1. Introduction

1.1 Purpose of Report

On June 29, 2007, Southern California Edison (SCE) submitted Application A.07-06-031 seeking authorization by the California Public Utilities Commission (CPUC) for a Certificate of Public Convenience and Necessity (CPCN) for the Tehachapi Renewable Transmission Project (TRTP or proposed Project/Action). On August 10, 2007, SCE submitted a Special Use Application (SF 299) to the USDA Forest Service because the proposed Project/Action would cross approximately 43 miles (~26 miles in Segment 6 and ~17 miles in Segment 11) of National Forest System (NFS) lands in the Angeles National Forest (ANF). This document describes the alternatives screening analysis that has been conducted for the proposed Project/Action.

Alternatives to the proposed Project/Action were suggested by SCE in its Proponent's Environmental Assessment (PEA), which was submitted as part of SCE's application to the CPUC. Additional alternatives were developed by the CPUC and Forest Service in conjunction with the team preparing the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Project/Action. Alternatives were also suggested by public agencies and the public during the scoping period for the EIR/EIS (August-October 2007). This Alternatives Screening Report is intended to document: (1) the range of alternatives that have been considered and evaluated; (2) the approach and methods used in screening the feasibility of these alternatives according to guidelines established under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA); and (3) the results of the alternatives screening analysis.

This Alternatives Screening Report provides the basis and rationale for whether or not an alternative will be carried forward for analysis in the EIR/EIS. For each alternative that was eliminated from further consideration, this screening report explains in detail the rationale for elimination. Since full consideration of the No Project/Action Alternative is required by CEQA and NEPA, and must automatically be considered in the EIR/EIS, this report does not address that alternative.

1.2 Background

Under Section 210 and 212 of the Federal Power Act (16 U.S.C. § 824 [i] and [k]) and Section 3.2 and 5.7 of the California Independent System Operator's (CAISO) Tariff, SCE is obligated to interconnect and integrate power generation facilities into its electric system. In addition, the 2001 National Energy Policy goals are to increase domestic energy supplies, modernize and improve our nation's energy infrastructure, and improve the reliability of the delivery of energy from its sources to points of use. Executive Order 13212 encourages increased production and transmission of energy in a safe and environmentally sound manner. According to Executive Order 13212, for energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects. The agencies shall take such actions to the extent permitted by law and regulations and where appropriate.

Based on SCE's obligation to integrate planned generation projects into its electrical system, SCE determined that certain transmission lines (T/Ls) and substation facilities are required to be constructed

between the Tehachapi Wind Resources Area (TWRA), located in southern Kern County, California, and the Mira Loma Substation located in Ontario, San Bernardino County, California.

1.3 Summary of SCE's Proposed Project

SCE's proposed Project would involve new and upgraded transmission infrastructure along approximately 173 miles of new and existing rights-of-way (ROW) from the TWRA in southern Kern County south through Los Angeles County and the Angeles National Forest (ANF) and east to the existing Mira Loma Substation in Ontario, San Bernardino County, California. The major components of the proposed Project have been separated into eight distinct segments. Under separate application to the CPUC, SCE previously requested approval for Segments 1, 2, and 3 of the Antelope Transmission Project, which would also enhance transmission and related infrastructure serving the TWRA. Consequently, the description of major components for the TRTP begins with Segment 4. Segments 4 through 8, as well as Segments 10 and 11, of the TRTP are transmission facilities, while Segment 9 addresses the addition and upgrade of substation facilities. For descriptive purposes, the discussion throughout this report is organized geographically beginning with the northernmost point located in the TWRA (Segment 10) and ending at the southern/easternmost point in Ontario (Segment 8). Mileages along each segment are denoted first by the segment number (Sx, where x is between 4 and 11), followed by MP (for milepost) and then the mileage. A summary of the proposed TRTP components, by segment, is presented in Table 1.3-1, below, and in Figure 1.3-1. Please note that the information provided herein is based on SCE's preliminary design for the TRTP and is subject to change during final engineering. For land disturbance numbers, a deviation factor of ± 15 percent has been incorporated to provide a range allowing for the error associated with a project that has only gone through preliminary engineering. Furthermore, all mileages are approximate due to differences between engineering miles, which take into account topography, and map miles, which assume no variation in topography.

