4. Impact Analysis Approach

This section explains how potential visual resource impacts associated with the proposed Project and its alternatives were assessed. Section 4.1 presents the significance criteria on which impact determinations are based. Section 4.2 discusses Applicant-Proposed Measures (APMs) presented in the Proponent's Environmental Assessment (PEA). All impacts identified for the proposed Project and alternatives are presented in Sections 5 through 11.

Consistent with the analysis of visual resources in the Affected Environment section, the impact analysis approach was delineated by three geographic areas: the North, Center, and South Areas. For the North and South Areas, Visual Sensitivity/Visual Change (VS/VC) methodology was employed. For the Center Area, on NFS lands, the Scenery Management System (SMS) was employed.

In the North and South Areas, under VS/VC methodology, the degree of the visual impact depends upon how noticeable the adverse change may be, that is, the magnitude and extent of deviations from the existing visual conditions. The noticeability of a visual impact in the North and South Areas is a function of the visual characteristics of proposed Project features as compared to existing visual conditions, the degree of visual contrast as demonstrated in computerized visual simulations, viewing conditions (distance, duration of view, angle of view, atmospheric conditions, etc), and viewer sensitivity.

In the Center Area, under the SMS methodology in the ANF, visual impacts of the proposed Project are evaluated based on how the changes affect the Desired Conditions and the Scenic Integrity Objectives (SIO) established by the Forest in the Land Management Plan. Scenic integrity is a measure of the degree to which a landscape is visually perceived to be "complete." The highest scenic integrity ratings are given to those landscapes which have little or no deviation from the character valued by constituents for its aesthetic appeal. Scenic Integrity is used to describe an existing situation, standard for management, or desired future conditions. To illustrate how the Project would affect existing conditions, computerized visual simulations where created based on the Project description. These effect predictions and simulations then were compared to Desired Condition descriptions and Scenic Integrity Objectives (SIOs) adopted in the Forest Plan for the Angeles National Forest.

For the entire visual resources analysis, assessment of the likely visual impacts that would occur as a result of implementation of either the proposed Project or one of its alternatives was accomplished by establishing representative viewpoints, called Key Observation Points (KOPs). At each of these KOPs, photographs were taken of existing conditions, field analyses were performed, vantage points were established, distance zones were determined, and visibility conditions were noted. Section 2.3 provides the KOPs for the proposed Project.

A computerized visual simulation subsequently was prepared for each KOP that considered all the APMs, with which to further evaluate the preliminary impact determination (except that some simulations provided in the PEA for some residential areas, SCE did not utilize APM AES-2, *"Transmission Lines - TSPs Near Existing Residential Development"*). A conclusion on initial impact significance was then reached. If a determination was made that the resulting impact would be adverse and potentially significant or significant (see Table 2-2), the impact was further evaluated against the application of feasible mitigation measures in an effort to reduce the visual effects to a less-than-significant level, if possible. A final conclusion on impact significance was then reached. The detailed impact predictions prepared for each KOP in the Visual Resources Study Area are presented in Appendix A. The KOPs were selected to show representative visual effects. In Appendix A,

"before and after" photographs and simulations of the proposed Project and each alternative are displayed. Overall visual sensitivity varies by KOP, as described in each KOP caption for existing conditions, and the exact visual effect is described for each KOP in Appendix A. The results of the visual analysis conducted for the proposed Project and each of the alternatives is presented in the Table S-2 (Summary of Significant and Unavoidable Impacts for Visual Resources).

In his book Earthscape, John Simonds points out that *"Where there is an apparent harmony or unity of all the natural elements – ground forms, rock formations, vegetation, and even animal life – it may be said that these areas possess a naturally produced landscape character. The more complete and obvious this unity and harmony, the stronger the landscape character"* (Simonds, Earthscape. 1978).

