Volume II: Chapters 4 through 8

BLM

United States Department of the Interior
Bureau of Land Management

Desert Sunlight Solar Farm Project
California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement

For the
Palm Springs – South Coast Field Office
Palm Springs, California

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CACA #48649

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

As discussed in Chapter 1, the Project is subject to environmental review under the National Environmental Policy Act (NEPA). In addition, since the California Public Utilities Commission (CPUC) has permitting authority over the Red Bluff Substation portion of the Project, CPUC may use this EIS for its environmental review under the California Environmental Quality Act (CEQA). As a result, this EIS was written to comply with NEPA and to satisfy CEQA requirements for those project components that require entitlements from state and local agencies. Due to the similarity in information requirements for both NEPA and CEQA, the impacts analysis and mitigation measures that are described in this chapter serve both purposes.

The Proposed Action and alternatives described in Chapter 2 may result in direct, indirect, or cumulative effects on the physical, biological, and social components of the human environment. This chapter provides discussion of the anticipated environmental consequences (impacts) that may occur as a result of implementing the Proposed Action or one of the alternatives. Impacts may be direct, indirect, or cumulative. Direct impacts are those effects that are caused by the action and occur at the same time and place as the action. Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR §1508.8). Cumulative impacts are those that result from the impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR §1508.7).

Under NEPA, significance is defined by the Council on Environmental Quality (CEQ) (Section §1508.27) as a measure of the intensity and context of the effects of a major federal action on the human environment. The BLM NEPA Handbook reiterates this directive, stating that the document should "focus the discussion of effects on the context, intensity, and duration." Intensity refers to the severity or level of magnitude of impacts. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects may all be considered in determining intensity of effect. Context means that the effects of an action must be analyzed within a framework or within physical or conceptual limits. Whenever possible, this document will differentiate between short-term and long-term impacts.

Significance criteria, the basis for which is set forth in the CEQA Guidelines Environmental Checklist (Appendix G) and CPUC policy, are identified for each environmental resource area. The significance criteria serve as a benchmark for determining if a project would result in significant adverse environmental impacts when evaluated against the baseline or existing environmental conditions *under CEQA*. Impacts are assessed relative to each impact criterion to determine whether the project would have no impact, a less than significant impact, less than significant with mitigation, or a significant impact. Impacts are quantified to the extent possible. In addition, the determination of an impact's significance is derived from standards set by regulatory agencies on the federal, state, and local levels; knowledge of the effects of similar past projects; professional judgment; and plans and policies adopted by governmental agencies.

Because the CEQA significance criteria are more specific than those prescribed by NEPA, those criteria have been used as the primary basis for identifying potentially significant impacts *under CEQA and adverse impact indicators under NEPA* in this EIS.

For significant impacts, mitigation measures are identified that would reduce those impacts. Both Section 1508.20 of the CEQ regulations for implementing NEPA and the State CEQA Guidelines §15370 define mitigation as:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;[1]

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) Compensating for the impact by replacing or providing substitute resources or environments.

If impacts remain significant after all feasible mitigation is considered, i.e., continue to exceed the threshold of significance identified in the impact criteria, the analysis concludes that the impact is significant and unavoidable.

This EIS has been drafted by the BLM to meet its needs from a regulatory and analytical perspective. As described above, the CPUC may also use this EIS for its environmental review under CEQA. To help facilitate the review of this document, some of the major distinctions between CEQA and NEPA are provided in Table 4.1-1.

The environmental analysis for each resource topic considered the issues raised during the public scoping period from January 13, 2010 to February 12, 2010. The analysis also reflects comments and suggestions made through consultation with federal, state, and local agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG).

The impact analysis in this chapter is based on the following assumptions:

- Implementation of all best management practices as described in the proposed action.
- Compliance with all laws, regulations and ordinances, etc.
- Differentiation of long-term versus short-term environmental effects.
- Internal impacts are based on projected operations of approximately 30 years.

In each of the resource sections in this chapter, the applicable CEQA significance criteria are presented. For each alternative, the significance of the impacts relative to each of these criteria is evaluated. The resources evaluated in this chapter are the same as those discussed in Chapter 3, Affected Environment.

[1] CEQA Guidelines § 15370(c) substitutes the word “impacted” for “affected.”

Table 4.1-1
Differences between NEPA and CEQA Requirements

	CEQA	**NEPA**
Purpose	The purpose of an Environmental Impact Report (EIR) is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided. Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so. If economic, social, or other conditions make it infeasible to mitigate one or more significant effects on the environment of a project, the project may nonetheless be carried out or approved at the discretion of a public agency if the project is otherwise permissible under applicable laws and regulations. (Pub. Resources Code § 21002.1.)	"NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." (40 CFR §1500.1(b)) "NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore and enhance the environment." (40 CFR §1500.1(c))
Application	To all governmental agencies at all levels in California, including local agencies, regional agencies, and state agencies, boards, districts and commissions.	To all federal agencies.
Activities	All approvals or discretionary projects, which have not been exempted from CEQA by statute or regulation that may result in either a direct or reasonably foreseeable indirect physical change in the environment.	Whenever a federal agency proposes an action, grants a permit or agrees to fund or otherwise authorize any other entity to undertake an action that could possible affect the human environmental.
Regulation	CEQA is codified at Public Resources Code § 21000 et seq. The Resources Agency has adopted Guidelines for CEQA in California Code of Regulations, Title 14, § 15000 et seq. Additionally, CPUC's General Order No. 131-D sets forth rules relating to the planning and construction of electric generation, transmission/power/distribution line facilities and substations located in California, including procedures for implementing CEQA.	The CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) (40 CFR Parts 1500 – 1508); *Implementation of NEPA - 43 CFR 46; BLM NEPA Handbook (H-1790-1).*
Documents	For projects that may result in potentially significant environmental impacts, an EIR must be prepared and certified by the lead agency prior to approving a project (14 Cal. Code Regs. § 15090). The lead agency must also make certain written "findings," based on substantial evidence, for every significant impact identified in the EIR prior to approving a project (14 Cal. Code Regs. § 15091). Further, if the lead agency approves a project which will result in	All major federal actions that result in significant impact(s) on the environment require the preparation of an EIS. The federal agency decision on the action analyzed in an EIS is announced in a Record of Decision (ROD).

Table 4.1-1 (continued)
Differences between NEPA and CEQA Requirements

	CEQA	NEPA
Documents (cont.)	significant effects that cannot be avoided or substantially lessened, it must issue a statement of overriding considerations (14 Cal. Code Regs. § 15093). Finally, the lead agency must adopt a program for monitoring or reporting on the revisions it has required in the project and any mitigation measures it has imposed (14 Cal. Code Regs. § 15097).	
Baseline	An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time of the Notice of Preparation or preparation of the environmental analysis. This will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant (14 Cal. Code Regs. § 15125(a)).	The baseline under NEPA is the description of the Affected Environment. The EIS shall succinctly describe the environment of the area(s) to be affected by the alternatives under consideration (40 CFR §1502.15). The affected environment describes the environmental conditions and trends at the time the action would occur.
Analysis	An EIR must identify and focus on the significant environmental effects of the proposed project. It must analyze direct, indirect and cumulative impacts, giving due consideration to both short-term and long-term effects (14 Cal. Code Regs. § 15126.2). The determination of whether a project may have a significant effect on the environment must be based on substantial evidence, in light of the whole record before a lead agency, and, to the extent possible, on scientific and factual data (14 Cal. Code Regs. § 15064).	An EIS shall analyze and describe the direct, indirect (see 40 CFR §1508.8) and cumulative impacts (see 40 CFR §1508.7) on the quality of the human environment of the proposed action and each alternative analyzed in detail, including the no action alternative. Include, for the proposal, unavoidable adverse impacts, the relationship between short-term use and long-term productivity, and any irreversible or irretrievable commitments of resources (40 CFR §1502.16).
Unavailable Information	Drafting an EIR or preparing a Negative Declaration necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can (14 Cal. Code Regs. § 15144). If, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 Cal. Code Regs. § 15145).	Must acknowledge whether there is incomplete or unavailable information regarding reasonably foreseeable significant adverse impacts. Must obtain such information, with original research if necessary, unless costs of obtaining it are “exorbitant” or the “means to obtain it are unknown.” If unavailable, EIS must evaluate the impacts based on theoretical approaches generally accepted in the scientific community. (40 CFR §1502.22)

Table 4.1-1 (continued)
Differences between NEPA and CEQA Requirements

	CEQA	NEPA
Economic and Social Impacts	Social and economic effects of a project shall not be treated as significant effects on the environment, except where such effects result in a direct or indirect physical change (14 Cal. Code Regs. § 15131).	Must analyze the positive and negative economic and social effects of each alternative analyzed, where any such impact has a related physical or human impact. Human impacts may include economic, social or health impacts. In fulfillment of Environmental Justice requirements, identify any disproportionate adverse effect on low-income or minority populations associated with one or more alternatives.
Alternatives	An EIR must describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly achieve the 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 (14 Cal. Code Regs. § 15126.6(a)). The EIR must include "sufficient information…to allow meaningful evaluation, analysis and comparison with the proposed project." (14 Cal. Code Regs. § 15126.6(d)) The EIR must evaluate a "no project" alternative (14 Cal. Code Regs. § 15126.6(e)).	An EIS must rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated. Devote substantial treatment to each alternative considered in detail. Include alternatives not within the jurisdiction of the lead agency. Include the alternative of no action. Identify the agency preferred alternative. (40 CFR §1502.14)
Mitigation Measures	An EIR must describe feasible measures which could minimize significant adverse impacts. Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments (14 Cal. Code Regs. § 15126.4).	An EIS must include appropriate mitigation measures not already included in the proposed action or alternatives. See 40 CFR §1502.14(f). Also see the CEQ definition of mitigation at 40 CFR §1508.20.

4.2 AIR RESOURCES

4.2.1 Methodology for Analysis

Air quality issues addressed for the various alternatives were identified by independent evaluation of project-related impacts and review of comments received during the EIS scoping process. The identified issues are:

- Criteria pollutant emissions from on-site construction activity and construction-related vehicle traffic;
- Criteria pollutant emissions from facility operations and operational vehicle traffic;
- Net change in wind erosion at the Solar Farm site following construction;
- Compliance with regulatory requirements;
- Effects of fugitive dust on night sky visibility; and
- Ozone generation from corona discharge along the proposed Gen-Tie Line.

Analysis of these issues was performed through quantitative analysis of expected emissions, review of regulatory requirements, and qualitative analyses for issues that did not lend themselves to quantitative evaluation. Quantitative analyses were prepared to address construction-related emissions, emissions from facility operations, and the net change in wind erosion conditions at the Solar Farm site. Qualitative evaluations were prepared to address issues related to regulatory compliance, night sky visibility, and ozone from corona discharge along transmission lines. Additional details regarding impact assessment methodologies are discussed under relevant impact topics.

The region of interest for air quality depends on the air pollutants of concern. Directly emitted pollutants that do not undergo chemical reactions to form other pollutants (such as carbon monoxide) generally have a localized region of interest, since pollutant concentrations become dispersed and diluted as winds transport them away from the emission source. The region of interest for carbon monoxide emissions rarely extends more than 0.25 mile from the location of the emissions. Pollutants that undergo chemical reactions in the atmosphere to produce other air pollutants have a much larger region of interest that depends on the time scale over which the chemical reactions occur. Ozone is a secondary pollutant formed from chemical reactions between organic compounds and nitrogen oxides in the presence of sunlight. The time required for these chemical reactions (generally six to ten hours or more) allows emissions to be dispersed and transported over fairly large distances, depending on weather conditions.

Suspended particulate matter (PM_{10} and $PM_{2.5}$) is composed of a mixture of directly emitted pollutants and compounds formed from chemical reactions involving organic compounds, nitrogen oxides, and sulfur oxides. The directly emitted components (mostly fugitive dust and some combustion products) have a fairly localized region of interest while the components formed from chemical reactions have a much larger region of interest. For construction-related activities, the region of interest for directly emitted PM_{10} and $PM_{2.5}$ is typically less than one mile from the construction site. The region of interest for emissions that react to form chemically generated particulate matter is comparable to the region of interest for ozone precursors.

4.2.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on air resources if it would:

- AQ-1: Conflict with or obstruct implementation of any applicable air quality management plan.
- AQ-2: Conflict with local air pollution control regulations.
- AQ-3: Generate annual emission quantities that exceed any applicable Clean Air Act (CAA) conformity threshold or, in areas with no nonattainment or maintenance designations, that exceed the numerical values of conformity thresholds applied to maintenance areas.
- AQ-4: Generate emission quantities that exceed adopted impact significance criteria established by the applicable air pollution control district or air quality management district.
- AQ-5: Create new violations of any federal or state ambient air quality standard or contribute substantially to an existing or projected violation of any state or federal ambient air quality standard.
- AQ-6: Expose sensitive receptors to hazardous air pollutant concentrations that would result in an incremental increase in cancer risk or other health risks that exceeds criteria adopted by relevant local, state, or federal air quality management agencies. Sensitive receptors for air quality issues include residential, transient lodging, educational, and health care land uses, plus other land uses (such as retail, office, or local park uses) that include the presence of numerous individuals for a significant part of the day.
- AQ-7: Create objectionable odors affecting a substantial number of people.

The Project area has no nonattainment or maintenance designations for any federal ambient air quality standard. Consequently, formal CAA conformity requirements do not apply to federal agency actions related to the Project alternatives. However, the CAA conformity thresholds provide a useful indicator of significant annual emissions. The CAA conformity thresholds for maintenance areas (locations that currently meet federal air quality standards but which violated the standards in prior years) are generally 100 tons per year per pollutant.

The South Coast Air Quality Management District (SCAQMD) has adopted regional emissions significance thresholds for construction activities and for project-related operational emissions (SCAQMD 2009). The SCAQMD regional emissions significance thresholds are summarized in Table 4.2-1. The Project area is within the Mojave Desert Air Basin, but emissions from traffic associated with Project construction and operation would occur in all three air basins noted in Table 4.2-1.

The Mojave Desert Air Quality Management District (MDAQMD) also has adopted emissions impact significance thresholds for projects in its jurisdiction. These thresholds (MDAQMD 2009) are set as annual thresholds that should be converted to an equivalent daily basis if a project has construction or operational phases shorter than one year. The MDAQMD thresholds are summarized in Table 4.2-2.

Table 4.2-1
SCAQMD Regional Emissions Significance Thresholds

Pollutant	South Coast Air Basin Thresholds, Pounds per Day		Salton Sea Air Basin Thresholds, Pounds per Day		Mojave Desert Air Basin Thresholds, Pounds per Day	
	Construction	Operation	Construction	Operation	Construction	Operation
Reactive Organic Compounds	75	55	75	75	75	75
Nitrogen Oxides	100	55	100	100	100	100
Carbon Monoxide	550	550	550	550	550	550
Sulfur Oxides	150	150	150	150	150	150
Inhalable Particulate Matter (PM_{10})	150	150	150	150	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55	55	55	55	55
Lead	3	3	3	3	3	3

Source: SCAQMD 2009

Table 4.2-2
MDAQMD Emissions Significance Thresholds

Pollutant	Annual Thresholds, Tons per Year	Daily Threshold, 7-Day Activity Weeks, Pounds per Day	Daily Threshold, 5-Day Activity Weeks, Pounds per Day
Reactive Organic Compounds	25	137	192
Nitrogen Oxides	25	137	192
Carbon Monoxide	100	548	769
Sulfur Oxides	25	137	192
Inhalable Particulate Matter (PM10)	15	82	115
Fine Particulate Matter (PM2.5)	15	82	115
Hydrogen Sulfide	10	54	77
Lead	0.6	3	4.6

Source: MDAQMD 2009

Project facilities would all be within the jurisdiction of the SCAQMD. The only Project-related emissions that would occur within the MDAQMD jurisdiction would be a portion of the emissions from Project-related vehicle traffic that originates east of the Project area (generally either in the Blythe area or from states further to the east). *Therefore, the MDAQMD significance thresholds identified in Table 4.2-2 are presented here for informational purposes only, and Project-related CEQA significance determinations related to regional emissions are based on comparisons to the SCAQMD standards identified in Table 4.2-1.*

In addition to the regional emissions significance thresholds summarized in Table 4.2-1, the SCAQMD has identified voluntary local air quality impact significance thresholds that can be used to supplement the regional air quality impact significance thresholds (SCAQMD 2008b, 2008c). These local air quality impact significance thresholds are voluntary on the part of the lead agency,

Table 4.2-3
SCAQMD Voluntary Localized Significance Emissions Thresholds for Eastern Riverside County

Pollutant	Distance from emissions area, feet	Thresholds for On-Site Construction Emissions, pounds per day			Thresholds for On-Site Operational Emissions, pounds per day		
		1 Acre	2 Acres	5 Acres	1 Acre	2 Acres	5 Acres
Nitrogen Oxides	1,640	733	769	875	733	769	875
Carbon Monoxide	1,640	24,417	26,212	31,115	24,417	26,212	31,115
PM10	1,640	214	223	248	52	54	60
PM2.5	1,640	105	112	128	26	27	33

Note: There appear to be several typographical errors or reversed entries in the SCAQMD construction and operational PM10 emissions threshold tables, including discrepancies for the 2-acre site size in Eastern Riverside County. An adjusted operational value is presented in this table based on extrapolation from the construction emissions thresholds.
Source: SCAQMD 2008c.

and are typically used when there are sensitive receptors close to the Project site. Separate sets of thresholds are provided for construction emissions and operational emissions. The voluntary localized emissions thresholds vary by geographic portion of the SCAQMD jurisdiction, by project emissions area size, and by distance from emissions area boundaries. Default significance thresholds are provided for active emission source area sizes of 1 acre, 2 acres, and 5 acres, and for distance of 82 feet (25 meters), 164 feet (50 meters), 328 feet (100 meters), 656 feet (200 meters), and 1,640 feet (500 meters) from the emissions area boundary, assuming that the emissions area can be treated as an area or volume source with emissions distributed across the emissions area rather than concentrated at a stack location within the site.

The Solar Farm site has only a few scattered rural residences within one mile of the site (refer to Figure 3.10-1 in the Noise section of Chapter 3). The closest residence is about 1,175 feet from the proposed Solar Farm property line. All other nearby homes are 0.5 mile or farther away. Homes along Kaiser Road to the west of the proposed Solar Farm are between 0.5 and 1 mile from the site. The closest home to the southeast is more than 1 mile from the site. Homes near the MWD Eagle Mountain Pumping Plant are about 1.75 miles away. The Eagle Mountain Elementary School and the Eagle Mountain Village residential area are about 2.5 miles west-northwest of the proposed Solar Farm site. The Lake Tamarisk development is about four miles south, and the community of Desert Center is about six miles south of the proposed Solar Farm site.

Construction activity at the Solar Farm site would be staged in a sequence of subareas across the site over the course of the 26-month construction period. Thus, active construction areas would not affect the entire site at any one time. Along the western side of the proposed Solar Farm site, there would be approximately 100 feet between the property line and the closest solar modules. The area between the western property line and the solar arrays would include a tortoise exclusion fence, a drainage and debris control channel with a gabion wall, and an interior security fence. A gabion wall is essentially a rectangular wire mesh structure filled with rock that provides a stabilized inner or outer wall for the drainage and debris control channel.

Construction of the Solar Farm would involve a few periods when construction activity would occur about 1,200 to 1,300 feet from the closest residence to the west (installation of perimeter fencing, construction of drainage and debris basins, construction of the closest solar array modules, and de-compaction of soils between solar array module at the end of construction). For most of the

26-month construction period, however, construction activity at the proposed Solar Farm site would be well over 2,000 feet from the nearest residence to the west and over two miles from the nearest residence southeast of the site. Only a small portion of the overall construction activity would occur within half a mile of the nearest residence west of the proposed Solar Farm site.

Table 4.2-3 summarizes the default localized significance threshold values for eastern Riverside County using the 1,640-foot receptor distance.

As can be seen from Table 4.2-3, the localized emissions significance thresholds increase with increasing emissions area size. For project sites with emissions coming from more than 5 acres on any given day, the comparable emissions thresholds would be larger than the values for the 5-acre sites. The localized emissions significance thresholds presented in Table 4.2-3 are based on dispersion modeling analyses conducted by the SCAQMD to identify potential localized air pollutant impacts. The low number of sensitive receptors near the Project site does not warrant project-specific dispersion modeling analyses to identify project-specific localized emissions significance thresholds. Because there are so few sensitive receptors close to the proposed Project site, the default thresholds for the 1,640-foot distance from a 5-acre emissions area have been used in this document as a localized significance threshold factor. Given the average distance to actual construction activity and the typical size of areas subject to significant construction activity on any single day, the default 5-acre site thresholds provide a conservative screening value.

A comparison of Table 4.2-1 and Table 4.2-3 shows that for construction activity, the regional emissions significance thresholds are more stringent than the localized significance thresholds at all project sizes. For operational activity, the regional emissions significance thresholds are more stringent than the localized significance thresholds for nitrogen oxides and carbon monoxide at all project sizes. For PM_{10}, the localized significance thresholds are more stringent than the regional thresholds for project sizes under 5 acres, and less stringent than the regional thresholds for project sizes of 5 acres or more. For $PM_{2.5}$, the localized emissions significance thresholds are more stringent than the regional thresholds at all project sizes.

4.2.3 Alternative 1 – Proposed Action

Construction

After the DEIS was released, the Project has been modified and would result in a reduction in construction emissions compared with the Project as originally proposed (see Project Modifications Since Publication of DEIS discussion in Section 2.1 for details of the modifications). The emissions reductions would be primarily as a result of a reduced number of bulldozers and scrapers that would be required for cut and fill and a reduction in the overall acreage required for the Project. In place of cut and fill, a disc and roll technique would be employed for site compaction on more than 50 percent of the Solar Farm site. Additional emission reductions would occur through the elimination of decompacting the rows between the solar panels after panels are installed, which would require the use of heavy construction equipment.

First Solar estimates that the disc and roll technique would replace five motor graders and 14 scrapers with two discers for the first two months of Project construction, and it would eliminate the need for those five motor graders and 14 scrapers during the 13th through 22nd month of the construction phase. The two discers would have lower engine exhaust emissions than the equipment they would replace because of their smaller engine size as well as the fewer pieces of equipment that would be required. Smaller engine sizes and reduced equipment requirements would result in lower equipment exhaust emissions. In addition, the Solar Farm site would be leveled and smoothed with less cut and fill *requirements than the originally proposed Project, resulting in less soil and material handling and associated fugitive dust emissions. A smaller project footprint would lead to less site preparation, which would reduce the construction soil disturbance and associated fugitive dust emissions for the Project compared with the proposal analyzed in the DEIS.*

Based on the above Project modifications, it is estimated that total Project construction emissions would be reduced by approximately 20 to 40 percent compared with the emissions presented for Alternative 1 later in this section. Even with these reductions, Project-related construction emissions would continue to exceed the SCAQMD significance thresholds. Therefore, for this review and to maintain a reasonably conservative analysis, BLM has determined that the construction emission estimates provided below remain valid for the modified Project because the outcome of the unavoidable environmental effects would not change.

Solar Farm Layout B

Criteria Pollutant Emissions from On-Site Construction Activity. On-site construction activity impacts have been evaluated using a detailed spreadsheet model. The spreadsheet model calculates criteria pollutant emissions, diesel particulate emissions, and greenhouse gas emissions from construction or demolition activities and equipment. The model provides criteria pollutant emission estimates for reactive organic compounds, nitrogen oxides, carbon monoxide, sulfur oxides, inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$) and diesel particulate matter (DPM). Particulate matter emissions from diesel engines contain known and suspected carcinogens, and consequently have been designated as a toxic air contaminant by CARB. The model also estimates emissions for three greenhouse gases: carbon dioxide, methane, and nitrous oxide. The spreadsheet model uses a conventional approach to estimating emissions from construction equipment and activity. In a normal application, users:

- Divide the construction or demolition project into activity phases that have similar equipment requirements;
- Identify equipment types needed for each construction or demolition phase;
- Identify how many items of each type will be needed, the typical horsepower rating for the item, and the typical engine load factor;
- Identify the hours per day with active use for each equipment item;
- Identify the fraction of each use hour when the equipment will actually be operating;
- Identify the overall disturbed area size for each phase of construction or demolition activity;
- Identify the overall duration of each construction or demolition phase;
- Identify the typical area size that will be disturbed on a given day during each phase of construction or demolition activity;
- Identify typical fugitive dust emission rates for each phase of construction or demolition activity; and
- Identify which construction or demolition phases partially or completely overlap with each other.

