12. Comparison of Alternatives

This section provides a comparison of the proposed Project and alternatives based on the analysis presented in Sections 5 through 11. This comparison describes the differences in impacts among the various alternatives, focusing primarily on notable differences between the proposed Project and alternatives.

Based on the analyses of the Visual Resources impacts of the proposed Project and alternatives, distinguishing characteristics of the alternatives have been highlighted in order to evaluate the overall effect of each alternative. For Visual Resources, the differentiators used to compare the alternatives included such considerations as differences in: visual sensitivity; changes from existing visual conditions to future conditions; total land area and visual environment disturbance; Project visibility from sensitive receptor locations; amount of skyline interruption; and, numbers of communities, residential areas, and/or parklands affected.

As shown in Table 12-1, Alternative 2 (SCE's Proposed Project) would have the greatest visual impacts of all Project alternatives from placing new T/Ls along a second priority scenic highway (110th Street West) in Segment 4 and in a highly visible location to many viewers (urban area) through the Cities of Chino Hills, Chino, and Ontario in Segment 8. The proposed Project would cross through the ANF, and the Project would create significant adverse visual contrasts and would not meet the High Scenic Integrity Objective or Natural-Appearing Desired Condition designated in the Forest Plan. The proposed Project would not comply with the following Forest-specific Design Criteria and Place-specific Standards, and would require Project-specific Forest Plan amendments before approval:

- S9: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.
- S10: Scenic Integrity Objectives will be met with the following exceptions: Minor adjustments not-to-exceed a drop of one SIO level is allowable with the Forest Supervisor's approval.

In the ANF, SCE would construct and operate 13 helicopter staging areas in various areas along and near Segments 6 and 11 in and near the National Forest (some staging areas would be on private lands, others on NFS lands). SCE would use these staging areas to construct approximately 33 500-kV LSTs.

Alternative 3 (West Lancaster) would avoid visual impacts along the second priority scenic highway (110th Street West) along Segment 4 from S4 MP 15.8 to S4 17.9, a distance greater than 2 miles. This realignment would reduce the very visually evident and incongruent 500-kV single circuit LSTs in the immediate foreground of 110th Street West in Lancaster. All other elements of Alternative 2 would be identical to the proposed Project (Alternative 2).

In comparison with all the other Project alternatives, Alternative 4 (Chino Hills Routes) would eliminate construction and operation of new double-circuit 500-kV transmission lines in existing residential neighborhoods and parklands from S8A MP 19.2 to S8A MP 35.2 through Chino Hills, Chino, and Ontario, thereby reducing visual impacts in these communities for a distance of 16 miles. Because of the elimination of 16 miles of new double-circuit 500-kV T/L, all the Alternative 4 routes have fewer overall visual impacts than Alternative 2. Furthermore, while construction of Segment 8B (6.8 miles between Chino and Mira Loma Substations) would occur under each of the Alternative 4 routes, the new 220-kV double-circuit T/L would be less visually evident than the proposed Project's new 500-kV double-circuit T/L, as illustrated in Figures A.53-b and A.53-c.

Alternative 4 would create new significant and unavoidable visual impacts within CHSP and on top of "Significant Ridgelines" in the City of Chino Hills (City of Chino Hills, 2008a, City of Chino Hills, 2008b, City of Chino Hills, 2008c), as detailed below for the five optional routes of Alternative 4 (A, B, C, C Modified and D).

Alternative 4A would eliminate construction and operation of new transmission lines for 16 miles through Chino Hills, Chino, and Ontario (Segments 8A, MP 19.2 to 35.2). Certain significant and unavoidable visual impacts would occur in the CHSP and visual integrity would be compromised by a new double circuit 500-kV T/L alignment alongside an existing 500-kV single circuit T/L near the north Park boundary. A new switching station would be constructed on a hillside near the convergence of several existing transmission lines, and the switching station would be very visible in the foreground from existing hiking and equestrian trails and in the middleground from the Horse Camp. Extensive grading would occur at the switching station site in CHSP under Alternative 4A.

Alternative 4B would create a new double circuit 500-kV T/L alignment through the center of the Park, following existing transmission line alignments, further cluttering the visual environment of the Park. A new switching station would be constructed outside the Park near Butterfield Ranch Road in the City of Chino Hills. The switching station and new transmission lines would be very visible in the foreground from this road.