Landscape character is an overall visual impression of landscape attributes – the physical appearance of a landscape that gives it an identity and "sense of place" (USDA Forest Service, 1995). Landscape character can be described in terms such as "naturally evolving wilderness" and these terms, in turn, will connote a meaning and emote a visual impression. Other terms can be used to describe landscape character, such as: natural-appearing, pastoral, rural, agricultural, low-density suburban, parkland, high-density residential, greenway, convenience shops, regional mall, urban, commercial, downtown, light-manufacturing, heavy-manufacturing, or industrial. In the broadest sense, landscape character ranges from a "naturally evolving landscape" to one that is "urban and industrialized" – from a pristine wilderness to a human-dominated, built environment having little or no connection to its former natural state. Landscape character is studied as a point of reference to assess whether a given project would appear compatible with the desirable features of the landscape setting, or would contrast noticeably and unfavorably with them. There are certain features within each landscape character type that combine to make an overall appearance of harmony and unity and that make each landscape identifiable or unique. Other features may appear to be incongruous and out of place. For example, transmission lines or substations may appear out of place in some landscape character types.

Visual quality is a measure of the overall impression or appeal of an area as determined by the particular landscape characteristics such as landforms, rockforms, water features, and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, unity, and pattern contribute to visual quality classifications of indistinctive (low), common (moderate), and distinctive (high). Visual quality is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

Visual contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from low to high. The presence of forms, lines, colors, and textures in the landscape similar to those of a proposed project indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability and typically is inversely proportional to visual contrast.

Project dominance is a measure of a feature's apparent size relative to other visible landscape features and the total field of view. Project dominance can also refer to the size of the proposed features compared to the size of human beings, in other words, scale of the feature. A feature's dominance may be affected by its relative location in the field of view and the distance between the viewer and the feature, or its sheer size. The level of dominance can range from subordinate to dominant.

View blockage or skyline impairment describes the extent to which any previously visible landscape features are blocked from view as a result of the project structures' physical elements, their scale and/or position. Blockage of higher quality landscape features by lower quality project features would cause adverse visual

impacts. Impairment of views to natural-appearing ridgelines or skylines by industrial character features would also cause adverse visual impacts. The degree of view blockage or impairment can range from none to high.

Overall visual change is a concluding assessment as to the degree of change that will be caused by a project. Overall visual change is derived from a comparison of resulting visual contrast, project dominance, and view blockage or skyline impairment. The overall visual change is then evaluated on NFS lands to determine if the SIOs would be achieved, and if they would not achieved, by how much.

4.1 Criteria for Determining Impact Significance

The proposed Project and its alternatives would result in significant visual resource impacts if they would:

- Criterion VIS1: Have a substantial adverse effect on the existing landscape character and visual quality of the site and its surroundings.
- Criterion VIS2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.
- Criterion 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).
- Criterion 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.

4.2 Applicant-Proposed Measures (APMs)

Applicant-Proposed Measures (APMs) were identified by SCE in the PEA. Table 4-1 presents the APMs that are relevant to visual resources. APMs are a commitment by the Applicant (SCE) and are considered part of the proposed Project. Therefore, the following discussions of impact analysis assume that all APMs would be implemented as defined in the table. Additional mitigation measures are recommended in this section if it is determined that APMs do not fully mitigate impacts or lack the necessary specificity to ensure that impacts would be reduced or avoided to the degree feasible.

Table 4-1. Applicant-Proposed Measures – Visual Resources (Aesthetics, per PEA)

APM AES-1	Transmission Lines - Reduce Light Reflection off Towers/Poles. Lattice steel towers (LSTs) and tubular steel poles (TSPs) will be constructed of steel that is galvanized and treated at the factory to create a dulled finish that will reduce reflection of light off of the tower members. As appropriate to the context, the galvanized coating will also be darkened to allow the towers to blend into the backdrops.
APM AES-2	Transmission Lines - TSPs Near Existing Residential Development. In areas that are in close proximity to existing residential development, TSPs will be specified to provide tower structures that relate visually to the other elements in these settings. The exceptions to this principle are: 1) LSTs are specified at turning tower locations and at long spans because, structurally, TSPs do not have the strength to withstand the forces exerted by the conductors at these locations; and 2) LSTs may be used to match existing structure types adjacent to the Project in the transmission corridor.
APM AES-3	Transmission Lines - Nonreflective/Nonrefractive Insulators. The insulators specified for this proposed Project will be made of materials that do not reflect or refract light.
APM AES-4	Transmission Lines - Nonreflective/Nonrefractive Conductors. The conductors specified for the Project will be nonspecular, that is, they will be treated at the factory to dull their surfaces to reduce their potential to reflect light.
APM AES-5	Transmission Lines - New Structures Aligned with Existing Structures. To the extent feasible, new transmission structures that will be located in corridors containing existing transmission lines will be located to line up with the other transmission structures to create a higher level of visual unity.
APM AES-6	Transmission Lines - Transmission Structures Set Back from Major Roadways. Where conditions permit, transmission structures will be set back from the crossings of major roadways.
APM AES-7	Transmission Lines - Avoid Structures in Middle of Lines of Sight. To the extent feasible, the final locations of transmission structures will be adjusted to avoid locations that place the structures in the middle of the line of sight from streets and other important views.