The version of the spreadsheet model used for this EIS includes an equipment database with 514 entries covering 114 basic equipment types. Entries for each equipment type are subdivided into engine size and fuel type categories (diesel, gasoline, and compressed gas fuels). Engine size categories used in the equipment database correlate with emission standards that have been adopted in recent years by EPA and CARB. The generalized fugitive dust emission rates used in the spreadsheet model account for several sources of fugitive dust: direct soil disturbance by construction equipment, earthmoving activities, and wind erosion from disturbed areas. Appendix D-1 provides a more detailed explanation of the spreadsheet model.

Solar Farm development would occur over a 26-month period, with construction activity undertaken as a rolling sequence of activity on different subareas of the site. Construction would generally progress as incremental work areas from the south end to the north end of the Project site. Tortoise exclusion fencing of the entire site would be the initial phase of activity, followed by threatened species removals and relocations. Temporary construction offices, sanitary facilities, and water supply facilities would be established prior to initiating subarea construction activities. Incremental construction of access roads and staging areas would generally lead the main construction activity sequence, followed by site clearing and grading, which would be followed by various facility construction activity stages. For analysis purposes, it was assumed that construction activity would be initiated on about 11 acres per day (55.2 acres per week). The overall construction process was analyzed in terms of the following 18 construction phases:

- Tortoise exclusion fencing;
- Access roads and staging areas;
- Temporary construction offices, water supply, and sanitary facilities;
- Security fencing and west side debris and drainage basins;
- Vegetation (site) clearing;
- Site grading;
- Installation of array support posts;
- Trenching and underground power cable installation;
- Soil compacting and dust palliative application;
- Installation of on-site power poles;
- Installation of on-site switchgear;
- Construction of the on-site substation;
- Solar array assembly;
- Installation of on-site overhead power lines;
- Construction of permanent buildings;
- Functional testing;
- De-compaction of areas between solar arrays and dust palliative application; and
- Site cleanup.

Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours. For safety reasons, some electrical connection activity would typically occur at night when the solar panels are not energized, but this activity would not require any significant heavy equipment operations.

Fugitive dust generation estimates from the spreadsheet model reflect the texture characteristics of on-site soils as identified by the Project's geotechnical report (Earth Systems Southwest 2010b). Particle size analyses showed combined clay plus silt fractions ranging from 2 percent to 13 percent in samples collected from different portions of the site, with only one sample showing more than 7 percent clay plus silt. A conservative average of 7 percent clay plus silt was used in the spreadsheet model. Dust control by watering of disturbed areas (generally at least twice a day) was assumed to provide 50 percent control of fugitive dust for the early construction phases. A hygroscopic dust control agent (a magnesium chloride solution such as CHLOR-TEX) would be applied to access roads and staging areas, resulting in an estimated 75 percent control of fugitive dust from those areas. A different dust control product (a biodegradable organic mulch mixture product such as ECCO-TEX) would be applied to open portions of the site during the soil compaction stage of construction, achieving an estimated 75 percent control of fugitive dust during that and subsequent stages of construction activity. After completion of facility construction, the areas between the solar arrays would be de-compacted and given another dust palliative treatment (using a biodegradable organic mulch mixture product such as ECCO-TEX).

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-4, Table 4.2-5, and Table 4.2-6 summarize annual emissions in tons per year for 2011, 2012, and 2013, respectively. Table 4.2-7, Table 4.2-8, and Table 4.2-9 summarize average daily emissions in pounds per day for 2011, 2012, and 2013, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-4
Summary of 2011 Annual On-Site Construction Emissions for Solar Farm Layout B

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Tortoise Exclusion Fencing	0.07	0.35	0.55	0.01	0.04	0.03	0.02
Access Roads and Staging Areas	0.45	3.60	3.46	0.18	0.35	0.30	0.32
Construction Offices and Water/Sanitation Facilities	0.11	0.74	0.54	0.03	0.34	0.11	0.05
Security Fencing and Debris Basins	0.15	0.65	1.38	0.03	0.10	0.05	0.04
Site Clearing	0.54	3.11	3.45	0.14	2.61	0.70	0.24
Site Grading	1.76	16.67	13.70	1.20	4.27	2.23	1.91
Array Support Posts	0.39	3.46	3.48	0.08	1.76	0.49	0.19
Trenching and Underground Cables	0.37	2.27	2.82	0.09	0.68	0.25	0.16
Soil Compacting and Dust Palliative	0.58	5.33	5.10	0.37	1.03	0.57	0.51
On-Site Power Poles	0.05	0.15	0.47	0.01	0.02	0.01	0.01
Switchgear Facilities	0.18	0.78	1.64	0.04	0.08	0.07	0.07
On-Site Substation	0.17	0.56	1.73	0.03	0.26	0.09	0.05
Solar Array Assemblies	2.69	3.60	29.61	0.20	0.74	0.31	0.20
On-Site Overhead Power Lines	0.05	0.49	0.38	0.02	0.04	0.04	0.04
2011 Totals	**7.56**	**41.77**	**68.34**	**2.44**	**12.32**	**5.24**	**3.82**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-5
Summary of 2012 Annual On-Site Construction Emissions for Solar Farm Layout B

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Roads and Staging Areas	0.13	0.98	0.98	0.04	0.10	0.08	0.08
Site Clearing	0.58	3.27	3.52	0.14	2.87	0.76	0.25
Site Grading	1.85	17.35	14.85	1.21	4.62	2.36	1.99
Array Support Posts	0.54	4.79	4.72	0.11	2.47	0.69	0.27
Trenching and Underground Cables	0.46	2.78	3.46	0.09	0.93	0.33	0.20
Soil Compacting and Dust Palliative	0.82	7.32	7.58	0.46	1.53	0.83	0.73
On-Site Power Poles	0.06	0.19	0.55	0.01	0.02	0.02	0.02
Switchgear Facilities	0.25	1.11	2.17	0.06	0.10	0.09	0.10
Solar Array Assemblies	3.82	5.09	36.28	0.28	1.13	0.46	0.29
On-Site Overhead Power Lines	0.08	0.70	0.59	0.03	0.06	0.05	0.06
Permanent Buildings	0.06	0.26	0.41	0.01	0.12	0.04	0.02
Functional Testing	0.35	1.25	2.86	0.02	0.12	0.06	0.05
2012 Totals	**9.00**	**45.09**	**77.98**	**2.46**	**14.08**	**5.77**	**4.05**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-6
Summary of 2013 Annual On-Site Construction Emissions for Solar Farm Layout B

	Annual Emissions For 2013, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Functional Testing	0.02	0.12	0.15	0.00	0.01	0.01	0.00
De-Compaction and Dust Palliative	0.05	0.42	0.43	0.02	0.52	0.13	0.04
Site Cleanup	0.02	0.07	0.13	0.00	0.04	0.01	0.01
2013 Totals	**0.10**	**0.61**	**0.72**	**0.02**	**0.58**	**0.15**	**0.05**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-7
Summary of 2011 Daily On-Site Construction Emissions for Solar Farm Layout B

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Tortoise Exclusion Fencing	1.53	8.21	12.91	0.33	1.07	0.61	0.55
Access Roads and Staging Areas	10.21	80.82	77.80	4.09	7.85	6.71	7.13
Construction Offices and Water/Sanitation Facilities	5.10	34.40	25.34	1.55	16.08	5.04	2.53
Security Fencing and Debris Basins	2.30	10.11	21.47	0.46	1.51	0.81	0.69
Site Clearing	6.79	38.94	43.09	1.75	33.54	8.88	3.01
Site Grading	22.03	208.34	171.29	15.03	54.36	28.04	23.83
Array Support Posts	5.64	49.41	49.76	1.21	25.55	7.03	2.65
Trenching and Underground Cables	5.26	32.44	40.35	1.24	9.95	3.66	2.31
Soil Compacting and Dust Palliative	8.32	76.19	72.86	5.23	14.95	8.26	7.31
On-Site Power Poles	1.89	6.12	19.37	0.34	0.65	0.52	0.53
Switchgear Facilities	2.53	11.17	23.49	0.61	1.08	0.97	1.03
On-Site Substation	7.81	26.21	80.31	1.38	12.32	4.07	2.17
Solar Array Assemblies	38.41	51.43	423.05	2.80	10.85	4.49	2.89
On-Site Overhead Power Lines	2.21	20.15	15.56	0.94	1.70	1.49	1.60
2011 Maximum *Average Daily* Totals	**120.04**	**653.95**	**1,076.64**	**36.95**	**191.47**	**80.59**	**58.23**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas, although the construction offices phase probably would not overlap with all of the other phases.
Source: Tetra Tech analyses

Table 4.2-8
Summary of 2012 Daily On-Site Construction Emissions for Solar Farm Layout B

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Roads and Staging Areas	8.58	64.13	63.99	2.88	6.72	5.19	5.33
Site Clearing	6.40	35.93	38.83	1.49	33.57	8.71	2.75
Site Grading	20.58	192.73	164.96	13.40	52.93	26.52	22.11
Array Support Posts	5.41	47.86	47.24	1.12	25.79	7.10	2.68
Trenching and Underground Cables	4.63	27.84	34.59	0.95	9.67	3.35	1.96
Soil Compacting and Dust Palliative	7.43	66.58	68.89	4.23	14.35	7.66	6.64
On-Site Power Poles	1.71	5.50	15.71	0.28	0.58	0.46	0.47
Switchgear Facilities	2.25	9.95	19.64	0.49	0.94	0.84	0.90

Table 4.2-8 (continued)
Summary of 2012 Daily On-Site Construction Emissions for Solar Farm Layout B

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Solar Array Assemblies	34.75	46.23	329.84	2.52	10.66	4.27	2.64
On-Site Overhead Power Lines	2.03	18.14	15.34	0.76	1.57	1.37	1.46
Permanent Buildings	2.07	9.67	15.11	0.39	4.80	1.52	0.77
Functional Testing	3.51	12.53	28.62	0.19	1.22	0.62	0.50
2012 Maximum *Average Daily* Totals	**99.34**	**537.09**	**842.75**	**28.70**	**162.80**	**67.60**	**48.22**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Table 4.2-9
Summary of 2013 Daily On-Site Construction Emissions for Solar Farm Layout B

	Average Daily Emissions For 2013, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Functional Testing	2.20	11.78	13.98	0.11	1.17	0.57	0.46
De-Compaction and Dust Palliative	4.95	37.12	38.60	1.65	54.52	13.32	3.34
Site Cleanup	1.75	6.02	12.44	0.37	3.97	1.25	0.62
2013 Maximum *Average Daily* Totals	**8.90**	**54.93**	**65.01**	**2.13**	**59.66**	**15.14**	**4.42**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for Solar Farm Layout B. Construction-related traffic would include two major components: heavy truck traffic and construction worker commute traffic. The construction emissions spreadsheet model was used to generate estimates of off-site truck trips and construction worker traffic according to Project component and construction phase. The traffic estimates from the spreadsheet model were correlated with information provided by Sunlight.

Off-site truck traffic for the Solar Farm would include equipment transporters, flatbed trucks, dump trucks, and cement mixer trucks coming from a variety of locations. Deliveries of many equipment components would originate from outside California. The emissions analyses for this EIS were limited to the portions of those truck trips occurring within California.

Construction worker commute traffic was analyzed in terms of several components. Sunlight plans to provide a shuttle bus system transport most construction workers to and from the Solar Farm site, with shuttle assembly points in the Palm Springs and Blythe areas. Some workers, however, would commute to the Solar Farm site in personal vehicles, either by choice, because they miss the shuttle connection, or because their travel route makes it inconvenient to use the shuttle buses. The analysis assumed that 10.5 percent of workers would use personal vehicles, and that 40 percent of those workers would carpool with two workers per vehicle. The remaining 89.5 percent of workers were assumed to use the shuttle buses. To provide a conservative analysis, it was assumed that the 20-passenger shuttles would have an average occupancy of 15 workers per vehicle. Workers who use the shuttle bus system would still need to drive to and from the shuttle assembly points. It was assumed that 40 percent of those trips would be by two-person carpools.

Emission estimates for construction-related vehicle traffic were prepared using version 9.2.4 of the URBEMIS2007 model (Jones and Stokes Associates 2008) and supplemental spreadsheet calculations. URBEMIS was used to generate a set of average daily emission rates for a nominal 15,000 miles of vehicle travel (200 trips of 75 miles) for each of several vehicle mixes. Since a large fraction of total vehicle travel would occur on freeways and other state highways, an average speed of 55 mph was used for all URBEMIS runs. Separate URBEMIS runs were performed for summer and winter temperature conditions in each of three analysis years (2011, 2012, and 2013). The summer and winter emission rate results were averaged to provide annual average emission rates. The generalized emission rates were then scaled to actual travel estimates using spreadsheet analyses. Table 4.2-10 summarizes some of the key input parameters used for the URBEMIS emissions estimates. Additional details of the vehicle emissions analyses are provided in Appendix D-3.

Table 4.2-10
Summary of Generalized URBEMIS Setups

URBEMIS Run Category	Vehicle Type Mix	Fuel Mix	Input Daily 1-Way Trips	Input Average Trip Distance, miles	Average Vehicle Speed, mph
Personal Vehicles	25.6% LDA 16.3% LDT1 37.4% LDT2 20.7% MDT	Default	200	75	55
Shuttle Buses	100% LHT2	100% Gasoline	200	75	55
Medium-Heavy Trucks	100% MHD	100% Diesel	200	75	55
Heavy-Heavy Trucks	100% HHD	Default	200	75	55

LDA = light duty autos
LDT1 = pickup trucks, vans, and sport utility vehicles, gross vehicle weight rating up to 3,750 pounds
LDT2 = pickup trucks, vans, and sport utility vehicles, gross vehicle weight rating of 3,751 – 5,750 pounds
MDT = pickup trucks, vans, and sport utility vehicles, gross vehicle weight rating of 5,751 – 8,500 pounds
LHT2 = medium trucks and multi-passenger vehicles, gross vehicle weight rating of 10,001 – 14,000 pounds
MDT = heavy trucks, gross vehicle weight rating of 14,001 – 33,000 pounds
HHD = heavy trucks, gross vehicle weight rating of 33,001 – 60,000 pounds
Winter temperature runs assumed 60 degrees Fahrenheit
Summer temperature runs assumed 90 degrees Fahrenheit
Separate runs made for 2011, 2012, and 2013
Source: Tetra Tech analyses

Table 4.2-11 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for SF-B under Alternative 1. Annual and maximum *average daily* emissions associated with construction-related vehicle trips for SF-B are summarized in Table 4.2-12 and Table 4.2-13, respectively.

Table 4.2-11
Construction-Related Vehicle Trips for Solar Farm Layout B

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	10,514	42.1	143	1,504,650	6,019
	Shuttles	19,500	78	73	966,094	3,864
	Personal Vehicle Commute	23,000	92	83	1,294,966	5,180
	To/From Assembly Point	254,500	1,018	16.1	2,205,777	8,823
2012	Heavy-Heavy Trucks	13,433	53.1	158	2,126,040	8,403
	Shuttles	15,180	60	73	991,274	3,918
	Personal Vehicle Commute	21,252	84	83	1,569,198	6,202
	To/From Assembly Point	217,074	858	16.1	2,498,643	9,876
3013	Heavy-Heavy Trucks	63	1.9	75	4,725	139
	Shuttles	340	10	73	24,888	732
	Personal Vehicle Commute	476	14	83	39,508	1,162
	To/From Assembly Point	4,420	130	16.1	56,930	1,674

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Table 4.2-12
Annual Emissions from Construction-Related Vehicle Traffic, Solar Farm Layout B

	Annual Emissions, Tons per Year						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	1.10	19.57	4.58	0.03	2.16	1.00	0.93
Shuttle Buses	0.15	0.50	1.50	0.01	0.82	0.15	0.03
Personal Vehicle Commute	0.29	0.47	4.54	0.01	1.11	0.21	0.05
To/From Shuttle Assembly Areas	0.50	0.80	7.74	0.01	1.89	0.36	0.09
2011 Total	**2.04**	**21.34**	**18.36**	**0.05**	**5.98**	**1.72**	**1.10**
2012 Emissions							
Construction Trucks	1.39	24.28	6.04	0.04	2.94	1.31	1.20
Shuttle Buses	0.14	0.49	1.37	0.01	0.84	0.15	0.03
Personal Vehicle Commute	0.34	0.53	5.24	0.01	1.34	0.25	0.06
To/From Shuttle Assembly Areas	0.54	0.84	8.34	0.01	2.14	0.40	0.10
2012 Total	**2.42**	**26.13**	**20.99**	**0.06**	**7.26**	**2.12**	**1.40**
2013 Emissions							
Construction Trucks	0.00	0.05	0.01	0.00	0.01	0.00	0.00
Shuttle Buses	0.00	0.01	0.03	0.00	0.02	0.00	0.00
Personal Vehicle Commute	0.01	0.01	0.13	0.00	0.03	0.01	0.00
To/From Shuttle Assembly Areas	0.01	0.02	0.18	0.00	0.05	0.01	0.00
2013 Total	**0.03**	**0.09**	**0.35**	**0.00**	**0.11**	**0.02**	**0.01**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-13
Maximum Average Daily Emissions from Construction-Related Vehicle Traffic, Solar Farm Layout B

Traffic Component	Maximum Day Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Emissions							
Construction Trucks	14.99	267.69	62.71	0.36	29.58	13.72	12.76
Shuttle Buses	1.76	5.92	17.70	0.06	9.68	1.72	0.35
Personal Vehicle Commute	3.45	5.53	53.58	0.07	13.09	2.47	0.62
To/From Shuttle Assembly Areas	5.93	9.50	92.01	0.13	22.47	4.25	1.06
2011 Total	**26.13**	**288.65**	**226.00**	**0.63**	**74.82**	**22.16**	**14.79**
2012 Emissions							
Construction Trucks	11.22	195.50	48.67	0.30	23.66	10.55	9.67
Shuttle Buses	1.25	4.31	12.13	0.05	7.45	1.32	0.27
Personal Vehicle Commute	3.04	4.70	46.55	0.07	11.95	2.26	0.56
To/From Shuttle Assembly Areas	4.82	7.46	73.78	0.11	18.94	3.58	0.89
2012 Total	**20.33**	**211.97**	**181.13**	**0.53**	**61.99**	**17.71**	**11.40**
2013 Emissions							
Construction Trucks	0.16	2.76	0.73	0.00	0.37	0.16	0.14
Shuttle Buses	0.19	0.66	1.80	0.01	1.24	0.22	0.05
Personal Vehicle Commute	0.49	0.73	7.38	0.01	1.99	0.38	0.09
To/From Shuttle Assembly Areas	0.70	1.05	10.64	0.02	2.87	0.54	0.14
2013 Total	**1.55**	**5.20**	**20.55**	**0.04**	**6.48**	**1.30**	**0.42**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Traffic-related emissions would occur in three air basins, each of which should be evaluated separately in terms of significance thresholds. Evaluation of the SCAQMD regional significance thresholds is based on an approximate distribution of the total traffic-related emissions among these air basins.
Source: Tetra Tech analyses

Construction-related traffic would be distributed among the Mojave Desert, Salton Sea, and South Coast air basins. Almost half of the heavy truck traffic emissions would occur in the Mojave Desert Air Basin, since many material deliveries would originate in states east of California. The remaining heavy truck traffic would be split between the Salton Sea and South Coast air basins. Construction worker commute emissions (shuttles, personal vehicle commutes, and traffic to/from shuttle assembly areas) would be split primarily between the Mojave Desert and Salton Sea air basins, with a relatively smaller component in the South Coast Air Basin.

Somewhat more than half of the emissions from construction-related traffic would likely occur in the Mojave Desert Air Basin. Approximately 50 percent of the construction-related traffic emissions in the Mojave Desert Air Basin would occur within the SCAQMD jurisdiction portion, with the remainder in the MDAQMD jurisdiction portion (refer to Figures 3.2-1 and 3.2-2 in the Air Resources section of Chapter 3 for AQMD and air basin boundaries). At least two-thirds of the remaining emissions would probably occur in the Salton Sea Air Basin, with the remainder occurring in the South Coast Air Basin.

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with the Solar Farm under Alternative 1 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also operating on-site during Solar Farm construction. The location of hazardous pollutant emissions from construction equipment operation would vary across the Solar Farm site over the construction period, and thus would not be in a fixed location for long periods of time. There would be few sources of hazardous air pollutant emissions other than limited on-site vehicle traffic at the Solar Farm site during facility operation. As noted previously, there are only a few rural residences within one mile of the site, and only one rural residence within 0.25 mile of boundary of the proposed Solar Farm.

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with construction activities at the Solar Farm site. These emission sources are not considered significant odor sources.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of the Solar Farm would occur primarily during daytime hours. Sunlight would implement a dust control plan including the use of dust suppressants during facility construction. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. Construction activity would be phased across the Solar Farm site over a 26-month period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at night. Development of the Solar Farm site would result in only a small increase in wind erosion potential compared to natural conditions (see the wind erosion discussion under Operation and Maintenance).

Gen-Tie Line A-1

Criteria Pollutant Emissions from On-Site Construction Activity. On-site construction activity impacts for GT-A-1 have been evaluated using a detailed spreadsheet model, as discussed previously for Solar Farm Layout B. Construction of the Gen-Tie Line would occur over an 8-month period beginning in January 2011, but the Gen-Tie Line would not be energized until late 2012 or later, depending on completion of the Red Bluff Substation. Final cleanup of the construction corridor would occur after the Gen-Tie Line is energized. The overall construction process was analyzed in terms of the following six construction phases:

- Site preparation;
- Tower foundations;
- Tower assembly and erection;
- Power line stringing;
- Testing; and
- Site cleanup.

GT-A-1 would be about 12.2 miles long with 73 towers. Approximately *92* acres of the *256*-acre transmission line corridor would be disturbed by construction activity. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours. Construction activity would progress in a linear fashion along the transmission corridor. In general, only a few acres would be actively disturbed at any one time during construction, with about five acres per day being disturbed during site preparation. The site preparation and tower foundation construction phases would overlap, but all other construction phases would occur sequentially.

Normal dust control practices would be followed during construction. As indicated in Figure 3.10-1 in the Noise section of Chapter 3), there are some scattered rural residences and the Lake Tamarisk development near the portion of the transmission line corridor that follows Kaiser Road. Other portions of the transmission line corridor are not near existing residences.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-14 and Table 4.2-15 summarize annual emissions in tons per year for 2011 and 2012, respectively. Table 4.2-16 and Table 4.2-17 summarize average daily emissions in pounds per day for 2011 and 2012, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-14
Summary of 2011 Annual On-Site Construction Emissions for Gen-Tie Line A-1

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	0.04	0.32	0.21	0.02	0.08	0.04	0.03
Tower Foundations	0.11	0.55	1.07	0.02	0.07	0.06	0.07
Tower Assembly and Erection	0.07	0.54	0.43	0.03	0.11	0.06	0.05
Power Line Stringing	0.50	0.64	7.16	0.05	0.08	0.06	0.05
Testing	0.08	0.03	1.25	0.00	0.01	0.00	0.00
2011 Totals	**0.79**	**2.08**	**10.13**	**0.12**	**0.35**	**0.22**	**0.20**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-15
Summary of 2012 Annual On-Site Construction Emissions for Gen-Tie Line A-1

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.002	0.016	0.012	0.001	0.007	0.002	0.001
2012 Totals	**0.002**	**0.016**	**0.012**	**0.001**	**0.007**	**0.002**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-16
Summary of 2011 Daily On-Site Construction Emissions for Gen-Tie Line A-1

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	4.92	42.41	27.51	2.68	11.24	5.19	4.08
Tower Foundations	4.68	24.46	47.44	1.11	2.99	2.71	2.91
Tower Assembly and Erection	2.07	16.61	13.38	0.89	3.29	1.83	1.63
Power Line Stringing	22.19	28.55	318.36	2.08	3.72	2.56	2.36
Testing	7.67	2.68	119.40	0.30	1.27	0.30	0.00
2011 Maximum *Average Daily* Totals	**22.19**	**66.86**	**318.36**	**3.79**	**14.23**	**7.89**	**6.99**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-17
Summary of 2012 Daily On-Site Construction Emissions for Gen-Tie Line A-1

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.19	1.49	1.18	0.06	0.71	0.22	0.11
2012 Maximum *Average Daily* Totals	**0.19**	**1.49**	**1.18**	**0.06**	**0.71**	**0.22**	**0.11**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for GT-A-1. Emissions from construction-related traffic for GT-A-1 analyzed using the same procedures as those discussed previously for construction-related traffic from Solar Farm Layout B. Table 4.2-18 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for GT-A-1 under Alternative 1.