Table 1.3-1. Summary of Alternative 2 (SCE's Proposed Project) Components

Overall Project Construction
• Proposed construction duration of 55 months (estimated to begin in April 2009 and end in November 2013) • Transmission facility construction generally scheduled for Monday through Friday, 7:00 a.m. to 5:00 p.m.; when extended hours would require a variance, it would be acquired • Substation construction generally scheduled for Monday through Friday, 7:00 a.m. to 5:00 p.m.; when extended hours would require a variance, it would be acquired • Workforce ranging in size from 10 to 300 persons, with daily average workforce of approximately 75 persons • Disturbance of approximately 1,518 acres with a ±15% range of 1,290-1,746 acres, with restoration of approximately 1,292 acres with a ±15% range of 1,098-1,486 acres, resulting in permanent land disturbance of approximately 215 acres with a ±15% range of 183-247 acres
Segment 10: New Whirlwind – Windhub 500-kV T/L
• Initiates at the Windhub Substation and ends at the new Whirlwind Substation • Construct new approximately 17-mile single-circuit Whirlwind – Windhub 500-kV T/L • All construction within new 330-foot-wide ROW (~17 miles) • Erect approximately 96 new single-circuit 500-kV lattice steel towers (LSTs) (94-172 feet tall) • Would require approximately 16 new pulling locations, 16 tensioner locations, and 7 new splicing locations

Table 1.3-1. Summary of Alternative 2 (SCE's Proposed Project) Components

Segment 4: Whirlwind 500/220 kV T/L Elements

- Initiates at the Cottonwind Substation and ends at the existing Antelope Substation
- Construct two new parallel 4-mile single-circuit 220-kV T/Ls (Cottonwind – Whirlwind 220-kV No. 1 & No. 2)
- Construct new approximately 16-mile single-circuit Antelope – Whirlwind 500-kV T/L
- All construction within new 200-foot-wide ROW (20 miles total)
- Erect approximately 165 new transmission structures, including:
  - 88 single-circuit 220-kV LSTs (90-120 feet tall)
  - 77 single-circuit 500-kV LSTs (113-188 feet tall)
- Would require approximately 34 new pulling locations, 34 tensioner locations, and 19 new splicing locations

Segment 5: Antelope – Vincent No. 2 500-kV T/L

- Initiates at the existing Antelope Substation and ends at the existing Vincent Substation
- Remove the existing Antelope – Vincent 220-kV T/L and the existing Antelope – Mesa 220-kV T/L
- Construct new approximately 18-mile single-circuit Antelope – Vincent No. 2 500-kV T/L
- All construction in existing ROW (18 miles)
- Erect approximately 67 new single-circuit 500-kV LSTs (113-188 feet tall)
- Would require approximately 14 new pulling locations, 16 tensioner locations, and 7 new splicing locations

Segment 11: New Mesa – Vincent (via Gould) 500/220-kV T/L

- Initiates at the existing Vincent Substation and ends at the existing Mesa Substation
- Remove approximately 4 miles of the existing Pardee – Vincent No. 1 220-kV T/L
- Remove approximately 15 miles of the existing Eagle Rock – Pardee 220-kV T/L
- Construct new approximately 19-mile 500-kV single-circuit T/L between Vincent and Gould Substations (initially energized at 220 kV)
- String approximately 18 miles of new 220-kV conductor on the vacant side of the existing double-circuit structures of the Eagle Rock-Mesa 220-kV T/L
- Most construction within existing ROW, except for approximately 3 miles north of Gould Substation where existing ROW would be expanded by approximately 250 feet on the west side to accommodate swing of proposed T/Ls
- Erect approximately 76 new transmission structures (68 on National Forest System [NFS] lands), including:
  - 2 single-circuit 220-kV poles (120 feet tall)
  - 7 single-circuit 220-kV LSTs (120-160 feet tall)
  - 67 single-circuit 500-kV LSTs (100-198 feet tall)
- Would require approximately 12 new pulling locations, 15 tensioner locations, and 5 new splicing locations
- Several portions along this segment would be located on NFS lands including: S11 MP 1.5-3.5, 3.75-18.5, 19.25-20.3, 20.8-21.3, 21.8-22.6, 23.05-24.15, and 24.35-24.55 (in-holdings or other non-Forest properties are located between the mileposts listed)

Segment 6: Section of New Replacement Rio Hondo – Vincent No. 2 500-kV T/L (initially energized at 220 kV) and Section of New Mira Loma – Vincent 500-kV T/L

- Initiates at the existing Vincent Substation and ends at the southern boundary of the ANF
- Remove approximately 5 miles of the existing Rio Hondo – Vincent No. 2 220-kV T/L between Vincent Substation and the "crossover" span (S6 MP 5.0)
- Construct new approximately 5-mile single-circuit Mira Loma – Vincent 500-kV T/L from the Vincent Substation to the "crossover" span (S6 MP 5.0)
- Remove approximately 27 miles of the existing Antelope – Mesa 220 kV T/L from Vincent Substation to the southern boundary of the ANF
- Construct new approximately 27-mile single-circuit Rio Hondo – Vincent No. 2 500-kV T/L (initially energized at 220 kV)
- Eliminate the existing crossing of the Rio Hondo – Vincent No. 2 220-kV T/L over the Antelope – Mesa 220-kV T/L
- All construction within existing ROW (~32 miles)
- Erect approximately 140 new transmission structures (104 on NFS lands), including:
  - 2 single-circuit 220-kV LSTs (90-120 feet tall)
  - 30 single-circuit 500-kV tubular steel poles (TSPs) (75-200 feet tall)
  - 104 single-circuit 500-kV LSTs (85-193 feet tall)
  - 4 three-pole dead-end 500-kV structures (75-80 feet tall)
- Would require approximately 16 new pulling locations, 16 tensioner locations, and 16 new splicing locations
- The majority of this segment would be located on NFS lands including: S6 MP 1.45-1.7, 2.75-5.3, 5.65-6.7, 6.7-6.95, 7.05-24.8 (in-holdings or other non-Forest properties are located between the mileposts listed)