Table 4-1. Applicant-Proposed Measures – Visual Resources (Aesthetics, per PEA)	
APM AES-8	Transmission Lines - Regrade/Revegetate Construction Sites. Any areas around new or rebuilt transmission structures that must be cleared during the construction process will be regraded and revegetated to restore the area to an appearance that will blend back into the overall landscape context.
APM AES-9	Access Roads - Use Existing Access Roads. To the extent feasible, existing access roads will be used.
APM AES-10	Access Roads - Helicopter Construction. In mountainous areas, particularly in the ANF, helicopters will be used for construction of towers in areas where extensive new road development would be required.
APM AES-11	Access Roads - Minimize Road Modifications. Widening and grading of roads will be kept to the minimum required for access by proposed Project construction equipment.
APM AES-12	Access Roads - Dust Suppression. During the construction period, dust suppression measures will be used to minimize the creation of dust clouds potentially associated with the use of the access roads.
APM AES-13	Access Roads - Cut and Fill Slope Revegetation. Any areas of exposed cut and fill slope created in the process of widening existing access roads or creating new access roads will be revegetated, as practicable, to blend back into the surrounding landscape.
APM AES-14	Marshalling Yards and Laydown Areas - Reuse Previously Disturbed/Low Visibility, Low Sensitivity Areas for Marshalling Yards. To the extent feasible, the sites selected for use as marshalling yards and laydown areas will be areas that are already disturbed, in locations of low visual sensitivity.
APM AES-15	Marshalling Yards and Laydown Areas - Cover Chain-Link Fencing with Fabric. During the construction period, the temporary chain-link fences surrounding the marshalling yards and laydown areas will be covered with fabric to limit views into these sites and to create a unified, tidy appearance.
APM AES-16	Marshalling Yards and Laydown Areas - Reduce Glare and Light Spill. The lighting specified for the marshalling yards and laydown areas will be the minimum required to meet safety and security standards. All light fixtures will be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required.
APM AES-17	Marshalling Yards and Laydown Areas - Construction Site Cleanup. When the construction period is over, the fencing around the marshalling yards and laydown areas will be removed, the sites will be cleaned up, and their surfaces will be restored.
APM AES-18	Substations - Reflectivity Finish. Substation equipment will be specified with a low reflectivity, neutral finish. SCE will request dull finishes. Some equipment may not be available with a dull finish.
APM AES-19	Substations - Nonreflective/Nonrefractive Insulators. All insulators at the substations and on the takeoff equipment will be nonreflective and nonrefractive.
APM AES-20	Substations - Low Reflectivity Finish on Structures. The surfaces of all structures will be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops.
APM AES-21	Substations - Reduce Glare and Light Spill. The lighting specified for the new and expanded substations will be the minimum required to meet safety and security standards. All light fixtures will be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required.
APM AES-22	Substations - Chain-Link Dulled Finish. The chain-link fences surrounding the substations will have a dulled, darkened finish to reduce contrast with its surroundings.
APM AES-23	Substations - Landscape Plan. An appropriate landscape plan will be prepared for the area on the west side of the Vincent Substation expansion to screen the equipment from view and blend the substation into the surroundings.