Annual and maximum *average daily* emissions associated with construction-related vehicle trips for GT-A-1 are summarized in Table 4.2-19 and Table 4.2-20, respectively.

Table 4.2-18
Construction-Related Vehicle Trips for Gen-Tie Line A-1

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	1,354	7.7	75	101,550	577
	Personal Vehicle Commute	16,928	184	83	2,278,184	12,944
2012	Heavy-Heavy Trucks	4	0.2	75	300	14
	Personal Vehicle Commute	98	14	83	24,402	1,162

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Table 4.2-19
Annual Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line A-1

Traffic Component	Annual Emissions, Tons per Year						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.07	1.32	0.31	0.00	0.15	0.07	0.06
Personal Vehicle Commute	0.52	0.83	7.99	0.01	1.95	0.37	0.09
2011 Total	**0.59**	**2.15**	**8.30**	**0.01**	**2.10**	**0.44**	**0.15**
2012 Emissions							
Construction Trucks	0.000	0.002	0.000	0.000	0.000	0.000	0.000
Personal Vehicle Commute	0.005	0.008	0.081	0.000	0.021	0.004	0.001
2012 Total	**0.005**	**0.010**	**0.082**	**0.000**	**0.021**	**0.004**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM_{10} = inhalable particulate matter, particles generally smaller than 50 microns
$PM_{2.5}$ = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-20
Maximum *Average Daily* Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line A-1

Traffic Component	Maximum Day Emissions, Pounds per Day						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.95	17.04	3.99	0.02	1.88	0.87	0.81
Personal Vehicle Commute	6.61	10.59	102.50	0.14	25.04	4.73	1.18
2011 Total	**7.56**	**27.62**	**106.50**	**0.16**	**26.92**	**5.61**	**1.99**
2012 Emissions							
Construction Trucks	0.00	0.20	0.04	0.00	0.03	0.01	0.01
Personal Vehicle Commute	0.51	0.78	7.76	0.01	1.99	0.38	0.09
2012 Total	**0.51**	**0.99**	**7.80**	**0.01**	**2.02**	**0.38**	**0.10**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides

Table 4.2-20 (continued)
Maximum *Average Daily* Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line A-1

PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with construction and operation of GT-A-1 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also used during construction. There would be few operational sources of hazardous air pollutant emissions other than limited and infrequent on-site vehicle traffic for periodic line inspection and necessary maintenance activities. The quantities of hazardous pollutant emissions associated with transmission line construction and operation are expected to be too small to pose a health risk to the nearest residences.

Changes in Night Sky Visibility as a result of Project-Related Fugitive Dust. Fugitive dust emissions during construction of GT-A-1 would occur primarily during daytime hours. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. The GT-A-1 corridor would not be a noticeable source of dust from wind erosion. Consequently, construction of GT-A-1 would not produce significant dust-related changes in night sky visibility.

Red Bluff Substation A

Criteria Pollutant Emissions from On-Site Construction Activity. On-site construction activity impacts have been evaluated using a detailed spreadsheet model as discussed previously for Solar Farm Layout B. Construction of the Substation would occur over a 26-month period beginning in April 2011. Construction activity would include construction of the separate telecommunications site. Because the telecommunication site is so small, construction activity at that site has been included in the analysis of the main Substation site. The overall construction process was analyzed in terms of the following 11 construction phases:

- Access road construction
- Site fencing
- Site clearing
- Site grading and compaction
- Trenching and foundations
- Equipment pads
- Equipment installation
- Power line connections
- Testing
- Driveways, other paving, and security wall
- Site cleanup

The construction emissions analyses for Red Bluff Substation A assumed that construction activity would disturb approximately 174 acres, with 145 acres being permanently affected (substation site, access roads, drainage diversions, power line connection corridors, telecommunications site, etc.).

Recent changes to the substation plans indicate that the total disturbed area would be about 165.4 acres, with 127.6 acres permanently affected. Consequently, the construction emission estimates provided below represent a conservative analysis. The various construction phases would occur in sequence, with no overlap among phases. As indicated in Figure 3.10-1 in the Noise section of Chapter 3), there are no residences or other sensitive land uses in the immediate vicinity of the substation site, although there are some rural residences near the telecommunications site.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-21 through Table 4.2-23 summarize annual emissions in tons per year for 2011, 2012, and 2013, respectively. Table 4.2-24 through Table 4.2-26 summarize average daily emissions in pounds per day for 2011, 2012, and 2013, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-21
Summary of 2011 Annual On-Site Construction Emissions for Red Bluff Substation A

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Road Construction	0.04	0.36	0.24	0.02	0.04	0.03	0.04
Site Fencing	0.02	0.08	0.22	0.00	0.01	0.01	0.01
Site Clearing	0.07	0.52	0.36	0.03	0.20	0.08	0.05
Grading and Compacting	0.13	1.15	0.85	0.08	0.28	0.15	0.13
2011 Totals	**0.26**	**2.11**	**1.67**	**0.14**	**0.53**	**0.26**	**0.22**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-22
Summary of 2012 Annual On-Site Construction Emissions for Red Bluff Substation A

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Trenching and Foundations	0.04	0.17	0.53	0.01	0.09	0.03	0.01
Equipment Pads	0.10	0.53	1.26	0.03	0.27	0.09	0.05
Equipment Installation	0.31	0.68	4.15	0.04	0.76	0.20	0.06
Power Line Connections	0.20	0.20	2.56	0.01	0.93	0.20	0.01
Testing	0.06	0.02	0.89	0.00	0.03	0.01	0.00
2012 Totals	**0.72**	**1.60**	**9.39**	**0.10**	**2.07**	**0.52**	**0.13**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-23
Summary of 2013 Annual On-Site Construction Emissions for Red Bluff Substation A

	Annual Emissions For 2013, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Testing	0.06	0.02	0.77	0.00	0.03	0.01	0.00
Driveways, Other Paving, Security Wall	0.08	0.47	0.46	0.02	0.11	0.05	0.04
Site Cleanup	0.00	0.01	0.01	0.00	0.00	0.00	0.00
2013 Totals	**0.14**	**0.50**	**1.24**	**0.02**	**0.14**	**0.06**	**0.04**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-24
Summary of 2011 Daily On-Site Construction Emissions for Red Bluff Substation A

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Road Construction	2.17	17.80	11.93	1.19	1.89	1.68	1.81
Site Fencing	1.72	6.55	17.65	0.27	0.61	0.44	0.43
Site Clearing	2.29	17.31	11.99	1.00	6.94	2.56	1.62
Grading and Compacting	4.18	38.45	28.47	2.62	9.51	4.92	4.19
2011 *Average Daily* Totals	**4.18**	**38.45**	**28.47**	**2.62**	**9.51**	**4.92**	**4.19**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-25
Summary of 2012 Daily On-Site Construction Emissions for Red Bluff Substation A

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Trenching and Foundations	4.43	17.34	52.80	0.78	9.35	2.85	1.34
Equipment Pads	6.77	35.13	84.24	2.06	19.40	6.36	3.40
Equipment Installation	6.92	15.09	92.15	0.92	17.31	4.44	1.30
Power Line Connections	6.69	6.66	85.40	0.45	31.98	6.74	0.40
Testing	2.69	0.91	39.40	0.11	1.43	0.30	0.00
2012 *Average Daily* Totals	**6.92**	**35.13**	**92.15**	**2.06**	**31.98**	**6.74**	**3.40**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)

Table 4.2-25 (continued)
Summary of 2012 Daily On-Site Construction Emissions for Red Bluff Substation A

CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-26
Summary of 2013 Daily On-Site Construction Emissions for Red Bluff Substation A

	Average Daily Emissions For 2013, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Testing	2.51	0.82	34.01	0.11	1.43	0.30	0.00
Driveways, Other Paving, Security Wall	3.99	23.47	23.19	1.01	5.64	2.54	1.96
Site Cleanup	0.19	1.52	1.36	0.05	0.58	0.20	0.12
2012 *Average Daily* Totals	**3.99**	**23.47**	**34.01**	**1.01**	**5.64**	**2.54**	**2.23**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

The analysis presented above assumes that access to Substation A from I-10 would occur from the east via the I-10/Chuckwalla Valley Road interchange, with an access road constructed to connect the Substation site to Corn Springs Road. An alternative access route would be from the west via the I-10/SR-177 interchange, with an access road constructed to connect the Substation site to Aztec Road. In either case, access road and related drainage improvements would disturb approximately 19 acres. Consequently, the access road construction impacts presented above in Tables 4.2-22 and 4.2-25 would be applicable to the alternative access road and no separate analysis of the western access route is required.

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for Red Bluff Substation A. Emissions from construction-related traffic for Red Bluff Substation A were evaluated using the same procedures as discussed previously for Solar Farm Layout B. Table 4.2-27 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for Red Bluff Substation A under Alternative 1.

Table 4.2-27
Construction-Related Vehicle Trips for Red Bluff Substation A

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	145	0.8	75	10,875	59
	Personal Vehicle Commute	1,458	54.0	83	829,170	4,482
2012	Heavy-Heavy Trucks	5,507	22.5	75	413,025	1,686
	Personal Vehicle Commute	3.362	82.0	83	1,309,740	5,346
2013	Heavy-Heavy Trucks	3,486	34.9	75	261,450	2,615
	Personal Vehicle Commute	578	34.0	83	282,200	2,822

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Annual and maximum day emissions associated with construction-related vehicle trips for Red Bluff Substation A are summarized in Table 4.2-28 and Table 4.2-29, respectively.

Table 4.2-28
Annual Emissions from Construction-Related Vehicle Traffic, Substation A

	Annual Emissions, Tons per Year						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.01	0.14	0.03	0.00	0.02	0.01	0.01
Personal Vehicle Commute	0.19	0.30	2.91	0.00	0.71	0.13	0.03
2011 Total	**0.20**	**0.44**	**2.94**	**0.00**	**0.73**	**0.14**	**0.04**
2012 Emissions							
Construction Trucks	0.27	4.72	1.17	0.01	0.57	0.25	0.23
Personal Vehicle Commute	0.29	0.44	4.37	0.01	1.12	0.21	0.05
2012 Total	**0.56**	**5.16**	**5.55**	**0.01**	**1.69**	**0.47**	**0.29**
2013 Emissions							
Construction Trucks	0.15	2.59	0.69	0.00	0.35	0.15	0.13
Personal Vehicle Commute	0.06	0.09	0.90	0.00	0.24	0.05	0.01
2013 Total	**0.21**	**2.68**	**1.59**	**0.01**	**0.59**	**0.19**	**0.15**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-29
Maximum Day Emissions from Construction-Related Vehicle Traffic, Red Bluff Substation A

Traffic Component	Maximum Day Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Emissions							
Construction Trucks	0.09	1.53	0.36	0.00	0.17	0.08	0.07
Personal Vehicle Commute	2.03	3.25	31.45	0.04	7.68	1.45	0.36
2011 Total	**2.11**	**4.78**	**31.81**	**0.05**	**7.85**	**1.53**	**0.43**
2012 Emissions							
Construction Trucks	2.71	47.16	11.74	0.07	5.71	2.54	2.33
Personal Vehicle Commute	2.82	4.37	43.22	0.06	11.10	2.10	0.52
2012 Total	**5.53**	**51.53**	**54.96**	**0.14**	**16.80**	**4.64**	**2.86**
2013 Emissions							
Construction Trucks	3.05	51.86	13.79	0.09	6.95	2.97	2.68
Personal Vehicle Commute	1.19	1.77	17.93	0.03	4.84	0.92	0.23
2013 Total	**4.24**	**53.63**	**31.71**	**0.12**	**11.79**	**3.88**	**2.91**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM_{10} = inhalable particulate matter, particles generally smaller than 50 microns
$PM_{2.5}$ = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with construction and operation of Red Bluff Substation A would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented previously. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also used during construction. There would be few operational sources of hazardous air pollutant emissions other than limited and infrequent on-site vehicle traffic for periodic facility inspection and necessary maintenance activities. As noted previously, there are no sensitive receptors in the immediate vicinity of the Substation site. The quantities of hazardous pollutant emissions associated with substation construction and operation are expected to be too small to pose a health risk to the nearest residences.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of Red Bluff Substation A would occur primarily during daytime hours. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. The Substation site would not be a noticeable source of dust from wind erosion. Consequently, the Substation would not produce significant dust-related changes in night sky visibility.

Summary of Construction Impacts for Alternative 1

Construction activities and associated vehicle traffic under Alternative 1 would generate emissions of criteria pollutants and hazardous air pollutants over a period of approximately 26 months. Construction-related emissions generally would be limited to daytime hours on weekdays, and would have little effect on night sky visibility conditions. No odor problems would be expected as a result of construction-related activity or vehicle traffic.

Operation and Maintenance

Solar Farm Layout B

Criteria Pollutant Emissions from Facility Operations. Alternative 1 would have limited operational emissions at the Solar Farm site. There would be no emissions associated with operation of the Solar Farm equipment. With only 10 to 15 on-site Solar Farm employees and limited requirements for material deliveries, emissions from operational vehicle traffic (employee commutes, delivery vehicles, and on-site vehicle use) would be low (less than six pounds per day for nitrogen oxide emissions and less than four pounds per day of PM_{10} emissions). Emissions associated with vehicle travel to the on-site visitor center also would be limited. Small amounts of volatile organic compounds would be released any time buildings or equipment enclosures need to be repainted. Small amounts of organic compounds and perhaps other pollutants would be released from the use of janitorial materials and other equipment maintenance materials.

Net Change in Wind Erosion from Solar Farm Layout B. Development of the Solar Farm would replace natural vegetation and ground surface conditions with cleared land, solar panel arrays, buildings, equipment pads, gravel roads, and related features. There would be a change in wind erosion conditions associated with these land surface changes. *However, it is estimated that development of the Solar Farm would result in long-term reductions in fugitive dust emissions that can be attributed to the following factors: (1) a reduced site acreage, as compared with the site acreage proposed in the DEIS, would reduce the area available to wind erosion; (2) the site would be compacted after construction, which would lead to a lower wind erosion potential than de-compacted soil; and (3) First Solar would be required to apply dust palliatives between the rows of solar panels using a water truck.*

To determine the change in wind erosion emissions, pre-Project wind erosion fugitive dust emissions from the undisturbed desert site were estimated using the procedures described in the MDAQMD Mineral Handling and Processing Industries guidance document. Post-Project emissions are estimated based on the removal of vegetation, site compaction to 90 percent, and the routine (e.g., quarterly) application of dust palliatives. For the entire wind erosion, PM_{10}*, and* $PM_{2.5}$ *formation study, including all assumptions and references, see Appendix D-6. While First Solar believes that the installation of the solar panel arrays would decrease ground-level wind velocity and energy, and consequently decrease wind erosion from the site compared with the vegetative cover that exists in the pre-Project condition, the solar arrays have not been studied sufficiently to quantify the reduction that would be realized. Consequently, the additional emissions reductions that could occur as a result of the solar array installation are not considered in this analysis.*

The reduction in fugitive dust $PM_{10}/PM_{2.5}$ *emissions from the Solar Farm site are summarized in Table 4.2-30. It should be noted that the emissions listed in Table 4.2-30 for the existing conditions scenario assume that the Solar Farm site would be 3,800 acres, which is approximately three percent less than the 3,912 acres actually proposed for the Solar Farm site. Therefore, the actual net reduction in emissions would be approximately 20 pounds less than described in Table 4.2-30.*

Operation of SF-B under Alternative 1 would result in an indirect air quality impact from altered wind erosion conditions at the Solar Farm site. *However,* as noted in Table 4.2-30 below, the *mitigated Project, which would include the application of dust palliatives up to four times per year (see Mitigation Measure MM-AIR-3), would not be* expected to increase the wind erosion susceptibility of the site.

Table 4.2-30
Summary of Operating Wind Erosion PM10/PM2.5 Emissions

Emission Scenario	***PM10 (lb/day)***	***PM2.5 (lb/day)***
Existing Condition (undisturbed desert)	*673*	*269*
Post-Project Emissions (assumes compaction to 90%)	*1,370*	*548*
Mitigated Post-Project Emissions (assumes application of dust palliatives quarterly)	*219*	*88*
Change in emissions	*-454*	*-182*
Reduction	*-67%*	*-67%*

Source: First Solar, Wind Erosion, PM10, and PM2.5 Formation at the Desert Sunlight Solar Farm Site, Memorandum from Amanda Beck of First Solar, to BLM Palm Springs – South Coast Field Office, December 27, 2010.

Compliance with Air Quality Plans and Regulatory Requirements. The proposed Project would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of the Solar Farm would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. The power screeners used during construction would either be provided directly by construction contractors or would be rented equipment items. In either case, that equipment would most likely be registered under the CARB statewide portable equipment registration program or would be operating under the owner's existing SCAQMD permits. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Resources section of Chapter 3, the Applicant would comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Gen-Tie Line A-1

Criteria Pollutant Emissions from Facility Operations. Operational emissions for GT-A-1 would be minimal, resulting from periodic line inspections and any necessary maintenance activity. Assuming two line inspections and one maintenance event per year, operational activities would typically produce maximum daily emissions of less than 2.5 pounds of nitrogen oxide and less than 0.7 pounds of PM_{10}.

Net Change in Wind Erosion from the Project Site. No quantitative analysis of wind erosion conditions has been conducted for GT-A-1, since the area of disturbance is a relatively narrow linear corridor with adjacent undisturbed areas providing at least partial shielding from wind erosion. Vegetation within the disturbance area would be cleared only where necessary for laydown and staging areas, tower assembly areas, and other localized work areas. The size and orientation of cleared and disturbed areas would avoid any large changes in wind erosion conditions along the Gen-Tie Line corridor.

Compliance with Air Quality Plans and Regulatory Requirements. GT-A-1 would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of GT-A-1 would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Resources section of Chapter 3, the Applicant would comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Emissions from Corona Discharge. Corona discharge is an electrical discharge caused by ionization of air in the electric field surrounding an electrical conductor such as a high voltage transmission line. Electrical transmission lines are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects. Corona discharge generally is not an issue with transmission lines rated at 230 kV or less (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with operation and maintenance of GT-A-1. Because these emissions would be minimal, they are not considered adverse odor sources. Corona discharge effects along high voltage transmission lines during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the transmission line right of way. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Red Bluff Substation A

Criteria Pollutant Emissions from Facility Operations Traffic. Operational *traffic-related* emissions for Red Bluff Substation A would be minimal, resulting from periodic facility inspections and necessary maintenance activity. Assuming two line inspections and one maintenance event per year, operational *traffic* would typically produce maximum daily emissions of less than 2.5 pounds of nitrogen oxide and less than 0.7 pounds of PM_{10}.

Criteria Pollutant Emissions from Emergency Generator Testing. The Red Bluff Substation would include installation of a generator to provide emergency power for substation lighting, battery chargers, and circuit breakers in the event of an electrical outage at the substation. First Solar estimates that the emergency generator would be approximately 750 break horsepower (bhp) and typical operational tests would be performed monthly for a maximum *of approximately one hour per test. Although the exact specifications for the emergency generator have not yet been determined, bid specifications provided by SCE indicate that it would be diesel-fueled with emissions of NOx that would not exceed 6.4 grams per break horsepower-hour (g/bhp-hr), emissions of CO that would not exceed 3.5 g/bhp-hr, and emissions of particulate matter (PM) that would not exceed 0.20 g/bhp-hr. In addition, a permit to construct would be required from the SCAQMD before the engine could be installed, which would ensure that the emergency generator would meet all applicable SCAMQD requirements, including the use of Best Available Control Technology (BACT) for NOx, ROG, and CO controls.*

Table 4.2-31 presents the estimated maximum daily and annual emissions that would be associated with routine maintenance and testing of the emergency generator at Red Bluff Substation. As indicated in Table 4.2-31, total daily operational emissions of the emergency generator on test days would not exceed the SCAQMD's regional emissions significance thresholds (see Table 4.2-1) or the SCAQMD localized significance thresholds (see Table 4.2-3).

Table 4.2-31
Red Bluff Substation Emergency Generator Emissions

Pollutant	NOx	CO	PM
Emission Factor (g/bhp-hr)	6.40	3.50	0.20
Pounds per Day	10.58	5.79	0.33
Tons per Year	0.06	0.03	<0.01

Notes: g/bhp-hr = grams per break horsepower-hour. Emission factors are based on bid specifications provided by First Solar. Pounds per day emissions represent emissions on days that the generator would be tested; assumed to be one hour per test. Tons per year assume 12 one-hour tests per year.

Net Change in Wind Erosion from the Project Site. No quantitative analysis of wind erosion conditions has been conducted for Red Bluff Substation A, since the substation area would be covered by non-erodible surfaces (concrete pads, asphalt paving, or gravel).

Compliance with Air Quality Plans and Regulatory Requirements. Red Bluff Substation A would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of Red Bluff Substation A would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Quality section of Chapter 3, SCE would need to comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Emissions from Corona Discharge. Corona discharge is an electrical discharge caused by ionization of air in the electric field surrounding an electrical conductor such as a high voltage transmission line or a substation. Electrical transmission lines and substation equipment are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines and at substation equipment primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with operation and maintenance of Red Bluff Substation A. Because these emissions would be minimal, they are not considered adverse odor sources. Corona discharge effects at high voltage substation equipment during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the substation site. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Summary of Operation and Maintenance Impacts for Alternative 1

Operation and maintenance activities and associated vehicle traffic under Alternative 1 would generate limited amounts of emissions of criteria pollutants and hazardous air pollutants for the duration of Project operations. Changes in ground cover conditions would result in limited increases in wind erosion potential for the Solar Farm site and Gen-Tie Line corridor, but not at the Red Bluff Substation site. Alternative 1 would not conflict with any air quality management plan, and would be expected to comply with federal, state, and SCAQMD regulatory requirements. Operation and maintenance conditions for Alternative 1 are not expected to create any air quality issues related to corona discharge or odors.

Decommissioning

Solar Farm Layout B

Decommissioning of the Solar Farm would require disassembly of mechanical equipment components, demolition of on-site buildings, and removal of perimeter fencing. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment emissions from decommissioning activities.

Gen-Tie Line A-1

Decommissioning of GT-A-1 would require removal of the transmission cables, removal of the transmission towers and footings, filling of tower footing excavations, and perhaps a limited amount of revegetation along the transmission line corridor. Most of the material removed during decommissioning would likely be recycled. Equipment used for decommissioning would generally be similar to that used for construction. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment emissions from decommissioning activities.

Red Bluff Substation A

Decommissioning of the Red Bluff Substation would require disassembly of mechanical equipment components, demolition of equipment pads and paving, and removal of perimeter wall. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment emissions from decommissioning activities.

Summary of Decommissioning Impacts for Alternative 1

Air quality impacts of facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine emissions, in particular, might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Summary of Combined Impacts for Alternative 1

The preceding analyses have identified impacts associated with individual components of Alternative 1 (Solar Farm Layout B, GT-A-1, and Red Bluff Substation A). The following discussion provides a summary of air quality impacts reflecting the combined effects of all components of Alternative 1.

Criteria Pollutant Emissions from Overall Construction Activity. Overall construction activity for Alternative 1 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout B, GT-A-1, and Red Bluff Substation A. Annual and maximum day emissions associated with overall construction activity for Alternative 1 are summarized in Table 4.2-32 and Table 4.2-33, respectively.

