	1	6	53
Segment 9 - Gould Substation	50 ton Crane	200	2	6	59
	Forklift	75	1	6	59
	Manlifts	75	1	6	59

Alternative 5

Equipment		HP	Number	Hours/day	Days
Clear, Grub, Stage	Dozer, D7	240	1	8	25
	Forklift - 10 ton	85	1	2	25
	Motor Grader - 120H	125	1	4	25
	Loader - 928	143	1	4	25
	Chippers - WC 342G	100	1	2	10
	Chainsaws Stihl MS 460	6	1	4	10
Marshalling Yard	Crane Rough Terrain 35 Ton	155	1	2	590
	Forklift, 5 ton	75	1	6	590
	Forklift, 10 ton	85	1	6	590
	Motor, Auxilary Power	5	1	1	590
Access Shaft Excavation	Excavator Cat 345	345	1	8	91
	Excavator/Rock Drill Cat 320	138	2	8	91
	Pile Driver Crane	240	1	8	91
	Loader - 928	143	1	8	91
	Crane 250 Ton	390	1	2	91
	Generator - 250 hp	250	4	24	106
	Grout Pump	100	1	8	91
	Water Pumps - 100 hp	100	2	24	106
Tunneling	Generator - TBM	1500	1	16	322
	Loader - 928	143	1	16	322
	Crane 250 Ton	390	2	16	322
	Generator - 250 hp	250	4	24	376
	Water Pump - 100 hp	100	4	24	376
Ventilation Shaft Excavation	Vertical Shaft Machine	550	1	8	91
	Loader - 928	143	1	8	91
	Crane 250 Ton	390	1	2	91
	Generator - 250 hp	250	1	24	106
	Water Pump - 100 hp	100	1	24	106
Tunnel Grouting	Crane 250 Ton	390	1	6	60
	Grout Pump	100	1	6	60
	Generator - 250 hp	250	4	24	70
	Water Pump - 100 hp	100	1	24	70
Cable Installation	Welder	50	2	6	90
	Generator - 250 hp	250	4	24	105
	Forklift, 5 ton	75	2	8	90
	Crane 250 Ton	240	2	6	90
Access Features and Cleanup	Excavator - 320	188	1	4	75
	Backhoe	85	2	4	75
	Crane 250 Ton	390	1	4	75
	Loader - 928	143	1	6	75
	Motor Grader - 120H	125	1	4	75
	Vib. Compactor CS-433E	100	1	4	75
	Generator - 250 hp	250	4	24	75

Schedule			2010											2011											2012			
	Crew Size	Total Days	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
500 kV Undergrounding																														
Clear, Grub, Stage	6	**25**				5	20																							
Marshalling Yard	4	**590**					10	26	26	26	25	25	24	25	24	23	27	26	25	26	25	27	25	25	24	26	24	24	27	25
Access Shaft Excavation	20	**91**					5	26	26	26	8																			
Tunneling	90	**322**							26	26	25	25	24	25	24	23	27	26	25	26	20									
Ventilation Shaft Excavation	15	**91**																			25	27	25	14						
Tunnel Grouting	20	**60**																					13	25	22					
Cable Installation	20	**90**																							24	26	24	16		
Access Features and Cleanup	10	**75**																									4	24	27	20

Single- and Double-Circuit Options

TRTP - Single-Circuit and Double-Circuit Undergrounding
Construction - Summary

Single-Circuit Maximum Daily Emissions (lbs/day)

	VOC	CO	NOx	SOx	PM10	PM2.5
Onroad	4.25	39.25	71.99	0.20	3.54	2.49
Offroad	9.02	63.76	68.73	0.10	6.11	5.62
Fugitive Dust	--	--	--	--	44.72	10.01
Total	13.26	103.01	140.72	0.29	54.38	18.12

* Maximum daily emissions for all pollutants would occur during the overlapping period when mobilize, obtain material & staging yard, vault and duct bank installation and excavation, cable delivery, cable pulling, cable splicing and terminations, east horizontal drilling, west transition station clear and grub, and east transition station final grading activities occur concurrently.

Double-Circuit Maximum Daily Emissions (lbs/day)

	VOC	CO	NOx	SOx	PM10	PM2.5
Onroad	4.36	40.00	74.62	0.20	3.66	2.57
Offroad	9.02	63.76	68.73	0.10	6.11	5.62
Fugitive Dust	--	--	--	--	50.09	11.12
Total	13.38	103.76	143.35	0.30	59.86	19.32

* Maximum daily emissions for all pollutants would occur during the overlapping period when mobilize, obtain material & staging yard, vault and duct bank installation and excavation, cable delivery, cable pulling, cable splicing and terminations, east horizontal drilling, west transition station clear and grub, and east transition station final grading activities occur concurrently.

Single-Circuit Total Emissions (tons)

	VOC	CO	NOx	SOx	PM10	PM2.5
Onroad	0.41	5.14	4.19	0.01	0.25	0.16
Offroad	1.44	11.19	12.47	0.02	1.10	1.01
Fugitive Dust	--	--	--	--	7.11	1.23
Total	1.85	16.33	16.66	0.03	8.45	2.40

Double-Circuit Total Emissions (tons)

	VOC	CO	NOx	SOx	PM10	PM2.5
Onroad	0.57	6.71	6.67	0.02	0.37	0.25
Offroad	1.80	13.27	14.78	0.02	1.31	1.21
Fugitive Dust	--	--	--	--	10.11	1.71
Total	2.37	19.98	21.45	0.04	11.79	3.16

Single-Circuit LST Emissions (lbs/day)

	VOC	CO	NOx	SOx	PM10	PM2.5
Offroad	3.13	25.84	32.20	0.05	0.93	2.80
Fugitive Dust	--	--	--	--	3.30	0.75
Total	3.13	25.84	32.20	0.05	4.24	3.54

Note: The maximum daily LST values for VOC and PM10 would occur during clearing and grubbing activity and east transition station rough grading, respectively. The maximum daily LST values for NOx and PM2.5 would occur during lattice steel tower construction. The maximum daily LST values for CO an SOx would occur during east horizontal drilling.

Double-Circuit LST Emissions (lbs/day)

	VOC	CO	NOx	SOx	PM10	PM2.5
Offroad	3.13	25.84	32.20	0.05	0.93	2.80
Fugitive Dust	--	--	--	--	3.30	0.75
Total	3.13	25.84	32.20	0.05	4.24	3.54

Note: The maximum daily LST values for VOC and PM10 would occur during clearing and grubbing activity and east transition station rough grading, respectively. The maximum daily LST values for NOx and PM2.5 would occur during lattice steel tower construction. The maximum daily LST values for CO an SOx would occur during east horizontal drilling.

Single-Circuit Total GHG Emissions (Metric Tons)

	CO2	N2O	CH4	CO2e (MT)
Onroad	1,355.63	0.02	0.01	1,358.94
Offroad	3,959.96	0.22	0.10	3,995.95
Total	5,315.60	0.25	0.11	5,354.89

Double-Circuit Total GHG Emissions (Metric Tons)

	CO2	N2O	CH4	CO2e (MT)
Onroad	2,021.92	0.03	0.01	2,026.30
Offroad	4,640.39	0.26	0.12	4,682.55
Total	6,662.30	0.29	0.13	6,708.86

TRTP - Single-Circuit and Double-Circuit Option
Construction - Comparison

Maximum Daily Emissions Comparison (lbs/day)

	VOC	CO	NOx	SOx	PM10	PM2.5
TRTP Alt.5 SCAQMD	420.77	1,628.25	2,320.31	10.66	706.35	242.14
TRTP Alt. 5 Undergrounding	87.36	313.53	855.10	0.98	132.01	53.85
Single-Circuit	13.26	103.01	140.72	0.29	54.38	18.12
Double-Circuit	13.38	103.76	143.35	0.30	59.86	19.32

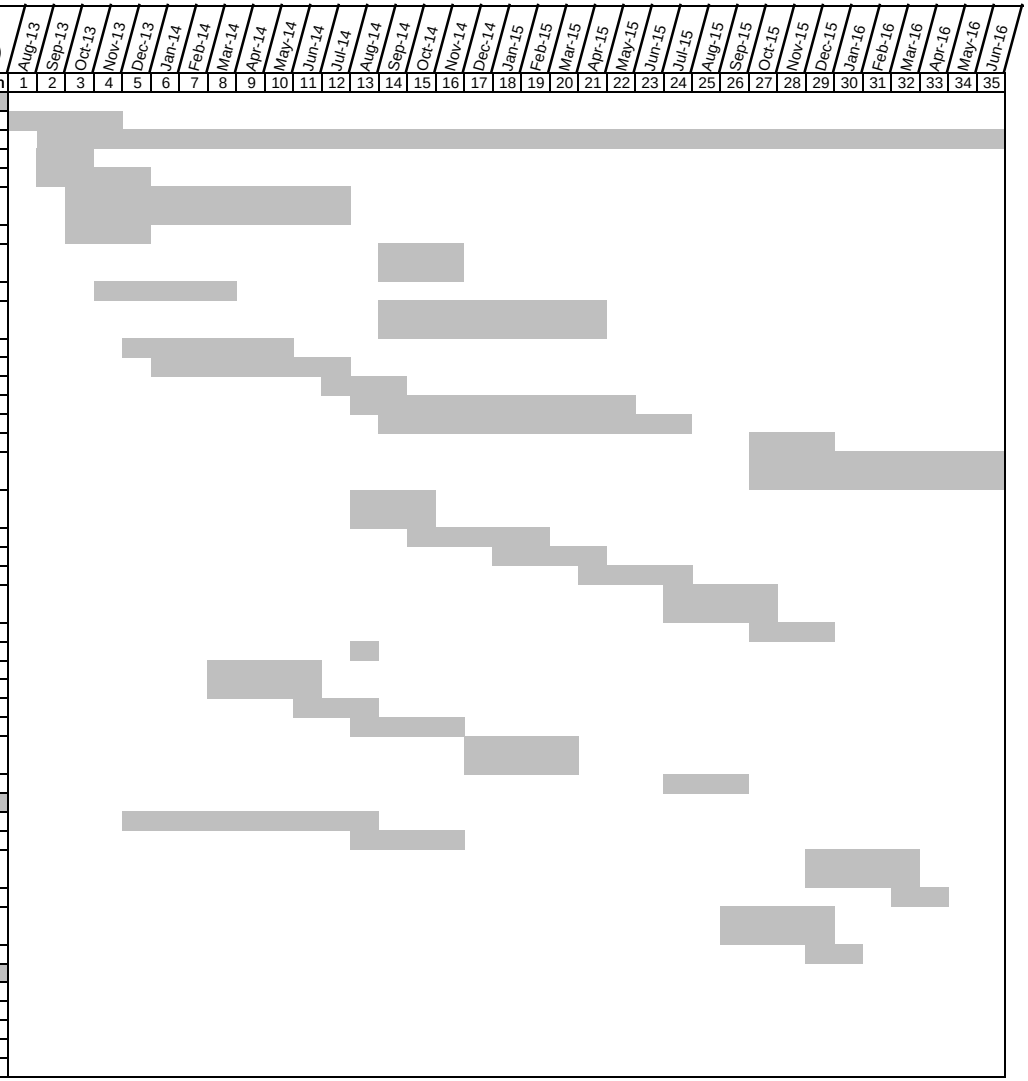
Total Emissions Comparison (tons)