Table 1.3-1. Summary of Alternative 2 (SCE's Proposed Project) Components
Segment 7: Section of New Replacement Rio Hondo – Vincent No. 2 500-kV T/L (initially energized at 220 kV) and Section of New Mira Loma – Vincent 500-kV T/L
• Initiates at the southern boundary of the ANF and ends at the existing Mesa Substation • Remove approximately 16 miles of the existing Antelope – Mesa 220-kV T/L between the southern boundary of the ANF and the Mesa Substation • Construct new approximately 16-mile 500-kV double-circuit T/L to include the Rio Hondo – Vincent No. 2 500-kV T/L (initially energized at 220 kV) and the new Mira Loma – Vincent 500-kV T/L • Connect the new Rio Hondo – Vincent No. 2 500-kV T/L (initially energized at 220 kV) into the Rio Hondo Substation • Relocate several existing 66-kV subtransmission lines between the existing Rio Hondo Substation and the existing Mesa Substation • All construction within existing ROW (~16 miles) • Erect approximately 82 new transmission structures, including: ▪ 1 double-circuit 220-kV LST (185 feet tall) ▪ 2 double-circuit 500-kV TSPs (195-200 feet tall) ▪ 3 single-circuit 500-kV LSTs (113-175 feet tall) ▪ 76 double-circuit 500-kV LSTs (147-262 feet tall) • Erect approximately 150 new double-circuit 66-kV subtransmission Light Weight Steel Poles (LWSPs) and TSPs • Would require approximately 16 new pulling locations, 16 tensioner locations, and 16 new splicing locations
Segment 8: Section of New Mira Loma – Vincent 500-kV T/L
• Initiates near the existing Mesa Substation and ends at the existing Mira Loma Substation • Remove various 220-kV T/L structures between the existing Mesa Substation and the existing Mira Loma Substation • Construct approximately 33 miles of new double-circuit 500-kV T/L to include approximately 33 miles of the new Mira Loma – Vincent 500-kV T/L (Segments 8A/8C) • Construct approximately 7 miles of new double-circuit 220-kV T/L from the Chino Substation to the Mira Loma Substation (Segment 8B) • Relocate several existing 66-kV subtransmission lines in the area of the Mesa and Chino Substations • Most construction in existing ROW, except for the following: ▪ Rose Hills Memorial Park ROW relocation (existing: 1.1-mile, 200-foot-wide; future: 1.4-mile, 240-foot-wide) ▪ Hacienda Heights ROW expansion (existing: 2.15-mile, 150 to 230-foot-wide; future: 250 to 330-foot-wide) ▪ Fullerton Road new ROW (existing: none; future: 0.4-mile, 100-foot-wide) ▪ Ontario (near Mira Loma Substation) ROW expansion (existing: 0.45-mile, 175-foot-wide; future: 325-foot-wide) • Erect approximately 226 new transmission structures, including: ▪ 2 single-circuit 220-kV LSTs (65-75 feet tall) ▪ 57 double-circuit 220-kV LSTs (113-180 feet tall) ▪ 3 single-circuit 500-kV LSTs (128-149 feet tall) ▪ 92 double-circuit 500-kV LSTs (147-255 feet tall) ▪ 2 single-circuit 220-kV TSPs (85-95 feet tall) ▪ 11 double-circuit 220-kV TSPs (75-115 feet tall) ▪ 5 three-pole dead-end 220-kV structures (75-110 feet tall) ▪ 4 single-circuit 500-kV TSPs (120-170 feet tall) ▪ 50 double-circuit 500-kV TSPs (150-195 feet tall) • Erect approximately 55 new double-circuit 66-kV subtransmission LWSPs • Would require approximately 33 new pulling locations, 33 tensioner locations, and 33 new splicing locations
Segment 9: Substation Facilities
• Construct new Whirlwind Substation; activity would require acquisition of a new approximately 106-acre substation property • Expand and upgrade existing Antelope and Vincent Substations to accommodate new 500-kV and 220-kV equipment; activity would require acquisition of additional substation property – approximately 18 acres for Antelope upgrade and approximately 0.2 acre for Vincent upgrade; Vincent expansion would disturb approximately 18 acres • Upgrade existing Mesa and Gould Substations to accommodate new 220-kV equipment • Upgrade existing Mira Loma Substation to accommodate new 500-kV equipment

Source: SCE, 2007a