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with the different components of Alternative 1 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also operating on-site during Solar Farm construction. The location of hazardous pollutant emissions from construction equipment operation would vary across the facility construction sites over the construction period, and thus would not be in a fixed location for long periods of time. There would be few sources of hazardous air pollutant emissions other than limited on-site vehicle traffic at the Solar Farm site during facility operation. There are only a few rural residences within one mile of the Solar Farm site, and only one rural residence within 0.25 mile of

Table 4.2-32
Annual Emissions from Combined Construction Activity for Alternative 1

Component	Annual Emissions, Tons per Year						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Construction Activity							
Solar Farm B	9.64	63.14	87.10	2.49	18.42	6.97	4.92
Transmission Line A-1	1.38	4.22	18.43	0.14	2.45	0.66	0.36
Red Bluff Substation A	0.45	2.55	4.62	0.14	1.25	0.40	0.26
2011 Total	**11.48**	**69.92**	**110.15**	**2.76**	**22.12**	**8.03**	**5.53**
2012 Construction Activity							
Solar Farm B	11.45	71.36	99.25	2.53	21.49	7.92	5.46
Transmission Line A-1	0.007	0.026	0.094	0.001	0.028	0.006	0.002
Red Bluff Substation A	1.27	6.76	14.93	0.11	3.77	0.98	0.42
2012 Total	**12.73**	**78.15**	**114.28**	**2.64**	**25.29**	**8.91**	**5.88**
2013 Construction Activity							
Solar Farm B	0.12	0.67	1.03	0.02	0.68	0.17	0.05
Red Bluff Substation A	0.35	3.18	2.83	0.03	0.73	0.25	0.19
2013 Total	**0.47**	**3.85**	**3.86**	**0.05**	**1.41**	**0.42**	**0.24**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-33
Daily Emissions from Combined Construction Activity for Alternative 1

Component	Daily Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Construction Activity							
Solar Farm B	145.5	934.9	1,296.1	37.1	266.4	102.2	72.2
Transmission Line A-1	29.8	94.5	424.9	4.0	41.2	13.5	9.0
Red Bluff Substation A	6.3	43.2	60.3	2.7	17.4	6.5	4.6
2011 Total	**181.5**	**1,072.6**	**1,781.3**	**43.8**	**324.9**	**122.1**	**85.8**
2012 Construction Activity							
Solar Farm B	119.7	749.1	1,023.9	29.2	224.8	85.3	59.6
Transmission Line A-1	0.7	2.5	9.0	0.1	2.7	0.6	0.2
Red Bluff Substation A	12.4	86.7	147.1	2.2	48.8	11.4	6.3
2012 Total	**132.8**	**838.2**	**1,180.0**	**31.5**	**276.3**	**97.3**	**66.1**
2013 Construction Activity							
Solar Farm B	10.5	60.1	85.6	2.2	66.1	16.4	2.7
Red Bluff Substation A	8.2	77.1	65.7	1.1	17.4	6.4	5.1
2013 Total	**18.7**	**137.2**	**151.3**	**3.3**	**83.6**	**22.9**	**7.8**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

boundary of the proposed Solar Farm. There are some scattered residences and the Lake Tamarisk development near those portions of the alignment for GT-A-1 that follow Kaiser Road. The limited duration of construction activity at any one location along the transmission line corridor would minimize health risks from construction equipment engine exhaust. There are no sensitive receptors near Red Bluff Substation A.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of Project facilities would occur primarily during daytime hours. The applicant would implement a dust control plan including the use of dust suppressants during facility construction. Airborne dust generated from construction sites would be widely dispersed and greatly reduced in concentration by nighttime hours. Construction activity would be phased across the Solar Farm site over a 26-month period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at night. Development of the Solar Farm site would result in only a small increase in wind erosion potential compared to natural conditions.

Criteria Pollutant Emissions from Facility Operations. Alternative 1 would have limited operational emissions. Operational emissions would involve vehicle travel by Solar Farm employees or other employees conducting periodic inspections or maintenance activity along the Gen-Tie Line or at the Red Bluff substation*, and periodic testing of the emergency generator at the Red Bluff Substation*. Annual and daily operational *traffic and emergency generator* emissions for Alternative 1 are summarized in Table 4.2-34 and Table 4.2-35, respectively.

As indicated in Table 4.2-34 and Table 4.2-35, traffic *and the emergency generator* associated with facility operations would generate only limited quantities of pollutant emissions *and would not exceed the SCAQMD's regional emissions significance thresholds (see Table 4.2-1)*. The on-site visitor's center at the Solar Farm is not expected to draw a high volume of visitor traffic. Consequently, emissions associated with vehicle travel to the on-site visitor center also would be limited. Small amounts of volatile organic compounds would be released any time buildings or equipment enclosures need to be repainted. Small amounts of organic compounds and perhaps other pollutants would be released from the use of janitorial materials and other equipment maintenance materials.

Table 4.2-34
Annual Emissions from Combined Operational Traffic *and the Red Bluff Substation Emergency Generator* for Alternative 1

	Annual Emissions, Tons per Year						
Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Traffic - Solar Farm B	0.15	1.09	2.13	0.01	0.67	0.14	0.05
*Traffic -*Transmission Line A-1	0.0001	0.0012	0.0013	0.0000	0.0005	0.0001	0.0000
*Traffic -*Red Bluff Substation A	0.0001	0.0012	0.0013	0.0000	0.0005	0.0001	0.0000
Red Bluff Substation Emergency Generator	--	*0.06*	*0.03*	--	*<0.01*	*<0.01*	*<0.01*
Total	**0.15**	***1.15***	***2.16***	**0.01**	**0.67**	**0.14**	**0.05**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Sources: Tetra Tech *and ESA* analyses

Table 4.2-35
Daily Emissions from Combined Operational Traffic *and the Red Bluff Substation Emergency Generator* for Alternative 1

	Daily Emissions, Pounds per Day						
Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Traffic - Solar Farm B	0.80	5.98	11.70	0.03	3.65	0.77	0.27
Traffic - Transmission Line A-1	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Traffic - Red Bluff Substation A	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Red Bluff Substation Emergency Generator	---	*10.58*	*5.79*	---	*0.33*	*0.33*	*0.33*
Total	**1.02**	***21.12***	***20.55***	**0.04**	***5.24***	***1.40***	***0.74***

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech *and ESA* analyses

Net Change in Wind Erosion from the Project Site. Changes in wind erosion conditions have been evaluated using procedures discussed previously for SF-B. Development of SF-B would replace natural vegetation and ground surface conditions with cleared land, solar panel arrays, buildings, equipment pads, gravel roads, and related features. There would be a change in wind erosion conditions associated with these land surface changes. As discussed previously, construction of GT-A-1 and Red Bluff Substation A would have minimal effects on wind erosion conditions in the Project area. Thus, the net change in wind erosion conditions for the combined components of Alternative 1 would be the same as presented previously in Table 4.2-31. The change in ground cover conditions for Solar Farm Layout B *as mitigated by MM-AIR-3* *would* *not be* expected to increase the wind erosion susceptibility of the site.

Compliance with Air Quality Plan and Regulatory Requirements. Alternative 1 would not conflict with any air quality management plan, and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during Project construction would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. The power screeners used during Solar Farm construction would either be provided directly by construction contractors or would be rented equipment items. In either case, that equipment would most likely be registered under the CARB statewide portable equipment registration program or would be operating under the owner's existing SCAQMD permits. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Quality section of Chapter 3, the applicant and SCE would need to comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Emissions from Corona Discharge. Electrical transmission lines and substation equipment are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines and at substation equipment primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with the combined facilities for Alternative 1. These emission sources are not considered significant odor sources. Corona discharge effects at high voltage substation equipment during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the substation site. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Applicant Measures and Mitigation Measures

Applicant Measures. Sunlight has designed the Project to incorporate various measures that would reduce on-site construction-related emissions and emissions from construction-related traffic. Because the Applicant Measures are considered part of the Project description, the emission analyses included in this EIS account for the following Applicant Measures:

- AM-AIR-1: Sunlight would develop and implement a dust control plan that includes use of dust palliatives to ensure compliance with SCAQMD Rule 403. The dust control plan is expected to focus on reducing fugitive dust from construction. Sunlight has identified two types of dust palliatives that would be used during the construction process: a hygroscopic salt solution that would be used for the on-site construction roads, and an organic polymer mulch that would be used for other portions of the Solar Farm site, especially the areas between rows of solar arrays. Although preparation of a written dust control plan is not a formal requirement of SCAQMD Rule 403, compliance with all of the substantive provisions of Rule 403 (See Tables 3.2-2 and 3.2-3 in Chapter 3) is a legal requirement.
- AM-AIR-2: Construction activity would be phased across the Solar Farm site in a manner that would minimize the area disturbed on any single day.
- AM-AIR3: Cut and fill quantities would be balanced across the Solar Farm site to minimize emissions from grading and to avoid the need to import fill materials or to remove excess spoil.
- AM-AIR-4: Sunlight would use power screeners to obtain sand and gravel requirements on site, rather than delivering construction sand and gravel to the Solar Farm site by truck. Although this decision would increase the amount of on-site equipment emissions generated

during construction, it would eliminate up to 3,500 truck loads of sand and gravel that would otherwise be brought to the site.

- AM-AIR-5: Sunlight would arrange a shuttle bus program for construction workers, with assembly points in the Palm Springs and Blythe areas. Sunlight expects this shuttle bus system to be heavily used by construction workers, with an average of 89.5 percent of construction workers accessing the Solar Farm site by shuttle bus.

SCE has identified two Applicant Measures that would be implemented during construction of the Red Bluff Substation:

- AM-AIR-6: SCE would develop and implement a dust control plan to ensure compliance with SCAQMD Rule 403 during substation construction. Although preparation of a written dust control plan is not a formal requirement of SCAQMD Rule 403, compliance with all of the substantive provisions of Rule 403 (See Tables 3.2-2 and 3.2-3 in Chapter 3) is a legal requirement and is accommodated in the emissions analyses prepared for this EIS.
- AM-AIR-7: SCE would require bidders for the construction contract to submit a transportation plan describing how workers would travel to the Project site.

Mitigation Measures. The following mitigation measures would provide additional reductions in emissions from Project construction and operation:

- MM-AIR-1: Sunlight and SCE shall *require all on-site construction equipment to meet EPA Tier 2 or higher emissions standards according to the following:*
    - *April 1, 2010, to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by the California Air Resources Board (CARB). Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.*
    - *January 1, 2012, to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.*
    - *Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.*
    - *A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided when each applicable unit of equipment is mobilized.*
- MM-AIR-2: Sunlight shall temporarily stockpile chipped or shredded vegetation debris from the Solar Farm site, then spread it on open areas of the site once construction activity has

been completed on a subarea. This measure would eliminate a modest number of truck trips otherwise required to remove vegetation debris from the site.

- MM-AIR-3: Sunlight shall provide *up to four* re-applications of dust palliatives *per year* at the Solar Farm site to unpaved roads and parking areas and to the open areas between the rows of solar arrays. *Re-applications* of dust palliatives would reduce fugitive dust from on-site vehicle travel and would reduce the net increase in wind erosion from the Solar Farm site. This measure would increase annual operating costs and require a small number of additional truck trips to the Solar Farm site.
- *MM-AIR-4: The Project construction contractor(s) shall:*
  - *Submit a transportation plan that describes how adherence to AM-AIR-5 will be achieved, thus minimizing daily construction worker trips to the maximum extent feasible;*
  - *Appoint a construction relations officer to act as a community liaison concerning on-site construction activity including resolution of any issues related to PM10 generation;*
  - *Where available, use electricity from existing power poles rather than temporary diesel or gasoline power generators; and*
  - *Restrict construction delivery trucks to model year 2001 or newer.*

CEQA Significance Determination

Solar Farm Layout B

Criterion AQ-1. Construction and operation of SF-B would not conflict with air quality management programs under any air quality management plan. Construction and operation of SF-B would further the goals of and would implement programs consistent with federal and state policies that encourage development of renewable energy sources. Decommissioning for SF-B would be expected to comply with all applicable air quality plans and all applicable federal, state, and local air quality regulations at the time that decommissioning occurs. Consequently, SF-B would not have any air quality impacts related to Criterion AQ-1.

Criterion AQ-2. Construction and operation activities for SF-B would be required to comply with all applicable SCAQMD regulations. Decommissioning for SF-B would be expected to comply with all applicable federal, state, and local air quality regulations when decommissioning occurs. Sunlight would develop and implement a dust control plan (AM-AIR-1) to ensure compliance with SCAQMD Rule 403 requirements. Consequently, SF-B would not have any air quality impacts related to Criterion AQ-2.

Criterion AQ-3. Construction, operation, and decommissioning of SF-B would generate various quantities of criteria pollutant emissions. Applicant Measures AM-AIR-1, AM-AIR-2, AM-AIR-3, AM-AIR-4, and AM-AIR-5 are part of the basic Project description for SF-B and have been incorporated into the emissions analyses presented previously. Maximum annual emissions associated with construction, operation, and decommissioning of SF-B would be less than 100 tons per year for any criteria pollutant. Some further reductions in construction and operational emissions could be achieved by implementing mitigation measures MM-AIR-1*, MM-AIR-2, MM-AIR-3, and MM-AIR-4*. Construction, operation, and decommissioning of SF-B would have a less-than-significant air quality impact under Criterion AQ-3 both before and after mitigation because maximum annual emissions would be less than 100 tons per year for each criteria pollutant.

Criterion AQ-4. Daily construction-related emissions for SF-B would exceed SCAQMD regional emissions significance thresholds for reactive organic compounds, nitrogen oxides, carbon monoxide, PM_{10}, and $PM_{2.5}$, but would not exceed the SCAQMD optional local impact significance criteria for nitrogen oxides, carbon monoxide, PM_{10}, or $PM_{2.5}$. Daily operation and maintenance emissions for SF-B would be less than SCAQMD local impact significance thresholds for all pollutants*. Operational emissions of fugitive PM_{10} would be reduced to less than SCAQMD regional thresholds with implementation of Mitigation Measure MM-AIR-3 and all other operational emissions would be less than the SCAQMD regional thresholds before mitigation*. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions and would be less than predicted construction-related emissions. Reactive organic compounds and nitrogen oxides are primarily regional-scale pollutants. Carbon monoxide is a local-scale air pollutant, and not a regional-scale air pollutant. Directly emitted PM_{10} and $PM_{2.5}$ are primarily local-scale pollutants, but contribute as regional-scale pollutants. Applicant Measures AM-AIR-1, AM-AIR-2, AM-AIR-3, AM-AIR-4, and AM-AIR-5 have been accommodated in preparing the emission estimates presented previously. Some further reductions in construction and operational emissions could be achieved by implementing mitigation measures MM-AIR-1*, MM-AIR-2, MM-AIR-3, and MM-AIR-4*, but these measures would not reduce *construction* ozone precursor or particulate matter emissions to levels less than the SCAQMD regional emissions significance thresholds. Consequently, construction-related emissions for Solar Farm Layout B would be a significant air quality impact under criteria AQ-4, both before and after mitigation.

Criterion AQ-5. Daily construction-related emissions for SF-B would not exceed the SCAQMD optional local impact significance criteria for nitrogen oxides, carbon monoxide, PM_{10}, or $PM_{2.5}$. Applicant Measures AM-AIR-1, AM-AIR-2, AM-AIR-3, AM-AIR-4, and AM-AIR-5 have been accommodated in preparing the emission estimates presented previously. Some further reductions in construction and operational emissions could be achieved by implementing mitigation measures MM-AIR-1*, MM-AIR-2, MM-AIR-3, and MM-AIR-4*. Daily operation and maintenance emissions for SF-B would be less than SCAQMD local impact significance thresholds for all pollutants. *Operational emissions of fugitive PM10 would be reduced to less than SCAQMD regional thresholds with implementation of Mitigation Measure MM-AIR-3, and all other operational emissions would be less than SCAQMD regional thresholds before mitigation*. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions and would be less than predicted construction-related emissions. Furthermore, the SCAQMD localized impact significance thresholds are based on dispersion modeling analyses related to state and federal ambient air quality standards. Therefore, no localized violations of ambient air quality standards are expected from construction or operation of SF-B. Consequently, SF-B would have a less-than-significant air quality impact under Criterion AQ-5 both before and after mitigation.

Criterion AQ-6. Construction of SF-B would be a source of diesel particulate emissions during the 26-month construction period. Diesel particulate emissions are a component of PM_{10} and $PM_{2.5}$

emissions and contain carcinogenic compounds. Applicant Measures AM-AIR-1, AM-AIR-2, AM-AIR-3, AM-AIR-4, and AM-AIR-5 have been accommodated in preparing the emission estimates presented previously. Some further reductions in diesel particulate matter emissions could be achieved by implementing mitigation measure MM-AIR-1. Construction-related PM_{10} and $PM_{2.5}$ emissions would be less than SCAQMD localized significance thresholds and no violations of ambient air quality standards would be expected (see discussion of Criterion AQ-5). Construction activities would last for 26 months. Cancer risks are typically evaluated over a 70-year lifetime period. No unacceptable cancer risks would be expected at the closest sensitive receptor locations. because no violations of ambient air quality standards for PM_{10} or $PM_{2.5}$ are expected and because the duration of construction would last only 26 months Consequently, construction at SF-B would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation. Operational emissions of diesel particulate matter for SF-B would too low to pose any significant health risk. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning activities. However, it is reasonable to expect that emissions of diesel particulate matter would be greatly reduced in the future compared with current conditions. Consequently, construction, operation, and decommissioning of SF-B would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation.

Criterion AQ-7. Construction, operation, and decommissioning of SF-B would not generate any strongly odorous emissions. Consequently, SF-B would have a less-than-significant air quality impact under criterion AQ-7.

Gen-Tie Line A-1

Criterion AQ-1. Construction and operation of GT-A-1 would not conflict with air quality management programs under any air quality management plan. Construction and operation of GT-A-1 would further the goals of and would implement programs consistent with federal and state policies that encourage development of renewable energy sources. Decommissioning for GT-A-1 would be expected to comply with all applicable air quality plans and all applicable federal, state, and local air quality regulations when decommissioning occurs. Consequently, GT-A-1 would not have any air quality impacts related to Criterion AQ-1.

Criterion AQ-2. Construction and operation for GT-A-1 would be required to comply with all applicable SCAQMD regulations. Decommissioning for GT-A-1 would be expected to comply with all applicable federal, state, and local air quality regulations when decommissioning occurs. Consequently, GT-A-1 would not have any air quality impacts related to Criterion AQ-2.

Criterion AQ-3. Construction, operation, and decommissioning of GT-A-1 would generate various quantities of criteria pollutant emissions. Maximum annual emissions associated with construction, operation, and decommissioning of GT-A-1 would be less than 100 tons per year for any criteria pollutant. Some further reductions in construction and operational emissions could be achieved by implementing mitigation measure MM-AIR-1. Construction, operation, and decommissioning of GT-A-1 would have a less-than-significant air quality impact under Criterion AQ-3 both before and after mitigation because maximum annual emissions would be less than 100 tons per year for each criteria pollutant.

Criterion AQ-4. Daily construction-related emissions for GT-A-1 would not exceed any SCAQMD regional or local emissions significance thresholds. Some further reductions in construction emissions could be achieved by implementing mitigation measure MM-AIR-1. Daily operation and maintenance emissions for GT-A-1 also would be less than SCAQMD regional and local impact significance thresholds for all pollutants. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. AS a result, it is not possible to make reliable projections of emissions associated with decommissioning. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions and would be less than predicted construction-related emissions. Consequently, construction, operation, and decommissioning of GT-A-1 would be a less-than-significant air quality impact under criteria AQ-4 both before and after mitigation.

Criterion AQ-5. Daily construction-related emissions for GT-A-1 would not exceed any of the SCAQMD optional local impact significance criteria. Some further reductions in construction emissions could be achieved by implementing mitigation measure MM-AIR-1. Daily operation and maintenance emissions for GT-A-1 would be less than SCAQMD local impact significance thresholds for all pollutants. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning activities. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions and would be less than predicted construction-related emissions. Furthermore, the SCAQMD localized impact significance thresholds are based on dispersion modeling analyses related to state and federal ambient air quality standards. Therefore, no localized violations of ambient air quality standards are expected from construction or operation of GT-A-1. Consequently, GT-A-1 would have a less-than-significant air quality impact under Criterion AQ-5 both before and after mitigation.

Criterion AQ-6. Construction of GT-A-1 would be a source of diesel particulate emissions during the 8-month construction period. Diesel particulate emissions are a component of PM_{10} and $PM_{2.5}$ emissions and contain carcinogenic compounds. Some further reductions in diesel particulate matter emissions could be achieved by implementing mitigation measure MM-AIR-1. Construction-related PM_{10} and $PM_{2.5}$ emissions would be less than SCAQMD localized significance thresholds and no violations of ambient air quality standards would be expected (see discussion of Criterion AQ-5). Construction would last for a total of 8-months, but construction activity at any single location would last only a few weeks. Cancer risks are typically evaluated over a 70-year lifetime period. No violations of ambient air quality standards for PM_{10} or $PM_{2.5}$ are expected and because the duration of construction would last only a few weeks at any one location. Therefore, no unacceptable cancer risks would be expected at the closest sensitive receptor locations. Consequently, construction of GT-A-1 would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation. Operational emissions of diesel particulate matter for GT-A-1 would too low to pose any significant health risk. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. However, it is reasonable to expect that emissions of diesel particulate matter would be greatly reduced in the future compared to current conditions. Consequently, construction, operation, and decommissioning of GT-A-1 would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation.

Criterion AQ-7. Construction, operation, and decommissioning of GT-A-1 would not generate any strongly odorous emissions. Ozone generation from corona discharge along high-voltage transmission lines occurs only during rain storms and is typically not an issue for transmission lines rated at 230 kV or less. Even for higher-voltage transmission lines, ozone generated by corona discharge is rarely detectable beyond the transmission line right-of-way. Consequently, GT-A-1 would have a less-than-significant air quality impact under criterion AQ-7.

Red Bluff Substation A

Criterion AQ-1. Construction, and operation of Red Bluff Substation A would not conflict with air quality management programs under any air quality management plan. Construction and operation of Red Bluff Substation A would further the goals of and would implement programs consistent with federal and state policies that encourage development of renewable energy sources. Decommissioning for Red Bluff Substation A would be expected to comply with all applicable air quality plans and all applicable federal, state, and local air quality regulations when decommissioning occurs. Consequently, Red Bluff Substation A would not have any air quality impacts related to Criterion AQ-1.

Criterion AQ-2. Construction and operation activities for Red Bluff Substation A would be required to comply with all applicable SCAQMD regulations. Decommissioning for Red Bluff Substation A would be expected to comply with all applicable federal, state, and local air quality regulations when decommissioning occurs. SCE would develop and implement a dust control plan (AM-AIR-6) to ensure compliance with SCAQMD Rule 403 requirements. Consequently, Red Bluff Substation A would not have any air quality impacts related to Criterion AQ-2.

Criterion AQ-3. Construction, operation, and decommissioning of Red Bluff Substation A would generate various quantities of criteria pollutant emissions. Maximum annual emissions associated with construction, operation, and decommissioning of Red Bluff Substation A would be less than 100 tons per year for any criteria pollutant. Some further reductions in construction and operational emissions could be achieved by implementing mitigation measure MM-AIR-1. Because maximum annual emissions would be less than 100 tons per year for each criteria pollutant, construction, operation, and decommissioning of Red Bluff Substation A would have a less-than-significant air quality impact under Criterion AQ-3 both before and after mitigation.

Criterion AQ-4. Daily construction-related emissions and daily operation and maintenance emissions for Red Bluff Substation A would not exceed any SCAQMD regional or local emissions significance thresholds. Some further reductions in construction emissions could be achieved by implementing mitigation measure MM-AIR-1. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions, and would be less than predicted construction-related emissions. Consequently, construction, operation, and decommissioning of Red Bluff Substation A would be a less-than-significant air quality impact under criteria AQ-4 both before and after mitigation.

Criterion AQ-5. Daily construction-related emissions for Red Bluff Substation A would not exceed any of the SCAQMD optional local impact significance criteria. Some further reductions in construction emissions could be achieved by implementing mitigation measure MM-AIR-1. Daily operation and maintenance emissions for Red Bluff Substation A would be less than SCAQMD local impact significance thresholds for all pollutants. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. It is, however, reasonable to assume that these emissions would be less than the emissions generated by comparable equipment and activities under present conditions and would be less than predicted construction-related emissions. Because the SCAQMD localized impact significance thresholds are based on dispersion modeling analyses related to state and federal ambient air quality standards, no localized violations of ambient air quality standards are expected from construction or operation of Red Bluff Substation A. Consequently, Red Bluff Substation A would have a less-than-significant air quality impact under Criterion AQ-5 both before and after mitigation.

