C. Alternatives

C.1 INTRODUCTION

SCE's Proposed El Casco System Project is described in detail in Section B (Project Description) of this EIR. This section describes the alternatives to the Proposed Project, and the alternatives screening process that has been conducted for the Proposed Project. This section summarizes the screening of alternatives and provides a record of the screening criteria and results that were reached regarding alternatives carried forward for full EIR analysis. The intent of this section is to document:

1) The range of alternatives that have been suggested and evaluated;
2) The approach and methods used by the CPUC Energy Division in screening the feasibility of these alternatives according to guidelines established under CEQA; and
3) The results of the alternatives screening (i.e., which alternatives are analyzed in the EIR, and which alternatives have been eliminated from further consideration).

This section is organized as follows:

- Section C.1 is an overview of the alternatives screening process;
- Section C.2 describes the methodology used for alternatives evaluation;
- Section C.3 presents a summary of which alternatives have been selected for full EIR analysis and which have been eliminated based on CEQA criteria;
- Section C.4 describes the alternatives (including the CEQA-required No Project Alternative) that have been retained for full EIR analysis within each individual issue area subsection in Section D; and
- Section C.5 presents descriptions of each alternative that was eliminated from EIR analysis and explains why each was eliminated.

C.2 ALTERNATIVES DEVELOPMENT AND SCREENING PROCESS

One of the most important aspects of the environmental review process is the identification and assessment of a reasonable range of alternatives that have the potential for avoiding or minimizing one or more significant impacts of a proposed project while meeting most of the project's objectives. In considering the reasonable range of alternatives, a screening process is applied whereby alternatives that have been identified that do not meet the requirements set forth by CEQA (see Section C.2.1) are eliminated, and those alternatives which do meet the requirements are carried forward for full analysis in the EIR.

The range of potential alternatives to the Proposed El Casco System Project was identified through the CEQA scoping process, and through supplemental studies and consultation conducted during the course of this analysis. The range of alternatives considered encompasses:

- Alternatives identified by SCE in their PEA;
- Alternatives identified by the EIR team as a result of an independent review of the Proposed Project route and the alternatives presented in the PEA; and
- Alternatives identified by the general public during the scoping period (June through August 2007) conducted in accordance with CEQA requirements.

In total, eight potential alternatives have been identified. These alternatives range from minor routing adjustments to SCE's Proposed Project route, to entirely different transmission line routes, to alternate substation sites.

C.2.1 CEQA Requirements for Alternatives Assessment

The CEQA Guidelines (Section 15126.6[a]) state that

> ***An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.***

The key applicable provisions of the CEQA Guidelines (Section 15126.6) pertaining to the analysis of alternatives are summarized as follows:

- The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- The "no project" alternative shall be evaluated along with its impact. The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason"; therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice between the alternatives and the proposed project. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

C.2.2 Alternatives Screening Methodology

The evaluation of alternatives to the Proposed El Casco System Project was completed using a screening process that consisted of three steps:

Step 1: Clarify the description of each alternative to allow comparative evaluation.

Step 2: Evaluate each alternative using CEQA criteria (defined below).

Step 3: Determine the suitability of each alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it from further consideration. Infeasible alternatives and alternatives that clearly offered no potential for overall environmental advantage when compared to the Proposed Project were removed from further analysis.

Following the three-step screening process, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to CEQA's criteria for consideration of alternatives. These criteria are:

- Does the alternative meet most basic project objectives?

- Is the alternative feasible (legal, regulatory, technical)?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the Proposed Project)?

C.2.3 Consistency with Project Objectives

The CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives" (Section 15126.6[b]). Therefore, it is not required that each alternative meet all of SCE's objectives.

The objectives of the Proposed Project are defined by SCE in its PEA (Section 1.0), and are described in Section A of this EIR. This EIR does not adopt or endorse the objectives that SCE has defined for its Proposed Project. SCE's stated objectives are as follows:

- Serve long-term projected electrical load requirements in the Electrical Needs Area (see Figure A-2 in Section A of this EIR;
- Provide enhanced system reliability by constructing a project in a suitable location to serve the Electrical Needs Area;
- Provide greater operational flexibility to transfer load between lines and substations;
- Provide substations with more than one 28 MVA transformer with service from two 115 kV lines;
- Provide safe and reliable electrical service consistent with SCE's planning guidelines and Subtransmission Guidelines;
- Meet project need while minimizing environmental impacts and in a cost-effective manner.

C.2.4 Feasibility

Section 15364 of the CEQA Guidelines defines feasibility as:

> ***. . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.***

In addition, Section 15126.6(f) of the CEQA Guidelines states that in determining the range of alternatives to be evaluated in the EIR, the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and proponent's control over alternative sites. The feasibility of potential alternatives has been assessed taking the following factors into account:

Legal Feasibility: Does the alternative have the potential to avoid lands that have legal protections that may prohibit or substantially limit the feasibility of permitting the El Casco System Project?

Regulatory Feasibility: Does the alternative have the potential to avoid lands that have regulatory restrictions that may substantially limit the feasibility of, or permitting of, the El Casco System Project by 2010?

Technical Feasibility: Is the alternative feasible from a technological perspective, considering available technology? Are there any construction, operation, or maintenance constraints that cannot be overcome?

Environmental Feasibility: Would implementation of the alternative cause substantially greater environmental damage than the Proposed Project, thereby making the alternative clearly inferior from an environmental standpoint?

This screening analysis does not focus on relative economic factors or costs of the alternatives (as long as they are found to be economically feasible) since CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (CEQA Guidelines Section 15126.6[b]). The CPUC's proceedings will separately and specifically consider cost issues.

C.2.5 Potential to Eliminate Significant Environmental Effects

CEQA requires that to be fully considered in an EIR, an alternative must have the potential to *"avoid or substantially lessen any of the significant effects of the project"* (CEQA Guidelines Section 16126.6[a]). If an alternative was identified that clearly does not provide potential overall environmental advantage as compared to the Proposed Project, it was eliminated from further consideration. At the screening stage, it is not possible to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions in the subject area.

Table C-1 presents a summary of the potential significant effects of the Proposed Project. This impact summary was prepared prior to completion of the EIR analysis (i.e., identified at the time of the issuance of the Notice of Preparation [NOP] for the Proposed Project), so it may not be complete in comparison to the detailed analysis now presented in Section D (Environmental Analysis) of this EIR. However, the impacts in the table are representative of those resulting from preliminary EIR preparation and were therefore used to determine whether an alternative met this CEQA requirement. The contents of Table C-1 are the same as the contents of Attachment 1 of the NOP (see Appendix 2 of this EIR).

Table C-1 Summary of Potential Issues or Impacts: El Casco System Project

Environmental Issue Area	Potential Issues or Impacts
Aesthetics	• As the Proposed Project subtransmission line route and the El Casco Substation site would travel through and be located in rural areas with extended views of the natural environment, including hillsides and natural landscape features, there is the potential for the Proposed Project to have an adverse effect on scenic vistas in the immediate vicinity of the Proposed Project route and substation locations or in sufficiently close proximity such that views from and to those vistas would be adversely affected by the Proposed Project. • Both the I-10 Freeway and State Route 38 in the vicinity of the Proposed Project transmission line route are designated as Eligible State Scenic Highways. There is the potential for the Proposed Project to have an adverse effect on scenic vistas in the immediate vicinity of the Proposed Project route or in sufficiently close proximity such that views from and to those vistas would be adversely affected by the Proposed Project. • The Proposed Project subtransmission line route and substation site would alter the existing landscape and travel through rural areas with extended views of the natural environment, including hillsides and natural landscape features. In addition, the proposed El Casco substation would result in grading and construction activities permanently altering the existing visual