	VOC	CO	NOx	SOx	PM10	PM2.5
TRTP Alt. 5 Undergrounding	14.14	50.18	142.34	0.17	18.74	7.69
Single-Circuit	1.85	16.33	16.66	0.03	8.45	2.40
Double-Circuit	2.37	19.98	21.45	0.04	11.79	3.16

TRTP - Single-Circuit Undergrounding

Construction - Schedule

	Start	End	Schedule days	Duration (work days)
1st Circuit Civil and Cable Pull				
Remove Existing Structures	8/26/13	11/23/13	90	64
Mobilize, Obtain Material & Staging Yard	9/10/13	6/30/16	1,024	731
Construction Staking & Potholing	9/10/13	10/24/13	45	32
Clearing, Grubbing, Demolition & Erosion Control	9/10/13	12/3/13	85	61
Rough Grading, Construction Access Roads & Site Civil	10/10/13	7/9/14	273	195
Vault Excavation & Installation - VC 5 to 11	10/25/13	12/5/13	42	30
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	9/2/14	11/3/14	70	50
Duct Bank Installation & Excavation - VC 5 to 11	11/1/13	3/6/2014	126	90
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	9/9/14	4/6/15	210	150
West Horizontal Directional Drills	12/4/13	5/2/14	150	107
East Horizontal Directional Drills	1/7/14	7/5/14	180	129
Cable Delivery	7/16/14	9/25/14	72	51
Cable Pulling	8/18/14	5/29/15	240	171
Cable Splicing & Terminations	9/2/14	7/19/15	320	229
Cable Testing & Commissioning	10/1/15	12/29/15	90	64
Final Grading, Final Access Roads, ROW Restoration & Landscaping	10/1/15	6/30/16	274	196
WTS - Clearing, Grubbing, Demolition & Erosion Control	8/2/14	10/30/14	90	64
WTS - Rough Grading & Site Civil	10/31/14	2/27/15	120	86
WTS - Foundation & Cable Trench Installation	1/29/15	4/28/15	90	64
WTS - Final Grading & Yard Surfacing	4/29/15	7/2/15	65	46
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	7/3/15	10/30/15	120	86
WTS - Facility Testing & Commissioning	10/31/15	12/29/15	60	43
WTS - Installation of One LST	8/2/14	8/16/14	15	11
ETS - Rough Grading & Site Civil	3/14/14	6/11/14	90	64
ETS - Clearing, Demolition & Erosion Control	3/14/14	6/11/14	90	64
ETS - Foundation & Cable Trench Installation	6/12/14	8/30/14	80	57
ETS - Final Grading & Yard Surfacing	8/31/14	11/3/14	65	46
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	12/3/14	3/2/15	90	64
ETS - Facility Testing & Commissioning	7/20/15	9/17/15	60	43
2nd Circuit Civil and Cable Pull				
West Horizontal Directional Drills	12/4/13	8/21/14	261	186
East Horizontal Directional Drills	8/22/14	11/19/14	90	64
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	12/30/15	3/28/16	90	64
WTS - Facility Testing & Commissioning	3/29/16	4/27/16	30	21
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	9/18/15	12/16/15	90	64
ETS - Facility Testing & Commissioning	12/17/15	1/15/16	30	21
Substation Construction				
Civil				60
Electrical				80
Transformer Assembly and Processing				29
Maintenance				80
Test				80



Notes:

1) Assumes working schedule of 5 days/week

2) WTS = West Transtition Station

3)ETS = East Transition Station

Overlap 1: Mobilize, Obtain Material & Staging Yard, Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS, Duct Banck Installation & Excavation - WTS to VC 5, VC 12 to ETS, Cable Delivery, Cable Pulling, Cable Splicing & Terminations, WTS - Clearing and Grubbing, ETS - Final Grading, East Horizontal Drilling (Second Circuit)

TRTP - Single-Circuit Undergrounding
Construction Assumptions

	Schedule Days	Work Days	Crew Size
First Circuit			
Remove Existing Structures	90	64	8
Mobilize, Obtain Material & Staging Yard	1024	731	4
Construction Staking & Potholing	45	32	8
Clearing, Grubbing, Demolition & Erosion Control	85	61	8
Rough Grading, Construction Access Roads & Site Civil	273	195	8
Vault Excavation & Installation - VC 5 to 11	42	30	12
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	70	50	12
Duct Bank Installation & Excavation - VC 5 to 11	126	90	28
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	210	150	28
West Horizontal Directional Drills	150	107	24
East Horizontal Directional Drills	180	129	24
Cable Delivery	72	51	0
Cable Pulling	240	171	12
Cable Splicing & Terminations	320	229	8
Cable Testing & Commissioning	90	64	12
Final Grading, Final Access Roads, ROW Restoration & Landscaping	274	196	8
WTS - Clearing, Grubbing, Demolition & Erosion Control	90	64	6
WTS - Rough Grading & Site Civil	120	86	10
WTS - Foundation & Cable Trench Installation	90	64	10
WTS - Final Grading & Yard Surfacing	65	46	10
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	120	86	8
WTS - Facility Testing & Commissioning	60	43	12
WTS - Installation of One LST	15	11	8
LST - Install Foundations		3	8
LST - Tower Construction		5	8
LST - Cabling		3	8
ETS - Rough Grading & Site Civil	90	64	10
ETS - Clearing, Demolition & Erosion Control	90	64	6
ETS - Foundation & Cable Trench Installation	80	57	10
ETS - Final Grading & Yard Surfacing	65	46	10
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
ETS - Facility Testing & Commissioning	60	43	12
Second Circuit			
West Horizontal Directional Drills	261	186	24
East Horizontal Directional Drills	90	64	24
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
WTS - Facility Testing & Commissioning	30	21	12
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
ETS - Facility Testing & Commissioning	30	21	12
Substation Construction			
Civil	--	60	10
Electrical	--	80	10
Transformer Assembly and Processing	--	29	10
Maintenance	--	80	10
Test	--	80	10

Notes:
1) Assumes working schedule of 5 days/week
2) WTS = West Transtition Station
3) ETS = East Transition Station

Onroad Equipment - First Circuit and Cable Pull

	Vehicles	Class	# Trips	Assumptions	Daily Trip
Remove Existing Structures	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Delivery	Delivery	20	1 trip/day max	1
	Heavy Haul	HHDT	20	2 trip/day max	2
Mobilize, Obtain Material & Staging Yard	Worker vehicles	Passenger	2924	1 trip/empoyee, no ride share	4
	Delivery	Delivery	20	1 trip/day max	1
	Heavy Haul	HHDT	20	2 trip/day max	2
Construction Staking & Potholing	Worker vehicles	Passenger	256	1 trip/empoyee, no ride share	8
	Delivery	Delivery	32	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1
Clearing, Grubbing, Demolition & Erosion Control	Worker vehicles	Passenger	488	1 trip/empoyee, no ride share	8
	Delivery Truck	Delivery	244	4 trips/day	4
	Crew Trucks	Delivery	61	1 trip/day	1
	Tower Haul	HHDT	54	3 trips/tower, 18 towers	2
	Concrete Waste	HHDT	4	25 tons/trip, 2 tons/cy	1
	Clear and Grub Waste Hauling	HHDT	122	2 trips/day	2
Rough Grading, Construction Access Roads & Site Civil	Worker vehicles	Passenger	1560	1 trip/empoyee, no ride share	8
	Delivery	Delivery	195	1 trip/day	1
	Heavy Haul	HHDT	20	1 trip/day max	1
Vault Excavation & Installation - VC 5 to 11	Worker vehicles	Passenger	360	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	60	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	289	8 trips/vault, 68 vaults	10
	Heavy Haul - Vaults Delivery	HHDT	136	8 trips/splice vault, 45 vaults	7
	Heavy Haul - Vaults Delivery	HHDT	10	5 trips/restraint, 6 vaults	2
	Heavy Haul - Vaults Delivery	HHDT	18	3 trips/telecom, 17 vaults	2
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	600	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	100	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	482	8 trips/vault, 68 vaults	10
	Heavy Haul - Vaults Delivery	HHDT	224	8 trips/splice vault, 45 vaults	7
	Heavy Haul - Vaults Delivery	HHDT	20	5 trips/restraint, 6 vaults	2
	Heavy Haul - Vaults Delivery	HHDT	33	3 trips/telecom, 17 vaults	2
Duct Bank Installation & Excavation - VC 5 to 11	Worker vehicles	Passenger	2520	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	180	2 trips/day	2
	Waste Soil	HHDT	929	daily=1.25*avg day	14
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	22	1 trip/day	1
	Concrete Trucks	HHDT	359	daily=1.25*avg day	5
	Thermal Fill	HHDT	250	daily=1.25*avg day	4
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	4200	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	300	2 trips/day	2
	Waste Soil	HHDT	1,547	daily=1.25*avg day	14
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	35	1 trip/day	1
	Concrete Trucks	HHDT	597	daily=1.25*avg day	5
	Thermal Fill	HHDT	417	daily=1.25*avg day	4
West Horizontal Directional Drills	Worker vehicles	Passenger	2,568	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	3
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	2
	Concrete Trucks	HHDT	69	based on interpolation, total	1
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	11	1 trip/day	1
	Soil/Veg Waste	HHDT	431	based on interpolation, total	7
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
East Horizontal Directional Drills	Worker vehicles	Passenger	3096	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	3
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	2
	Concrete Trucks	HHDT	69	based on interpolation, total	1
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	14	1 trip/day	1
	Soil/Veg Waste	HHDT	519	based on interpolation, total	7
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1