Criterion AQ-6. Construction of Red Bluff Substation A would be a source of diesel particulate emissions during the 26-month construction period. Diesel particulate emissions are a component of PM_{10} and $PM_{2.5}$ emissions and contain carcinogenic compounds. Some further reductions in diesel particulate matter emissions could be achieved by implementing mitigation measure MM-AIR-1. Construction-related PM_{10} and $PM_{2.5}$ emissions would be less than SCAQMD localized significance thresholds and no violations of ambient air quality standards would be expected (see discussion of Criterion AQ-5). Construction would last for a total of 26 months. Cancer risks are typically evaluated over a 70-year lifetime period. No unacceptable cancer risks would be expected because no violations of ambient air quality standards for PM_{10} or $PM_{2.5}$ are expected and because there are no sensitive receptors near Red Bluff Substation A. Consequently, construction of Red Bluff Substation A would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation. Operational emissions of diesel particulate matter for Red Bluff Substation A would too low to pose any significant health risk. Decommissioning would occur at least 30 years in the future when equipment engine technologies and fuel technologies might be significantly different from those that exist today. As a result, it is not possible to make reliable projections of emissions associated with decommissioning. However, it is reasonable to expect that emissions of diesel particulate matter would be greatly reduced in the future compared with current conditions. Consequently, construction, operation, and decommissioning of Red Bluff Substation A would have a less-than-significant air quality impact under Criterion AQ-6 both before and after mitigation.

Criterion AQ-7. Construction, operation, and decommissioning of Red Bluff Substation A would not generate any strongly odorous emissions. Ozone generation from corona discharge along high-voltage transmission lines occurs only during rain storms and is typically not an issue for transmission lines rated at 230 kV or less. Even for higher voltage transmission lines, ozone generated by corona discharge is rarely detectable beyond the transmission line right-of-way. Consequently, Red Bluff Substation A would have a less-than-significant air quality impact under criterion AQ-7.

Unavoidable Adverse Effects

On-site construction activities and construction-related traffic for Solar Farm Layout B would produce ozone precursor emissions (reactive organic compounds and nitrogen oxides) and particulate matter emissions (PM_{10} and $PM_{2.5}$) that exceed SCAQMD regional emissions significance thresholds. Mitigation measures MM-AIR-1 and MM-AIR-2 would reduce these emissions somewhat, but would not reduce emissions to a level less than the SCAQMD regional emissions significance thresholds. Consequently, construction-related emissions for Solar Farm Layout B would be an unavoidable adverse air quality impact under Alternative 1.

4.2.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B under Alternative 2 would be the same as those discussed under Alternative 1. Construction-related Applicant Measures and mitigation measures for SF-B also would be the same under Alternative 2 as those discussed under Alternative 1.

Gen-Tie Line B-2

Criteria Pollutant Emissions from On-Site Construction Activity. On-site construction activity impacts for GT-B-2 have been evaluated using a detailed spreadsheet model as discussed previously for Solar Farm Layout B under Alternative 1. GT-B-2 would be about 10 miles long, with 58 towers. Approximately *68* acres of the *203*-acre transmission line corridor would be disturbed by construction. The construction scenario and assumptions are the same as those described for GT-A-1 under Alternative 1.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-36 and Table 4.2-37 summarize annual emissions in tons per year for 2011 and 2012, respectively. Table 4.2-38 and Table 4.2-39 summarize average daily emissions in pounds per day for 2011 and 2012, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-36
Summary of 2011 Annual On-Site Construction Emissions for Gen-Tie Line B-2

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	0.04	0.32	0.21	0.02	0.07	0.04	0.03
Tower Foundations	0.10	0.54	1.06	0.02	0.07	0.06	0.06
Tower Assembly and Erection	0.07	0.54	0.43	0.03	0.09	0.06	0.05
Power Line Stringing	0.50	0.64	7.16	0.05	0.08	0.06	0.05
Testing	0.08	0.03	1.25	0.00	0.01	0.00	0.00
2011 Totals	**0.79**	**2.06**	**10.11**	**0.12**	**0.32**	**0.21**	**0.20**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NO_x = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SO_x = sulfur oxides
PM_{10} = inhalable particulate matter, particles generally smaller than 50 microns
$PM_{2.5}$ = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-37
Summary of 2012 Annual On-Site Construction Emissions for Gen-Tie Line B-2

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.002	0.016	0.012	0.001	0.005	0.002	0.001
2012 Totals	**0.002**	**0.016**	**0.012**	**0.001**	**0.005**	**0.002**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-38
Summary of 2011 Daily On-Site Construction Emissions for Gen-Tie Line B-2

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	4.92	42.41	27.51	2.68	9.88	4.91	4.08
Tower Foundations	4.62	23.81	46.96	1.07	2.93	2.65	2.85
Tower Assembly and Erection	2.06	16.54	13.33	0.89	2.96	1.76	1.63
Power Line Stringing	22.19	28.55	318.36	2.08	3.49	2.52	2.36
Testing	7.67	2.68	119.40	0.30	0.87	0.22	0.00
2011 Maximum *Average Daily* Totals	**22.19**	**66.22**	**318.36**	**3.75**	**12.81**	**7.56**	**6.93**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-39
Summary of 2012 Daily On-Site Construction Emissions for Gen-Tie Line B-2

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.19	1.49	1.18	0.06	0.51	0.18	0.11
2012 Maximum *Average Daily* Totals	**0.19**	**1.49**	**1.18**	**0.06**	**0.51**	**0.18**	**0.11**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for GT-B-2. Emissions from construction-related traffic for GT-B-2 were analyzed using the same procedures as those discussed previously for construction-related traffic from Solar Farm Layout B. Table 4.2-40 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for GT-B-2 under Alternative 2.

Table 4.2-40
Construction-Related Vehicle Trips for Gen-Tie Line B-2

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	1,212	6.9	75	90,900	516
	Personal Vehicle Commute	16,928	184.	83	2,278,184	12,944
2012	Heavy-Heavy Trucks	4	0.2	75	300	14
	Personal Vehicle Commute	98	14.	83	24,402	1,162

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Annual and maximum day emissions associated with construction-related vehicle trips for Transmission Line B-2 are summarized in Table 4.2-41 and Table 4.2-42, respectively.

Table 4.2-41
Annual Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line B-2

	Annual Emissions, Tons per Year						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
			2011 Emissions				
Construction Trucks	0.07	1.32	0.31	0.00	0.15	0.07	0.06
Personal Vehicle Commute	0.52	0.83	7.99	0.01	1.95	0.37	0.09
2011 Total	**0.59**	**2.15**	**8.30**	**0.01**	**2.10**	**0.44**	**0.15**
			2012 Emissions				
Construction Trucks	0.000	0.002	0.000	0.000	0.000	0.000	0.000
Personal Vehicle Commute	0.005	0.008	0.081	0.000	0.021	0.004	0.001
2012 Total	**0.005**	**0.010**	**0.082**	**0.000**	**0.021**	**0.004**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-42
Maximum Day Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line B-2

Traffic Component	Maximum Day Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Emissions							
Construction Trucks	0.85	15.25	3.57	0.02	1.69	0.78	0.73
Personal Vehicle Commute	6.61	10.59	102.50	0.14	25.04	4.73	1.18
2011 Total	**7.46**	**25.84**	**106.08**	**0.16**	**26.72**	**5.51**	**1.91**
2012 Emissions							
Construction Trucks	0.00	0.20	0.04	0.00	0.03	0.01	0.01
Personal Vehicle Commute	0.51	0.78	7.76	0.01	1.99	0.38	0.09
2012 Total	**0.51**	**0.99**	**7.80**	**0.01**	**2.02**	**0.38**	**0.10**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with construction and operation of GT-B-2 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented previously. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also used during construction. There would be few operational sources of hazardous air pollutant emissions other than limited and infrequent on-site vehicle traffic for periodic line inspection and necessary maintenance activities. The quantities of hazardous pollutant emissions associated with transmission line construction and operation are expected to be too small to pose a health risk to the nearest residences.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of GT-B-2 would occur primarily during daytime hours. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. As noted previously, the Gen-Tie Line corridor would not be an adverse source of dust from wind erosion. Consequently, construction of GT-B-2 would not produce significant dust-related changes in night sky visibility.

Red Bluff Substation B

Criteria Pollutant Emissions from On-Site Construction Activity. On-site construction activity impacts have been evaluated using a detailed spreadsheet model as discussed previously for Solar Farm Layout B under Alternative 1. Construction of the Gen-Tie Line would occur over a 26-month period beginning in April 2011. Construction activity would include construction of the separate telecommunications site. The construction emissions analyses for Red Bluff Substation B assumed that construction activity would disturb approximately 144 acres, with 114 acres being permanently affected (substation site, access roads, drainage diversions, power line connection corridors, and the telecommunications site). Recent changes to the substation plans indicate that the total disturbed area would be about 118.2 acres, with 89.6 acres permanently affected. Consequently, the construction emission estimates provided below represent a conservative analysis. The construction phases and assumptions for Red Bluff Substation B are the same as those described for Red Bluff Substation A under Alternative 1.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-43 through Table 4.2-45 summarize annual emissions in tons per year for 2011, 2012, and 2013, respectively. Table 4.2-46 through Table 4.2-48 summarize average daily emissions in pounds per day for 2011, 2012, and 2013, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-43
Summary of 2011 Annual On-Site Construction Emissions for Red Bluff Substation B

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Road Construction	0.02	0.13	0.09	0.01	0.02	0.01	0.01
Site Fencing	0.02	0.08	0.22	0.00	0.01	0.01	0.01
Site Clearing	0.07	0.52	0.36	0.03	0.20	0.08	0.05
Grading and Compacting	0.13	1.15	0.85	0.08	0.28	0.15	0.13
2011 Totals	**0.23**	**1.89**	**1.52**	**0.12**	**0.50**	**0.24**	**0.19**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-44
Summary of 2012 Annual On-Site Construction Emissions for Red Bluff Substation B

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Trenching and Foundations	0.04	0.17	0.53	0.01	0.09	0.03	0.01
Equipment Pads	0.10	0.53	1.26	0.03	0.27	0.09	0.05
Equipment Installation	0.31	0.68	4.15	0.04	0.76	0.20	0.06
Power Line Connections	0.20	0.20	2.56	0.01	0.93	0.20	0.01
Testing	0.06	0.02	0.89	0.00	0.03	0.01	0.00
2012 Totals	**0.72**	**1.60**	**9.39**	**0.10**	**2.07**	**0.52**	**0.13**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-45
Summary of 2013 Annual On-Site Construction Emissions for Red Bluff Substation B

	Annual Emissions For 2013, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Testing	0.06	0.02	0.77	0.00	0.03	0.01	0.00
Driveways, Other Paving, Security Wall	0.05	0.32	0.32	0.01	0.06	0.03	0.02
Site Cleanup	0.00	0.01	0.01	0.00	0.00	0.00	0.00
2013 Totals	**0.11**	**0.35**	**1.09**	**0.02**	**0.09**	**0.04**	**0.02**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-46
Summary of 2011 Daily On-Site Construction Emissions for Red Bluff Substation B

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Road Construction	2.15	17.68	11.84	1.18	2.03	1.70	1.80
Site Fencing	1.72	6.55	17.65	0.27	0.61	0.44	0.43
Site Clearing	2.29	17.31	11.99	1.00	6.94	2.56	1.62
Grading and Compacting	4.18	38.45	28.47	2.62	9.51	4.92	4.19
2011 *Average Daily* Totals	**4.18**	**38.45**	**28.47**	**2.62**	**9.51**	**4.92**	**4.19**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-47
Summary of 2012 Daily On-Site Construction Emissions for Red Bluff Substation B

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Trenching and Foundations	4.43	17.34	52.80	0.78	9.35	2.85	1.34
Equipment Pads	6.77	35.13	84.24	2.06	19.40	6.36	3.40
Equipment Installation	6.92	15.09	92.15	0.92	17.31	4.44	1.30
Power Line Connections	6.69	6.66	85.40	0.45	31.98	6.74	0.40
Testing	2.69	0.91	39.40	0.11	1.43	0.30	0.00
2012 *Average Daily* Totals	**6.92**	**35.13**	**92.15**	**2.06**	**31.98**	**6.74**	**3.40**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-48
Summary of 2013 Daily On-Site Construction Emissions for Red Bluff Substation B

Construction Phase	Average Daily Emissions For 2013, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
Testing	2.51	0.82	34.01	0.11	1.43	0.30	0.00
Driveways, Other Paving, Security Wall	2.40	15.89	15.90	0.64	2.98	1.46	1.19
Site Cleanup	0.19	1.52	1.36	0.05	0.58	0.20	0.12
2013 *Average Daily* Totals	**2.40**	**15.89**	**34.01**	**0.64**	**2.98**	**1.46**	**2.23**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for Red Bluff Substation B. Emissions from construction-related traffic for Red Bluff Substation B were evaluated using the same procedures as discussed previously for Solar Farm Layout B. Table 4.2-49 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for Red Bluff Substation B under Alternative 5.

Table 4.2-49
Construction-Related Vehicle Trips for Red Bluff Substation B

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	77	0.5	75	5,775	36
	Personal Vehicle Commute	1,458	54.0	83	717,120	4,482
2012	Heavy-Heavy Trucks	5,507	22.5	75	413,025	1,686
	Personal Vehicle Commute	3,362	82.0	83	1,309,740	5,346
3013	Heavy-Heavy Trucks	5,507	22.5	75	413,025	1,686
	Personal Vehicle Commute	578	34.0	83	282,200	2,822

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Annual and maximum day emissions associated with construction-related vehicle trips for Red Bluff Substation B are summarized in Table 4.2-50 and Table 4.2-51, respectively.

Table 4.2-50
Annual Emissions from Construction-Related Vehicle Traffic, Red Bluff Substation B

	Annual Emissions, Tons per Year						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.00	0.08	0.02	0.00	0.01	0.00	0.00
Personal Vehicle Commute	0.16	0.26	2.52	0.00	0.61	0.12	0.03
2011 Total	**0.17**	**0.33**	**2.53**	**0.00**	**0.62**	**0.12**	**0.03**
2012 Emissions							
Construction Trucks	0.27	4.72	1.17	0.01	0.57	0.25	0.23
Personal Vehicle Commute	0.29	0.44	4.37	0.01	1.12	0.21	0.05
2012 Total	**0.56**	**5.16**	**5.55**	**0.01**	**1.69**	**0.47**	**0.29**
2013 Emissions							
Construction Trucks	0.07	1.13	0.30	0.00	0.15	0.06	0.06
Personal Vehicle Commute	0.06	0.09	0.90	0.00	0.24	0.05	0.01
2013 Total	**0.13**	**1.21**	**1.20**	**0.00**	**0.39**	**0.11**	**0.07**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-51
Maximum Day Emissions from Construction-Related Vehicle Traffic, Red Bluff Substation B

	Maximum Day Emissions, Pounds per Day						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.05	0.94	0.22	0.00	0.10	0.05	0.04
Personal Vehicle Commute	2.03	3.25	31.45	0.04	7.68	1.45	0.36
2011 Total	**2.08**	**4.19**	**31.67**	**0.04**	**7.79**	**1.50**	**0.41**
2012 Emissions							
Construction Trucks	2.71	47.16	11.74	0.07	5.71	2.54	2.33
Personal Vehicle Commute	2.82	4.37	43.22	0.06	11.10	2.10	0.52
2012 Total	**5.53**	**51.53**	**54.96**	**0.14**	**16.80**	**4.64**	**2.86**
2013 Emissions							
Construction Trucks	1.32	22.51	5.98	0.04	3.02	1.29	1.16
Personal Vehicle Commute	1.19	1.77	17.93	0.03	4.84	0.92	0.23
2013 Total	**2.51**	**24.28**	**23.91**	**0.07**	**7.86**	**2.21**	**1.39**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with construction and operation of Red Bluff Substation B would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also used during construction. There would be few operational sources of hazardous air pollutant emissions other than limited and infrequent on-site vehicle traffic for periodic facility inspection and necessary maintenance activities. As noted previously, there are no sensitive receptors in the immediate vicinity of the Substation site. The quantities of hazardous pollutant emissions associated with substation construction and operation are expected to be too small to pose an adverse health risk to the nearest residences.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of Red Bluff Substation B would occur primarily during daytime hours. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. As noted previously, the Substation site would not be an adverse source of dust from wind erosion. Consequently, the Substation would not produce adverse dust-related changes in night sky visibility.

Summary of Construction Impacts for Alternative 2

Construction activities and associated vehicle traffic under Alternative 2 would generate emissions of criteria pollutants and hazardous air pollutants over a period of approximately 26 months. Construction-related emissions generally would be limited to daytime hours on weekdays, and would have little effect on night sky visibility conditions. No odor problems would be expected as a result of construction-related activity or vehicle traffic.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B under Alternative 2 would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Criteria Pollutant Emissions from Facility Operations. Operational emissions for GT-B-2 would be minimal, resulting from periodic line inspections and any necessary maintenance activity. Assuming two line inspections and one maintenance event per year, operational activities would typically produce maximum daily emissions of less than 2.5 pounds of nitrogen oxide and less than 0.7 pounds of PM_{10}.

Net Change in Wind Erosion from the Project Site. No quantitative analysis of wind erosion conditions has been conducted for GT-B-2 since the area of disturbance is relatively narrow linear corridor with adjacent undisturbed areas providing at least partial shielding from wind erosion. Vegetation within the disturbance area would be cleared only where necessary for laydown and staging areas, tower assembly areas, and other localized work areas. The size and orientation of cleared and disturbed areas would avoid any large changes in wind erosion conditions along the Gen-Tie Line corridor.

Compliance with Air Quality Plans and Regulatory Requirements. GT-B-2 would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of GT-B-2 would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Resources section of Chapter 3, the Applicant would comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal Clean Air Act conformity reviews.

Emissions from Corona Discharge. Electrical transmission lines are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects. Corona discharge generally is not an issue with transmission lines rated at 230 kV or less (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with operation and maintenance of GT-B-2. Because these emissions would be minimal, they would not be considered adverse odor sources. Corona discharge effects along high voltage transmission lines during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the transmission line right of way. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Red Bluff Substation B

Criteria Pollutant Emissions from Facility Operations. Operational emissions for Red Bluff Substation B would be minimal, resulting from periodic facility inspections and necessary maintenance activity. Assuming two line inspections and one maintenance event per year, operational activities would typically produce maximum daily emissions of less than 2.5 pounds of nitrogen oxide and less than 0.7 pounds of PM_{10}.

Net Change in Wind Erosion from the Project Site. No quantitative analysis of wind erosion conditions has been conducted for Red Bluff Substation B, since the Substation area would be covered by non-erodible surfaces (concrete pads, asphalt paving, or gravel).

Compliance with Air Quality Plans and Regulatory Requirements. Red Bluff Substation B would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of Red Bluff Substation B would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from

SCAQMD regulation. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Quality section of Chapter 3, SCE would need to comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Emissions from Corona Discharge. Electrical transmission lines and substation equipment are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines and at substation equipment primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with operation and maintenance of Red Bluff Substation B. Because these emissions would be minimal, they would not be considered adverse odor sources. Corona discharge effects at high voltage substation equipment during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the substation site. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Summary of Operation and Maintenance Impacts for Alternative 2

Operation and maintenance activities and associated vehicle traffic under Alternative 2 would generate limited amounts of emissions of criteria pollutants and hazardous air pollutants for the duration of Project operations. Changes in ground cover conditions would result in limited increases in wind erosion potential for the Solar Farm site and Gen-Tie Line corridor, but not at the Red Bluff Substation site. Alternative 2 would not conflict with any air quality management plan, and would be expected to comply with federal, state, and SCAQMD regulatory requirements. Operation and maintenance conditions for Alternative 2 are not expected to create any air quality issues related to corona discharge or odors.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B under Alternative 2 would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 under Alternative 2 would be similar to those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The impacts resulting from decommissioning Red Bluff Substation B under Alternative 2 would be similar to those discussed for Red Bluff Substation A under Alternative 1.

Summary of Decommissioning Impacts for Alternative 2

Air quality impacts of facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine emissions, in particular, might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Summary of Combined Impacts for Alternative 2

The preceding analyses have identified impacts associated with individual components of Alternative 2 (Solar Farm Layout B, GT-B-2, and Red Bluff Substation B). The following discussion provides a summary of air quality impacts reflecting the combined effects of all components of Alternative 2.

Criteria Pollutant Emissions from Overall Construction Activity. Overall construction activity for Alternative 2 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout B, GT-B-2, and Red Bluff Substation B. Annual and maximum day emissions associated with overall construction activity for Alternative 2 are summarized in Table 4.2-52 and Table 4.2-53, respectively.

Table 4.2-52
Annual Emissions from Combined Construction Activity for Alternative 2

	Annual Emissions, Tons per Year						
Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Construction Activity							
Solar Farm B	9.64	63.14	87.10	2.49	18.42	6.97	4.92
Transmission Line B-2	1.37	4.07	18.38	0.14	2.40	0.64	0.35
Red Bluff Substation B	0.40	2.22	4.06	0.12	1.13	0.36	0.23
2011 Total	**11.41**	**69.43**	**109.54**	**2.75**	**21.95**	**7.97**	**5.49**
2012 Construction Activity							
Solar Farm B	11.45	71.36	99.25	2.53	21.49	7.92	5.46
Transmission Line B-2	0.01	0.03	0.09	0.00	0.03	0.01	0.00
Red Bluff Substation B	1.27	6.76	14.93	0.11	3.77	0.98	0.42
2012 Total	**12.73**	**78.15**	**114.28**	**2.64**	**25.29**	**8.91**	**5.88**
2013 Construction Activity							
Solar Farm B	0.12	0.67	1.03	0.02	0.68	0.17	0.05
Red Bluff Substation B	0.23	1.56	2.29	0.02	0.48	0.15	0.09
2013 Total	**0.35**	**2.23**	**3.32**	**0.04**	**1.17**	**0.32**	**0.15**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-53
Daily Emissions from Combined Construction Activity for Alternative 2

Component	Daily Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Construction Activity							
Solar Farm B	145.5	934.9	1,296.1	37.1	266.4	102.2	72.2
Transmission Line B-2	29.7	92.1	424.4	3.9	39.5	13.1	8.8
Red Bluff Substation B	6.3	42.6	60.1	2.7	17.3	6.4	4.6
2011 Total	**181.4**	**1,069.5**	**1,780.7**	**43.7**	**323.2**	**121.7**	**85.6**
2012 Construction Activity							
Solar Farm B	119.7	749.1	1,023.9	29.2	224.8	85.3	59.6
Transmission Line B-2	0.7	2.5	9.0	0.1	2.5	0.6	0.2
Red Bluff Substation B	12.4	86.7	147.1	2.2	48.8	11.4	6.3
2012 Total	**132.8**	**838.2**	**1,180.0**	**31.5**	**276.1**	**97.2**	**66.1**
2013 Construction Activity							
Solar Farm B	10.5	60.1	85.6	2.2	66.1	16.4	2.7
Red Bluff Substation B	4.9	40.2	57.9	0.7	10.8	3.7	3.6
2013 Total	**15.4**	**100.3**	**143.5**	**2.9**	**77.0**	**20.1**	**6.3**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with the different components of Alternative 2 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also operating on-site during Solar Farm construction. The location of hazardous pollutant emissions from construction equipment operation would vary across the facility construction sites over the construction period, and thus would not be in a fixed location for long periods of time. There would be few sources of hazardous air pollutant emissions other than limited on-site vehicle traffic at the Solar Farm site during facility operation. There are only a few rural residences within one mile of the Solar Farm site, and only one rural residence within 0.25 mile of boundary of the proposed Solar Farm. There are some scattered residences and the Lake Tamarisk development near those portions of the alignment for GT-B-2 that follow Kaiser Road. The limited duration of construction activity at any one location along the Gen-Tie Line corridor would minimize health risks from construction equipment engine exhaust. There are no sensitive receptors near Red Bluff Substation B.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of Project facilities would occur primarily during daytime hours. The Applicant would implement a dust control plan including the use of dust suppressants during facility construction. Airborne dust generated from construction sites would be widely dispersed and greatly reduced in concentration by nighttime hours. Construction activity would be phased across the Solar Farm site over a 26-month period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at night. As noted previously, development of the Solar Farm site would result in only a small increase in wind erosion potential compared to natural conditions. Consequently, the combined effects of facility components for Alternative 2 would not produce significant dust-related changes in night sky visibility.

Criteria Pollutant Emissions from Facility Operations. Alternative 2 would have limited operational emissions. Most operational emissions would involve vehicle travel by Solar Farm employees or other employees conducting periodic inspections or maintenance activity along the Gen- Tie Line or at the Red Bluff Substation. Annual and daily operational emissions for Alternative 2 are summarized in Table 4.2-54 and Table 4.2-55, respectively.