Alternative 4C would relocate existing 220-kV and 500-kV transmission lines within CHSP to less visible locations and a new double circuit 500-kV T/L and switching station would be located outside the Park boundary in a corner area of the Park property that is screened by topography from view of most sensitive receptors. Certain significant and unavoidable visual impacts would occur in CHSP by introduction of new, taller transmission lines that would be visible to Park visitors.

Alternative 4C Modified would be similar to Alternative 4C but would locate the switching station approximately 2,500 feet further north, and access roads would be located within the Aerojet property. The switching station for Alternative 4C Modified would be visible from the Vellano Development and from KOP-South-22 (although it is not simulated because of the direction of view depicted in the photograph chosen for simulations), and therefore, Alternative 4C Modified would have greater visual impacts than Alternative 4C. The switching station would be located in an area that is visible from KOP-South-22 (see existing condition panorama view in Section 2.5, above).

Alternative 4D would construct a new double-circuit 500-kV T/L aligned along the north Park boundary and crossing over Bane Canyon Road near the Park's entry kiosk. The new double circuit 500-kV T/L would be very visible from the entrance road, entry kiosk, and surrounding park lands. The new switching station and T/L of Alternative 4D would be very visible in the foreground from Butterfield Ranch Road in Chino Hills, and would be at the same location selected for Alternative 4B.

Alternative 5 (Partial Underground) would reduce visual impacts in Chino Hills by constructing two new transition stations along Segment 8A and placing the 500-kV transmission line underground for a distance of approximately 3.5 miles. Visual impacts associated with Alternative 5 would be the same as with the proposed Project, except for two transition stations and several ventilation shafts along the underground portion. The existing un-energized 220-kV transmission line along this 3.5 mile portion would remain in place, instead of being removed, and existing visual conditions would remain into the future in the existing ROW for this 3.5 mile portion. Except for this 3.6 mile portion of Segment 8A that would be placed underground, all other visual effects of Alternative 5 would be identical to the proposed Project (Alternative 2).

Alternative 6 (Maximum Helicopter Construction in the ANF) would minimize visual impacts within the ANF by utilizing helicopter construction to reduce the visual impacts associated with re-opening, widening, or re-constructing existing access roads along Segments 6 and 11. Alternative 6 also would eliminate re-construction or creation of spur roads to 148 new 500-kV LST structures. The use of helicopter construction would minimize land disturbances caused by re-opening and/or improving existing spur roads to each existing tower. Some of the existing spur roads have not been maintained for decades. However, according to SCE, some of the access roads along Segments 6 and 11 would have to be widened to accommodate large equipment for pulling, splicing, and tensioning. Helicopter staging areas would be constructed in various areas along and near Segments 6 and 11 in and near the ANF (some staging areas would be on private lands, others on NFS lands). Access roads along both Segments 6 and 11 would need to be improved in some areas in order to allow large equipment for splicing and pulling of conductors; however, road improvements would be less than for Alternatives 2, 3, 4, 5, or 7 because approximately 148 new 500-kV LSTs would be constructed at the staging areas and air-lifted in, rather than being transported by on-the-ground equipment. This means that existing access roads could remain in current conditions or would need only slight widening and/or improvement.

Alternative 7 would improve the visual environment of the Whittier Narrows Recreation Area and the Duck Farm in the San Gabriel Valley Conservation Area. Except for the four 66-kV subtransmission line elements of Segments 7 and 8A that would be either placed underground or re-routed overhead, all other portions of Alternative 7 would be identical to the proposed Project (Alternative 2). Under Alternative 7, a portion of Segment 8A (S8A MP 2.2 to 3.8) would be constructed in a new ROW where there is no existing transmission line, along San Gabriel Boulevard and Durfee Avenue. Therefore, the existing natural-appearing landscape character would be slightly modified by the introduction of light weight steel poles by the presence of Alternative 7. All other elements of Alternative 7 would be identical to the proposed Project (Alternative 2).

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Table 12-1. Summary Comparison of Environmental Issues/Impacts