Cable Delivery	Heavy Haul	HHDT	20	2 trip/day max	2
Cable Pulling	Worker vehicles	Passenger	2052	1 trip/empoyee, no ride share	12
	Crew Truck	Delivery	513	3 trips/day	3
	Heavy Haul - Cable Delivery	HHDT	120	120 reels	1
Cable Splicing & Terminations	Worker vehicles	Passenger	1832	8 passengers/day	8
	Crew Truck	Delivery	458	2 crew trucks/day	8
	Heavy Haul - Cable Delivery	HHDT	20	1 trip/day max, 20 total	1
Cable Testing & Commissioning	Worker vehicles	Passenger	768	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	64	1 trip/day	1
Final Grading, Final Access Roads, ROW Restoration & Landscaping	Worker vehicles	Passenger	1568	1 trip/empoyee, no ride share	8
	Delivery	Delivery	196	1 trip/day	1
	Heavy Haul	HHDT	20	1 trip/day max, 20 total	1
WTS - Clearing, Grubbing, Demolition & Erosion Control	Worker vehicles	Passenger	384	1 trip/empoyee, no ride share	6
	Crew Trucks	Delivery	64	1 trip/day	1
	Heavy Haul	HHDT	10	1 trip/day max	1
WTS - Rough Grading & Site Civil	Worker vehicles	Passenger	860	1 trip/empoyee, no ride share	10
	Delivery	Delivery	172	2 trips/day	2
	Heavy Haul	HHDT	20	2 trips/day, 20 total	2
WTS - Foundation & Cable Trench Installation	Worker vehicles	Passenger	640	1 trip/empoyee, no ride share	10
	Delivery	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	80	10 trips/day max, 80 total	10
WTS - Final Grading & Yard Surfacing	Worker vehicles	Passenger	460	1 trip/empoyee, no ride share	10
	Delivery	Delivery	92	2 trips/day	2
	Heavy Haul	HHDT	4	1 trips/day, 4 total	1
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	688	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	172	2 trips/day	2
	Heavy Haul	HHDT	86	1 trips/day	1
WTS - Facility Testing & Commissioning	Worker vehicles	Passenger	516	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	43	1 trip/day	1
WTS - Installation of One LST LST - Install Foundations	Worker vehicles	Passenger	24	1 trip/empoyee, no ride share	8
	Delivery	Delivery	3	1 trip/day max	1
	Heavy Haul	HHDT	6	1 trip/day max	2
WTS - Installation of One LST LST - Tower Construction	Worker vehicles	Passenger	40	1 trip/empoyee, no ride share	8
	Delivery	Delivery	6	1 trip/day max	1
	Heavy Haul	HHDT	3	1 trip/day max	2
WTS - Installation of One LST LST - Cabling	Worker vehicles	Passenger	24	1 trip/empoyee, no ride share	8
	Delivery	Delivery	6	1 trip/day max	1
	Heavy Haul	HHDT	6	1 trip/day max	2
ETS - Rough Grading & Site Civil	Worker vehicles	Passenger	640	1 trip/empoyee, no ride share	10
	Delivery	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	20	2 trips/day, 20 total	2
ETS - Clearing, Demolition & Erosion Control	Worker vehicles	Passenger	384	1 trip/empoyee, no ride share	6
	Crew Trucks	Delivery	64	1 trip/day	1
	Heavy Haul	HHDT	10	1 trip/day, 10 trips total	1
ETS - Foundation & Cable Trench Installation	Worker vehicles	Passenger	570	1 trip/empoyee, no ride share	10
	Delivery	Delivery	114	2 trips/day	2
	Heavy Haul	HHDT	80	10 trips/day max, 80 total	10
ETS - Final Grading & Yard Surfacing	Worker vehicles	Passenger	460	1 trip/empoyee, no ride share	10
	Delivery	Delivery	92	2 trips/day	2
	Heavy Haul	HHDT	4	1 trips/day, 4 total	1
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
ETS - Facility Testing & Commissioning	Worker vehicles	Passenger	516	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	43	1 trip/day	1
Fuel/Water	Fuel Trucks	Delivery	770	1 trips/day	1
	Water Trucks	HHDT	704	1 trips/day	1

Notes:

1) Assumes working schedule of 5 days/week

2) WTS = West Transtition Station

3) ETS = East Transition Station

Onroad Equipment - Second Circuit and Cable Pull

	Vehicles	Class	# Trips	Assumptions	Daily Trip
West Horizontal Directional Drills	Worker vehicles	Passenger	4,464	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	2
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	1
	Concrete Trucks	HHDT	69	based on interpolation, total	1

	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	18	1 trip/day	1
	Soil/Veg Waste	HHDT	707	based on interpolation, total	5
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
East Horizontal Directional Drills	Worker vehicles	Passenger	1,536	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	5
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	3
	Concrete Trucks	HHDT	69	based on interpolation, total	2
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	2
	Misc Material - Pipes, etc	HHDT	7	1 trip/day	1
	Soil/Veg Waste	HHDT	243	based on interpolation, total	5
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
WTS - Facility Testing & Commissioning	Worker vehicles	Passenger	252	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	21	1 trip/day	1
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
ETS - Facility Testing & Commissioning	Worker vehicles	Passenger	252	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	21	1 trip/day	1

Onroad Equipment - Substation Construction

	Vehicles	Class	# Trips	Assumptions	Daily Trip
Civil	Worker vehicles	Passenger	600	1 trip/empoyee, no ride share	10
	Delivery	Delivery	60	1 trip/day	1
	Heavy Haul	HHDT	20	25 total trips	1
Electrical	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Heavy Haul	HHDT	25	25 total trips	1
Maintenance	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1
Test	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1

Offroad Equipment - First Circuit

	Equipment	HP	Quantity	Hrs/Day	Days
Remove Existing Structures	Excavator - 320C	138	1	8	64
	Crane, Hydraulic, Rough Terrain 35 t	155	1	4	64
	Generator/Welder	25	1	8	64
Mobilize, Obtain Material & Staging Yard	Forklift	75	1	4	731
Clearing, Grubbing, Demolition & Erosion Control	Dozer - D4	80	1	4	61
	Loader - 924	129	1	4	61
	Chippers - WC 342G	100	1	2	61
	Chainsaw Stihl MS 460	6	1	4	61
Rough Grading, Construction Access Roads & Site Civil	Dozer - D7R	240	1	4	195
	Grader - 12H	145	1	4	195
Vault Excavation & Installation - VC 5 to 11	Excavator - 325C	188	1	4	30
	Generators	50	1	8	30
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Excavator - 325C	188	1	4	50
	Generators	50	1	8	50
Ductbank Excavation & Installation - VC 5 to 11	Backhoe	85	1	4	90
	Excavator - 325C	188	1	8	90
	Generators	50	2	8	90
	Concrete Pump	50	1	4	90
	Loader	129	1	4	90
	Compactor	80	1	4	90
Ductbank Excavation & Installation - WTS to VC 5, VC 12 to ETS	Backhoe	85	1	4	150
	Excavator - 325C	188	1	8	150
	Generators	50	2	8	150
	Concrete Pump	50	1	4	150
	Loader	129	1	4	150
	Compactor	80	1	4	150
West Horizontal Directional Drills	Backhoe	85	1	6	107
	Horizontal Directional Drill	225	1	24	107
East Horizontal Directional Drills	Backhoe	85	1	6	129
	Generators	100	1	24	129
	Horizontal Directional Drill	225	1	24	129
Cable Pulling	Generators	50	1	8	171
	Drum Puller	310	1	4	171
	Tension Machine	135	1	4	171
Cable Splicing & Terminations	Generators	50	2	8	229
Final Grading, Final Access Roads, Row Restoration & Landscaping	Compactor	80	1	4	196
	Grader - 12H	145	1	4	196
WTS Clearing, Grubbing & Erosion Control	Loader	129	1	4	64
	Dozer - D7	240	1	4	64
	Compactor	80	1	2	64
WTS Rough Grading & Site Civil	Grader - 12H	145	1	4	86
	Dozer - D7	240	1	6	86
WTS Foundation & Cable Trench Installation	Excavator - 320C	138	1	4	64
	Grader - 12H	145	1	4	64
WTS Final Grading & Yard Surfacing	Grader - 12H	145	1	4	46
	Power Trowel	44	1	4	46
WTS Structure, Bus, Switch, Jumpers & Meer Installation	Drum Puller	310	1	4	86
	Crane	250	1	4	86
LST Install Foundations	Crawler - D6	185	1	3	3
	Excavator	165	1	4	3
	Crawler - D8	305	1	8	3
	Backhoe	85	2	4	3
	Motor, Auxiliary Power	5	2	2	3
LST Tower Construction	Crane, Hydraulic, 150/300 ton	450	1	8	5
	Crane, Hydraulic, Rough Terrain 35 t	155	3	8	5
	Compressor	75	5	7.5	5
	Motor, Auxiliary Power	5	2	2	5
LST Cabling	Backhoe	85	1	3	3
	Crane, Hydraulic, Rough Terrain 35 t	155	3	3	3
	Crawler - D8	305	3	2	3
	Motor, Auxiliary Power	5	4	2	3
	Tension Machine, conductor	135	2	3	3
	Tension Machine, static	135	1	2	3
ETS Rough Grading & Site Civil	Grader - 12H	145	1	4	64
	Dozer - D7	240	1	6	64
ETS Clearing, Grubbing & Erosion Control	Grader - 12H	145	1	4	64
	Compactor	80	1	2	64
ETS Foundation & Cable Trench Installation	Excavator - 320C	138	1	4	57