Table 4.2-54
Annual Emissions from Combined Operational Traffic for Alternative 2

	Annual Emissions, Tons per Year						
Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Solar Farm B	0.15	1.09	2.13	0.01	0.67	0.14	0.05
Transmission Line B-2	0.0001	0.0012	0.0013	0.0000	0.0005	0.0001	0.0000
Red Bluff Substation B	0.0001	0.0012	0.0013	0.0000	0.0005	0.0001	0.0000
Total	**0.15**	**1.09**	**2.14**	**0.01**	**0.67**	**0.14**	**0.05**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-55
Daily Emissions from Combined Operational Traffic for Alternative 2

	Daily Emissions, Pounds per Day						
Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Solar Farm B	0.80	5.98	11.70	0.03	3.65	0.77	0.27
Transmission Line B-2	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Red Bluff Substation B	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Total	**1.03**	**10.53**	**14.76**	**0.04**	**4.91**	**1.07**	**0.42**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
The SCAQMD localized impact significance thresholds are not applicable to off-site traffic emissions.
Source: Tetra Tech analyses

As indicated in Table 4.2-54 and Table 4.2-55, annual and daily emissions from traffic associated with facility operations would generate only limited quantities of pollutant emissions. The on-site visitor's center at the Solar Farm is not expected to draw a high volume of visitor traffic. Consequently, emissions associated with vehicle travel to the on-site visitor center also would be limited. Small amounts of volatile organic compounds would be released any time buildings or equipment enclosures need to be repainted. Small amounts of organic compounds and perhaps other pollutants would be released from the use of janitorial materials and other equipment maintenance materials.

<u>*Net Change in Wind Erosion from the Project Site.*</u> Changes in wind erosion conditions have been evaluated using procedures discussed previously for Solar Farm Layout B under Alternative 1. Development of Solar Farm Layout B would replace natural vegetation and ground surface conditions with cleared land, solar panel arrays, buildings, equipment pads, gravel roads, and related features. There would be a change in wind erosion conditions associated with these land surface changes. As discussed previously, construction of GT-B-2 and Red Bluff Substation B would have minimal effects on wind erosion conditions in the Project area. Thus, the net change in wind erosion conditions for the combined components of Alternative 2 would be the same as presented previously in Table 4.2-30.

The change in ground cover conditions for Solar Farm Layout B is expected to increase the wind erosion susceptibility of the site by a small amount. On a per-acre basis, this change would be quite small, amounting to only 0.144 pounds of PM_{10} per acre per day (less than one ounce per acre per day). Such a small change in wind erosion conditions would not be detectable by visual observation, and probably would not be detectable by instrumental monitoring equipment. But when aggregated over the entire 4,245-acre site, the total net increase in PM_{10} emissions from wind erosion would average approximately 185 pounds per day.

<u>*Compliance with Air Quality Plans and Regulatory Requirements.*</u> Alternative 2 would not conflict with any air quality management plan, and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during Project construction would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. The power screeners used during Solar Farm construction would either be provided directly by construction contractors or would be rented equipment items. In either case, that equipment would most likely be registered under the CARB statewide portable equipment registration program or would be operating under the owner's existing SCAQMD permits. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Quality section of Chapter 3, the applicant and SCE would need to comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

<u>*Emissions from Corona Discharge.*</u> Electrical transmission lines and substation equipment are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines and at substation equipment primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with the combined facilities for Alternative 2. These emission sources are not considered significant odor sources. Corona discharge effects at high voltage substation equipment during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the substation site. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Applicant Measures and Mitigation Measures

Applicant Measures and mitigation measures for Alternative 2 would be the same as those discussed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determinations for SF-B under Alternative 2 would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determinations for GT-B-2 under Alternative 2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The CEQA significance determinations for Red Bluff Substation B under Alternative 2 would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Unavoidable Adverse Effects

On-site construction activities and construction-related traffic for Solar Farm Layout B would produce ozone precursor emissions (reactive organic compounds and nitrogen oxides) and particulate matter emissions (PM_{10} and $PM_{2.5}$) that exceed SCAQMD regional emissions significance thresholds. Mitigation measures MM-AIR-1 and MM-AIR-2 would reduce these emissions somewhat, but would not reduce emissions to a level less than the SCAQMD regional emissions significance thresholds. Consequently, construction-related emissions for Solar Farm Layout B would be an unavoidable significant air quality impact under Alternative 2.

4.2.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Criteria Pollutant Emissions from On-Site Construction Activity, Solar Farm Layout C. On-site construction activity impacts have been evaluated using a detailed spreadsheet model as discussed under Alternative 1. Appendix D-1 provides a more detailed explanation of the spreadsheet model.

Solar Farm development under Alternative C would occur over a 26-month period, with construction activity undertaken as a rolling sequence of activity on different subareas of the site.

For analysis purposes, it was assumed that construction activity would be initiated on about 8 acres per day (about 39.8 acres per week). The phases of construction are the same as those described for SF-B under Alternative 1.

Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours. For safety reasons, some electrical connection activity would typically occur at night when the solar panels are not energized, but this activity would not require any significant heavy equipment operations.

Fugitive dust generation estimates for Solar Farm Layout C under Alternative 3 were prepared in the same manner as discussed for SF-B under Alternative 1. Dust control measures for SF-C construction activities under Alternative 3 also would be the same as discussed for SF-B under Alternative 1.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-56, Table 4.2-57, and Table 4.2-58 summarize annual emissions in tons per year for 2011, 2012, and 2013, respectively. Table 4.2-59, Table 4.2-60, and Table 4.2-61 summarize average daily emissions in pounds per day for 2011, 2012, and 2013, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-56
Summary of 2011 Annual On-Site Construction Emissions for Solar Farm Layout C

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Tortoise Exclusion Fencing	0.06	0.31	0.53	0.01	0.03	0.02	0.02
Access Roads and Staging Areas	0.39	2.98	2.98	0.15	0.29	0.25	0.26
Construction Offices and Water/ Sanitation Facilities	0.11	0.74	0.54	0.03	0.34	0.11	0.05
Security Fencing and Debris Basins	0.14	0.59	1.34	0.03	0.07	0.05	0.04
Site Clearing	0.42	2.30	2.85	0.11	1.91	0.51	0.18
Site Grading	1.41	12.89	10.78	0.93	3.20	1.70	1.47
Array Support Posts	0.35	2.91	3.10	0.08	1.32	0.38	0.16
Trenching and Underground Cables	0.33	2.00	2.61	0.08	0.53	0.21	0.15
Soil Compacting and Dust Palliative	0.48	4.28	4.29	0.29	0.79	0.45	0.41
On-Site Power Poles	0.05	0.15	0.47	0.01	0.02	0.01	0.01
Switchgear Facilities	0.17	0.76	1.63	0.04	0.07	0.07	0.07
On-Site Substation	0.17	0.56	1.73	0.03	0.26	0.09	0.05
Solar Array Assemblies	2.04	2.90	22.38	0.16	0.56	0.25	0.17
On-Site Overhead Power Lines	0.05	0.48	0.37	0.02	0.04	0.04	0.04
2011 Totals	**6.17**	**33.87**	**55.60**	**1.98**	**9.43**	**4.13**	**3.09**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-57
Summary of 2012 Annual On-Site Construction Emissions for Solar Farm Layout C

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Roads and Staging Areas	0.11	0.84	0.86	0.04	0.08	0.07	0.07
Site Clearing	0.44	2.40	2.86	0.10	2.10	0.56	0.19
Site Grading	1.43	12.92	11.16	0.90	3.32	1.73	1.48
Array Support Posts	0.44	3.66	3.83	0.09	1.75	0.50	0.20
Trenching and Underground Cables	0.40	2.39	3.09	0.09	0.69	0.26	0.17
Soil Compacting and Dust Palliative	0.68	5.87	6.32	0.37	1.17	0.66	0.58
On-Site Power Poles	0.06	0.19	0.55	0.01	0.02	0.02	0.02
Switchgear Facilities	0.25	1.08	2.15	0.05	0.10	0.09	0.10
Solar Array Assemblies	2.84	4.00	26.83	0.21	0.83	0.36	0.24
On-Site Overhead Power Lines	0.08	0.67	0.57	0.03	0.06	0.05	0.06
Permanent Buildings	0.06	0.26	0.41	0.01	0.12	0.04	0.02
Functional Testing	0.31	0.97	2.59	0.02	0.11	0.05	0.04
2012 Totals	**7.08**	**35.27**	**61.22**	**1.93**	**10.36**	**4.38**	**3.17**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-58
Summary of 2013 Annual On-Site Construction Emissions for Solar Farm Layout C

	Annual Emissions For 2013, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Functional Testing	0.02	0.10	0.12	0.00	0.01	0.00	0.00
De-Compaction and Dust Palliative	0.05	0.34	0.36	0.02	0.41	0.10	0.03
Site Cleanup	0.02	0.07	0.13	0.00	0.03	0.01	0.01
2013 Totals	**0.08**	**0.50**	**0.61**	**0.02**	**0.45**	**0.12**	**0.04**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-59
Summary of 2011 Daily On-Site Construction Emissions for Solar Farm Layout C

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Tortoise Exclusion Fencing	1.42	7.28	12.23	0.32	0.79	0.52	0.50
Access Roads and Staging Areas	8.71	67.04	66.94	3.42	6.57	5.60	5.94
Construction Offices and Water/Sanitation Facilities	5.10	34.40	25.34	1.55	16.08	5.04	2.53
Security Fencing and Debris Basins	2.19	9.15	20.78	0.44	1.16	0.71	0.65

Table 4.2-59 (continued)
Summary of 2011 Daily On-Site Construction Emissions for Solar Farm Layout C

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Clearing	5.23	28.81	35.65	1.35	24.58	6.56	2.28
Site Grading	17.61	161.10	134.72	11.64	40.70	21.39	18.40
Array Support Posts	4.98	41.63	44.33	1.12	19.05	5.49	2.33
Trenching and Underground Cables	4.69	28.56	37.25	1.16	7.69	3.07	2.11
Soil Compacting and Dust Palliative	6.92	61.09	61.33	4.19	11.43	6.51	5.85
On-Site Power Poles	1.89	6.11	19.37	0.34	0.63	0.52	0.53
Switchgear Facilities	2.50	10.86	23.27	0.59	1.04	0.94	1.01
On-Site Substation	7.81	26.21	80.31	1.38	12.32	4.07	2.17
Solar Array Assemblies	29.19	41.49	319.69	2.24	8.22	3.55	2.41
On-Site Overhead Power Lines	2.14	19.53	15.07	0.94	1.67	1.47	1.58
2011 Maximum *Average Daily* Totals	**100.39**	**543.27**	**896.26**	**30.67**	**151.93**	**65.45**	**48.27**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas, although the construction offices phase probably would not overlap with all of the other phases.
Source: Tetra Tech analyses

Table 4.2-60
Summary of 2012 Daily On-Site Construction Emissions for Solar Farm Layout C

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Access Roads and Staging Areas	7.59	55.89	57.26	2.57	5.66	4.55	4.73
Site Clearing	4.93	26.72	31.76	1.16	24.40	6.40	2.10
Site Grading	16.48	149.42	129.00	10.43	39.40	20.20	17.10
Array Support Posts	4.55	38.12	39.94	0.91	18.86	5.32	2.13
Trenching and Underground Cables	4.20	24.94	32.14	0.90	7.39	2.79	1.81
Soil Compacting and Dust Palliative	6.18	53.39	57.44	3.39	10.90	6.02	5.32
On-Site Power Poles	1.71	5.49	15.71	0.28	0.57	0.46	0.47
Switchgear Facilities	2.24	9.84	19.55	0.49	0.92	0.83	0.88
Solar Array Assemblies	26.40	37.19	249.63	2.00	8.01	3.35	2.19
On-Site Overhead Power Lines	1.95	17.52	14.84	0.76	1.53	1.35	1.44
Permanent Buildings	2.07	9.69	15.12	0.40	4.80	1.52	0.77
Functional Testing	3.07	9.68	25.87	0.17	1.10	0.51	0.38
2012 Maximum *Average Daily* Totals	**81.36**	**437.89**	**688.26**	**23.44**	**123.55**	**53.30**	**39.34**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Table 4.2-61
Summary of 2013 Daily On-Site Construction Emissions for Solar Farm Layout C

	Average Daily Emissions For 2013, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Functional Testing	1.78	9.07	11.24	0.09	1.06	0.47	0.36
De-Compaction and Dust Palliative	4.29	32.06	34.45	1.49	42.76	10.72	3.00
Site Cleanup	1.79	6.38	12.79	0.39	3.34	1.15	0.66
2013 Maximum *Average Daily* Totals	**7.86**	**47.51**	**58.48**	**1.97**	**47.16**	**12.35**	**4.01**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
NA = not applicable
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for Solar Farm Layout C. Emissions from construction-related traffic for Solar Farm Layout C were evaluated using the same procedures as those discussed previously for SF-B under Alternative 1. Table 4.2-62 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for SF-C under Alternative 3.

Table 4.2-62
Construction-Related Vehicle Trips for Solar Farm Layout C

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	8,249	33.1	141	1,159,950	4,658
	Shuttles	16,932	68.0	73	828,478	3,327
	Personal Vehicle Commute	4,050	90.0	83	1,236,866	4,967
	To/From Assembly Point	238,542	958.0	16	2,042,871	8,204
2012	Heavy-Heavy Trucks	10,689	42.2	156	1,669,605	6,599
	Shuttles	13,662	54.0	73	874,447	3,456
	Personal Vehicle Commute	2,888	76.0	83	1,395,396	5,515
	To/From Assembly Point	198,352	784.0	16	2,247,251	8,882
3013	Heavy-Heavy Trucks	43	1.3	75	3,225	95
	Shuttles	272	8.0	73	19,910	586
	Personal Vehicle Commute	72	12.0	83	33,864	996
	To/From Assembly Point	3,808	112.0	16	49,047	1,443

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Annual and maximum day emissions associated with construction-related vehicle trips for Solar Farm Layout C are summarized in Table 4.2-63 and Table 4.2-64, respectively.

Table 4.2-63
Annual Emissions from Construction-Related Vehicle Traffic, Solar Farm Layout C

Traffic Component	Annual Emissions, Tons per Year						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.84	15.08	3.53	0.02	1.67	0.77	0.72
Shuttle Buses	0.13	0.43	1.28	0.00	0.70	0.12	0.03
Personal Vehicle Commute	0.28	0.45	4.34	0.01	1.06	0.20	0.05
To/From Shuttle Assembly Areas	0.46	0.74	7.17	0.01	1.75	0.33	0.08
2011 Total	**1.71**	**16.70**	**16.32**	**0.04**	**5.18**	**1.43**	**0.88**
2012 Emissions							
Construction Trucks	1.09	19.06	4.75	0.03	2.31	1.03	0.94
Shuttle Buses	0.12	0.43	1.21	0.00	0.74	0.13	0.03
Personal Vehicle Commute	0.30	0.47	4.66	0.01	1.20	0.23	0.06
To/From Shuttle Assembly Areas	0.49	0.76	7.50	0.01	1.93	0.36	0.09
2012 Total	**2.01**	**20.72**	**18.11**	**0.05**	**6.17**	**1.75**	**1.12**
2013 Emissions							
Construction Trucks	0.002	0.032	0.009	0.000	0.004	0.002	0.002
Shuttle Buses	0.003	0.009	0.024	0.000	0.017	0.003	0.001
Personal Vehicle Commute	0.007	0.011	0.108	0.000	0.029	0.006	0.001
To/From Shuttle Assembly Areas	0.010	0.015	0.156	0.000	0.042	0.008	0.002
2013 Total	**0.022**	**0.067**	**0.296**	**0.001**	**0.092**	**0.018**	**0.006**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-64
Maximum Day Emissions from Construction-Related Vehicle Traffic, Solar Farm Layout C

Traffic Component	Maximum Day Emissions, Pounds per Day						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	11.61	207.45	48.60	0.28	22.92	10.64	9.89
Shuttle Buses	1.53	5.17	15.43	0.06	8.44	1.50	0.31
Personal Vehicle Commute	3.38	5.41	52.42	0.07	12.80	2.42	0.60
To/From Shuttle Assembly Areas	5.58	8.94	86.58	0.12	21.15	4.00	1.00
2011 Total	**22.11**	**226.97**	**203.03**	**0.53**	**65.31**	**18.55**	**11.80**
2012 Emissions							
Construction Trucks	8.87	154.54	38.47	0.24	18.70	8.34	7.65
Shuttle Buses	1.13	3.88	10.92	0.04	6.70	1.19	0.25
Personal Vehicle Commute	2.75	4.26	42.11	0.06	10.81	2.04	0.51

Table 4.2-64 (continued)
Maximum Day Emissions from Construction-Related Vehicle Traffic, Solar Farm Layout C

	Maximum Day Emissions, Pounds per Day						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
To/From Shuttle Assembly Areas	4.40	6.81	67.42	0.10	17.31	3.27	0.81
2012 Total	**17.15**	**169.49**	**158.92**	**0.44**	**53.52**	**14.84**	**9.22**
2013 Emissions							
Construction Trucks	0.11	1.88	0.50	0.00	0.25	0.11	0.10
Shuttle Buses	0.15	0.53	1.44	0.01	0.99	0.18	0.04
Personal Vehicle Commute	0.42	0.62	6.33	0.01	1.71	0.32	0.08
To/From Shuttle Assembly Areas	0.61	0.90	9.16	0.01	2.47	0.47	0.12
2013 Total	**1.29**	**3.94**	**17.43**	**0.03**	**5.43**	**1.08**	**0.33**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Construction-related traffic would be distributed among the Mojave Desert, Salton Sea, and South Coast air basins. Almost half of the heavy truck traffic emissions would occur in the Mojave Desert Air Basin, since many material deliveries would originate in states east of California. The remaining heavy truck traffic would be split between the Salton Sea and South Coast air basins. Construction worker commute emissions (shuttles, personal vehicle commutes, and traffic to/from shuttle assembly areas) would be split primarily between the Mojave Desert and Salton Sea air basins, with a relatively smaller component in the South Coast Air Basin. Approximately 50 percent of the construction-related traffic emissions in the Mojave Desert Air Basin would occur within the SCAQMD jurisdiction portion, with the remainder in the MDAQMD jurisdiction portion (refer to Figures 3.2-1 and 3.2-2 in the Air Resources section of Chapter 3 for AQMD and air basin boundaries). At least two-thirds of the remaining emissions would probably occur in the Salton Sea Air Basin, with the remainder occurring in the South Coast Air Basin.

Hazardous Air Pollutant Emissions. Hazardous air pollutant issues for the Solar Farm under Alternative 3 would be the similar to those discussed under Alternatives 1 and 2. Emissions of diesel particulate matter during construction are presented above, and would be somewhat less than the comparable emissions under SF-B.

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with the Solar Farm. These emission sources are not considered significant odor sources.

Changes in Night Sky Visibility Due to Project-Related Fugitive Dust. Night sky visibility considerations for the SF-C under Alternative 3 would be similar to those discussed for SF-B under Alternatives 1 and 2.

Gen-Tie Line A-2

Emissions from On-Site Construction Activity. On-site construction activity impacts have been evaluated using a detailed spreadsheet model as discussed previously for SF-B under Alternative 1. GT-A-2 would be about 9.5 miles long with 55 towers. Approximately *86* acres of the *226*-acre transmission line corridor would be disturbed by construction. The construction scenario and assumptions are the same as those described for GT-A-1 under Alternative 1.

Emission estimates for on-site construction activity are summarized in a series of tables below. Table 4.2-65 and Table 4.2-66 summarize annual emissions in tons per year for 2011 and 2012, respectively. Table 4.2-67 and Table 4.2-68 summarize average daily emissions in pounds per day for 2011 and 2012, respectively. Additional details concerning the construction emissions analyses are provided in Appendix D-2.

Table 4.2-65
Summary of 2011 Annual On-Site Construction Emissions for Gen-Tie Line A-2

	Annual Emissions For 2011, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	0.04	0.32	0.21	0.02	0.07	0.04	0.03
Tower Foundations	0.10	0.53	1.06	0.02	0.07	0.06	0.06
Tower Assembly and Erection	0.07	0.54	0.43	0.03	0.09	0.06	0.05
Power Line Stringing	0.50	0.64	7.16	0.05	0.08	0.06	0.05
Testing	0.08	0.03	1.25	0.00	0.01	0.00	0.00
2011 Totals	**0.79**	**2.06**	**10.11**	**0.12**	**0.32**	**0.21**	**0.20**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-66
Summary of 2012 Annual On-Site Construction Emissions for Gen-Tie Line A-2

	Annual Emissions For 2012, Tons per Year						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.002	0.016	0.012	0.001	0.008	0.002	0.001
2012 Totals	**0.002**	**0.016**	**0.012**	**0.001**	**0.008**	**0.002**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-67
Summary of 2011 Daily On-Site Construction Emissions for Gen-Tie Line A-2

	Average Daily Emissions For 2011, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Preparation	4.92	42.41	27.51	2.68	9.90	4.92	4.08
Tower Foundations	4.62	23.76	46.92	1.06	2.92	2.65	2.85
Tower Assembly and Erection	2.06	16.52	13.31	0.89	2.97	1.76	1.62
Power Line Stringing	22.19	28.55	318.36	2.08	3.49	2.52	2.36
Testing	7.67	2.68	119.40	0.30	1.47	0.34	0.00
2011 Maximum *Average Daily* Totals	**22.19**	**66.16**	**318.36**	**3.74**	**12.82**	**7.56**	**6.93**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Table 4.2-68
Summary of 2012 Daily On-Site Construction Emissions for Gen-Tie Line A-2

	Average Daily Emissions For 2012, Pounds per Day						
Construction Phase	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Site Cleanup	0.19	1.49	1.18	0.06	0.81	0.24	0.11
2012 Maximum *Average Daily* Totals	**0.19**	**1.49**	**1.18**	**0.06**	**0.81**	**0.24**	**0.11**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that the site preparation and tower foundation phases would overlap, but that all other phases would follow sequentially with no overlaps.
Source: Tetra Tech analyses

Criteria Pollutant Emissions from Construction-Related Vehicle Traffic for GT-A-2. Emissions from construction-related traffic for GT-A-2 were evaluated using the same procedures as those discussed previously for GT-A-1 under Alternative 1. Table 4.2-69 summarizes annual vehicle trips used for the analysis of construction-related vehicle emissions for GT-A-2 under Alternative 3.

Annual and maximum day emissions associated with construction-related vehicle trips for GT-A-2 are summarized in Table 4.2-70 and Table 4.2-71, respectively.

Table 4.2-69
Construction-Related Vehicle Trips for Gen-Tie Line A-2

Year	Vehicle Trip Category	Annual 1-Way Trips	Average Daily 1-Way Trips	Mean 1-Way Trip Distance, miles	Annual VMT	Average Daily VMT
2011	Heavy-Heavy Trucks	1,116	6.3	75	83,700	476
	Personal Vehicle Commute	16,928	184.0	83	2,278,184	12,944
2012	Heavy-Heavy Trucks	4	0.2	75	300	14
	Personal Vehicle Commute	98	14.0	83	24,402	1,162

Vehicle travel calculations were performed by construction phase within each year. Different construction phases would have different durations.
Source: Tetra Tech analyses

Table 4.2-70
Annual Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line A-2

	Annual Emissions, Tons per Year						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.06	1.09	0.25	0.00	0.12	0.06	0.05
Personal Vehicle Commute	0.52	0.83	7.99	0.01	1.95	0.37	0.09
2011 Total	**0.58**	**1.91**	**8.25**	**0.01**	**2.07**	**0.42**	**0.14**
2012 Emissions							
Construction Trucks	0.000	0.002	0.000	0.000	0.000	0.000	0.000
Personal Vehicle Commute	0.005	0.008	0.081	0.000	0.021	0.004	0.001
2012 Total	**0.005**	**0.010**	**0.082**	**0.000**	**0.021**	**0.004**	**0.001**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-71
Maximum Day Emissions from Construction-Related Vehicle Traffic, Gen-Tie Line A-2

	Maximum Day Emissions, Pounds per Day						
Traffic Component	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Emissions							
Construction Trucks	0.79	14.04	3.29	0.02	1.55	0.72	0.67
Personal Vehicle Commute	6.61	10.59	102.50	0.14	25.04	4.73	1.18
2011 Total	**7.39**	**24.63**	**105.79**	**0.16**	**26.59**	**5.45**	**1.85**
2012 Emissions							
Construction Trucks	0.00	0.20	0.04	0.00	0.03	0.01	0.01
Personal Vehicle Commute	0.51	0.78	7.76	0.01	1.99	0.38	0.09
2012 Total	**0.51**	**0.99**	**7.80**	**0.01**	**2.02**	**0.38**	**0.10**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Analysis assumes that all phases overlap at some point during a construction year due to different activities occurring on multiple subareas.
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with construction and operation of GT-A-2 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also used during construction. There would be few operational sources of hazardous air pollutant emissions other than limited and infrequent on-site vehicle traffic for periodic line inspection and necessary maintenance activities. The quantities of hazardous pollutant emissions associated with transmission line construction and operation are expected to be too small to pose an adverse health risk to the nearest residences.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of GT-A-2 would occur primarily during daytime hours. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. The Gen-Tie Line corridor would not be a significant source of dust from wind erosion. Consequently, construction of GT-A-2 would not produce significant dust-related changes in night sky visibility.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Construction Impacts for Alternative 3

Construction activities and associated vehicle traffic under Alternative 3 would generate emissions of criteria pollutants and hazardous air pollutants over a period of approximately 26 months. Construction-related emissions generally would be limited to daytime hours on weekdays, and would have little effect on night sky visibility conditions. No odor problems would be expected as a result of construction-related activity or vehicle traffic.