Table C-1 Summary of Potential Issues or Impacts: El Casco System Project

	character and quality of the proposed substation site, which is currently open space and part of the Norton Younglove Reserve. • Nighttime construction lighting would be used during Project construction and the proposed El Casco substation would include operational nighttime security lighting that could be viewed by adjacent residential structures. In addition, reflective parts of construction equipment and subtransmission facilities and structures could create a new source of daytime glare.
Agricultural Resources, Land Use/Planning, and Recreation	• The majority of the components comprising the Proposed Project would not be located on or adjacent to Farmland. Portions of the 115 kV subtransmission line, however, would traverse Farmland, particularly between Milepost 3.9 and 4.1 of the El Casco-Banning route and at Milepost 0.3 of the Maraschino Loop South. • The El Casco Substation would be constructed within the boundaries of the Norton Younglove Reserve, which is designated for open space and conservation and would utilize 28 acres of the 640 acres of the Reserve. • A portion of the 115 kV subtransmission line would be within 4,000 feet of the Banning Municipal Airport and some of the support structures for the subtransmission line would be greater than the maximum permitted height described in the Banning Municipal Airport Land Use Plan and FAA regulations. SCE would be required to file a Notice of Proposed Construction or Alteration with the FAA and submit design of the poles to the Airport Land Use Commission for review. • The proposed El Casco Substation Site and portions of the 115 kV subtransmission lines would be within the bounds of the Western Riverside County MSHCP and the Mill Creek Communications Site would be located in a resource conservation area. • Construction of the El Casco Substation in this location would not include the construction of recreational facilities and would not require the construction or expansion of recreational facilities. Construction of El Casco Substation within Norton Younglove Reserve, however, could potentially encourage the expanded use of Norton Younglove Reserve.
Air Quality	• Construction of the Proposed Project (in particular, site grading activities for the El Casco Substation) would generate emissions that could potentially exceed construction and operational emission thresholds, as established by the SCAQMD, potentially contributing to an existing or projected air quality violation. • Construction of the Proposed Project would generate emissions that could potentially exceed emission thresholds, as established by the SCAQMD, potentially resulting in a cumulatively considerable net increase of any criteria pollutant for which the SCAQMD is in non-attainment. • Construction of the Proposed Project would generate emissions that could potentially exceed emission thresholds, as established by the SCAQMD, potentially exposing sensitive receptors to substantial pollutant concentrations.
Biological Resources	• Impacts to biological resources could occur at the proposed El Casco Substation, along the 115 kV subtransmission line route, at the Mill Creek Communications Site, and along the fiber optic line during construction and operation of the Proposed Project. • Construction of the proposed El Casco Substation would temporarily disturb approximately 7.98 acres and would permanently impact approximately 14.36 acres of habitat. Wildlife species and habitat in San Timoteo Creek could also be impacted by improvement of the substation access road resulting from siltation and sedimentation into the Creek. • Horizontal directional drilling (HDD) for the 12 kV getaway duct banks could result in temporary increases in turbidity and sedimentation that could affect amphibians and habitat in San Timoteo Creek. • Noise from construction could affect wildlife by impairing communication, impairing foraging success and predator detection, and causing the temporary dispersal of individuals from the area of impacts.

Table C-1 Summary of Potential Issues or Impacts: El Casco System Project

Biological Resources (continued)	• Construction of the 115 kV subtransmission line and installation of the four new poles for the fiber optic cable could potentially destroy or adversely affect sensitive species as a result of grading previously undisturbed surfaces for pole structure sites or cable pulling, or blading to remove rocks, large shrubs, or other objects from the soil surface. In areas where grading or blading would not occur, habitat could still be damaged by vehicles and staging of materials during construction. Sensitive species could be crushed by the operation of heavy machinery or foot traffic. The establishment of nonnative weeds could suppress or eliminate special status species. • Permanent impacts to habitat would occur adjacent to the existing communications building at the Mill Creek Communications Site as a result of the installation of the microwave antenna tower and temporary impacts would occur to a 60-foot by 60-foot staging area. While construction would largely affect disturbed habitat and non-native grassland, chaparral habitat would also be disturbed by these activities. Construction of the El Casco Substation and its access road would permanently disturb 3.50 acres of scrub oak chaparral and 0.01 acre of chamise chaparral and would temporarily disturb 3.71 acres of scrub oak chaparral, 0.12 acre of chamise chaparral, and 0.03 acre of southern mixed chaparral. • Direct impacts to riparian habitat along San Timoteo Creek could occur due to frac-out during HDD • Grading and road widening for the El Casco Substation access road could cause siltation or sedimentation that could damage riparian habitat along the Creek. • Construction of the El Casco Substation would indirectly affect wetlands along San Timoteo Creek as a result of improvements to the substation access road. Grading and road widening could cause siltation and sedimentation to be released to San Timoteo Creek. This siltation and sedimentation could disrupt the growth of aquatic plants and interfere with the physiological processes of aquatic animals such as fish, amphibians, and insects. • Least Bell's vireo, a State and Federally Endangered Species, is known to occur in the vicinity of San Timoteo Creek . Construction of the El Casco substation could remove potential habitat, and Project construction activities could impact this and other special-status species. • Construction of the Proposed Project could adversely affect nesting birds covered by the Migratory Bird Treaty Act (MBTA). • The Proposed Project could require the removal of trees or other vegetation.
Cultural Resources	• The El Casco Substation would be located in the vicinity of the historic Duff Weaver Ranch. As such, construction of the proposed substation could damage or destroy significant cultural resources, including structures and features from the historic Ranch. • Construction of the El Casco Substation and the 115 kV subtransmission line could potentially affect archaeological resources. • Components of the Proposed Project, including the El Casco Substation Site and access roads to the 115 kV subtransmission lines, would be located on or within 0.5 miles of paleontological resource localities. Excavation associated with construction of the El Casco Substation and the 115 kV subtransmission line could impact paleontological resources, including datable organic materials. • Although no known burial grounds have been identified along the Proposed Project alignment, the possibility of uncovering human remains exists.
Geology and Soils	• The proposed El Casco Substation site would be approximately two miles southwest of the Cherry Valley Fault Zone. Zanja Substation is located approximately 0.3 mile southeast of the South Branch of the San Andreas Fault Zone and the Mill Creek Communications Site is located approximately 0.9 mile northeast of the South Branch of the San Andreas Fault Zone. Banning Substation is located approximately 1.5 miles south of the San Gorgonio Pass Fault Zone. The 115 kV subtransmission line and fiber optic lines would pass over traces of the Beaumont Plain Fault Zone at Mileposts 6.58 and 7.9 and Milepost 0.76 of the Maraschino Loop West. • All of the components of the Proposed Project would be located within the California Building Code (CBC) Seismic Zone IV • While the majority of the Proposed Project components would be located on soils that would not be susceptible to seismic-related ground failure or liquefaction, the El Casco Substation site and portions of the 115 kV subtransmission line would be located on soils with a moderate potential for ground failure or liquefaction.

Table C-1 Summary of Potential Issues or Impacts: El Casco System Project

Geology and Soils (continued)	• The majority of the Proposed Project components would not be susceptible to landslides, but El Casco Substation would be located in an area where past landslides have been identified in soil borings. Site preparation for the El Casco Substation would include excavation, which could increase the potential for landslides. • Construction of the TSPs, LWS poles, poles for the fiber optic lines, and line stringing activities could potentially result in the disturbance of topsoil as a result of grading for pulling sites or installation of the poles.
Hazards and Hazardous Materials	• Construction vehicles would require on-site refueling, and may require routine or emergency maintenance that could result in the release of oil, diesel fuel, transmission fluid or other materials. • It is unclear at this time if the components of the Proposed Project would be located on a site listed as a hazardous materials site. • A portion of the 115 kV subtransmission line would be located approximately 4,000 feet west of Banning's Municipal Airport runway and within the Banning Municipal Airport Land Use Plan. • The Proposed Project would limit roadway access for short-term periods during construction of the 115 kV subtransmission line. The Mill Creek Communications Site, El Casco Substation site, portions of the fiber optic lines, and portions of the 115 kV subtransmission line route would be located in high fire risk areas. Short-term fire hazard impacts could result during the construction of the Proposed Project.
Hydrology and Water Quality	• During construction activities, there is a possibility that excavated material could be eroded into local drainages or San Timoteo Creek. Construction would also require the use of potential sources for water quality degradation such as diesel fuel, lubrication oil, hydraulic fluids, antifreeze, and other construction-related materials. If unchecked, these materials could be carried by runoff into drainages or San Timoteo Creek. Excavation for subtransmission structures could also require dewatering to ensure the stability of the structures. • The Horizontal Directional Drilling proposed for installation of the 12 kV distribution line getaways and fiber optic duct bank from the El Casco Substation would have the potential to affect water quality in San Timoteo Creek. Vertical leakage of drilling fluids in the formation over the boring could occur or hazardous materials from equipment during the boring could be transmitted to the Creek. Drilling fluids could also reach the surface through existing natural fractures, induced fractures, or porous and permeable zones and could degrade water quality. • Operation and maintenance of the Proposed Project could also result in accidental mineral oil releases from oil-filled electrical equipment at the El Casco Substation or the accidental release of diesel fuel, lubrication oil, hydraulic fluids, antifreeze, or other vehicle-related hazardous materials during maintenance and inspection activities. • Due to the Proposed Project's creation of impermeable surfaces, potential impacts to groundwater recharge could occur. • Construction and operation of the 115 kV subtransmission lines could potentially affect drainage as new TSPs and LWS poles would be sited in the same area as existing wood poles but could require the grading of new site pads. Construction and operation of the new structures for the 220 kV transmission line loop-ins and fiber optic lines could also require grading, and therefore could potentially alter existing drainage patterns. • Drainage at the El Casco Substation would be altered significantly due to the large amount of site grading required. • The proposed El Casco Substation and the 220 kV transmission towers could be affected by 500-year flood flows. • The Proposed Project could potentially create or contribute substantial new sources of runoff water that would exceed the capacity of stormwater drainage systems. Construction and operation of the proposed El Casco Substation site, in particular, would create a new source for polluted runoff draining into San Timoteo Creek. • Short-term erosion could occur during excavation and construction activities, which could adversely affect surface water quality from runoff water. Construction equipment and vehicles may potentially leak contaminants during construction activities and electrical equipment could potentially leak during operation, increasing the possibility of washing contaminated runoff into nearby waterbodies.