	Grader - 12H	145	1	4	57
ETS Final Grading & Yard Surfacing	Grader - 12H	145	1	4	46
	Power Trowel	44	1	4	46
ETS Structure, Bus, Switch, Jumpers & Meer Installation	Crane	250	1	4	64

Offroad Equipment - Second Circuit

	Equipment	HP	Quantity	Hrs/Day	Days
West Horizontal Directional Drills	Backhoe	85	1	6	186
	Horizontal Directional Drill	225	1	24	186
East Horizontal Directional Drills	Backhoe	85	1	6	64
	Generators	100	1	24	64
	Horizontal Directional Drill	225	1	24	64
	Drum Puller	310	1	4	64
WTS Structure, Bus, Switch, Jumpers & Meer Installation	Crane	250	1	4	64
	Drum Puller	310	1	4	64
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	Crane	250	1	4	64

Offroad Equipment - Substation

	Equipment	HP	Quantity	Hrs/Day	Days
Transformer Assembly and Processing	50 ton Crane	200	2	6	29
	Forklift	75	1	6	29
	Manlift	75	1	6	29

TRTP - Double-Circuit Undergrounding

Construction - Schedule

	Start	End	Schedule days	Duration (work days)
			Month	
First Circuit				
Remove Existing Structures	8/26/13	11/23/13	90	64
Mobilize, Obtain Material & Staging Yard	9/10/13	6/30/16	1,024	731
Construction Staking & Potholing	9/10/13	10/24/13	45	32
Clearing, Grubbing, Demolition & Erosion Control	9/10/13	12/3/13	85	61
Rough Grading, Construction Access Roads & Site Civil	10/10/13	7/9/14	273	195
Vault Excavation & Installation - VC 5 to 11	10/25/13	12/5/13	42	30
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	9/2/14	11/3/14	70	50
Duct Bank Installation & Excavation - VC 5 to 11	11/1/13	3/6/2014	126	90
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	9/9/14	4/6/15	210	150
West Horizontal Directional Drills	12/4/13	5/2/14	150	107
East Horizontal Directional Drills	1/7/14	7/5/14	180	129
Cable Delivery	7/16/14	9/25/14	72	51
Cable Pulling	8/18/14	5/29/15	240	171
Cable Splicing & Terminations	9/2/14	7/19/15	320	229
Cable Testing & Commissioning	10/1/15	12/29/15	90	64
Final Grading, Final Access Roads, ROW Restoration & Landscaping	10/1/15	6/30/16	274	196
WTS - Clearing, Grubbing, Demolition & Erosion Control	8/2/14	10/30/14	90	64
WTS - Rough Grading & Site Civil	10/31/14	2/27/15	120	86
WTS - Foundation & Cable Trench Installation	1/29/15	4/28/15	90	64
WTS - Final Grading & Yard Surfacing	4/29/15	7/2/15	65	46
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	7/3/15	10/30/15	120	86
WTS - Facility Testing & Commissioning	10/31/15	12/29/15	60	43
WTS - Installation of One LST	8/2/14	8/16/14	15	11
ETS - Rough Grading & Site Civil	3/14/14	6/11/14	90	64
ETS - Clearing, Demolition & Erosion Control	3/14/14	6/11/14	90	64
ETS - Foundation & Cable Trench Installation	6/12/14	8/30/14	80	57
ETS - Final Grading & Yard Surfacing	8/31/14	11/3/14	65	46
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	12/3/14	3/2/15	90	64
ETS - Facility Testing & Commissioning	7/20/15	9/17/15	60	43
Second Circuit				
West Horizontal Directional Drills	12/4/13	8/21/14	261	186
East Horizontal Directional Drills	8/22/14	11/19/14	90	64
Vault Excavation & Installation - VC 5 to 11	12/30/15	1/23/16	24	17
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	6/26/16	8/5/16	41	29
Duct Bank Installation & Excavation - VC 5 to 11	1/29/16	4/8/16	70	50
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	7/19/16	11/12/16	116	83
Final Grading, Final Access Roads, ROW Restoration & Landscaping	2/11/17	11/13/17	276	197
Cable Delivery	12/16/19	1/12/21	394	281
Cable Pulling	1/13/21	8/3/21	171	122
Cable Splicing & Terminating	2/17/21	10/2/21	228	163
Cable Testing & Commissioning	10/3/21	12/31/21	90	64
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	12/30/15	3/28/16	90	64
WTS - Facility Testing & Commissioning	10/3/21	11/1/21	30	21
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	9/18/15	12/16/15	90	64
ETS - Facility Testing & Commissioning	10/3/21	11/1/21	30	21
Substation Construction				
Civil				60
Electrical				80
Transformer Assembly and Processing				29
Maintenance				80
Test				80

Notes:

1) Assumes working schedule of 5 days/week
2) WTS = West Transtition Station
3) ETS = East Transition Station
4) VC = Vault Cluster

Overlap:

Mobilize, Obtain Material & Staging Yard, Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS, Duct Banck Installation & Excavation - WTS to VC 5, VC 12 to ETS, Cable Delivery, Cable Pulling, Cable Splicing & Terminations, WTS - Clearing and Grubbing, ETS - Final Grading, East Horizontal Drilling (Second Circuit)

TRTP - Double-Circuit Undergrounding
Construction Assumptions

	Schedule Days	Work Days	Crew Size
First Circuit			
Remove Existing Structures	90	64	8
Mobilize, Obtain Material & Staging Yard	1024	731	4
Construction Staking & Potholing	45	32	8
Clearing, Grubbing, Demolition & Erosion Control	85	61	8
Rough Grading, Construction Access Roads & Site Civil	273	195	8
Vault Excavation & Installation - VC 5 to 11	42	30	12
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	70	50	12
Duct Bank Installation & Excavation - VC 5 to 11	126	90	28
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	210	150	28
West Horizontal Directional Drills	150	107	24
East Horizontal Directional Drills	180	129	24
Cable Delivery	72	51	0
Cable Pulling	240	171	12
Cable Splicing & Terminations	320	229	8
Cable Testing & Commissioning	90	64	12
Final Grading, Final Access Roads, ROW Restoration & Landscaping	274	196	8
WTS - Clearing, Grubbing, Demolition & Erosion Control	90	64	6
WTS - Rough Grading & Site Civil	120	86	10
WTS - Foundation & Cable Trench Installation	90	64	10
WTS - Final Grading & Yard Surfacing	65	46	10
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	120	86	8
WTS - Facility Testing & Commissioning	60	43	12
WTS - Installation of One LST	15	11	8
LST - Install Foundations		3	8
LST - Tower Construction		5	8
LST - Cabling		3	8
ETS - Rough Grading & Site Civil	90	64	10
ETS - Clearing, Demolition & Erosion Control	90	64	6
ETS - Foundation & Cable Trench Installation	80	57	10
ETS - Final Grading & Yard Surfacing	65	46	10
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
ETS - Facility Testing & Commissioning	60	43	12
Second Circuit			
West Horizontal Directional Drills	261	186	24
East Horizontal Directional Drills	90	64	24
Vault Excavation & Installation - VC 5 to 11	24	17	12
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	41	29	12
Duct Bank Installation & Excavation - VC 5 to 11	70	50	28
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	116	83	28
Final Grading, Final Access Roads, ROW Restoration & Landscaping	276	197	8
Cable Delivery	394	281	0
Cable Pulling	171	122	12
Cable Splicing & Terminating	228	163	8
Cable Testing & Commissioning	90	64	12
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
WTS - Facility Testing & Commissioning	30	21	12
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	90	64	8
ETS - Facility Testing & Commissioning	30	21	12
Substation Construction			
Civil	--	60	10
Electrical	--	80	10
Transformer Assembly and Processing	--	29	10
Maintenance	--	80	10
Test	--	80	10

Notes:
1) Assumes working schedule of 5 days/week
2) WTS = West Transtition Station
3) ETS = East Transition Station

Onroad Equipment - First Circuit and Cable Pull

	Vehicles	Class	# Trips	Assumptions	Daily Trip
Remove Existing Structures	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Delivery	Delivery	20	1 trip/day max	1
	Heavy Haul	HHDT	20	2 trip/day max	2
Mobilize, Obtain Material & Staging Yard	Worker vehicles	Passenger	2924	1 trip/empoyee, no ride share	4
	Delivery	Delivery	20	1 trip/day max	1
	Heavy Haul	HHDT	20	2 trip/day max	2
Construction Staking & Potholing	Worker vehicles	Passenger	256	1 trip/empoyee, no ride share	8
	Delivery	Delivery	32	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1
Clearing, Grubbing, Demolition & Erosion Control	Worker vehicles	Passenger	488	1 trip/empoyee, no ride share	8
	Delivery Truck	Delivery	244	4 trips/day	4
	Crew Trucks	Delivery	61	1 trip/day	1
	Tower Haul	HHDT	54	3 trips/tower, 18 towers	2
	Concrete Waste	HHDT	4	25 tons/trip, 2 tons/cy	1
	Clear and Grub Waste Hauling	HHDT	122	2 trips/day	2
Rough Grading, Construction Access Roads & Site Civil	Worker vehicles	Passenger	1,560	1 trip/empoyee, no ride share	8
	Delivery	Delivery	195	1 trip/day	1
	Heavy Haul	HHDT	20	1 trip/day max	1
Vault Excavation & Installation - VC 5 to 11	Worker vehicles	Passenger	360	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	60	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	289	8 trips/vault, 68 vaults	7
	Heavy Haul - Vaults Delivery	HHDT	136	8 trips/splice vault, 45 vaults	7
	Heavy Haul - Vaults Delivery	HHDT	10	5 trips/restraint, 6 vaults	2
	Heavy Haul - Vaults Delivery	HHDT	18	3 trips/telecom, 17 vaults	2
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	600	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	100	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	481	8 trips/vault, 68 vaults	10
	Heavy Haul - Vaults Delivery	HHDT	224	8 trips/splice vault, 45 vaults	8
	Heavy Haul - Vaults Delivery	HHDT	20	5 trips/restraint, 6 vaults	2
	Heavy Haul - Vaults Delivery	HHDT	33	3 trips/telecom, 17 vaults	2
Duct Bank Installation & Excavation - VC 5 to 11	Worker vehicles	Passenger	2,520	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	180	2 trips/day	2
	Waste Soil	HHDT	929	daily=1.25*avg day	14
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	22	1 trip/day	1
	Concrete Trucks	HHDT	359	daily=1.25*avg day	5
	Thermal Fill	HHDT	250	daily=1.25*avg day	4
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	4,200	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	300	2 trips/day	2
	Waste Soil	HHDT	1,548	daily=1.25*avg day	13
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	36	1 trip/day	1
	Concrete Trucks	HHDT	597	daily=1.25*avg day	5
	Thermal Fill	HHDT	417	daily=1.25*avg day	4
West Horizontal Directional Drills	Worker vehicles	Passenger	2,568	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	3
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	2
	Concrete Trucks	HHDT	69	based on interpolation, total	1
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	8	1 trip/day	1
	Soil/Veg Waste	HHDT	673	based on interpolation, total	9
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
East Horizontal Directional Drills	Worker vehicles	Passenger	3,096	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	3
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	2
	Concrete Trucks	HHDT	69	based on interpolation, total	1
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	21	1 trip/day	1
	Soil/Veg Waste	HHDT	812	based on interpolation, total	9
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
Cable Delivery	Heavy Haul	HHDT	20	2 trip/day max	2
Cable Pulling	Worker vehicles	Passenger	2,052	1 trip/empoyee, no ride share	12
	Crew Truck	Delivery	513	3 trips/day	3
	Heavy Haul - Cable Delivery	HHDT	120	120 reels	1