Operation and Maintenance

Solar Farm Layout C

Criteria Pollutant Emissions from Facility Operations. Alternative 3 would have limited operational emissions at the Solar Farm site. There would be no emissions associated with operation of the Solar Farm equipment. With only 10 to 15 on-site Solar Farm employees and limited requirements for material deliveries, emissions from operational vehicle traffic (employee commutes, delivery vehicles, and on-site vehicle use) would be low (less than six pounds per day for nitrogen oxide emissions and less than four pounds per day of PM_{10} emissions). Emissions associated with vehicle travel to the on-site visitor center also would be limited. Small amounts of volatile organic compounds would be released any time buildings or equipment enclosures need to be repainted. Small amounts of organic compounds and perhaps other pollutants would be released from the use of janitorial materials and other equipment maintenance materials.

Net Change in Wind Erosion from Solar Farm Layout C. Changes in wind erosion conditions for SF-C under Alternative 3 have been evaluated using a detailed spreadsheet model as discussed under Alternative 1. Under SF-C, the developed site would have 0.8 percent of the area covered by gravel roads with a dust suppressant treatment; 0.4 percent of the area covered by building, equipment pads, power poles, and similar structures; and 34.1 percent of the area covered by solar panels. The remaining 64.7 percent of the Solar Farm site would be open ground that has been treated with a biodegradable dust suppressant. Vegetation would be allowed to re-establish on this open ground, but the rate of vegetation re-establishment is expected to be slow. The combined “vegetation cover equivalence” for SF-C conditions was 24.7 percent. The wind erosion reduction provided by this equivalent vegetation cover varies with wind speed, ranging from a 90 percent control factor at a wind speed of 20 mph to a 72.8 percent control factor at a wind speed of 40 mph. Appendix D-4 provides additional information regarding the wind erosion analyses.

Table 4.2-72 summarizes the results of the wind erosion analysis for Solar Farm Layout C.

Table 4.2-72
Summary of Wind Erosion Conditions for Solar Farm Layout C

Parameters	Per-Acre Conditions	Total Site Conditions
Site Acres	NA	3,045
Barren Ground PM10 Emissions, Tons per Year	0.193	586.8
Natural Condition PM10 Emissions, Tons per Year	0.018	55.9
Solar Farm Condition PM10 Emissions, Tons per Year	0.025	77.2
Net Change in PM10 Emissions, Solar Farm versus Natural Conditions, Tons per Year	0.070	21.2
Barren Ground PM10 Emissions, Average Pounds per Day	1.056	3,215.2
Natural Condition PM10 Emissions, Average Pounds per Day	0.101	306.5
Solar Farm Condition PM10 Emissions, Average Pounds per Day	0.139	422.8
Net Change in PM10 Emissions, Solar Farm versus Natural Conditions, Average Pounds per Day	0.038	116.3

Note: The net per acre change in wind erosion conditions (solar farm versus natural conditions) amounts to only 0.61 ounces (17.24 grams) per acre per day, a value that would not be detectable by visual observation and probably would not be detectable by instrumental monitoring.
Source: Tetra Tech analyses

Operation of SF-C under Alternative 3 would result in an indirect air quality impact from altered wind erosion conditions at the Solar Farm site. As noted in Table 4.2-72 above, the change in ground cover conditions is expected to increase the wind erosion susceptibility of the site by a small amount. On a per-acre basis, this change would be quite small, amounting to only 0.139 pounds of PM_{10} per acre per day (less than one ounce per acre per day). Such a small change in wind erosion conditions would not be detectable by visual observation, and probably would not be detectable by instrumental monitoring equipment. When aggregated over the entire 3,045-acre site, the total net increase in PM_{10} emissions from wind erosion would average about 116 pounds per day.

Compliance with Air Quality Plans and Regulatory Requirements. SF-C would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of the Solar Farm would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. The power screeners used during construction would either be provided directly by construction contractors or would be rented equipment items. In either case, that equipment would most likely be registered under the CARB statewide portable equipment registration program or would be operating under the owner’s existing SCAQMD permits. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Resources section of Chapter 3, the applicant would comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Gen-Tie Line A-2

Criteria Pollutant Emissions from Facility Operations. Operational emissions for GT-A-2 would be minimal, resulting from periodic line inspections and any necessary maintenance activity. Assuming two line inspections and one maintenance event per year, operational activities would typically produce maximum daily emissions of less than 2.5 pounds of nitrogen oxide and less than 0.7 pounds of PM_{10}.

Net Change in Wind Erosion from the Project Site. No quantitative analysis of wind erosion conditions has been conducted for GT-A-2 since the area of disturbance is relatively narrow linear corridor with adjacent undisturbed areas providing at least partial shielding from wind erosion. Vegetation within the disturbance area would be cleared only where necessary for laydown and staging areas, tower assembly areas, and other localized work areas.

Compliance with Air Quality Plans and Regulatory Requirements. GT- A-2 would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during construction of GT-A-2 would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Resources section of Chapter 3, the applicant would comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal Clean Air Act conformity reviews.

Emissions from Corona Discharge. Electrical transmission lines are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects. Corona discharge generally is not an issue with transmission lines rated at 230 kV or less (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with GT-A-2. Because these emissions would be minimal, they would not be considered adverse odor sources. These emission sources are not considered significant odor sources. Corona discharge effects along high voltage transmission lines during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the transmission line right of way. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A under Alternative 3 would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Operation and Maintenance Impacts for Alternative 3

Operation and maintenance activities and associated vehicle traffic under Alternative 3 would generate limited amounts of emissions of criteria pollutants and hazardous air pollutants for the duration of Project operations. Changes in ground cover conditions would result in limited increases in wind erosion potential for the Solar Farm site and Gen-Tie Line corridor, but not at the Red Bluff Substation site. Alternative 3 would not conflict with any air quality management plan, and would be expected to comply with federal, state, and SCAQMD regulatory requirements. Operation and maintenance conditions for Alternative 3 are not expected to create any air quality issues related to corona discharge or odors.

Decommissioning

Solar Farm Layout C

Decommissioning of the Solar Farm would require disassembly of mechanical equipment components, demolition of on-site buildings, and removal of perimeter fencing. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment emissions from decommissioning activities.

Gen-Tie Line A-2

Decommissioning of GT-A-2 would require removal of the transmission cables, removal of the transmission towers and footings, filling of tower footing excavations, and perhaps a limited amount of revegetation along the transmission line corridor. Most of the material removed during decommissioning would likely be recycled. Equipment used for decommissioning would generally be similar to that used for construction. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment emissions from decommissioning activities.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Decommissioning Impacts for Alternative 3

Air quality impacts of facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine emissions, in particular, might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Summary of Combined Impacts for Alternative 3

The preceding analyses have identified impacts associated with individual components of Alternative 3 (Solar Farm Layout C, GT-A-2, and Red Bluff Substation A). The following discussion provides a summary of air quality impacts reflecting the combined effects of all components of Alternative 3.

Criteria Pollutant Emissions from Overall Construction Activity. Overall construction activity for Alternative 3 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout C, GT-A-2, and Red Bluff Substation A. Annual and maximum day emissions associated with overall construction activity for Alternative 3 are summarized in Table 4.2-73 and Table 4.2-74, respectively.

Table 4.2-73
Annual Emissions from Combined Construction Activity for Alternative 3

Component	Annual Emissions, Tons per Year						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
2011 Construction Activity							
Solar Farm C	7.89	50.57	71.92	2.02	14.61	5.56	3.97
Transmission Line A-2	1.36	3.97	18.36	0.14	2.40	0.64	0.34
Red Bluff Substation A	0.45	2.55	4.62	0.14	1.25	0.40	0.26
2011 Total	**9.71**	**57.09**	**94.90**	**2.30**	**18.26**	**6.60**	**4.57**
2012 Construction Activity							
Solar Farm C	9.10	55.99	79.33	1.98	16.53	6.13	4.28
Transmission Line A-2	0.01	0.03	0.09	0.00	0.03	0.01	0.00
Red Bluff Substation A	1.27	6.76	14.93	0.11	3.77	0.98	0.42
2012 Total	**10.38**	**62.78**	**94.36**	**2.09**	**20.32**	**7.12**	**4.71**
2013 Construction Activity							
Solar Farm C	0.10	0.57	0.91	0.02	0.54	0.14	0.05
Red Bluff Substation A	0.35	3.18	2.83	0.03	0.73	0.25	0.19
2013 Total	**0.45**	**3.75**	**3.74**	**0.05**	**1.28**	**0.39**	**0.23**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-74
Daily Emissions from Combined Construction Activity for Alternative 3

Component	Daily Emissions, Pounds per Day						
	ROG	NOx	CO	SOx	PM10	PM2.5	DPM
2011 Construction Activity							
Solar Farm C	122.5	770.2	1,099.3	31.2	217.2	84.0	60.1
Transmission Line A-2	29.6	90.8	424.2	3.9	39.4	13.0	8.8
Red Bluff Substation A	6.3	43.2	60.3	2.7	17.4	6.5	4.6
2011 Total	**158.4**	**904.3**	**1,583.7**	**37.8**	**274.0**	**103.5**	**73.5**
2012 Construction Activity							
Solar Farm C	98.5	607.4	847.2	23.9	177.1	68.1	48.6
Transmission Line A-2	0.7	2.5	9.0	0.1	2.8	0.6	0.2
Red Bluff Substation A	12.4	86.7	147.1	2.2	48.8	11.4	6.3
2012 Total	**111.7**	**696.5**	**1,003.3**	**26.1**	**228.7**	**80.1**	**55.0**
2013 Construction Activity							
Solar Farm C	9.2	51.5	75.9	2.0	52.6	13.4	2.6
Red Bluff Substation A	8.2	77.1	65.7	1.1	17.4	6.4	5.1
2013 Total	**17.4**	**128.6**	**141.6**	**3.1**	**70.0**	**19.9**	**7.7**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Hazardous Air Pollutant Emissions. The primary hazardous air pollutant emission associated with the different components of Alternative 3 would be diesel particulate matter emissions from construction equipment. Those emissions have been quantified in the construction emissions tables presented above. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also operating on-site during Solar Farm construction. The location of hazardous pollutant emissions from construction equipment operation would vary across the facility construction sites over the construction period, and thus would not be in a fixed location for long periods of time. There would be few sources of hazardous air pollutant emissions other than limited on-site vehicle traffic at the Solar Farm site during facility operation. There are only a few rural residences within one mile of the Solar Farm site, and only one rural residence within 0.25 mile of boundary of the proposed Solar Farm. There are no sensitive receptors along the alignment for Transmission Line A-2. The absence of nearby sensitive receptors and the limited duration of construction activity at any one location along the transmission line corridor would minimize health risks from construction equipment engine exhaust. There are no sensitive receptors near Red Bluff Substation A.

Changes in Night Sky Visibility due to Project-Related Fugitive Dust. Fugitive dust emissions during construction of Project facilities would occur primarily during daytime hours. The Applicant would implement a dust control plan including the use of dust suppressants during facility construction. Airborne dust generated from construction sites would be widely dispersed and greatly reduced in concentration by nighttime hours. Construction activity would be phased across the Solar Farm site over a 26-month period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at night. As noted previously, development of the Solar Farm site would result in only a small increase in wind erosion potential compared to natural conditions. Consequently, the combined effects of facility components for Alternative 3 would not produce significant dust-related changes in night sky visibility.

Criteria Pollutant Emissions from Facility Operations. Alternative 3 would have limited operational emissions. Most operational emissions would involve vehicle travel by Solar Farm employees or other employees conducting periodic inspections or maintenance activity along the Gen-Tie line or at the Red Bluff substation. Annual and daily operational emissions for Alternative 3 are summarized in Table 4.2-75 and Table 4.2-76, respectively.

As indicated in Table 4.2-75 and Table 4.2-76, annual and daily traffic associated with facility operations would generate only limited quantities of emissions. The on-site visitor's center at the Solar Farm is not expected to draw a high volume of visitor traffic. Consequently, emissions associated with vehicle travel to the on-site visitor center also would be limited. Small amounts of volatile organic compounds would be released any time buildings or equipment enclosures need to be repainted. Small amounts of organic compounds and perhaps other pollutants would be released from the use of janitorial materials and other equipment maintenance materials.

Table 4.2-75
Annual Emissions from Combined Operational Traffic for Alternative 3

Component	Annual Emissions, Tons per Year						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Solar Farm C	0.15	1.09	2.13	0.01	0.67	0.14	0.05
Transmission Line A-2	0.0001	0.0012	0.0013	0	0.0005	0.0001	0
Red Bluff Substation A	0.0001	0.0012	0.0013	0	0.0005	0.0001	0
Total	**0.15**	**1.09**	**2.14**	**0.01**	**0.67**	**0.14**	**0.05**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Table 4.2-76
Daily Emissions from Combined Operational Traffic for Alternative 3

Component	Daily Emissions, Pounds per Day						
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**DPM**
Solar Farm C	0.80	5.98	11.70	0.03	3.65	0.77	0.27
Transmission Line A-2	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Red Bluff Substation A	0.11	2.28	1.53	0.01	0.63	0.15	0.07
Total	**1.03**	**10.53**	**14.76**	**0.04**	**4.91**	**1.07**	**0.42**

ROG = reactive organic compounds (ozone and particulate matter precursors)
NOx = nitrogen oxides (ozone and particulate matter precursors)
CO = carbon monoxide
SOx = sulfur oxides
PM10 = inhalable particulate matter, particles generally smaller than 50 microns
PM2.5 = fine particulate matter, particles generally smaller than 6 microns
DPM = diesel particulate matter (carcinogen)
Source: Tetra Tech analyses

Net Change in Wind Erosion from the Project Site. Changes in wind erosion conditions have been evaluated using procedures discussed previously for Solar Farm Layout B. Development of Solar Farm Layout C would replace natural vegetation and ground surface conditions with cleared land, solar panel arrays, buildings, equipment pads, gravel roads, and related features. There would be a change in wind erosion conditions associated with these land surface changes. As discussed previously, construction of GT-A-2 and Red Bluff Substation A would have minimal effects on wind erosion conditions in the Project area. Thus, the net change in wind erosion conditions for the combined components of Alternative 3 would be the same as presented previously in Table 4.2-30.

The change in ground cover conditions for Solar Farm Layout C is expected to increase the wind erosion susceptibility of the site by a small amount. On a per-acre basis, this change would be quite small, amounting to only 0.139 pounds of PM_{10} per acre per day (less than one ounce per acre per day). Such a small change in wind erosion conditions would not be detectable by visual observation, and probably would not be detectable by instrumental monitoring equipment. When aggregated over the entire 3,045-acre site, the total net increase in PM_{10} emissions from wind erosion would average about 116 pounds per day.

Compliance with Air Quality Plans and Regulatory Requirements. Alternative 3 would not conflict with any adopted air quality management plan and is expected to be in compliance with all local, state, and federal regulatory requirements. Most equipment used during Project construction would be mobile equipment exempt from regulation as stationary sources. Other equipment such as portable generators and air compressors, would most likely be registered under the CARB statewide portable equipment registration program, and thus would be exempt from SCAQMD regulation. The power screeners used during Solar Farm construction would either be provided directly by construction contractors or would be -rented equipment items. In either case, that equipment would most likely be registered under the CARB statewide portable equipment registration program or would be operating under the owner's existing SCAQMD permits. In addition, construction equipment would be expected to operate in compliance with state regulations governing unnecessary idling of diesel engine equipment (CARB 2008a, 2008d). As noted in the Air Quality section of Chapter 3, the applicant and SCE would need to comply with various SCAQMD rules and regulations, including Rule 403 (fugitive dust control), Rule 1113 (architectural coatings), Rule 442 (usage of solvents), and Rule 1171 (solvent cleaning operations).

Because eastern Riverside County has no federal nonattainment or maintenance designations, federal agency actions in eastern Riverside County are not required to conduct formal CAA conformity reviews.

Emissions from Corona Discharge. Electrical transmission lines and substation equipment are designed to minimize corona discharge effects, since corona discharge represents a loss of transmitted energy. Corona discharge occurs along high voltage transmission lines and at substation equipment primarily during rainstorm events. Ionization of air during corona discharge events can result in chemical reactions that generate small quantities of ozone and even smaller quantities of nitrogen oxides. The quantities of ozone and nitrogen oxides produced by corona discharge effects are too small to have ambient air quality effects (PG&E 2002).

Odors. Vehicle emissions and fugitive dust represent the primary air pollutants associated with the combined facilities for Alternative 3. These emission sources are not considered significant odor sources. Corona discharge effects at high voltage substation equipment during rainstorms can generate small quantities of ozone, which has a pungent odor. Corona discharge only occurs during rainstorms, and any resulting ozone odor generally is not noticeable beyond the substation site. In addition, stratospheric ozone transported to ground level by air turbulence is commonly noticed during thunderstorms. It is difficult to distinguish ozone generated by corona discharge from stratospheric ozone that has been entrained in thunderstorms and carried by vertical turbulence to ground level.

Applicant Measures and Mitigation Measures

Applicant Measures and mitigation measures discussed under Alternative 1 would be applicable to Alternative 3, also.

CEQA Significance Determination

Solar Farm Layout C

The CEQA significance determinations for SF-C under Alternative 3 are the same as those discussed under Alternative 1.

Gen-Tie Line A-2

The CEQA significance determinations for GT-A-2 under Alternative 3 are the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The CEQA significance determinations for Red Bluff Substation A under Alternative 3 are the same as those discussed for Red Bluff Substation A under Alternative 1.

Unavoidable Adverse Effects

On-site construction activities and construction-related traffic for Solar Farm Layout C would produce ozone precursor emissions (reactive organic compounds and nitrogen oxides) and particulate matter emissions (PM_{10} and $PM_{2.5}$) that exceed SCAQMD regional emissions significance thresholds. Mitigation measures MM-AIR-1 and MM-AIR-2 would reduce these emissions somewhat, but would not reduce emissions to a level less than the SCAQMD regional emissions significance thresholds. Consequently, construction-related emissions for Solar Farm Layout C would be an unavoidable significant air quality impact under Alternative 1.

4.2.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under Alternative 4, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, none of the Project components would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the construction or operation air emissions from the proposed Project would occur and none of the benefits of the proposed Project in displacing fossil fuel fired generation and reducing associated pollutant emissions would occur. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.2.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under Alternative 5, the proposed Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the air quality of the site is not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in the air quality impacts expected under the proposed Project nor would it result in the air quality benefits from the proposed Project. However, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.2.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under Alternative 6, the proposed Project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. If that were to happen, air pollutant emissions would result from the construction and operation of the solar technology and would likely be similar to the air quality impacts from the proposed Project. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. The benefits of the Proposed Project in displacing fossil fuel fired generation and reducing associated pollutant emissions could occur with a different solar technology at this site and therefore with this alternative. As such, this No Action Alternative could result in air quality impacts and benefits generally similar to the impacts under the Proposed Project.

4.2.9 Cumulative Impacts

Cumulative air quality impacts would occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of air quality impacts on a given area over a longer period of time. The factors of geographic extent and time frame for ambient air quality impacts and climate change impacts are discussed below.

Geographic Extent

The air quality impacts of the Project alternatives stem primarily from temporary construction activities. Ozone precursor emissions associated with engine exhaust from construction equipment and construction-related traffic would contribute to area-wide and regional air quality conditions. Direct particulate matter emissions, such as fugitive dust emissions from construction activities, generally would have a more localized impact, with the most noticeable impacts occurring within one-half mile or less of active construction sites. Secondary particulate matter, formed by atmospheric chemical reactions involving precursor emissions of organic compounds, nitrogen oxides, and sulfur oxides, would have an area-wide and regional extent similar to ozone.

Time Frame

Criteria pollutant emissions associated with construction activities or vehicle travel do not persist in the atmosphere for long periods of time. Ozone precursor emissions are chemically reactive, and have typical atmospheric lifetimes measured in hours, days, or weeks. The atmospheric lifetime of suspended particulate matter depends on particle size and composition. Most fugitive dust particles have typical atmospheric lifetimes measured in hours or days, while small particles can remain in the atmosphere for a few days to a few weeks. Emissions from large industrial facilities can be injected high into the atmosphere, resulting in longer atmospheric residence times for some pollutants from these sources. Actual changes in ambient air quality generally are determined by pollutants that have been emitted within recent days or weeks. Most emissions that were released earlier than that would no longer be affecting actual ambient air quality conditions for criteria pollutants.

Ambient air quality standards are set for time frames that include one-hour, three-hour, eight-hour, 24-hour, 30-day averages, calendar quarter averages, and yearly averages. Violations of some ambient air quality standards are based on statistical analyses of data compiled over a period of three consecutive years. Thus, there is a regulatory context in terms of attainment or nonattainment designations that is generally no more than three years beyond the time frame for emissions release.

Construction activities for the Project alternatives would be limited to 2011, 2012, and the first half of 2013. Criteria pollutant emissions from construction activity during those years would not persist in the atmosphere beyond the middle of 2013, and air quality conditions resulting from those emissions would not be considered in attainment or nonattainment designations after 2015.

Existing Cumulative Conditions

Current ambient air quality conditions represent the cumulative effect of pollutant emissions on a local and regional geographic scale for recent time periods. Eastern Riverside County meets all federal ambient air quality standards, but occasionally exceeds state ambient air quality standards for ozone and PM_{10}. The limited amount of ozone monitoring data from Blythe does not show any distinct trends in ozone levels or the frequency with which state ozone standards are exceeded. In a more general context, most Southern California monitoring stations show a trend of gradually improving air quality in terms of ozone, with a trend toward lower peak ozone levels and fewer days exceeding federal and state ozone standards. Historical data for PM_{10} levels often shows little distinct trend toward improving or declining air quality.

Existing projects and facilities listed in Table 3.18-2 are too far from the proposed Solar Farm area to create cumulative fugitive dust impacts in combination with any of the Solar Farm alternatives.

The alternative transmission line corridors all cross I-10, and the Red Bluff Substation alternatives are near I-10. Traffic on I-10, however, does not generate enough fugitive dust to lead to significant cumulative fugitive dust problems in combination with transmission line or substation construction activities. The region of interest for precursor emissions that can react to form ozone and secondary particulate matter extends for perhaps 30 to 40 miles from the Solar Farm area. Thus, most of the projects listed in Table 3.18-2 can be considered close enough to the proposed Project to have the potential for cumulative impacts related to ozone and secondary particulate matter. But traffic on I-10 and the Blythe energy project are the only projects in Table 3.18-2 that are meaningful emission sources for precursors of ozone and secondary particulate matter. The other projects listed in Table 3.18-2 do not generate sufficient emissions of ozone or particulate matter precursors to result in the potential for significant cumulative air quality impacts in combination with the various project alternatives. Additional considerations regarding cumulative air quality impacts for the various project alternatives in combination with existing conditions are presented below.

Past, Present, and Reasonably Foreseeable Future Projects

Most of the projects listed in Table 3.18-3 are too far from the proposed Solar Farm site to generate cumulative fugitive dust problems in combination with the Solar Farm alternatives, transmission line alternatives, or Red Bluff substation alternatives. The Eagle Mountain Pumped Storage Project and the Eagle Mountain Landfill Project are unlikely to start construction during the construction period for the various Solar Farm alternatives. GT-A-1 and GT-A-2 would pass through or near the Chuckwalla Solar I Project site. In addition, the Eagle Mountain Soleil Project is close enough to the Desert Sunlight solar is adjacent to the south side of the Desert Sunlight Solar Farm site. Thus, only the Chuckwalla Solar I and Eagle Mountain Soleil Projects have the potential for cumulative fugitive dust impacts in combination with the proposed Desert Sunlight Project.