Table C-1 Summary of Potential Issues or Impacts: El Casco System Project

Noise	• On-site noise during construction would occur primarily from heavy-duty diesel and gasoline-powered construction equipment. Off-site noise would be generated from trucks delivering materials and equipment to the job-sites, as well as from vehicles used by workers commuting to and from the job sites. • Operational noise would occur as a result of corona noise discharge from active electrical lines, noise generated from substation activities, and noise generated from maintenance activities. • On-site groundborne vibration and groundborne noise during construction would occur primarily from heavy-duty diesel and gasoline-powered construction equipment. Off-site groundborne vibration and groundborne noise would be generated from trucks delivering materials and equipment to the job sites.
Public Services and Utilities	• Fire protection could be required at a Project construction site in the event of a construction accident. The likelihood of an accident requiring such a response would be moderate, as Project construction would occur in areas of high fire danger. Furthermore, Proposed Project construction may require the temporary blockage or closure of roadway facilities affecting emergency access and response times to the area. Once operational, the proposed electrical facilities could generate an increase in fire risk, and new towers could potentially affect firefighting helicopter operations. • Police service could be required at a Project construction site in the event of a construction accident. Furthermore, Proposed Project construction may require the temporary blockage or closure of roadway facilities affecting emergency access and response times to the area. • During construction, workers and any potential change in stormwater drainage could generate additional wastewater to the treatment facilities serving the area. • During construction, grading activities and a change in the amount of permeable surface area associated with new tower footings and Proposed Project facilities could change the amount of stormwater drainage. • The Proposed Project may require water during site grading for dust suppression purposes. Due to the short-term nature of construction, the water consumed is expected to be minimal. • Construction of the transmission and subtransmission lines would result in the generation of various waste materials including wood, soil and vegetation, and sanitation waste.
Transportation and Traffic	• There are three primary categories of traffic impacts that would occur as a result of the Proposed Project. The first category would be the impacts associated with construction traffic on the roadways that provide access to the Project route and construction sites. During the construction activities, a number of vehicles would be traveling to and from the Project site, including trucks delivering materials to the site, trucks transporting waste material away from the site, and construction workers' vehicles commuting to and from the site. The second category of traffic impacts would be the physical impacts of the construction activities that would occur within the ROW of the affected public roadways (i.e., lane closures, detours, driveway blockages, loss of parking, and disruptions to traffic, transit, and pedestrian movements in the construction area). The third category of traffic impacts would be the impacts associated with the operation of the Proposed Project after construction is complete. • Once operational, the proposed electrical facilities would include new towers that could potentially affect firefighting helicopter operations. • Construction of the Proposed Project across, along, and within public street ROW areas could potentially result in increased hazards to motorists, bicyclists, and pedestrians because the construction activities would occur within the travel lanes of various roadways. • The Proposed Project could potentially result in a significant impact to emergency access due to construction activities across, along, and within public street ROWs which could increase the response times for emergency vehicles (police, fire, and ambulance/paramedic units) and block or disrupt access to adjacent properties. • The Proposed Project could potentially result in parking capacity impacts due to construction activities along and within public street ROWs that could block or disrupt street parking. • The Project could potentially result in temporary impacts to bus routes and bicycle lanes due to construction activities within public street ROW.

C.3 SUMMARY OF SCREENING RESULTS

Alternatives identified by the Applicant (SCE), agencies, EIR preparers, and the public are summarized below according to the determination made for analysis (i.e., retained for full analysis or dismissed from further consideration). Alternatives considered included alternative route alignments or substation sites, alternative system configurations, partial undergrounding of the route, and the No Project Alternative. If so desired, in its decision, the CPUC could elect to combine or match certain alternatives and Project components depending on feasibility. The potential to create different permutations of alternatives in reality creates many more overall alternatives.

C.3.1 Alternatives Fully Analyzed in the EIR

The alternatives listed below have been chosen for detailed analysis in this EIR through the alternative screening process. These alternatives are described in greater detail in Section C.4. The preliminary conclusions generated during the screening process are presented briefly below and each of these alternatives is evaluated in detail within each environmental issue area of Section D (Environmental Analysis) of this EIR. The alternatives are illustrated on Figures C-1 through C-7.

Subtransmission Line Route Alternatives

- CPUC's Northerly Route Alternative Option 3
- Partial Underground Alternative

C.3.2 Alternatives Eliminated from Full Consideration in the EIR

Subtransmission Line Route Alternatives

- SCE's Northerly Route Alternative
- CPUC's Northerly Route Alternative Option 1
- CPUC's Northerly Route Alternative Option 2

Other Alternatives

- SCE's Vista System Upgrade Alternative
- SCE's Alternative Substation Site
- Demand-Side Management

C.4 ALTERNATIVES EVALUATED IN THIS EIR

C.4.1 Introduction

As discussed in Section C.2, alternatives were assessed for their feasibility, their ability to reasonably achieve the Project objectives, and their potential for reducing the significant environmental impacts of the Proposed Project. Based on these screening criteria, the following alternatives were selected for detailed analysis within this EIR. Please see the issue area subsections in Section D for analysis of alternatives carried forward. Sections C.4.2.1 and C.4.2.2 present the detailed descriptions of these alternatives and the reasons they were carried forward for detailed analysis in the EIR.

C.4.2 Subtransmission Line Route Alternatives

C.4.2.1 CPUC's Northerly Route Alternative Option 3

This route was recommended by CPUC and refined by SCE in an attempt to offer a segment option to SCE's Northerly Route Alternative in the portions where that alternative would impact high-density residential neighborhoods with very limited space in SCE's existing ROW. The CPUC's Northerly Route Alternative Option 3 is also referred to as Route Alternative Option 3 (SCE, 2007j).

Description

The 115 kV subtransmission line of this alternative would pass through the Cities of Calimesa, Beaumont, and Banning. Route Alternative Option 3 requires the acquisition of additional ROWs for a distance of approximately two miles along the northerly 115 kV subtransmission line route. From mile-marker 0.0 to mile-marker 1.2 (as the line would exit the proposed El Casco Substation) and from mile-marker 9.2 to mile-marker 10.0 (as the line exits SCE's existing transmission line ROW), SCE would need to obtain additional ROW to widen its existing easement by 25 feet (SCE, 2007a).

Major Components of Route Alternative Option 3

The "Phase 1" construction activities described for the Proposed Project in Section B (Project Description) would remain unchanged, in order to loop-in the existing Vista-Maraschino-San Bernardino 115 kV subtransmission line into El Casco Substation, thereby creating the Vista-El Casco-San Bernardino and El Casco-Maraschino 115 kV subtransmission lines (SCE, 2007a).

Route Alternative Option 3 would consist of:

- Rebuilding the entire El Casco-Maraschino 115 kV subtransmission line;
- Rebuilding a portion of the Banning-Maraschino 115 kV subtransmission line; and
- Creating the El Casco-Banning and El Casco-Zanja 115 kV subtransmission lines from a combination of new construction and rebuilding of a portion of the existing Devers-Banning-Windpark-Zanja 115 kV subtransmission line.

Similar to Proposed Project activities (see Section B), this alternative includes the following major components:

- Construct the new 220/115/12 kV El Casco Substation within the Norton Younglove Reserve in the County of Riverside, associated 220 kV and 115 kV interconnections, and new 12 kV distribution line getaways.
- Upgrade existing 115 kV subtransmission lines between El Casco, Maraschino, and Banning.
- Rebuild 115 kV switchracks within Banning and Zanja Substations in the Cities of Banning and Yucaipa, respectively.
- Install telecommunications equipment at the proposed El Casco Substation and at SCE's existing Mill Creek Communications Site.
- Install fiber optic cables within public streets and on existing SCE structures between the Cities of Redlands and Banning.

With implementation of the Route Alternative Option 3, the El Casco System Project would be constructed from approximately June 2008 to June 2010, and the Project would be operational in two phases. The 115/12 kV portion of the substation would be operational by June 2009. The 220/115 kV portion of the substation and remaining components of the Project would be operational by June 2010.

The 115/12 kV portion of the proposed El Casco Substation would relieve the Maraschino Substation by transferring approximately 10 MVA of 12 kV distribution load to El Casco Substation in 2009. The five new 12 kV distribution line getaways associated with the El Casco Substation would be used to facilitate this load transfer, and would also serve future load growth that would otherwise be served from Maraschino Substation. With this transfer and the majority of the future load growth being served by the new El Casco Substation, demand on the existing transformers at Maraschino Substation would be below operating limits.

SCE's existing 220 kV Devers-San Bernardino No. 2 transmission line would serve as the source for the El Casco System, making it independent of the Vista System (i.e., having a separate 220 kV transmission source of supply). The El Casco System would tie in with the Vista System and the Devers System through the 115 kV subtransmission system and tie in to the Vista System through the 12 kV distribution system, thereby providing the capability to transfer load between systems under both normal and abnormal conditions. This increases the reliability of all three systems.