Cable Splicing & Terminations	Worker vehicles	Passenger	1,832	8 passengers/day	8
	Crew Truck	Delivery	458	2 crew trucks/day	8
	Heavy Haul - Cable Delivery	HHDT	20	1 trip/day max, 20 total	1
Cable Testing & Commissioning	Worker vehicles	Passenger	768	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	64	1 trip/day	1
Final Grading, Final Access Roads, ROW Restoration & Landscaping	Worker vehicles	Passenger	1,568	1 trip/empoyee, no ride share	8
	Delivery	Delivery	196	1 trip/day	1
	Heavy Haul	HHDT	20	1 trip/day max, 20 total	1
WTS - Clearing, Grubbing, Demolition & Erosion Control	Worker vehicles	Passenger	384	1 trip/empoyee, no ride share	6
	Crew Trucks	Delivery	64	1 trip/day	1
	Heavy Haul	HHDT	10	1 trip/day max	1
WTS - Rough Grading & Site Civil	Worker vehicles	Passenger	860	1 trip/empoyee, no ride share	10
	Delivery	Delivery	172	2 trips/day	2
	Heavy Haul	HHDT	20	2 trips/day, 20 total	2
WTS - Foundation & Cable Trench Installation	Worker vehicles	Passenger	640	1 trip/empoyee, no ride share	10
	Delivery	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	80	10 trips/day max, 80 total	10
WTS - Final Grading & Yard Surfacing	Worker vehicles	Passenger	460	1 trip/empoyee, no ride share	10
	Delivery	Delivery	92	2 trips/day	2
	Heavy Haul	HHDT	4	1 trips/day, 4 total	1
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	688	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	172	2 trips/day	2
	Heavy Haul	HHDT	86	1 trips/day	1
WTS - Facility Testing & Commissioning	Worker vehicles	Passenger	516	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	43	1 trip/day	1
WTS - Installation of One LST LST - Install Foundations	Worker vehicles	Passenger	24	1 trip/empoyee, no ride share	8
	Delivery	Delivery	3	1 trip/day max	1
	Heavy Haul	HHDT	6	1 trip/day max	2
WTS - Installation of One LST LST - Tower Construction	Worker vehicles	Passenger	40	1 trip/empoyee, no ride share	8
	Delivery	Delivery	6	1 trip/day max	1
	Heavy Haul	HHDT	3	1 trip/day max	2
WTS - Installation of One LST LST - Cabling	Worker vehicles	Passenger	24	1 trip/empoyee, no ride share	8
	Delivery	Delivery	6	1 trip/day max	1
	Heavy Haul	HHDT	6	1 trip/day max	2
ETS - Rough Grading & Site Civil	Worker vehicles	Passenger	640	1 trip/empoyee, no ride share	10
	Delivery	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	20	2 trips/day, 20 total	2
ETS - Clearing, Demolition & Erosion Control	Worker vehicles	Passenger	384	1 trip/empoyee, no ride share	6
	Crew Trucks	Delivery	64	1 trip/day	1
	Heavy Haul	HHDT	10	1 trip/day, 10 trips total	1
ETS - Foundation & Cable Trench Installation	Worker vehicles	Passenger	570	1 trip/empoyee, no ride share	10
	Delivery	Delivery	114	2 trips/day	2
	Heavy Haul	HHDT	80	10 trips/day max, 80 total	10
ETS - Final Grading & Yard Surfacing	Worker vehicles	Passenger	460	1 trip/empoyee, no ride share	10
	Delivery	Delivery	92	2 trips/day	2
	Heavy Haul	HHDT	4	1 trips/day, 4 total	1
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
ETS - Facility Testing & Commissioning	Worker vehicles	Passenger	516	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	43	1 trip/day	1
Fuel/Water	Fuel Trucks	Delivery	770	1 trips/day	1
	Water Trucks	HHDT	506	1 trips/day	1

Notes:
1) Assumes working schedule of 5 days/week
2) WTS = West Transtition Station
3) ETS = East Transition Station

Onroad Equipment - Second Circuit and Cable Pull

	Vehicles	Class	# Trips	Assumptions	Daily Trip
West Horizontal Directional Drills	Worker vehicles	Passenger	4,464	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	2
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	1
	Concrete Trucks	HHDT	69	based on interpolation, total	1
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	1
	Misc Material - Pipes, etc	HHDT	8	1 trip/day	1
	Soil/Veg Waste	HHDT	1,093	based on interpolation, total	8
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
East Horizontal Directional Drills	Worker vehicles	Passenger	1,536	1 trip/empoyee, no ride share	24
	Crew Trucks	Delivery	308	based on interpolation, total	5
	Sanitation Waste	Delivery	21	based on interpolation, total	1
	Dump Truck Internal Site Trips	HHDT	137	based on interpolation, total	3

	Concrete Trucks	HHDT	69	based on interpolation, total	2
	Steel Delivery	HHDT	7	based on interpolation, total	1
	Cable Delivery	HHDT	7	based on interpolation, total	1
	Misc Delivery	HHDT	69	based on interpolation, total	2
	Misc Material - Pipes, etc	HHDT	21	1 trip/day	1
	Soil/Veg Waste	HHDT	392	based on interpolation, total	9
	Miscellaneous Waste	HHDT	14	based on interpolation, total	1
Vault Excavation & Installation - VC 5 to 11	Worker vehicles	Passenger	204	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	34	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	285	8 trips/vault, 68 vaults	8
	Heavy Haul - Vaults Delivery	HHDT	136	8 trips/splice vault, 45 vaults	8
	Heavy Haul - Vaults Delivery	HHDT	10	5 trips/restraint, 6 vaults	5
	Heavy Haul - Vaults Delivery	HHDT	18	3 trips/telecom, 17 vaults	3
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	348	1 trip/empoyee, no ride share	12
	Delivery Truck	Delivery	58	2 trips/day	2
	Heavy Haul - Vaults Soil	HHDT	486	8 trips/vault, 68 vaults	8
	Heavy Haul - Vaults Delivery	HHDT	224	8 trips/splice vault, 45 vaults	8
	Heavy Haul - Vaults Delivery	HHDT	20	5 trips/restraint, 6 vaults	5
	Heavy Haul - Vaults Delivery	HHDT	33	3 trips/telecom, 17 vaults	3
Duct Bank Installation & Excavation - VC 5 to 11	Worker vehicles	Passenger	1,400	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	100	2 trips/day	2
	Waste Soil	HHDT	931	daily=1.25*avg day	19
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	22	1 trip/day	1
	Concrete Trucks	HHDT	360	daily=1.25*avg day	8
	Thermal Fill	HHDT	251	daily=1.25*avg day	6
Duct Bank Installation & Excavation - WTS to VC 5, VC 12 to ETS	Worker vehicles	Passenger	2,324	1 trip/empoyee, no ride share	28
	Delivery Truck	Delivery	166	2 trips/day	2
	Waste Soil	HHDT	1,546	daily=1.25*avg day	19
	Miscellaneous	HHDT	80	80 trips total, 2 trips/day	2
	Misc Material - Pipes, etc	HHDT	36	1 trip/day	1
	Concrete Trucks	HHDT	596	daily=1.25*avg day	8
	Thermal Fill	HHDT	416	daily=1.25*avg day	6
Final Grading, Final Access Roads, ROW Restoration & Landscaping	Worker vehicles	Passenger	1,576	1 trip/empoyee, no ride share	8
	Delivery	Delivery	197	1 trip/day	1
	Heavy Haul	HHDT	20	1 trip/day max, 20 total	1
Cable Delivery	Heavy Haul	HHDT	20	2 trips/day, 20 total	2
Cable Pulling	Worker vehicles	Passenger	1,464	1 trip/empoyee, no ride share	12
	Crew Truck	Delivery	489	3 trips/day	3
	Heavy Haul - Cable Delivery	HHDT	120	120 reels	1
Cable Splicing & Terminating	Worker vehicles	Passenger	1,304	8 passengers/day	8
	Crew Truck	Delivery	326	2 crew trucks/day	8
	Heavy Haul - Cable Delivery	HHDT	20	1 trip/day max, 20 total	1
Cable Testing & Commissioning	Worker vehicles	Passenger	768	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	64	1 trip/day	1
WTS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
WTS - Facility Testing & Commissioning	Worker vehicles	Passenger	252	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	21	1 trip/day	1
ETS - Structure, Bus, Switch, Jumpers & Meer Installation	Worker vehicles	Passenger	512	1 trip/empoyee, no ride share	8
	Crew Trucks	Delivery	128	2 trips/day	2
	Heavy Haul	HHDT	64	1 trips/day	1
ETS - Facility Testing & Commissioning	Worker vehicles	Passenger	252	1 trip/empoyee, no ride share	12
	Crew Trucks	Delivery	21	1 trip/day	1
Fuel/Water	Fuel Trucks	Delivery	770	1 trips/day	1
	Water Trucks	HHDT	462	1 trips/day	1