Environmental Issues	Alternative 1 (No Project/Action)	Alternative 2 (SCE's Proposed Project)	Alternative 3 (West Lancaster)	Alternative 4 (Chino Hills)	Alternative 5 (Partial Underground)	Alternative 6 (Max. Helicopter in ANF)	Alternative 7 (66-kV Subtransmission)
Temporary visual contrast resulting from construction activities and equipment	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impacts of future T/L project(s) are not known.	Project construction activities including road improvements, heavy equipment use, and helicopter staging areas would be visible from sensitive receptor locations as strong visual contrasts.	*Slightly less than Alt. 2 due to minor re-route.* Construction activities along Segment 4 would not be visible in the immediate foreground of 110th Street West for two miles.	*Less than Alt. 2 due to shorter overall Project length and fewer visual effects in Chino Hills, Chino, and Ontario, but slightly more than Alt. 2 due to construction activities in and/or near Chino Hills State Park (CHSP).* Construction of double-circuit 500-kV T/L would not occur along S8A from MP 19.2 to 35.2, but would be visible from Carbon Canyon Rd and other roads and trails near and within CHSP.	*Greater than Alt. 2 due to underground construction.* The underground portion of S8 would introduce the following visual contrasts: large earth-moving and boring equipment; truck trips to remove excavated materials; and large areas of land for disposal of excavated materials.	*Greater than Alt. 2 due to helicopter visibility.* Within the ANF, less access and spur road improvement would occur and associated visual contrast would be less; however, helicopter use would be more intense (construction of 148 towers via helicopter vs. 33 for Alt. 2) and temporary visual contrast would be substantial.	*Slightly greater than Alt. 2 due to 66-kV re-route in South Area.* Temporary visual contrast of equipment for underground construction would be greater in and near Whittier Narrows and the Duck Farm (South Area).
Visual contrast due to introducing structure(s) where none currently exist	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impact for future project(s) is not known.	Construction in new ROW (S10, S4, S8A) would modify existing landscape character from "natural" (S4, S10) and "urban park" (S8A) to "industrial". In these areas, new T/L towers would be the tallest structures in the landscape, creating skyline interference to landscape views.	*Slightly less than Alt. 2 due to minor re-route.* Direct alternation of landscape views would be less along 110th Street West in Lancaster (S4).	*Same as Alt, 2 for Segments 4, 10, and 8A (in Rose Hills Memorial Park). Greater than Alt. 2 for Alt. 4 Routes C, C Modified, and D, where portions of Segment 8A would be constructed in a new ROW north of CHSP where there are no existing T/Ls.*	*Slightly less than Alt. 2 due to underground.* In the long-term the underground portion of Alt. 5 would result in fewer overhead structures being installed.	*Same as Alternative 2.*	*Slightly greater than Alt. 2 due to re-routed subtransmission lines.* A new 66-kV subtransmission line would be introduced along San Gabriel Boulevard and Durfee Road, which are currently characterized as urban landscape character.
Visual contrast due to increasing T/L structure size and/or type where T/L structures currently exist[2]	Future T/L towers would be sited at unknown location(s); the extent and location of future visual effects is unknown.	Single-circuit and double-circuit 500-kV T/L structures would be larger and taller than existing 220-kV structures and would result in the following visual contrasts: increased prominence and industrial character; structure skylining; increased backdrop landscape obstruction; lower scenic integrity conditions in the ANF; Project-specific Forest Plan amendments would be required for Forest Standards S9 and S10.	*Same as Alternative 2.*	*Less than Alt. 2 due to shorter overall Project length and fewer visual effects in Chino Hills, Chino, and Ontario, but slightly greater than Alt. 2 due to taller structures in and/or near CHSP.* Adverse effects of taller structures would not occur along S8A from MP 19.2 to 35.2, but each route of Alt. 4 would introduce new and larger structures in and/or near CHSP.	*Slightly less than Alt. 2 due to underground.* A transition station would be installed at each end of the underground portion, but new overhead double-circuit 500-kV T/L structures (LSTs) would not be introduced along the underground segment.	*Less than Alt. 2 due to decreased visual prominence because of the use of colored galvanizing treatments.* Fewer access and spur roads would decrease visual attention of new LSTs. Same Project-specific Forest Plan amendments would be required for Forest Standards S9 and S10.	*Less than Alt. 2 due to undergrounding 66-kV.* The underground installation of subtransmission lines through Whittier Narrows and the Duck Farm would decrease adverse visual effects.
Visual contrast due to clearing and grading activities	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impacts of future project(s) are not known.	Roads (access / spur) in the ANF would be improved, resulting in substantial adverse visual effects including strong soil color contrasts. Visual effects from spur road improvement would not occur for 33 structures that would be constructed via helicopter. Thirteen helicopter staging areas would be cleared / graded in the ANF and would result in visual scarring and contrast similar to roads.	*Same as Alternative 2.*	*Slightly greater than Alt. 2 due to clearing and grading effects on hillsides in and/or near CHSP.* Adverse visual effects would be introduced to the CHSP as a result of clearing and grading activities for Routes A through D; however, these clearing and grading effects would not occur along S8A from MP 19.2 to MP 35.2.	*Temporary contrast would be greater than Alt. 2 due to underground construction.* Substantial earthwork would be required for installation of underground infrastructure and would introduce temporary adverse visual effects.	*Less than Alt. 2 due to fewer access road and spur road improvements.* Fewer access/spur roads would be constructed due to more structures being constructed via helicopter (148 for Alt 6 vs. 33 for Alt.2); adverse visual effects of spur roads would not occur for the 148 helicopter-constructed towers. Other roads such as West Fork National Scenic Bikeway would not be widened or result in visual contrast.	*Same as Alternative 2.* Additionally, vegetative clearing and earthwork associated with the underground portions of Alternative 7 and pulling/splicing locations for the new overhead line would temporarily affect existing landscape character and visual quality in the vicinity of Whittier Narrows and the Duck Farm.