The 220/115 kV portion of the proposed El Casco Substation would relieve the Vista 220/115 kV Substation through the transfer of four existing substations from the Vista 115 kV System to the El Casco 115 kV System. These substations (Crafton Hills, Maraschino, Mentone, and Zanja) are located at the eastern end of the existing Vista 115 kV System and will have a combined projected normal weather peak demand of approximately 135 MVA in 2010. After these transfers, demand on the existing transformers at the Vista 220/115 kV Substation would be below operating limits. In addition, the Banning 115/33 kV Substation (with a projected normal weather peak demand of approximately 101 MVA in 2010) would also be transferred from SCE's existing Devers 115 kV System to the El Casco 115 kV System. This allows Banning Substation to be served by more than one 115 kV line.

El Casco Substation. With construction of the Route Alternative Option 3, the addition of two additional 115 kV line positions would be required in the 115 kV switchrack and would be built during Phase 2 of construction. As described in Section B (Project Description), the Proposed Project would only require one 115 kV line position in the switchrack. All other activities related to the El Casco Substation would be the same as those described for the Proposed Project.

115 kV Subtransmission Line Upgrades and New Construction

The most notable difference between the Proposed Project and Route Alternative Option 3 is the 115 kV line work that would occur during the second stage of construction. The northerly 115 kV subtransmission line route consists of various upgrades to existing 115 kV lines and construction of new 115 kV lines as described below and as depicted on Figure C-1 (SCE, 2007a and SCE, 2007f).

Upgrades to the Existing Vista to Maraschino to San Bernardino 115 kV Subtransmission Lines (Blue Line shown on Figure C-1). The existing portion of SCE's Vista-Maraschino-San Bernardino 115 kV Subtransmission Lines that eventually would be looped into the El Casco Substation would need to be upgraded. This line would be referred to as the El Casco-Maraschino line. The El Casco-Maraschino single-circuit 115 kV line route begins at El Casco Substation and proceeds south, then continues southeast within the existing ROW for approximately five miles. This route then continues east for approximately one mile into Maraschino Substation.

Rebuilding the El Casco-Maraschino 115 kV line would be very similar to the description provided for the Proposed Project (Section B) along this same route, except that the new steel poles would be built in a single-circuit configuration, instead of the double-circuit configuration of the Proposed Project. The same number of poles (both lightweight steel [LWS] poles and tubular steel poles [TSP]) as detailed for

the Proposed Project would be required over this distance if Route Alternative Option 3 is implemented. With the Route Alternative Option 3, approximately 5.8 miles of SCE's existing single-circuit 115 kV subtransmission line would be replaced with new, higher capacity single-circuit 115 kV subtransmission lines. The existing single-circuit wood poles would be replaced with single-circuit steel poles within existing SCE ROWs along the El Casco-Maraschino 115 kV line.

Upgrades to the Existing Banning to Maraschino Subtransmission Line (Green Line and Yellow Line shown on Figure C-1). The existing SCE Banning-Maraschino 115 kV line route begins at Banning Substation and proceeds south for approximately 0.7 mile to the existing ROW. At this point, the existing single-circuit 115 kV line proceeds west to Maraschino Substation. Rebuilding the Banning-Maraschino 115 kV line in this alternative would be limited to converting the 0.7 mile of the existing single-circuit line (Yellow Line shown on Figure C-1) to double-circuit from Banning Substation due south to where the line intersects with Wesley Street in the City of Banning. Over this distance, the scope is identical to what is described for the Proposed Project: approximately 0.7 mile of existing 115 kV single-circuit subtransmission lines would be replaced with new, higher capacity double-circuit 115 kV subtransmission lines. Unlike the Proposed Project, however, no construction would be necessary from this point (i.e., Wesley Street) to the west towards Maraschino Substation (Green Line shown on Figure C-1). In this portion of the Route Alternative Option 3, the existing single-circuit 115 kV Subtransmission Line facilities (i.e., towers, ROW, etc.) would remain unchanged.

In addition, it should be noted that with implementation of this alternative, SCE would need to energize its existing 115 kV line between Banning and Maraschino Substations (i.e., Green Line shown on Figure C-1).

Construction of the New El Casco to Banning Subtransmission Line (Red, Grey, and Purple Lines shown on Figure C-1). This portion of the Route Alternative Option 3 would consist of two main segments, including creating the El Casco-Banning and the El Casco-Zanja 115 kV subtransmission lines.

Segment 1 (Red Line shown on Figure C-1). The El Casco-Banning 115 kV line route begins at El Casco Substation and proceeds east for approximately 9.5 miles (Red Line shown on Figure C-1). SCE would construct 9.5 miles of new double-circuit 115 kV subtransmission lines to intercept the 115 kV line between Banning Substation and Zanja Substation within existing SCE ROWs to create the El Casco-Zanja 115 kV line and the El Casco-Banning 115 kV line.

This first segment of Route Alternative Option 3 would require construction of several double-circuit TSPs to wrap the lines around the east and north sides of the El Casco Substation towards the existing Devers-San Bernardino #2 220 kV transmission line ROW. At that point, double-circuit TSPs would be installed for about one mile to take the lines northeast along the south side of that existing 220 kV transmission line ROW. Expansion of ROW would likely be required along this distance to widen the corridor enough to accommodate the new 115 kV lines. Where the Devers-San Bernardino #2 220 kV transmission line ROW joins the ROW for the Devers-Vista #1 and #2 and Devers-San Bernardino #1 220 kV lines, the new double-circuit 115 kV subtransmission line would be installed between the existing single-circuit Devers-San Bernardino #2 220 kV towers and the existing double-circuit Devers-Vista #1 and #2 220 kV towers for approximately 8.5 miles until this route crosses the location of the existing Devers-Banning-Windpark-Zanja 115 kV subtransmission line, near the northern terminus of Mountain Avenue in the City of Banning (this point is referred to as the "Zanja Break-off"). See Figure C-1 for the location of the route, and see Figure C-2 for the location of the proposed towers within SCE's existing ROW.

Click here for Figure C-1

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Click here for Figure C-2

At the "Zanja Break-off," the El Casco-Zanja 115 kV line would connect to SCE's existing single-circuit wood pole structures heading north toward Zanja Substation (shown as Green Line on Figure C-1). From the "Zanja Break-off" to Zanja Substation SCE's existing facilities would remain the same and no construction activities would occur. From the "Zanja Break-off," the El Casco-Banning 115 kV subtransmission line would continue east along the second segment (described below) of the new El Casco to Banning subtransmission line portion of Route Alternative Option 3. From El Casco Substation to the "Zanja Break-off", there would be approximately 90 structures installed, roughly equally split between TSPs and LWS poles. However, according to SCE, without the benefit of more in-depth engineering and design analysis it is not feasible at this time to provide specific locations for each of these structures (SCE, 2007a).

Segment 2 (Grey Line and Purple Line shown on Figures C-1 and C-3). Route Alternative Option 3 would continue east from the "Zanja Break-off" within SCE's existing Devers-Vista 220 kV ROW. The second segment of this portion of Route Alternative Option 3 would replace all existing single-circuit wood poles with single-circuit steel poles to continue rebuilding the El Casco-Banning 115 kV subtransmission line. The distance from the "Zanja Break-off" into Banning Substation would require approximately 45 new steel poles, again roughly equally split between TSP and LWS type structures.

While Figure C-1 illustrates the location and various activities occurring for the entirety of Route Alternative Option 3, Figure C-3 provides more detail of the route occurring between "Zanja Break-off" and Banning Substation.

Approximately 5.6 miles of existing 115 kV single-circuit subtransmission lines would be replaced with new, higher capacity single-circuit 115 kV subtransmission lines, and support structures would be replaced within new and existing ROWs to increase the capacity of the new El Casco-Banning 115 kV line. The majority of the second segment of this alternative (Grey Line shown on Figures C-1 and C-3) would be located between "Zanja Break-off" and Williams Street just north of Banning Substation (SCE, 2007j).

To avoid Morongo tribal land north of the Banning city limits, the route would exit SCE's existing Devers-Vista 220 kV ROW and head south on San Gorgonio Avenue. The route would then turn east onto Summit Drive and continue to Florida Street. The route would then turn south on Florida Street, where it would need to be overbuilt on existing City of Banning distribution poles on the east side of the street. SCE would need to obtain easement rights (or franchise rights) along Florida Street from the City of Banning. The route would then turn east on Repplier Road, where the subtransmission line would be overbuilt on poles that support the existing City of Banning distribution line, as well as an existing SCE 33 kV distribution line, on the north side of the street. SCE may need to obtain additional easement rights (or franchise rights) within this area. From Repplier Road, the route would continue south on Blanchard Street. The subtransmission line route would turn east onto Gilman Street, then turn south onto Hathaway Street. On Hathaway Street, the subtransmission line would likely continue overbuilding on the west side of Hathaway Street on City of Banning's existing distribution line.

At Morongo Road, the subtransmission line would need to cross Hathaway Street and would be overbuilt on the existing City of Banning distribution line that currently exists on the east side of Hathaway Street. The route would continue on Hathaway Street south to Williams Street. On Williams Street, the route would turn west and follow the existing SCE subtransmission line (within existing easements), which is currently on the south side of Williams Street.