Onroad Equipment - Substation Construction

	Vehicles	Class	# Trips	Assumptions	Daily Trip
Civil	Worker vehicles	Passenger	600	1 trip/empoyee, no ride share	10
	Delivery	Delivery	60	1 trip/day	1
	Heavy Haul	HHDT	20	25 total trips	1
Electrical	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Heavy Haul	HHDT	20	25 total trips	1
Maintenance	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1
Test	Worker vehicles	Passenger	800	1 trip/empoyee, no ride share	10
	Delivery	Delivery	80	1 trip/day	1
	Equipment Delivery	HHDT	25	25 total trips	1

Offroad Equipment - First Circuit

	Equipment	HP	Quantity	Hrs/Day	Days
Remove Existing Structures	Excavator - 320C	138	1	8	64
	Crane, Hydraulic, Rough Terrain 35 to	155	1	4	64
	Generator/Welder	25	1	8	64
Mobilize, Obtain Material & Staging Yard	Forklift	75	1	4	731
Clearing, Grubbing, Demolition & Erosion Control	Dozer - D4	80	1	4	61
	Loader - 924	129	1	4	61
	Chippers - WC 342G	100	1	2	61
	Chainsaw Stihl MS 460	6	1	4	61
	Dozer - D7R	240	1	4	195
Rough Grading, Construction Access Roads & Site Civil	Grader - 12H	145	1	4	195
Vault Excavation & Installation - VC 5 to 11	Excavator - 325C	188	1	4	30
	Generators	50	1	8	30
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Excavator - 325C	188	1	4	50
	Generators	50	1	8	50
Ductbank Excavation & Installation - VC 5 to 11	Backhoe	85	1	4	90
	Excavator - 325C	188	1	8	90
	Generators	50	2	8	90
	Concrete Pump	50	1	4	90
	Loader	129	1	4	90
	Compactor	80	1	4	90
Ductbank Excavation & Installation - WTS to VC 5, VC 12 to ETS	Backhoe	85	1	4	150
	Excavator - 325C	188	1	8	150
	Generators	50	2	8	150
	Concrete Pump	50	1	4	150
	Loader	129	1	4	150
	Compactor	80	1	4	150
West Horizontal Directional Drills	Backhoe	85	1	6	107
	Horizontal Directional Drill	225	1	24	107
East Horizontal Directional Drills	Backhoe	85	1	6	129
	Generators	100	1	24	129
	Horizontal Directional Drill	225	1	24	129
Cable Pulling	Generators	50	1	8	171
	Drum Puller	310	1	4	171
	Tension Machine	135	1	4	171
Cable Splicing & Terminations	Generators	50	2	8	229
Final Grading, Final Access Roads, Row Restoration & Landscaping	Compactor	80	1	4	196
	Grader - 12H	145	1	4	196
WTS Clearing, Grubbing & Erosion Control	Loader	129	1	4	64
	Dozer - D7	240	1	4	64
	Compactor	80	1	2	64
WTS Rough Grading & Site Civil	Grader - 12H	145	1	4	86
	Dozer - D7	240	1	6	86
WTS Foundation & Cable Trench Installation	Excavator - 320C	138	1	4	64
	Grader - 12H	145	1	4	64
WTS Final Grading & Yard Surfacing	Grader - 12H	145	1	4	46
	Power Trowel	44	1	4	46
WTS Structure, Bus, Switch, Jumpers & Meer Installation	Drum Puller	310	1	4	86
	Crane	250	1	4	86
LST Install Foundations	Crawler - D6	185	1	3	3
	Excavator	165	1	4	3
	Crawler - D8	305	1	8	3
	Backhoe	85	2	4	3
	Motor, Auxiliary Power	5	2	2	3
LST Tower Construction	Crane, Hydraulic, 150/300 ton	450	1	8	5
	Crane, Hydraulic, Rough Terrain 35 to	155	3	8	5
	Compressor	75	5	7.5	5
	Motor, Auxiliary Power	5	2	2	5
LST Cabling	Backhoe	85	1	3	3
	Crane, Hydraulic, Rough Terrain 35 to	155	3	3	3
	Crawler - D8	305	3	2	3
	Motor, Auxiliary Power	5	4	2	3
	Tension Machine, conductor	135	2	3	3
	Tension Machine, static	135	1	2	3
ETS Rough Grading & Site Civil	Grader - 12H	145	1	4	64
	Dozer - D7	240	1	6	64
ETS Clearing, Grubbing & Erosion Control	Grader - 12H	145	1	4	64
	Compactor	80	1	2	64
ETS Foundation & Cable Trench Installation	Excavator - 320C	138	1	4	57
	Grader - 12H	145	1	4	57
ETS Final Grading & Yard Surfacing	Grader - 12H	145	1	4	46
	Power Trowel	44	1	4	46
ETS Structure, Bus, Switch, Jumpers & Meer Installation	Crane	250	1	4	64

Offroad Equipment - Second Circuit

	Equipment	HP	Quantity	Hrs/Day	Days
West Horizontal Directional Drills	Backhoe	85	1	6	186
	Horizontal Directional Drill	225	1	24	186
East Horizontal Directional Drills	Backhoe	85	1	6	64
	Generators	100	1	24	64
	Horizontal Directional Drill	225	1	24	64
Vault Excavation & Installation - VC 5 to 11	Excavator - 325C	188	1	4	17
	Generators	50	1	8	17
Vault Excavation & Installation - WTS to VC 5, VC 12 to ETS	Excavator - 325C	188	1	4	29
	Generators	50	1	8	29
Ductbank Excavation & Installation - VC 5 to 11	Backhoe	85	1	4	50
	Excavator - 325C	188	1	8	50
	Generators	50	2	8	50
	Concrete Pump	50	1	4	50
	Loader	129	1	4	50
	Compactor	80	1	4	50
Ductbank Excavation & Installation - WTS to VC 5, VC 12 to ETS	Backhoe	85	1	4	83
	Excavator - 325C	188	1	8	83
	Generators	50	2	8	83
	Concrete Pump	50	1	4	83
	Loader	129	1	4	83
	Compactor	80	1	4	83
Final Grading, Final Access Roads, Row Restoration & Landscaping	Compactor	80	1	4	197
	Grader - 12H	80	1	4	197
Cable Pulling	Generators	50	1	8	122
	Drum Puller	310	1	4	122
	Tension Machine	135	1	4	122
Cable Splicing & Terminations	Generators	50	2	8	163
WTS Structure, Bus, Switch, Jumpers & Meer Installation	Drum Puller	310	1	4	64
	Crane	250	1	4	64
ETS Structure, Bus, Switch, Jumpers & Meer Installation	Crane	250	1	4	64

Offroad Equipment - Substation

	Equipment	HP	Quantity	Hrs/Day	Days
Transformer Assembly and Processing	50 ton Crane	200	2	6	29
	Forklift	75	1	6	29
	Manlift	75	1	6	29

Appendix 6

Cumulative Projects

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF LANCASTER					
5	CUP 11-02	Solar facility	3-MW solar facility	90th St West between Avenue K-8 and K-12	PC Approved 9/19/11
5	CUP 11-03	Solar facility	10-MW solar facility	Southwest corner of 90th St West and Avenue H	PC Approved 9/19/11
5	CUP 11-05	Solar facility	20-MW solar facility	Southeast corner of 80th St West and Avenue J	PC Approved 9/19/11
5	CUP 11-06	Solar facility	20-MW solar facility	Bounded by 95th St East, 93rd St East, Avenue J and J-8	PC Approved 9/19/11
5	CUP 11-07	Solar facility	30-MW solar facility	Southeast corner of 110th St West and Avenue J	On hold
CITY OF PALMDALE					
5	None provided	Infrastructur e	Install a 327 ft. wind turbine	Within hi-grade mining operation	Approved 7/28/11
5	None provided	Commercial	70,801 sq.ft. market and retail stores	NWC Rancho Vista Blvd and Town Center Dr	Approved 1/25/2012
5	None provided	Commercial	54,200 sq.ft. retail center (5 buildings)		Approved 3/5/2012
5	Ritter Ranch	Master Planned Community	Proposed 7,200 homes, 18-hole golf course, equestrian center, two lakes, six schools, 73 acres of businesses, 100 acres of parks, thousands of areas of open space	Leona Valley and foothill areas of West Palmdale	Partially developed
5	Anaverde Community	Master Planned Community	Subdivide 471.85 acres into 350 single-family lots, 3 detention basin lots, 1 school site, 1 fire station, 33 open space lots, and 13 natural open spaces	South side of Avenue S, west of Parkwood Dr within the City Ranch Specific Plan (Ana Verde)	Mostly developed

[1] The Cities of Rosemead, Montebello, and Industry were contacted by phone on October 8, 2012 and again on January 15, 2013 to request a current/revised development list. A follow-up email was sent on October 11, 2012 and again on January 22, 2013. No response was provided; therefore, Aspen was not able to obtain revised development lists within these jurisdictions.