[2] The Forest Supervisor may approve a project that would lower the Scenic Integrity Objectives level without a Forest Plan amendment, as long as the decrease would not be greater than one SIO level (for instance if a project would achieve a Moderate SIO in an area designated for a High SIO). See the detailed discussion of SIOs achieved by mileposts (MP) for Segments 6 and 11 under Alternatives 2 and 6. A drop of more than one level of SIO would require a Forest Plan amendment.

Table 12-1. Summary Comparison of Environmental Issues/Impacts

Environmental Issues	Alternative 1 (No Project/Action)	Alternative 2 (SCE's Proposed Project)	Alternative 3 (West Lancaster)	Alternative 4 (Chino Hills)	Alternative 5 (Partial Underground)	Alternative 6 (Max. Helicopter in ANF)	Alternative 7 (66-kV Subtransmission)
Sunlight reflection and glint and glare from new metal surfaces	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impacts of future project(s) are not known.	When viewed from higher vantage points, such as a mountain road, or crest trail, sunlight reflecting off new conductors and new metal towers would cause glint contrasts.	*Same as Alternative 2.*	*Slightly less than Alt. 2 due to non-build along Segment 8A from MP 19.2 to 35.2.* Routes 4A through 4D would have new double-circuit 500-kV LSTs and conductors that could be viewed from ridgetop trails in CHSP; however, no new T/Ls would be installed along S8A from MP 19.2 to MP 35.2, thereby lessening Project length and the amount of new metal surfaces.	*Same as Alternative 2.*	*Same as Alternative 2, except that medium and dark colored galvanizing treatments in ANF would reflect less light overall and would reduce sunlight glint..*	*Same as Alternative 2.*
Long-term loss or degradation of scenic viewshed(s)	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impacts of future project(s) are not known.	The Project would traverse and/or be visible from multiple designated or eligible scenic highways and trails, thereby directly degrading and causing the long-term loss of scenic quality of the viewsheds.	*Same as Alternative 2.*	*Slightly greater than Alt. 2 due to effects to Carbon Canyon Road.* Routes 4A through 4D, including 4C Modified, would traverse over Carbon Canyon Road (SR 142), which is an Eligible State Scenic Highway.	*Same as Alternative 2.*	*Less than Alt. 2 due to decreased road construction in the ANF.* Fewer access and spur roads would be built or improved in the ANF. Helicopter staging area #5 would be visible at background distances from the PCT along Santa Clara Divide; however, no helicopter staging areas would be visible from the Angeles Crest Scenic Byway, I-210, West Fork National Scenic Bikeway, or State Routes 39 and 57.	*Same as Alternative 2.*
Non-compliance with established visual resource management plans or landscape conservation plans	In the short term, existing visual conditions and landscapes would not be impacted. However there will continue to be a need for T/L project(s) to be implemented somewhere. The visual impacts of future project(s) are not known.	The Project would be inconsistent with Forest Plan Standards LMP (Part 3) S9 and S10, with the High Scenic Integrity Objective of NFS lands, and with Goal Visual-1 and Objective Visual-1.2 of the Puente Hills Landfill Native Habitat Preservation Authority Resource Management Plan.	*Same as Alternative 2.*	*Greater than Alt. 2 due to conflict with the CHSP General Plan.* Routes 4A through 4D, including 4C Modified, would be in conflict with the CHSP General Plan's goals for visual resource management.	*Same as Alternative 2.*	*Less than Alt. 2 due to better compliance with Forest Plan Standards S9 and S10 because of use of colored galvanizing treatments..*	*Same as Alternative 2.*