Click here for Figure C-3

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From Williams Street south to Banning Substation, SCE would construct the new 115 kV subtransmission line where its existing 115 kV subtransmission line is within existing easements (Purple Line on Figures C-1 and C-3) by rebuilding approximately 0.2 mile of existing double-circuit wood poles with double-circuit steel poles. From Williams Street, SCE would have to take the line across Interstate 10 freeway (I-10) to Banning Substation.

Rationale for Full Analysis

Project Objectives. This alternative would meet all of the stated objectives of the Proposed Project. However, this alternative would result in more miles of 115 kV subtransmission line exposure than the Proposed Project route, thereby potentially leading to reduced system reliability.

Feasibility. There are no technical, legal, or regulatory feasibility issues associated with implementation of Route Alternative Option 3.

Lessen Significant Environmental Impacts. There would be a reduction in environmental impacts associated with Route Alternative Option 3 because this route would avoid approximately six miles of the Proposed Project activities associated with the construction of the 115 kV line between Maraschino and Banning Substations. In this area, the existing SCE wood poles would remain in place (refer to the green line on Figure C-1). Therefore, the impacts between Maraschino and Banning Substations associated with construction of the Proposed Project (i.e., air quality, noise, and traffic nuisances) would not occur to the residential land uses along the Proposed Project route, including the Four Seasons Development located to the west side of Highland Springs Avenue, and the Sun Lakes community located on the east side of Highland Springs Avenue. In addition, the visual character of this six-mile portion would not change from existing conditions. Therefore, a reduction in environmental impacts could occur along this segment of existing 115 kV ROW as a result of the Alternative Route Option 3. In addition, unlike the Northerly Route Alternative, Option 3 is routed through less dense residential areas between the Banning Substation and "Zanja Break-off."

C.4.2.2 Partial Underground Alternative

Description

The Partial Underground Alternative, shown in Figure C-4, was developed as a partial overhead/underground alternative in response to scoping comments voicing concerns about impacts in and around the Sun Lakes community, where the Proposed Project bisects the Sun Lakes community between approximately Mile 9.0 and 10.0 of the Proposed Project 115 kV subtransmission line.

This alternative would contain the same elements as the proposed El Casco System Project (see Section B, Project Description), except for the approximately one-mile portion of the alignment through the Sun Lakes community beginning just east of Highland Springs Avenue and ending just east of S. Riviera Avenue and west of S. Highland Home Road. For the Partial Underground Alternative, the existing H-frame wood poles for the overhead single-circuit 115 kV subtransmission line would be removed, and a new double-circuit 115 kV subtransmission line and fiber optic communication line would be installed underground through the Sun Lakes community within the existing SCE ROW beginning at approximately Mile 9.0 (see Figure C-4). Road crossings associated with this underground portion (from west to east) would include Pine Valley Road, Birdie Drive, Fairway Oaks Avenue, and S. Riviera Avenue. Once through the Sun Lakes community, at approximately Mile 9.9, the new double-circuit 115 kV subtransmission line and fiber optic line would transition back to overhead construction

as described for the Proposed Project. This alternative would require approximately 10 fewer new steel poles (assuming one pole every 400 to 800 feet, which is the same as the current spacing), as the subtransmission lines would be placed underground rather than on overhead infrastructure (SCE, 2007i).

The technology that would be used for the underground portions of this alternative would consist of Solid Dielectric Cables (XLPE) with each circuit installed in a separate concrete-encased duct bank.

It should be noted that there is a buried high-pressure natural gas line co-located with SCE's existing 115 kV subtransmission line through the Sun Lakes community. These two utilities are within a 100-foot utility corridor that runs east to west through the Sun Lakes community. SCE retains an easement along the northern 50 feet of the corridor, while the Southern California Gas Company retains the easement along the southern 50 feet of the corridor. These distances provide adequate separation between the existing high-pressure gas line and any proposed underground electric facilities (i.e., new ducts and vaults).

The specific components of undergrounding, as well as the construction equipment necessary for underground construction, are described below.

Construction of Underground Subtransmission Line

Riser Pole. The riser pole is the point at which overhead lines transition to underground lines. For the Partial Underground Alternative, the riser poles would be approximately 75 to 80 feet tall. Since there are two sets of conductors (i.e., a double circuit with three wires on each circuit), two riser poles would be required at each transition point, similar to those shown in Figure C-5. The underground cables would be routed down from the pole cross arms through rigid conduits. A set of two riser poles would be constructed within the existing corridor just east of the intersection with Highland Springs Avenue, and another set would be constructed east of S. Riviera Avenue and west of S. Highland Home Road.

Trenching/Duct Bank Installation. To match the current carrying capacity of the Proposed Project's overhead double-circuit 115 kV subtransmission lines, the underground system would require the installation of two cables for each phase of the 115 kV lines resulting in six underground cables per circuit. Each underground cable would utilize cross-linked, polyethylene-insulated (XLPE) solid-dielectric insulation with a 1,750 kcmil aluminum conductor core. Each set of cables would be installed in a buried concrete-encased duct bank system, as shown in Figure C-6. Each duct bank would be designed to hold eight conduits (two conduits wide by four conduits deep), where six would be filled and two would be spares. The two duct banks would be approximately two feet wide and seven feet deep. The fiber optic communication lines would be installed within the duct banks. The total excavation footprint for each duct bank would be approximately 4 feet wide by 7.5 feet deep over the length of the one-mile segment (minus those areas where vaults would be located). Total excavated material for the one-mile segment associated with duct bank construction would amount to approximately 14,080 cubic yards. Conduit installation would proceed at a rate of approximately 100 to 125 feet per day (SCE, 2007h).

During operations, underground power cables generate a significant amount of heat. The electric current carrying capacity of underground cables is directly related to the amount of this cable heat that can be dissipated through the surrounding soil. Therefore, in order to minimize heat build-up, the two parallel duct banks would be placed six feet apart as shown in Figure C-7.

Click here for Figure C-4

Click here for Figure C-5

Click here for Figure C-6

Click here for Figure C-7

During construction, road closures and detours would be required as trenching crossed existing roadways, including Pine Valley Road, Birdie Drive, Fairway Oaks Avenue, and S. Riviera Avenue. During non-work hours, any open trench would be covered by either heavy-duty plywood (in non-traffic areas) or steel plates (in roadways) (SCE, 2007h).

A permanent access road through the portion of the ROW traversing the Sun Lakes community would not be required; however, unencumbered access to the underground structures and the duct bank route must be readily available to SCE crews at all times (SCE, 2007h). Therefore, restrictions would be in place limiting the placement of any structures or permanent or deep-rooted vegetation along the ROW to ensure that future access for regular maintenance and emergency repairs is not impeded (SCE, 2007h). If necessary, SCE would implement methods such as the installation of turfblock or other permeable pavers in certain areas to allow SCE crews to drive along the ROW without causing substantial damage to the grass (SCE, 2007h).

Vault Installation. Cable splice vaults would be installed at regular intervals below grade (i.e., below the ground surface) along the one-mile alignment for this alternative. These vaults would house equipment and splices for the underground circuits. Because there is a practical limit to the length of cable supplied on a reel, vaults generally would be located a maximum of every 1,500 feet to allow splicing of the cable ends. In addition, due to the requirements for cable pulling to the steel riser poles, the first set of splicing vaults must be placed within 150 feet of the riser poles (SCE, 2007h).

A total of five locations through the Sun Lakes community have been identified by SCE where vaults would be required (see Figure C-7), for a total of ten vaults (two vaults at each location – one for each duct bank). Vaults would be pre-fabricated and would be constructed of steel-reinforced concrete, with dimensions of approximately 20 feet long by 8 feet wide by 9.5 feet deep (SCE, 2007h). The vaults would be designed to withstand the maximum credible earthquake in the Project area. During operations, manholes located at finished grade level would provide access to the vaults so that operations personnel could access the underground cables for maintenance, inspections, and repairs.

The total excavation footprint for a vault would be approximately 26 feet long by 12 feet wide and 12 feet deep. Total excavated material for the ten vaults along the one-mile segment would amount to approximately 2,345 cubic yards. Installation of each vault would take place over an approximately three-day period as follows (SCE, 2007h):

- Surveying and marking (1 day),
- Excavation and shoring of the vault pit (1 day),
- Delivery and installation of the vault (1/2 day),
- Backfill and compaction (1/2 day), followed by re-contouring and re-vegetating the excavation area, which may take several months before it would be fully restored.

Although the fiber optic communication lines would be installed within the same duct banks as the 115 kV subtransmission lines, the subtransmission line vaults would not be used for pulling and splicing of the fiber optic lines. Instead, a total of six or eight 3-foot by 5-foot pullboxes would be installed within 20 to 30 feet of the large subtransmission vaults (SCE, 2007l).

Cable Pulling. After the conduit system and the riser poles have been constructed, the cable would be installed. Starting at one end, cable is pulled from the first vault up through the riser pole. Cable is then pulled through to the next vault, and so on, until the last length of cable has been pulled through the last riser pole. Once installed, the cable is ready to be spliced, terminated, tested, and energized. The

installation of two cables would be required per phase, resulting in the use of six of the available conduits in each duct bank leaving two additional spare conduits in each duct bank.