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF SAN MARINO					
11	Huntington Library-Education and Visitors Center Project	Institutional	43,095 sq.ft. net increase	1151 Oxford Rd, San Marino	Approved and under construction
CITY OF PASADENA					
11	None provided	Commercial	80-room hotel	1201 E Colorado Blvd, Pasadena	None provided
11	None provided	Residential	30-unit condominium	1043 E Del Mar Blvd, Pasadena	None provided
11	None provided	Mixed use	40 housing units, 15,000 sq.ft. retail	851 E Washington Blvd, Pasadena	None provided
11	None provided	Residential	60-unit condominium	200 S Sierra Madre, Pasadena	None provided
EAST PASADENA (Los Angeles County)					
11	PM061753	Industrial	Construction of a new treatment facility within the 12.83-acre Sunny Slope Water Co. site	1076 El Campo Dr, East Pasadena	CUP in progress
11	TTM 066664	Residential	Creation of 7 single-family lots on 1.6 acres	8300 Longden Ave, East Pasadena	Tentative Map approved
EAST SAN GABRIEL (Los Angeles County)					
11	TTM 071234	Residential	One multi-family lot with 30 detached condos on 4.2 acres	5006 N Bartlett Ave, East San Gabriel	Tentative Map approved
CITY OF ARCADIA					
11	None provided	Commercial	20,000 sq.ft.	400 S Baldwin, Arcadia	Under construction
11	None provided	Residential	10-unit condominium	845 W Huntingtion Dr, Arcadia	Under construction
11	None provided	Residential	11-unit condominium	715 S Old Ranch Rd, Arcadia	Under construction
11	None provided	Residential	34-unit condominium	650 W Huntington Dr, Arcadia	Proposed
11	None provided	Residential	18-unit condominium	948-950 Arcadia Ave, Arcadia	Approved
11	Metro Gold Line Extension	Infrastructure	11.5-mile Foothill Extension to connect communities	Arcadia	Under construction

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF TEMPLE CITY					
11	Rosemead Beautification Project	Infrastructure	2-mile street improvement	Rosemead Blvd, Temple City	Anticipated start date Nov 27 – Jan 2014
11	Gateway Project APN:5387-013-031	Commercial	75,000 sq.ft. shopping center	5770 Rosemead Blvd,, Temple City	Currently doing utility work. Pending building and grading plan check.
11	Lower Azusa Property: APN 8592-005-004	Residential	47-unit residential development	4303 Temple City Blvd,, Temple City	Currently doing a feasibility study. No tentative planning commission or city council meetings yet.
11	Former Alpha Beta Mixed-Use Project	Mixed use	50-residential condo with commercial units on the ground floor on 1.3 acre property	North of Las Tunas Dr on West side of Temple City Blvd, between Las Tunas Dr and Workman Ave. No address (vacant lot)	Currently doing a feasibility study. No tentative planning commission or city council meetings yet.
11	TTM 60850	Residential	10-unit subdivision	5527-5539 Sultana Ave	Final Map approved
11	TPM 62318	Residential	3-unit subdivision	6304 Oak Ave	Final Map approved
11	TPM 61338	Residential	4-unit subdivision	5534 Sultana Ave	Final Map approved
11	TPM 60710	Residential	4-unit subdivision	5646-5652 Sultana Ave	Final Map approved
11	TTM 61141, CUP 06-1671	Residential	6-unit subdivision	5834-5838 Encinita Ave	Pending Final Map approved
11	TTM 65942, CUP 06-1677	Residential	7-unit subdivision	5063-5067 Sereno Dr	Pending Final Map approved
11	TTM 66417, CUP 06-1667	Residential	5-unit subdivision	4431-4441 Ellis Ln	Pending Final Map approved
11	TTM 66051, CUP 07-1707	Residential	5-unit subdivision	9114 Blackley St	Pending Final Map approved
11	TTM 69905, CUP 08-1717	Residential	6-unit subdivision	5949 Cloverly Ave	Pending Final Map approved
11	TTM 71721, CUP 11-1796	Residential	10-unit subdivision	5549 Sultana Ave	Pending Final Map approved

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
11	CUP 12-1803, TTM 71792	Residential	9-unit condos	6126-6163 Temple City Blvd	Pending Final Map approved
11	CUP 12-1813, TPM 71596	Residential	3-unit subdivision	9608 Workman	Going to PC 11/13/12
11	CUP12-1817, TPM 71956	Residential	3-unit condos	5451 Sultana Ave	
11	ZV 12-1818 (CUP 11-1787, TPM 71298)	Residential	2-unit condos	5702 Temple City Blvd	PC approved 7/24/12
11	CUP 12-1816, TPM 71828	Residential	4-unit condos	5528 Sultana Ave	TBD
CITY OF SAN GABRIEL					
11	None provided	Commercial	Hotel	E Valley Blvd	Under review
11	None provided	Commercial	1 story 11,000 sq.ft. jewelry store	S Del Mar Ave	Under review
11	None provided	Commercial	New recycle buyback facility	S San Gabriel Blvd	Under review
8B, 8C	None provided	Residential	New single-family (single-family) residence	Alabama St	Approved
8B, 8C	None provided	Residential	Two new single-family residences	Sunset Ave	Under review
8B, 8C	None provided	Residential	New single-family residence	E Saxton St	Under review
8B, 8C	None provided	Mixed use	Mixed-use development	E Las Tunas Dr	Under review
8B, 8C	None provided	Infrastructure	Proposed storage structure	Pearl St	Approved
8B, 8C	None provided	Commercial	New commercial building	S San Gabriel Blvd	Under review
8B, 8C	None provided	Residential	Two new single-family residences	E Grand Ave	Under review
CITY OF MONTEREY PARK					
11	Monterey Park Towne Centre	Mixed use	Mixed use development with 109 condos and 71,366 sq.ft. of retail	SE corner of Garfield Ave and Garvey Ave	Under construction
11	Monterey Park Market Place	Commercial	Retail construction of 600,000 sq.ft. on 51.1 acres land	SW side of Saturn Dr and Potrero Grande Dr intersection	SEIR

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF MONROVIA					
7	Metro Gold Line Extension	Infrastructure	11.5-mile Foothill Extension to connect communities	Monrovia	Under construction
SOUTH ARCADIA (Los Angeles County)					
7	TR068400-(5)	Residential	Close a mobile home park and create six multi-family lots with 318 condos in 25 buildings on 12.1 acres	4241 E Live Oak, South Arcadia	Review in progress
CITY OF LA PUENTE					
7		Residential	5-unit apartments	527 League Ave	Under construction
7		Residential	6-unit apartments	14416 Beckner Ave	Prelim submittal
7	EPA Project	Infrastructure	Groundwater cleanup, well constructions	South of Puente Creek	Under construction
CITY OF DUARTE					
7	Metro Gold Line Extension	Infrastructure	11.5-mile Foothill Extension to connect communities	Duarte	Under construction
7	Andres Duarte Terrace II	Residential	43-unit senior apartment building	1700 Huntington	Approved
CITY OF EL MONTE					
7	Lot Division 701	Residential	2-unit planned residential development	2104 Parkway Dr	Approved
7	Lot Division 703	Residential	2-unit planned residential development	12031 Emery St	Approved
7	Tentative Tract Map No. 71583	Residential	23-unit planned residential development	4610 Peck Rd	Approved
7	Tentative Tract Map No. 71584	Residential	64-unit single-family dwelling project	3013 - 3034 Rumford	Approved
7	Design Review 6-10	Commercial	New 4,327 sq.ft. bank	4749 Santa Anita	Approved
7	Design Review 6-11	Commercial	Add 4773 sq.ft. to existing 9049 sq.ft. building	9660 Flair	Approved
7	Design Review No. 03-12	Industrial	10,770 sq.ft. industrial addition	10525 Valley Blvd	Approved
7	Design Review No. 04-12	Industrial	Construct new 4,000 sq.ft. building	3200 Peck Rd	Approved

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF AZUSA					
7	Monrovia Nursery Specific Plan	Mixed Use	1,575 housing units, elementary and middle school, 5.5-acre park, 50,000 sq.ft. transit commercial	Northeast Azusa	Approved
7	Azusa Rock Revised CUP and Reclamation Plan	Industrial	Mineral resource (mining)	Northerly terminus of Encanto Parkway and Fish Canyon Rd	Approved
CITY OF WHITTIER					
7	Philadelphia & Pickering	Residential	21-unit multi-story residential development on a half-acre	Philadelphia St and Pickering Ave	Under review
7	San Gabriel River Discovery Center (not a city project)	Open Space and Recreation	Discovery Center building, outdoor classrooms and parking	Whittier Narrows	Phase 1 is complete, Phase 2 is in the early planning stage
CITY OF SOUTH EL MONTE					
7, 8A	Street Improvement Project	Infrastructure	Street improvement construction	Havenpark Ave, Alesia St, Seaman Ave, La Madrina Dr, Adelita Lane, Kayford Ave	Under construction Expected completion 11/2/12
CITY OF PICO RIVERA					
8A	TTM 060630, CUP 633,	Single-Family Residential	Create a 7-lot residential subdivision to construct 7 two-story single-family homes	SWC of Durfee Ave and Gallatin, Pico Rivera	Under review
8A	Metro Gold Line Extension	Infrastructure	11.5-mile Foothill Extension to connect communities	Pico Rivera	Under construction
HACIENDA HEIGHTS (Los Angeles County)					
8A	Project 074-035-(4)	Residential	Subdivision to create 10 single-family lots on 12.3 acres	2342 Via Cielo	Staff recommended approval
8A	PM 24317	Residential	Subdivision to create 4 single-family lots on 2.5 acres	3260 Dulzura Dr	TTM in progress
CITY OF BREA					
8A	Canyon Crest	Residential	165 single-family homes in a 367.5-acre site	East end of Carbon Canyon, Northwest of Carbon Canyon Rd	Approved

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
CITY OF LA HABRA HEIGHTS					
8A	None provided	Residential	4,771 sq.ft. two-story single-family residence on a 2.75-acre lot	2553 Casalero	Under review
8A	None provided	Residential	5,179 sq.ft. two-story single-family residence with 1375 sq ft garage on a 1.03-acre land	837 Escarpado	Under review
8A	None provided	Residential	4,717 sq.ft. single-family residence on a 1.61-acre lot	707 Dorothea	Under review
8A	None provided	Residential	7,204 sq.ft. two-story single-family residence on a 2.75-acre lot	2551 Caselero	Under review
8A	None provided	Residential	4,615 sq.ft. two-story home on a 1-acre site	1455 Popenoe	Under review
8A	None provided	Residential	5449 sq.ft. split-level single-family residence on a 1-acre parcel	1444 Kashlan Rd	Under review
8A	None provided	Residential	Demo of existing home and construction of 4,144 sq.ft. single-family residence	1701 Kanola	Under review
CITY OF DIAMOND BAR					
8A	"Site D" Specific Plan	Mixed use	154,000 sq.ft. of commercial use and maximum of 202 residential units	SEC of Brea Canyon Rd and Diamond Bar Blvd	Proposed
CITY OF CHINO HILLS					
8A	Country Club Villas	Residential	70-unit condominium development, located on approx. 4.7 acres	Pomona Rincon Rd between Wallace Ave and Los Serranos Rd.	Under construction
8A	Foremost Communities – Canyon Hills (Tract Map 14094)	Residential	76 single-family detached homes on a 141-acre property. Approximately 70 acres of the project site is reserved for the open space.	Located on the concrete ski-slope on the west side of Canyon Hills Rd and north of Carbon Canyon Rd.	Construction plan review — no estimated time for construction.