4.3 Impact Assessment Methodology

Analysis of the Proponent's Environmental Analysis (PEA), Project Description, and PEA visual analysis report was followed by an on-site tour provided by SCE to specific critical areas. The visual analysts then performed independent site investigations of existing visual conditions throughout the proposed transmission line routes. The visual analysts determined that several of the KOP locations selected by SCE for the PEA adequately characterized representative views of the Project area and viewsheds. Several of the visual simulations provided in the PEA adequately represented anticipated visual impacts and, therefore, have been used in the EIR/EIS. The source of existing condition photos and simulations are noted in the title blocks of the Map and Figure Series Volume. SCE-provided photos and simulations include Figures for KOPs North-4, North-6, Center-19, South-1, South-2, South-3, South-4, South-5, South-7, South-8, South-10, South-11, South-12, South-13, South-14, South-16, South-17, South-18, South-19, and South-20.

From thousands of potential viewpoints, and in consultation with CPUC and Forest Service personnel, 53 locations were selected as KOPs for detailed analysis of the proposed Project, and seven additional KOPs were selected for detailed analysis of the Alternatives 3 through 7. KOPs were established at important viewpoints, regardless of whether they were located on private or public lands. At each KOP, photographs were taken with a digital camera equipped with a "normal" focal length lens. For comparison to this "normal lens," a wide-angle lens makes background features appear unrealistically small and further away, while a telephoto lens makes background features unrealistically larger and closer in the photograph. The normal lens makes all landscape features appear in their proper perspective and size, relative to each other. For each KOP analyzed in the EIR/EIS, a photograph and simulation has been printed on 11 by 17 inch-paper In Appendix A. If the reader stands at the exact location of the KOP looking in the direction the photo was taken, each photograph (and simulation) will appear "life-size" when held approximately 18-inches away from the viewer's eyes. From among all photographs taken, the best compositions and exposures taken by the visual analysts were selected to represent the existing view from each KOP and for subsequent computerized visual simulations to depict the visual effects of the proposed Project and its alternatives. Field work in the ANF was aided by using the Angeles National Forest Map Atlas (USDA Forest Service. Angeles National Forest Atlas: 7 ½' Quadrangle Topographic Maps. 2005d)

Simulations prepared by Lee Anderson and 3DScape were based on topographic data from USGS 1:24,000 series maps, structure size and location data provided by SCE, and the Proponent's TRTP Road Story and Structure Coordinates, Based on Preliminary Design (SCE. 2007b). In the impact analysis of this Specialist Report, future visual effects of the proposed Project and its physical alternatives were predicted for each KOP by using these computerized visual simulations. In Sections 6 through 11, the reader will find written descriptions of these visual effects. In Appendix A, the reader will find "life-size" pairs of before and after photographs and simulations. No simulations were completed for the No Project/Action Alternative (Alternative 1) because the future condition would be the same as the present condition.

For the North and South Areas (non-NFS lands), an assessment was made at each KOP of existing visual conditions, visual contrast, and Project dominance, using the Visual Sensitivity/Visual Change methodology. Subsequently, a conclusion was reached regarding the extent of overall visual change. Taken together with the existing landscape's visual sensitivity, the level of probable visual impact significance was determined.

For the Center Area (NFS lands), the key factors considered in determining the degree of visual impact were compliance and consistency with the adopted Desired Condition and Scenic Integrity Objectives. In like manner as in the North and South Areas, a computerized visual simulation was prepared for each KOP in the Center Area, with which to further evaluate the preliminary impact determination. A conclusion on initial impact significance was then reached, using the standard limits of deviations determined by SIO definitions. At each of these KOPs, field analysis included assessment of existing scenic integrity and Scenic Integrity Objectives using the Scenery Management System methodology.

Sections 5 through 11, below, provide a discussion of the impacts identified for the proposed Project and its alternatives. The significance of each impact is also identified, according to the following classifications:

- **Class I**: Significant impact; cannot be mitigated to a level that is less than significant. (Class I impacts are significant adverse effects that cannot be mitigated below a level of significance through the application of feasible mitigation measures. Class I impacts are significant and unavoidable.)
- **Class II**: Significant impact; can be mitigated to a level that is less than significant. (A Class II impact is a significant adverse effect that can be reduced to a less-than-significant level through the application of feasible mitigation measures.)

- **Class III**: Adverse impact; less than significant. (A Class III impact is a minor change or effect on the environment that does not meet or exceed the criteria established to gauge significance.)
- **Class IV**: Beneficial impact. (Class IV impacts represent beneficial effects that would result from Project implementation.)

Detailed discussions of each impact and the specific locations where each is identified are presented in the following sections.