Cable Splicing and Termination. After cable installation is completed, the cables would be spliced at all vaults. A splice trailer would be located directly above the vaults' manhole openings for easy access by workers. A mobile power generator would be located directly behind the trailer.

The dryness of the vault must be maintained 24 hours per day to ensure that unfinished splices are not contaminated with water or impurities. Normal splicing hours would be 8 to 10 hours per day with some workers remaining after hours to maintain splicing conditions and guard against vandalism and theft. These conditions are essential to maintaining quality control through completion of splicing. As splicing is completed at a vault, the splicing apparatus setup is moved to the next vault location and the splicing is resumed.

Construction Labor and Equipment

Anticipated construction personnel and equipment for overhead construction are summarized in Table B-10, Construction Personnel and Equipment Summary (115 kV Subtransmission Lines) in Section B (Project Description). However, the underground segment of the Partial Underground Alternative would require specialized construction equipment for installation of underground facilities. Additional crews for underground construction would also be required for activities associated with underground trench and duct banks, underground vaults, and cable pulling and splicing. The additional construction labor and equipment associated with underground construction activities are provided in Table C-2, below. All of this work would be completed during Phase 2 (described in Section B) of the Project (SCE, 2007h).

Table C-2 Construction Personnel and Equipment Summary for Underground Construction

Construction Element	Number of Personnel	Number of Days	Equipment Requirements
Survey	4	5	2 – Pick-ups (Gasoline)
Substructure Installation (vaults, conduits, & riser pole foundations)	10	130	2 – Backhoes (Diesel) 1 – Auger Machine (Diesel) 3 – Concrete Trucks (Diesel) 3 – Pick-ups (Gasoline) 2 – Dump Trucks (Diesel)
Steel Riser Pole Installations	8	10	1 – Line Truck (Diesel) 1 – 80-ton Hydro Crane (Diesel) 2 – Pick-ups (Gasoline) 1 – Bucket Truck (Diesel) 2 – Semi-Tractors (Diesel)
Cable Pulling	8	50	1 – Cable-Pulling Machine (Diesel) 2 – Pick-ups (Diesel) 2 – Semi-Tractors (Diesel) 1 – Line Truck (Diesel)
Cable Makeup (vault splicing)	8	40	2 – Crew Vehicles (Gasoline) 1 – Splicing Van (Diesel)
Pothead Terminations & Surge Arrestors	8	50	2 – Pick-ups (Gasoline) 1 – Bucket Truck (Diesel) 1 – Line Truck (Diesel)
Clean-up & Restoration	4	10	1 – 10-ton Dump Truck (Diesel) 1 – Pick-up (Diesel) 1 – Asphalt Truck (Diesel) 1 – Pavement Compactor (Diesel)

Source: SCE, 2007h, Alt-5.

Construction Schedule

SCE estimates that the completion of the underground portion of the Partial Underground Alternative within the Sun Lakes community alone would take approximately 295 days of work effort. However, assuming some of the work would occur simultaneously, the overall length of calendar time to complete installation of the underground portion is estimated to be 10 months (SCE, 2007h). To implement the Proposed Project (overhead construction) in the same one-mile segment within the Sun Lakes Community would take approximately 2 months (SCE, 2007h).

Operations and Maintenance

Regular maintenance would be required for the underground system on an annual basis. This would be accomplished through visual inspections of the cable and splices installed in each vault. Inspections would require approximately two full days of work with a two-person crew in a pick-up truck (SCE, 2007h).

In the event of an underground cable failure, it is likely that the failure would cause collateral damage to other cables and/or splices nearby (SCE, 2007h). Such failures typically result in extensive repair efforts, which could include replacing sections of conduit banks. Typically, these repairs require multiple days of construction, as well as the complete replacement of cable sections. During restoration work, restrictions similar to those imposed during construction may be necessary, which would include limited use of the golf course and greenbelt area in the vicinity of construction/repair activities.

The life expectancy of the underground cable, based on projected loading levels for the foreseeable future, is approximately 30 to 40 years (SCE, 2007h).

Rationale for Full Analysis

Project Objectives. This alternative would meet most of the stated objectives of the Proposed Project. The Partial Underground Alternative would:

- Add needed capacity to meet the electrical need identified in the Electrical Needs Area,
- Provide for enhanced system reliability,
- Provide for greater operational flexibility to transfer load between lines and substations,
- Provide substations with more than one 28 MVA transformer, and
- Provide safe and reliable service consistent with SCE's planning guidelines and Subtransmission Guidelines.

Feasibility. The Partial Underground Alternative would require installing double-circuit 115 kV subtransmission lines underground for approximately one mile through the Sun Lakes community. The use of XLPE technology for underground double-circuit 115 kV subtransmission lines would be technically feasible. There are no legal or regulatory feasibility concerns associated with this alternative.

Lessen Significant Environmental Impacts. Under the Proposed Project, for the one-mile segment through the Sun Lakes community, the existing 60- to 65-foot tall single-circuit H-frame wood structures would be removed and replaced in generally the same locations with new 75- to 85-foot tall double-circuit lightweight steel poles. The Proposed Project would create a visual change from existing conditions due to the taller (10 feet) and more industrial (steel versus wood) character of the new poles. The Proposed Project would also result in significant air quality impacts related to the grading of access

roads and construction of the proposed El Casco Substation; although, these are common features between the Proposed Project and the Partial Underground Alternative.

The Partial Underground Alternative would result in the elimination of the aboveground 115 kV subtransmission line through the Sun Lakes community, which would improve the existing visual character within this portion of the existing ROW. Furthermore, by placing the subtransmission line underground through the golf course, it would no longer obstruct activities associated with the golf course resulting in an improved recreational facility.

C.5 ALTERNATIVES ELIMINATED FROM FULL EIR EVALUATION

As discussed in Section C.1, alternatives were assessed for their ability to reasonably achieve the project objectives and reduce the significant environmental impacts of the Proposed Project. Also, their technical, legal and regulatory feasibility was evaluated. Based on these screening criteria, the alternatives eliminated from EIR consideration are listed above in Section C.3.2. The rationale for elimination of each alternative is summarized below and presented in detail in Section 4 of Appendix 1 (Alternatives Screening Report) of this EIR. For a visual depiction of the following routes eliminated from full EIR evaluation, please refer to the aerial maps in Appendix 1.

C.5.1 Subtransmission Line Route Alternatives

The discussions below briefly explain the reasons for elimination from EIR analysis for each potential alternative; more in-depth descriptions of each alternative are in Appendix 1 of this EIR.

C.5.1.1 SCE's Alternative 2.b: Northerly 115 kV Subtransmission Line Route (Northerly Route Alternative)

Description

In its PEA, SCE presented an alternative subtransmission line route depicting an alternate line arrangement for the El Casco 115 kV System. The Northerly 115 kV Subtransmission Line Route alternative is also referred to as the Northerly Route Alternative, or SCE Alternative 2.b. This alternative would pass through the Cities of Calimesa, Beaumont, and Banning. The Northerly Route Alternative requires the acquisition of additional ROWs for a distance of approximately two miles along the northerly 115 kV subtransmission line route. From mile-marker 0.0 to mile-marker 1.2 (as the line would exit the proposed El Casco Substation) and from mile-marker 9.2 to mile-marker 10.0 (as the line exits SCE's existing transmission line ROW), SCE would need to obtain additional ROW to widen its existing easement by 25 feet (SCE, 2007a).

The majority of the Northerly Route Alternative is exactly as described for CPUC's Northerly Route Alternative Option 3, with the exception of the 115 kV subtransmission line route between "Zanja Break-off" and Banning Substation, which is the second segment of the route that SCE refers to as the El Casco-Banning Subtransmission Line. Between "Zanja Break-off" and Banning Substation, SCE's Northerly Route Alternative would replace all existing single-circuit wood poles with single-circuit steel poles to continue rebuilding the El Casco-Banning 115 kV subtransmission line. The route would head due south from the "Zanja Break-off", passing under the three existing SCE 220 kV transmission lines, along the east side of Mountain Avenue for approximately 0.2 mile, then turn due east for approximately 0.2 mile until it intersects with the existing line heading southeast for another 0.2 mile and then east for approximately 3.0 miles on the north side of Gilman Street. Just past the intersection

of Gilman Street and Alessandro Road, the route turns due south and continues for approximately 1.0 mile. As the route crosses Williams Street, the Devers-Windpark 115 kV subtransmission line connects from the east and the two circuits continue south, across the Interstate 10 freeway (I-10), into Banning Substation. In this portion, SCE would rebuild approximately 0.2 mile of the existing double-circuit wood poles with double-circuit steel poles. The distance from the "Zanja Break-off" into Banning Substation would require approximately 45 new steel poles, again roughly equally split between TSP and LWS type structures.

Rationale for Elimination

This alternative would meet all Project objectives. In general, both the Proposed Project and the Northerly Route Alternative would result in similar types of construction impacts. However, with implementation of the Northerly Route Alternative slightly higher levels of construction impacts would result due to a longer route and the acquisition of new ROW. Due to the rerouting of the 115 kV line through populated areas of the Cities of Banning, Beaumont, and Calimesa, an increase in the amount of existing and future planned residential and sensitive receptors (including the historic Gilman Ranch) impacted during construction would occur with the Northerly Route Alternative when compared to the Proposed Project. The increase in temporary construction-related adverse impacts would occur to land use, cultural resources, air quality, traffic and noise over those analyzed for the Proposed Project. However, these adverse impacts are short-term construction-related impacts and would be mitigable.