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
8A	Lago Los Serranos	Residential	Lago Los Serranos is a 95-unit town home development on an 8.06-acre parcel. Amenities include sports courts, a swimming pool and spa, and passive open space.	Located at the southwest corner of Ramona Ave and Birdfarm Rd, adjacent to the north end of Los Serranos Golf Club.	Approved in 2007, no date for construction.
8A	Pine Valley Estates (also identified as Tentative Tract No. 16596)	Residential	Project area consists of 192 acres, includes a gated community of 98 single-family detached homes. Development of residential lots is limited to 25.8-acres on the east-facing slope overlooking the golf course and Carbon Canyon Rd. The remainder of the property will remain largely in open space.	Located west of the Western Hills Golf Course, between Eucalyptus Ave and Carbon Canyon Rd.	Constructions of Phases I & II are complete. Design review for remaining 58 units was approved by Planning Commission in 2009.
8A	Stonefield Developmen t (Tentative Tract Map 18393 and Design Review 336)	Residential	The 34.73-acre property is proposed to be subdivided into 28 single-family residential lots and 5 open space lots with two gated access points off of Fairway Dr.	Located at Fairway Dr and Carbon Canyon Rd, across from the Western Hills Country Club.	Formal Application
8A	Villagio Apartment Complex	Residential	286-unit apartment complex on a 15.09-acre site. Consists of 15 three-story residential buildings, a community recreation building, a pool area, two open space areas with courtyard seating, and a maintenance building.	Located on the southeast corner of Butterfield Ranch Rd and Picasso Dr	Project approved, no estimated timeframe for construction
8A	Vista Bella Townhomes	Residential	65-unit townhome multi-family development on a 4.62-acre parcel with a density of 14.07 units per acre. Consists of 9 three-story residential buildings.	Southwest corner of Butterfield Ranch Rd and St Gaudens Dr	Approved

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
8A	B.A.P.S. Temple and Cultural Center	Institutional	A Hindu socio-religious facility on a 20.3-acre site; 164,372 total building sq.ft.	Located south of Chino Hills Parkway, east of Monte Vista Ave and west of Central Ave in the City of Chino Hills	Under construction
8A	Crossroads Entertainment Center	Mixed-use commercial	Site is approx. 32 acres, consisting of a theater complex, 9,200 square feet of in-line restaurant/ shop space, a three-story, 104-room hotel, a 40,000-sq.ft. professional office building, a daycare, four restaurant pads, and a gas station.	Located on the north side of Chino Ave, west of, and adjacent to the Chino Valley Freeway (SR-71)	Open for business; 2 restaurant pads available
8A	Heritage Professional Center	Mixed-use commercial	Medical office, hotel, retail & possible specialty hospital development on approx. 21.8 acres.	Generally at SE corner of Soquel Canyon Parkway and Pomona Rincon Rd and east of Chino Hills High School	Construction plan review
8A	Soquel Canyon Crossings	Commercial	8.81-acre site consists of a pharmacy, a bank, tire store, and general retail shops. Included in the original approval is a grocery store and additional retail tenant suites.	Northern corner of Soquel Canyon Parkway and Los Serranos Country Club Dr	Phase I: Open for business
8A	The Commons	Commercial	49.1-acre site uses numerous commercial retail stores totaling approx. 520,000 square feet of building area.	Located on the south side of Chino Hills Parkway, east of Ramona Ave and north of the Chino Valley Freeway (SR-71).	Partially complete and open to the public. Approximately 40% of the building area is available for lease.

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
8A	The Shoppes at Chino Hills	Mixed-use retail, restaurant, office, public institutional, open space, multi-family residential, hotel	The project involves five components: (1) The Shoppes Retail Center with approx. 357,811-sq.ft. of building area on 26.18 acres (2) The Park Residential includes up to 125 multifamily dwelling units and up to 19,000-sq.ft. Community Center on 6.78 acres (3) A new Government Center approx. 132,000 sq.ft. (4) 40-acre community park (5) The Shoppes Mixed-Use is approved for up to 235 multi-family dwelling units, up to 40,000 sq.ft. of retail/restaurant/office uses and up to 300 hotel rooms on approx. 9 acres.	Southeastern corner of Grand Ave and Peyton Dr	The Government Center buildings, The Shoppes, the library and new Community Park are completed and open to the public. The Shoppes Mixed-Use project was approved by the City Council in 2008.
CITY OF CHINO					
8B, 8C	Duke Realty	Industrial	421,031 sq.ft. industrial building	SE corner of Monte Vista and Edison	
8B, 8C	Carson Building K	Industrial	227,977 sq.ft. industrial building	West side of Mountain, south of Cypress	Under construction
8B, 8C	DR Horton	Residential	43 residential dwelling units within College Park	SW corner Edison and Purdue	Under construction
8B, 8C	Watson Commerce Center	Industrial	1 million sq.ft. warehouse/distribution center	Kimball Ave, east of Mountain	In DRC
8B, 8C	Xebec PL 12-0211 (Administrative Approval)	Industrial	300,300 sq.ft.	SE corner of Kimball & Mountain Aves	Under construction
8B, 8C	Lennar PL 12-0001 (Site Approval) and PL12-0245 (TTM. 18848)	Residential	95 single-family dwelling units in Planning Area 11B in the High Density Residential land use designation of the College Park Specific Plan	Located at the NE corner of Appalachian St and Marquette Ave, west of the Magnolia Channel (APN: 1026-051-05)	Under construction

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
8B, 8C	Lennar PL 12-0109 (Site Approval)	Residential	77 single-family dwelling units on 11 acres of land in Planning Area 18 located in the MDR land use designation of the College Park Specific Plan (Tract 17898).	Located at the NW corner of Eucalyptus and Mountain Aves (APN: 1026-051-02)	Under construction
8B, 8C	Lennar PL12-0622	Residential	A request for approval of 149 residential condominiums on 10.8 acres located in the Mixed Use land use designation of the College Park Specific Plan (Lot 3 of Tract 16838-2).	SE corner of Satterfield Way and Eucalyptus Ave, Planning Area 20 of College Park (APN: 1026-051-02)	Obtaining entitlements
8B, 8C	McCalla Center	Industrial Park	4 industrial buildings totaling 42,800 sq.ft. on 3.0 acres	Along the east side of Central Ave, north of Schaefer (APN: 1020-461-24 thru 28)	Approved, no construction
8B, 8C	Central Ave Professional Office Bldg.	Commercial	A request to demolish 2 single-family homes and construct a 14,992 sq.ft. professional office building on 1.029 acres of land in the M2 & RD4.5 zoning districts.	13791 Central Ave	Submitted, in process
8B, 8C	PL12-0117 (AA) Verizon Wireless	Cell Facility	A request to construct a 50' high wireless telecommunication facility designed as a wooden utility pole in the public ROW in the CG zone	Along street side frontage of 6132 Riverside Dr	Submitted, in process
8B, 8C	PL12-0513 (MSA), PL12-0514 (TPM 18816) & PL12-0515 (TTM 18858) Richland Communities	Residential	A request for approval of a MSA for 33.4 acre project site. Parcel map to subdivide the project into 2 lots. Tract map to subdivide the MDR of 18.51 acres into 192 lots at a density of 10.37.	South of Kimball Ave, east of Sultana Ave (APN: 1055-241-06)	Submitted, in process

Cumulative Projects by Jurisdiction[1]

Segment	Project Name	Project Type	Project Description/Size	Project Location	Project Status / Schedule
8B, 8C	Westmont	Residential	A request for approval of 75 single-family residential dwelling units on 10.399 acres of land at a density of 7.2 dwelling units per acre in Sub Area 10A, within the MDR land use designation of the College Park SP.	Generally located northwest of Appalachian St, east of Norfolk Ave, and south of Eucalyptus Ave (APN 1026-051-02).	Approved, in construction
8B, 8C	PL11-0299 (SA) & PL11-0300 (TPM 19323)	Industrial	A request to subdivide approx. 6.78 acres of land into four parcels and construct two 25,000 square foot concrete tilt-up industrial buildings in the BP land use designation of the ECSP	0.25 mile south of Edison Ave between Fern and Euclid Aves.	Approved, no construction
8B, 8C	The Seasons Senior Villas PL12-0064 (SA) & PL12-0065 (SCUP)	Residential	A request to construct 9 senior affordable apartment units in the CG land use designation of the DCCMP	5136 D St	Approved, no construction
CITY OF ONTARIO					
8B, 8C		Commercial	Dental office within 2,686 sq.ft. retail space	300 West "B" St	
8A, 8B, 8C	New Model Colony New Model Colony	Multiple-use development	2,611 acres of total development, 10,276 single-family residences, 4,390 multi-family residences, 1,604,720 sq.ft. commercial, 550,000 sq.ft. business park	New Model Colony encompasses approx. 8,200 acres and is bounded by Riverside Dr to the north, Milliken Ave and Hamner Ave to the east, the Riverside County line and Merrill Ave to the south, and Euclid Ave to the west	Approved
			433 acres of total development, 1,058 single-family residences, 843 multi-family residences		Applications in process