It should be noted that the only advantage of the Northerly Route Alternative is that construction activities of the Proposed Project would not occur between Maraschino Substation east toward Banning Substation, and SCE's existing facilities would remain in place. However, SCE would need to energize the existing 115 kV line if this alternative were to be implemented. While this alternative would result in the elimination of Proposed Project activities associated with the construction of the 115 kV line between Maraschino and Banning Substations for approximately six miles, the amount and density of residential receptors impacted by the Northerly Route Alternative is greater than the residential areas of the Proposed Project that would be avoided (i.e., the Sun Lakes community on the east side of Highland Springs Avenue and the Four Seasons development on the west side of Highland Springs Avenue). The portions of the Proposed Project ROW that would be avoided also have wider ROWs in residential areas than the residential areas traversed by the Northerly Route Alternative. Therefore, while the construction and visual impacts would be somewhat similar between the Proposed Project and the Northerly Route Alternative, the amount of receptors exposed to construction impacts and permanent visual impacts would be greater under this alternative.

In general, operational visual and land use impacts associated with this alternative would be greater than those of the Proposed Project due to siting of an approximate additional five miles of 115 kV line infrastructure, two miles of which would be new ROW that does not currently contain any electric infrastructure. Furthermore, the Northerly Route Alternative would result in both taller and more industrial electrical poles as well as an increase in the bulk and mass of electrical infrastructure within exiting ROWs. These changes would be considered adverse visual impacts greater than those associated with the Proposed Project due to the greater number of receptors exposed to this visual change within the Cities of Banning, Beaumont, and Calimesa due to the siting of the Northerly Route Alternative. Given that this alternative has slightly greater overall construction and visual impacts on residential sensitive receptors as compared to the Proposed Project, SCE's proposed Northerly Route Alternative was eliminated from further consideration.

C.5.1.2 CPUC's Northerly Route Alternative Option 1

Description

The majority of CPUC's Northerly Route Alternative Option 1 (Route Alternative Option 1) would be exactly the same as CPUC's Northerly Route Alternative Option 3 described in detail above in Section C.4.2.1. The differences between CPUC's Northerly Route Alternative Options 1 and 3 are in the 115 kV subtransmission line route between the "Zanja Break-off" and Banning Substation. Starting at the "Zanja Break-off" near the northern terminus of Mountain Avenue in the City of Banning (SCE, 2007f), this route would continue due east, with new single-circuit TSPs and LWS poles within the existing Devers-Vista 220 kV transmission line ROW for approximately 3.5 miles. When the route reaches San Gorgonio Avenue, the new line construction would continue for approximately 1.0 mile farther to the east to tower M17-T1 (located on land owned by the Morongo Indian Tribe) before turning south and east toward the northern terminus of Hargrave Street. In this area, the route would parallel the Proposed Project fiber optic communication line route described in detail in Section B.8.2.1.1, (Routing) as the "Banning-M17-T2" fiber optic circuit. This route would then proceed south on Florida Street, then turn east on Repplier Road, then proceed south on the west side of Hargrave Street, then turn west on the south side of Williams Street, and then south along the existing line route and across the I-10 into Banning Substation.

Rationale for Elimination

This alternative would meet all project objectives. However, similar to the SCE's Northerly Route Alternative, the visual and land use impacts associated with this alternative would be greater than those of the Proposed Project due to the siting of approximately six additional miles of 115 kV line infrastructure when compared to the length of the Proposed Project route. In general, both the Proposed Project and the Route Alternative Option 1 would result in similar types of impacts. However, Route Alternative Option 1 would result in slightly higher levels of impacts than the Proposed Project due to a longer route and number of residential receptors subject to construction and operational impacts.

While this alternative would result in the elimination of Proposed Project activities associated with the construction of the 115 kV line between Maraschino and Banning Substations for approximately six miles, the amount and density of residential receptors impacted by the Route Alternative Option 1 is greater than that avoided. In general, operational visual and land use impacts associated with this alternative would be greater than those of the Proposed Project due to siting of additional 115 kV line infrastructure, two miles of which would be new ROW that would need to be acquired and that does not currently contain any electric infrastructure. Furthermore, the Route Alternative Option 1 would result in both taller and more industrial electrical poles within exiting ROWs. These changes would be considered adverse visual impacts greater than those associated with the Proposed Project due to the greater number of residential sensitive receptors exposed to this visual change within the City of Banning. This alternative could also result in legal feasibility issues due to crossing of Morongo tribal lands. Given that this alternative has slightly greater overall construction and visual impacts when compared to the Proposed Project, and the potential for impacts to tribal lands, Route Alternative Option 1 was eliminated from further consideration.

C.5.1.3 CPUC's Northerly Route Alternative Option 2

Description

The CPUC's Northerly Route Alternative Option 2 is also referred to as Route Alternative Option 2, and occurs between "Zanja Break-off" and the Banning Substation. This route would be virtually identical to CPUC's Northerly Route Alternative Option 1 described above in Section C.5.1.2, with the exception that at the point where the ROW crosses San Gorgonio Avenue, the route would turn due south, under three 220 kV transmission lines, for approximately 0.1 mile, then turn east to follow an existing distribution pole line (which currently supports a combination of SCE and City of Banning distribution voltages) for approximately 1.0 mile (SCE, 2007f). Then the route would turn south on Hargrave Street. From approximately the northern terminus of Hargrave Street into Banning Substation, this route would be identical to Option 1 described above.

Rationale for Elimination

This alternative would meet all project objectives. However, similar to SCE's Northerly Route Alternative and Alternative Route Option 1, the visual and land use impacts associated with this alternative would be greater than those of the Proposed Project due to siting of additional 115 kV line infrastructure (approximately six miles more than the Proposed Project). While this alternative would result in the elimination of Proposed Project activities associated with the construction of the 115 kV line between Maraschino and Banning Substations for approximately six miles, the amount and density of residential receptors impacted by the Route Alternative Option 2 is greater than that avoided. In general, operational visual and land use impacts associated with this alternative would be greater than those of the Proposed Project due to the siting of additional 115 kV line infrastructure, two miles of which would be new ROW that does not currently contain any electric infrastructure. Furthermore, this alternative would result in both taller and more industrial electrical poles within exiting ROW. These changes would be considered adverse visual impacts greater than those associated with the Proposed Project due to the greater number of residential receptors exposed to this visual change within the City of Banning. Given that this alternative has slightly greater overall construction and visual impacts as compared to the Proposed Project, Route Alternative Option 2 was eliminated from further consideration.

C.5.2 Other Alternatives

C.5.2.1 SCE's Vista System Upgrade

Description

In its PEA, SCE presented two system upgrade alternatives. The El Casco System Upgrade Alternative (PEA Alternative 2) is SCE's preferred alternative and is considered the Proposed Project (described in detail in Section B of this EIR). SCE's Alternative 3 is the Vista System Upgrade. An upgrade of the Vista System would require the addition of one 280 MVA, 220/115 kV transformer at Vista Substation, construction of two new 115 kV subtransmission lines to deliver the power, and the addition of a fourth 28 MVA, 115/12 kV transformer and five 12 kV distribution lines at Maraschino Substation. To add one 280 MVA, 220/115 kV transformer at Vista Substation requires adding a new 115 kV bank position, expanding the 220 kV switchrack one bay to the south for a new bank position, and constructing several transmission steel poles and conductors to connect the new transformer. Additionally the 115 kV switchrack would be expanded three bays to the east to create a new bus sectionalizing position, a new bank position, and new 115 kV line position for a new line. Various

upgrades are required to the existing 115 kV switchrack, breakers, disconnects, conductors, and relays. The existing 66 kV switchrack would need to be demolished and rebuilt to make room for the 220/115 kV transformer work. Specifically, the Vista System Upgrades Alternative would consist of the following actions:

- Increase capacity at the Vista 220/115 kV Substation through the addition of one 280 MVA transformer;
- Construct 10 miles of new, single-circuit 115 kV subtransmission lines and replace 13 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within new and existing ROWs to create the new Vista-Maraschino 115 kV line;
- Construct 4.4 miles of new, single-circuit 115 kV subtransmission lines and replace 4.3 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within new and existing ROWs to create the new Banning-Maraschino-Zanja 115 kV line;
- Replace 0.7 mile of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within existing SCE ROWs;
- Increase capacity at the Maraschino 115/12 kV Substation through the addition of one 28 MVA transformer;
- Rebuild 115 kV switchracks within Banning and Zanja Substations in the Cities of Banning and Yucaipa, respectively;
- Install telecommunications equipment at Vista, Maraschino, Banning, and Zanja Substations; and
- Install fiber optic cables within public streets and on existing SCE structures from Vista Substation to Maraschino, Banning, and Zanja Substations.

Rationale for Elimination

This alternative would not meet any of the primary project objectives due to the temporary nature of the expanded subtransmission line capacity associated with this alternative. In addition, it would require the establishment of a new utility corridor that would increase overall environmental impacts when compared to the Proposed Project, which would occur entirely within existing SCE ROW. Furthermore, as the location of the new ROW is unknown, this alternative has the potential to conflict with applicable plans and policies thus being potentially infeasible from a regulatory perspective. Therefore, this alternative was eliminated from further analysis in this EIR.

C.5.2.2 Alternative Substation Site

Description

In its PEA, SCE presented two substation site alternatives. The El Casco Substation Site is SCE's preferred site and is considered part of the Proposed Project (described in detail in Section B of this EIR). SCE's Alternative Substation Site property is a privately owned 68-acre parcel located northeast of San Timoteo Canyon Road, approximately 0.5 mile from the proposed El Casco Substation site (SCE, 2007a). This site is located in the City of Calimesa in a privately owned undeveloped area currently used for livestock grazing. An abandoned farmhouse dating to the 1800's is located on the property. The Alternative Substation Site is designated as open space under the Oak Valley Specific Plan, with adjacent land designated for residential development. The intent of the open space designation is to preserve the rural character of the area through low-density development such as residences.

The footprint of the substation would occupy approximately 19.7 acres, resulting in the permanent conversion of approximately 15.16 acres of disturbed/ruderal habitat, 2.62 acres of disturbed Riversidean sage scrub, 1.19 acres of developed land, 0.53 acre of southern willow scrub, and 0.20 acre of southern riparian forest. The Alternative Substation Site would be developed using the same general design features and construction methods as those discussed in Section B.4.1, El Casco Substation, for the Proposed Project. Because of space constraints at this Alternative Substation Site, the substation configuration would be altered to approximately parallel an existing drainage channel located along the length of the southern perimeter of the site. While the substation site layout would be altered, it is assumed identical facilities as those described for the proposed El Casco Substation would be constructed.

Rationale for Elimination

This alternative would meet all project objectives. In general, both the Proposed Project and the Alternative Substation Site would result in similar types of impacts. However, the Alternative Substation Site would result in slightly higher levels of impacts than the Proposed Project in the areas of aesthetics, utilities, land use, and cultural resources. As the Alternative Substation Site would result in nonconformity with the Oak Valley Specific Plan, this alternative would not be consistent with the legal and regulatory feasibility criteria identified above in section C.2.4, Feasibility. Therefore, the Alternative Substation Site was eliminated from further consideration.

C.5.2.3 Demand-Side Management

Description

Demand-side management (DSM) programs are designed to reduce customer energy consumption. Regulatory requirements dictate that supply-side and demand-side resource options should be considered on an equal basis in a utility's plan to acquire lowest cost resources. One goal of these programs is to reduce overall electricity use. Some programs also attempt to shift such energy use to off-peak periods.

The CPUC supervises various DSM programs administered by the regulated utilities, and many municipal electric utilities have their own DSM programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation. In spite of the State's success in reducing demand to some extent, California continues to grow and overall demand is increasing. Economic and price considerations as well as long-term impacts of state-sponsored conservation efforts, such as the Governors 20/20 rebate program and new appliance efficiency standards, are considered in load forecasts.

Rationale for Elimination

The projected capacity savings of DSM activities would not defer the need of the Proposed Project. While reductions in demand are considered an essential part of SCE's existing and future operations, they are incorporated into its system base and peak load forecasts. The available energy savings from these programs is insufficient to improve the service reliability to the Electrical Needs Area to the level desired and achieved through the El Casco System Project. As a stand-alone alternative to the Proposed Project, energy conservation and load management programs are eliminated from its consideration since they represent a small fraction of the capacity requirements needed to meet SCE's objectives for the Proposed Project.

C.6 NO PROJECT ALTERNATIVE

C.6.1 Background

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project. According to the CEQA Guidelines (§15126.6[e]), the No Project Alternative analysis shall discuss the existing conditions at the time the Notice of Preparation of an Environmental Impact Report is published (i.e., baseline environmental conditions), as well as what would reasonably be expected to occur in the foreseeable future if the Proposed Project were not approved. Existing conditions are described in Section D (Environmental Analysis) for each issue area under "Environmental Setting."

C.6.2 No Project Alternative Scenario

If the No Project Alternative were to be implemented instead of the Proposed Project, the El Casco System Project would not be built. SCE's existing 15.4 miles of existing single-circuit 115 kV subtransmission line within existing SCE ROWs in the Cities of Banning, Beaumont, and Yucaipa, and within unincorporated Riverside County, would remain in place and would not be replaced with a double-circuit 115 kV subtransmission line; existing 115 kV switchracks within Zanja and Banning Substations also would not be replaced. As such, the environmental impacts associated with the Proposed Project, as described in Section D, would not occur. SCE's objectives, purpose, and need for the Proposed Project (provided in Section A, Introduction) would remain unfulfilled under the No Project Alternative.

If the Proposed Project or an alternative to the Proposed Project (besides the No Project Alternative) is not constructed, SCE would implement temporary operating procedures within the Vista and Devers Systems, which could include contracting local generation, temporarily transferring Vista and Devers Systems substations to adjacent 115 kV systems, and/or implementing rolling blackouts. Without the Proposed Project, the events or actions described below are reasonably expected to occur in the foreseeable future.

Without the Proposed Project, overload of existing capacities would occur at five distribution substations that are currently served by the Vista and Devers 115 kV Systems (Crafton Hills, Maraschino, Mentone, Zanja, and Banning Substations), and the improved system reliability and operating flexibility associated with the Proposed Project would not occur. Therefore, without upgrades to the existing system, as new facilities are added, the system would experience system-wide power flow and reliability problems due to overloading of the existing system, such as curtailed generation, thermal overload, and blackouts.

The line between Maraschino and Banning Substations is always "energized" at 115 kV, but because it is used as the emergency line to Maraschino Substation, current only flows through the line when it is needed to serve loads. Therefore, without the Proposed Project, the existing single-circuit 115 kV would have to carry load at all times and would not be available for emergency overload events, thereby compromising the reliability of the system.

To address the overload conditions in the Maraschino Substation service area, SCE would add a third 28 MVA transformer and two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation in 2007. The addition of this third 28 MVA transformer would increase the operational capacity of Maraschino Substation to 109 MVA under normal operating conditions.

However, the 2007 upgrades at Maraschino Substation would not address all of the deviations to SCE's planning guidelines, and reliability issues would continue to exist within the Maraschino Substation service area due to the current 115 kV line arrangement and the length of 12 kV distribution lines. To accommodate the load growth in the Maraschino Substation service area, SCE has built increasingly longer 12 kV distribution lines at Maraschino Substation, which significantly exceed the maximum preferred distribution line length of approximately four miles. As distribution lines increase in length and the load on those lines continues to grow, the voltage to the end of the line decreases and exposure to outages increases, resulting in reduced reliability to the customers served by those lines. In addition, longer distribution lines create difficulties in transferring load between distribution lines and between distribution substations. Load transfers are standard procedures to mitigate distribution circuit and substation overloads during normal and abnormal operating conditions. The inability to transfer load results in diminished operating capabilities and reduced reliability.

Switchrack rebuilds at Banning and Zanja Substations would need to be completed. Currently, those substations, as well as Maraschino Substation, are each configured in a "Preferred-Emergency" arrangement, whereby only one 115 kV subtransmission line (the "preferred" line) is connected at any one time. When there is an interruption to the preferred line, switches within the substation automatically transfer the substation over to the emergency line, resulting in an outage lasting several seconds each time this occurs.

SCE would be required to implement demand-side management (DSM) programs to reduce customer energy consumption and overall electricity use. Some programs attempt to shift energy use to off-peak periods. The CPUC supervises various DSM programs administered by the regulated utilities, and many municipal electric utilities have their own DSM programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation. Reducing demand is an essential part of SCE's operations with or without the Proposed Project and is not directly related to the Proposed Project.

Currently, SCE's existing 15.4 miles of single-circuit 115 kV subtransmission line is used as a backup system only (refer to Section B, Project Description). Maraschino Substation, located in the eastern portion of the Vista System, serves the rapidly growing development in this area. However, the Vista System (and Maraschino Substation in particular) cannot accommodate the anticipated load growth. In addition, reliability issues and capacity overload is occurring within the Devers System as a whole. The purpose of the Proposed Project is to build electrical facilities necessary to serve forecasted demand in Calimesa, Beaumont, and the surrounding areas of unincorporated northern Riverside County (Electrical Needs Area) and to maintain safe and reliable service to customers in this area. Studies indicate that increased electrical demand in the Electrical Needs Area (as shown in Figure A-2, Electrical Needs Area and Affected SCE Substations, within Section A, Introduction/Overview) could exceed SCE's existing electrical system capacity serving this area in the immediate future (refer to Section A.2.2, Electrical Supply and System Issues). Therefore, while the above improvements would be required in the short term, capacity overload of the Vista and Devers Systems would occur. SCE would ultimately be required to either upgrade existing subtransmission infrastructure, or build new subtransmission facilities along a different and unspecified alignment at some point in the immediate future.