Cumulative Impact Analysis

The region of interest for precursor emissions that can react to form ozone and secondary particulate matter extends for perhaps 30 to 40 miles from the Solar Farm area. Thus, most of the projects listed in Table 3.18-3 can be considered close enough to the proposed Project to have the potential for cumulative impacts related to ozone and secondary particulate matter. But many of the smaller projects listed in Table 3.18-3, especially urban development projects in the Blythe area, are unlikely to generate enough precursor emissions for ozone and secondary particulate matter to create actual cumulative impacts in combination with the Desert Sunlight Project. The same consideration would hold true for most of the smaller renewable energy projects listed in Table 3.18-3. The proposed Desert Sunlight Project would not be a meaningful source of precursor emissions for ozone or secondary particulate matter during its operational lifetime. Thus, the time frame for potential cumulative air quality impacts related to precursors of ozone and secondary particulate matter is restricted to the construction period for the Desert Sunlight Project.

The timing for approval and construction of the Chuckwalla Solar I and Eagle Mountain Soleil Projects is not known, but it could overlap with part of the construction period for the Desert Sunlight Project. Consequently, there is the potential for short-term significant cumulative fugitive dust impacts from the Desert Sunlight Project in combination with either or both of these other solar energy projects. There also would be short-term cumulative air quality impacts in terms of precursor emissions for ozone and secondary particulate matter because the timing for construction of at least some of the projects listed in Table 3.18-3 would overlap with construction of the Desert Sunlight Project.

The timing for construction of most projects listed in Table 3.18-3 is not known. The Genesis and Palen solar energy projects are planned with construction time frames that overlap that of the Desert Sunlight Project. In addition, the transmission line projects (Devers-Palo Verde 2, Desert Southwest, and Green Energy transmission lines) might have construction periods that partially overlap with the Desert Sunlight Project. It is unclear whether or not other projects listed in Table 3.18-3 would have construction periods that overlap with the Desert Sunlight Project.

Alternatives 1, 2, and 3 would have short-term unavoidable adverse air quality impacts associated with facility construction. The timing for approval and construction of the Chuckwalla Solar I and Eagle Mountain Soleil Projects is not known, but could potentially overlap with part of the construction period for the Desert Sunlight Project. Consequently, there is the potential for short-term significant cumulative fugitive dust impacts from the Desert Sunlight Project in combination with either or both of these other solar energy projects. Because the timing for construction of at least some of the projects listed in Table 3.18-3 would overlap with construction of the Desert Sunlight Project, there also would be short-term cumulative air quality impacts in terms of precursor emissions for ozone and secondary particulate matter. *However, for there to be a risk of any cumulative effect, the proposed Project and the Chuckwalla Solar I and Eagle Mountain Soleil Projects would have to be constructed simultaneously. All cumulative projects would also need to comply with local ordinances prohibiting nuisances or requiring dust control.*

Operational emissions would not have the potential to significantly increase regional cumulative emissions, as net mitigated fugitive dust emissions would be less than ambient conditions (see Table 4.2-30) and exhaust emissions would be the result of vehicle use for limited routine maintenance and inspection.

The foreseeable renewable projects in the California desert as listed in Table 3.18-1 would generally be too far from the Desert Sunlight Project to have any cumulative air quality impacts in combination with the Desert Sunlight Project *from either short-term construction or operational emissions*.

Alternatives 1, 2, and 3, in combination with past, present, and foreseeable future projects, would have adverse cumulative air quality impacts related to ozone and secondary particulate matter precursor emissions during the 26-month time frame for construction. *The Applicant Measures for air quality and air quality mitigation measures recommended for the proposed Project and Alternatives 2 and 3 would reduce cumulative construction impacts. However, the Project would result in significant adverse short-term air quality impacts and have a cumulatively considerable contribution to air quality impacts under CEQA within the SCAQMD jurisdiction.*

Alternatives 1, 2, and 3 would not contribute to adverse long-term cumulative air quality *emissions*. *They would be consistent with the local air quality rules, regulations, and attainment plans, and have no cumulatively considerable contribution to air quality impacts under CEQA, because no substantial emission increases would result from the proposed Project.*

There would be no cumulative air quality impacts under the No Action and No Project Alternatives (Alternatives 4, 5 or 6) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. However, any future proposals for use of the site could result in the generation of pollutant emissions and would be subject to separate environmental analysis. For example, under Alternative 6, it would be possible that another solar energy project could be constructed on the Project site, which would result in air resources impacts similar to those that would occur under one of the action alternatives.

4.3 VEGETATION

4.3.1 Methodology for Analysis

A summary of the overall acreages of disturbance associated with each alternative is provided in Table 4.3-1. Acreages calculated for impacts were based on the best information available at the time of publication of the EIS for permanent disturbance areas. *These acreages are based on information provided by Sunlight and SCE regarding construction of each project component.*

Table 4.3-1
Comparison of Action Alternative Features Relevant to Vegetation Impacts

Project Feature	Alternative 1	Alternative 2	Alternative 3
Solar Farm Acreage	*3,912*	*3,912*	3,045
Gen-Tie Line Disturbance Acreage	*92*	*68*	*86*
Red Bluff Substation (and related elements) Disturbance Acreage	*172*	*130*	*172*
Total Disturbance Acreage	*4,176*	*4,110*	*3,303*

For the purposes of this analysis, *and following CDFG guidance, all ground disturbance activity is considered a permanent impact as a result of the long time period for natural revegetation to occur in the desert.* Natural recovery rates from disturbance in desert ecosystems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), whereas more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery and complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999).

Tables 4.3-2 through 4.3-5 summarize the direct impacts of each alternative on vegetation communities, special status plant species, sensitive natural communities (desert dry wash woodland), and CDFG jurisdictional resources, respectively, as described in more detail below.

Direct impacts on vegetation are considered to include disruption, trampling, or removal of rooted vegetation resulting in a reduction in the total acres of native vegetation and actions that unequivocally cause a reduction of total numbers of plants and/or reduction or loss of total area, diversity, vigor, structure, or function of vegetative habitat. This includes loss of suitable habitat due to surface disturbance. Direct impacts can also include decreased plant vigor or health from reduced air or water quality.

Table 4.3-2
Vegetation Communities within Each Alternative Footprint

Project Feature	Alternative 1	Alternative 2	Alternative 3
Creosote Desert Scrub	*4,072*	*4,015*	*3,180*
Desert Dry Wash Woodland	101	93	102
Disturbed Areas	3	2	21
Total	*4,176*	*4,110*	*3,303*

Note: Numbers are in acres and include permanent disturbance areas.

Table 4.3-3
Overall Summary of Impacts on Special Status Plant Species

Species	Alternative 1	Alternative 2	Alternative 3
Foxtail cactus (CNPS List 4.3)	5	2	5
Emory's crucifixion thorn (CNPS List 2.3)	*1*	*1*	*3*
Las Animas colubrina (CNPS List 2.3)	*0*	0	*0*
California ditaxis (CNPS List 2.2)	*2*	*604*	*2*
Desert unicorn plant (CNPS List 4.3)	*1*	*0*	1
Slender-spined allthorn (CNPS List 2.2)	5	5	5

Note: Numbers of individuals present in the Project *disturbance areas* shown. *For example, although no Las Animas Colubrina were found in Project disturbance areas, two individuals were found near Alternatives 1 and 3.*

Table 4.3-4
Overall Summary of Impacts on Desert Dry Wash Woodland

Vegetation Community	Alternative 1	Alternative 2	Alternative 3
Desert dry wash woodland *Total (acres)*	101	93	102

Table 4.3-5
Summary of Impacts on Jurisdictional Resources

Vegetation Community	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)
Desert Dry Wash – In Creosote Desert Scrub Habitat*			
Subtotal (acres)	*201*	*197*	*171*
Riparian – Desert Dry Wash Woodland			
Subtotal (acres)	101	93	102
Total (acres)	***302***	***290***	***273***

Notes: * Largely unvegetated desert dry washes found within creosote desert scrub habitat.

Indirect impacts can occur later in time or are farther removed in distance while still being reasonably foreseeable and related to the project. Potential indirect impacts include introduction of invasive species by various vectors or conditions that compete with native species and can result in habitat degradation.

An *Integrated Weed Management Plan* (Ironwood Consulting 2010b) and *Habitat Compensation Plan* (Ironwood Consulting 2010c) have been prepared for the Project to reduce impacts associated with the potential introduction of invasive plant species and the loss of vegetation communities. These draft plans are contained in Appendix H of this document. Invasive species on BLM lands will be prevented, controlled, treated, and restored through an Integrated Pest Management approach pursuant to the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM 2007), and the *National Invasive Species Management Plan* (The National Invasive Species Council 2008).

4.3.2 CEQA Significance Criteria

The proposed Project would have a significant impact on vegetation if it would:

BIO-1. Have a substantial adverse effect on native vegetation communities, including direct loss of vegetation and introduction of nonnative invasive weed species;

BIO-2. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for state or federal listing as threatened or endangered, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (CDFG) or US Fish and Wildlife Service (USFWS);

BIO-3. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;

BIO-4. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, riparian, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or

BIO-5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

4.3.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Native Vegetation Communities

Clearing and grading activities for SF-B construction and infrastructure (such as access roads, staging areas, the footprint of the PV arrays, on-site substation, Visitor's Center, and O&M facility) would cause the direct loss of native vegetation within the SF-B boundaries. Vegetation communities affected would include creosote desert scrub and desert dry wash woodland. All surface disturbances would have permanent impacts. Total permanent disturbance would be approximately *3,912* acres. The creosote desert scrub community would receive the greatest impact (*3,877* acres), as it is the dominant vegetation community within SF-B (Table 4.3-6). Implementation of Applicant Measure BIO-1, Mitigation Measure BIO-1 *and Mitigation Measure BIO-2* would *avoid,* reduce *or mitigate* these impacts.

Dust generated during construction could directly adversely affect offsite native vegetation communities immediately adjacent to the Project by covering stomata and reducing photosynthetic or respiratory activity. Over the proposed 26-month construction period, this could cause lowered growth rates, increased susceptibility to disease, lowered reproductive capacity, or lowered ability to compete with nonnative species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, grading activities during construction could also have direct effects on the water quality and hydrology of desert dry washes located downstream of SF-B during rain events. Specifically, without implementation of erosion control measures, site compaction and grading activities would result in an increase in the rate and volume and sediment load in storm water runoff traveling offsite. Implementation of a Storm Water Pollution Prevention Plan (SWPPP) during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

Finally, clearing and grading activities within SF-B would disturb soil and remove vegetation. This could indirectly affect adjacent native vegetation communities by creating opportunities for nonnative invasive weed species to colonize or spread into the disturbed areas and then possibly into undisturbed areas located adjacent to SF-B (including Pinto Wash). Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Special Status Plant Species

As stated in Section 3.3, no federally listed, state-listed, or proposed listed plant species have been observed in the Project locations and are not expected to be affected by the Project. Clearing and grading activities to construct SF-B would cause the direct loss of *five* foxtail cactus (CNPS List 4.3), one crucifixion thorn (CNPS List 2.3), and five slender-spined allthorn (Table 4.3-7). Eight other species of cacti, protected by BLM, have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *3,912* acres of permanent disturbance caused by construction of SF-B. Although not observed during botanical surveys conducted for the Project, there is a chance that new special status species could emerge within SF-B immediately prior to construction (especially annual species). If present, these species would be directly impacted as well. Implementing Applicant Measures *AM-*BIO-1 and *AM-*BIO-3 through *AM-*BIO-5, Mitigation Measure BIO-1 *and Mitigation Measures MM-BIO-2 through BIO-4* would *avoid,* reduce *or mitigate* these impacts.

As described for *Native Vegetation Communities*, dust generated during construction could also directly adversely affect foxtail cactus and other cacti species located immediately adjacent to SF-B (see Figure 3.3-3). Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Finally, clearing and grading activities within SF-B would disturb soil and remove vegetation. This could indirectly affect special status plant species by creating opportunities for nonnative invasive weed species to colonize or spread into the disturbed areas and then possibly into undisturbed areas, as described for *Native Vegetation Communities*. Implementing Applicant Measure BIO-2 would reduce these impacts.

Sensitive Natural Communities

A total of 35 acres of desert dry wash woodland would be permanently removed to construct SF-B (Table 4.3-8). Implementing Applicant Measure BIO-1, Mitigation Measure BIO-1 *and Mitigation Measure BIO-2* would *avoid,* reduce *or mitigate* these impacts.

In addition, as previously described for *Native Vegetation Communities*, grading activities during construction could also have direct effects on the water quality and hydrology of desert dry washes located downstream of SF-B during rain events. Implementation of a SWPPP during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

As described for *Native Vegetation Communities*, dust generated during construction could also directly adversely affect desert dry wash woodland located immediately adjacent to SF-B. Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be minimized by Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas. Finally, clearing and grading activities within SF-B would disturb soil and remove vegetation. This could indirectly affect desert dry wash woodland downstream and adjacent to SF-B (including Pinto Wash) by creating opportunities for nonnative invasive weed species to colonize or spread, as previously described. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Jurisdictional Resources

Table 4.3-9 presents the acres of CDFG jurisdictional resources that would be disturbed as a result of construction of SF-B. A total of *170* acres of desert dry washes occurring within creosote desert scrub habitat and *35* acres of desert dry wash woodland habitat subject to CDFG's Lake and Streambed Alteration Agreement Program jurisdiction would be permanently disturbed to construct the SF-B site (for a total of *205* acres of jurisdictional resources affected). Implementation of Applicant Measure BIO-1, Mitigation Measure BIO-1 *and Mitigation Measure BIO-2* would reduce *or mitigate* these impacts.

No areas were found that meet the USACE technical criteria for being classified as wetlands. Areas mapped as desert dry wash occurring within creosote desert scrub habitat and desert dry wash woodland habitat did meet the technical criteria for other waters of the US due to the presence of an ordinary high water mark. However, following joint USACE/USEPA guidance resulting from relatively recent US Supreme Court decisions, these *are* excluded from USACE jurisdiction because they are non-navigable intrastate waters, have not been used for navigation in the past, do not have a surface water connection to a traditional navigable water, and have not been used and are not currently being used for interstate or foreign commerce. An official verification of this finding by the USACE *has been received by the Applicant*.

As described under *Sensitive Natural Communities* above, direct impacts to the water quality of jurisdictional resources located downstream of SF-B could result from construction activities due to an increase in the rate and volume and sediment load of storm water runoff traveling offsite. Implementation of a SWPPP during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

As described for *Native Vegetation Communities*, dust generated during construction could also directly adversely affect jurisdictional resources located immediately adjacent to SF-B. Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, construction of SF-B would also have the potential to introduce invasive species into jurisdictional resources located downstream and adjacent to SF-B as well, as described above under the *Sensitive Natural Communities* section. Implementation of Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping could reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential would be minimized be implementing Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas.*

Local Policies or Ordinances Protecting Biological Resources

Local open space Policy DCAP 10.1 of the Desert Center Area Plan of the County of Riverside's General Plan states the following:

> *DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.*

The site for SF-B was chosen in part because of its proximity to existing development, particularly existing transmission and transportation infrastructure. Thus, SF-B is consistent with this policy.

Gen-Tie Line A-1

Native Vegetation Communities

A total of *65* acres of creosote desert scrub would be permanently removed to construct GT-A-1 (Table 4.3-*6*). Acreages of desert dry wash woodland that would be disturbed are discussed below under *Sensitive Natural Communities*. Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-5 and Mitigation Measure *MM-*BIO-1 *and MM-BIO-2* would reduce *or mitigate* these impacts.

Other direct and indirect impacts on native vegetation communities would be similar to those described under SF-B. However, given the linear nature of the GT-A-1 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementing Applicant Measure BIO-2 would reduce these impacts.

Special Status Plant Species

Clearing and grading activities to construct GT-A-1 would cause the direct loss of *one* desert unicorn plant (CNPS List 4.3) (Table 4.3-7). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *92* acres of permanent disturbance caused by construction of GT-A-1. As for SF-B, although not observed during botanical surveys conducted for the Project, there is a chance that new special status species could emerge within GT-A-1 immediately prior to construction (especially annual species). If present, these species would be directly impacted as well. Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-3 through BIO-5 and Mitigation Measure*s MM-*BIO-1 *and MM-BIO-2* *through MM-BIO-4* would reduce these impacts.

Other direct and indirect impacts on special status plant species would be similar to those described under SF-B. However, given the linear nature of the GT-A-1 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementing Applicant Measure *AM-*BIO-2 would reduce these impacts.

Sensitive Natural Communities

A total of *37* acres of desert dry wash woodland would be permanently removed to construct GT-A-1 (Table 4.3-8). Implementation of Applicant Measures BIO-1 and BIO-5 and Mitigation Measure BIO-1 *and BIO-2* would reduce these impacts.

Other direct and indirect impacts on desert dry wash woodland would be similar to those described under SF-B. However, given the linear nature of the GT-A-1 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementing Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping could reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential would be minimized be implementing Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas.*

Jurisdictional Resources

Table 4.3-9 presents the acres of CDFG jurisdictional resources that would be temporarily and permanently disturbed as a result of construction of GT-A-1. A total of *52 acres of CDFG jurisdictional resources* would be permanently disturbed by construction of GT-A-1. Implementation of Applicant Measures BIO-1 and BIO-5 and Mitigation Measure BIO-1 *and BIO-2* would reduce these impacts.

Other direct and indirect impacts on jurisdictional resources would be similar to those described for SF-B. However, given the linear nature of the GT-A-1 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementing Applicant Measure BIO-2 would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, GT-A-1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Red Bluff Substation A

Native Vegetation Communities

A total of *130* acres of creosote desert scrub would be permanently removed to construct the Red Bluff Substation A elements (Table 4.3-6). Acreages of desert dry wash woodland that would be disturbed are discussed below under *Sensitive Natural Communities* (Table 4.3-6). Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-5 and Mitigation Measure*s MM-*BIO-1 *and MM-BIO-2* would reduce *or mitigate* these impacts.

Other direct and indirect impacts on native vegetation communities would be similar to those described for SF-B. Implementing Applicant Measure *AM-*BIO-2 would reduce these impacts.

Special Status Plant Species

Clearing and grading activities to construct the Red Bluff Substation A and all of its associated improvements (including Access Road 1 and the Telecommunications Site) would cause the direct loss of two California ditaxis (CNPS List 2.2) (Table 4.3-7). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the

172 acres of permanent disturbance caused by construction of Red Bluff Substation A *and substation-related features*. As for SF-B, although not observed during botanical surveys conducted for the Project, there is a chance that new special status species could emerge within Red Bluff Substation A immediately prior to construction (especially annual species). If present, these species would be directly impacted as well. Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-3 through *AM-*BIO-5 and Mitigation Measure*s MM-*BIO-1 *through MM-BIO-4* would reduce *or mitigate* these impacts.

Similar direct and indirect impacts associated with dust and the potential introduction of invasive species would also result from construction of Red Bluff Substation A and associated elements as under SF-B. Implementing Applicant Measure *AM-*BIO-2 would reduce these impacts.

Sensitive Natural Communities

A total of *29* acres of desert dry wash woodland would be permanently removed to construct the elements of Red Bluff Substation A (Table 4.3-8). Implementation of Applicant Measures *AM-*BIO-1 and Mitigation Measure*s MM-* BIO-1 and *MM-*BIO-2 would reduce *or mitigate* these impacts.

Other direct and indirect impacts on desert dry wash woodland would be similar to those described for SF-B. Implementing Applicant Measure *AM-*BIO-2 would reduce these impacts. *Groundwater pumping could reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential would be minimized be implementing Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas.*

Jurisdictional Resources

Table 4.3-9 presents the acres of CDFG jurisdictional resources that would be disturbed as a result of construction of the elements of the Red Bluff Substation A. A total of *51* acres of CDFG jurisdictional resources would be permanently disturbed by construction of elements of Red Bluff Substation A. Implementation of Applicant Measures *AM-*BIO-1 and Mitigation Measure*s MM-*BIO-1 *and MM-BIO-2* would reduce these impacts. *Groundwater pumping could reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential would be minimized be implementing Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor in adjacent desert dry wash woodland areas.* Other direct and indirect impacts on these resources would be similar to those described for SF-B. Implementing Applicant Measure *AM-*BIO-2 would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, Red Bluff Substation A and its associated elements would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Construction Impacts

Native Vegetation Communities

Table 4.3-6 summarizes the construction impacts on creosote desert scrub and desert dry wash woodland under Alternative 1. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite native

Table 4.3-6
Summary of Construction Impacts on Vegetation Communities under Alternative 1

Project Feature	Solar Farm B	Gen-Tie Line A-1 Permanent Disturbance	Red Bluff Substation A Permanent Disturbance	Total Permanent Disturbance
Creosote Desert Scrub	*3,877*	*65*	*130*	*4,072*
Desert Dry Wash Woodland	35	*37*	*29*	*101*
Disturbed Areas	0	2	1	3

Note: Numbers are shown in acres.

vegetation communities *located* immediately adjacent to the Project. Direct impacts on desert dry wash woodland could occur downstream of the Alternative 1 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on adjacent vegetation communities could also result due to potential introduction of invasive species into these areas. Implementing Applicant Measures *AM-*BIO-1, *AM-*BIO-2, *AM-*BIO-4, and *AM-*BIO-5 and Mitigation Measure*s MM-*BIO-1 *and MM-BIO-2* would reduce these impacts, as would implementation of the mitigation measures discussed above for air resources and water resources.

Special Status Plant Species

Table 4.3-7 summarizes the direct construction impacts on special status plant species known to occur in the disturbance footprint of Alternative 1. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction and four other special status plant species have the potential to occur in this footprint and could be directly impacted by construction. Finally, indirect impacts associated with dust and the potential introduction of invasive species could affect special status species immediately adjacent to the construction footprint of Alternative 1. Implementing Applicant Measures *AM-*BIO-1 through *AM-*BIO-5 and Mitigation Measure *MM-*BIO-1 and *MM-*BIO-2 would reduce these impacts, as would implementation of the mitigation measures discussed above for air resources.

Sensitive Natural Communities

Table 4.3-8 summarizes the construction impacts on desert dry wash woodland under Alternative 1. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite native vegetation communities immediately adjacent to the Project. Without implementation of Applicant Measures or Mitigation Measures, indirect impacts on desert dry wash woodland could occur downstream of the Alternative 1 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct impacts on desert dry wash woodland located downstream of Alternative 1 and adjacent to Alternative 1 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementing Applicant Measures *AM-*BIO-1, *AM-*BIO-2, *AM-*BIO-4, and *AM-*BIO-5 and Mitigation Measure*s* *MM-*BIO-1 and *MM*BIO-2 would reduce these impacts, as would implementation of the mitigation measures discussed above for air resources and water resources.

Table 4.3-7
Summary of Construction Impacts on Special Status Plant Species under Alternative 1

Species	Solar Farm B	Gen-Tie Line A-1	Red Bluff Substation A	Total
Foxtail cactus (CNPS List 4.3)	5	0	0	**5**
Emory's crucifixion thorn (CNPS List 2.3)	1	0	0	**1**
Las Animas colubrina (CNPS List 2.3)	0	0	0	**0**
California ditaxis (CNPS List 2.2)	0	0	2	**2**
Desert unicorn plant (CNPS List 4.3)	0	1	0	**1**
Slender-spined althorn (CNPS List 2.2)	5	0	0	**5**

Note: Numbers of individuals present in the Project locations shown. Estimated acreage of distribution of foxtail cactus shown in parentheses.

Table 4.3-8
Summary of Construction Impacts on Desert Dry Wash Woodland under Alternative 1

Species	Solar Farm B (acres)	Gen-Tie Line A-1 (acres)	Red Bluff Substation A (acres)	Total (acres)
Desert wash woodland permanent disturbance acreage	35	37	29	**101**

Jurisdictional Resources

Table 4.3-9 summarizes the direct construction impacts on CDFG jurisdictional resources under Alternative 1. Similar to impacts described in the *Sensitive Natural Communities* section, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite native vegetation communities immediately adjacent to the Project. Direct impacts on jurisdictional resources could occur downstream of the Alternative 1 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct impacts on desert dry wash woodland located downstream of Alternative 1 and adjacent to Alternative 1 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementing Applicant Measures AM-BIO-1, AM-BIO-2, AM-BIO-4, and AM-BIO-5 and Mitigation Measures MM-BIO-1 and MM-BIO-2 would reduce these impacts, as would implementation of the mitigation measures discussed above for air resources and water resources.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, construction of Alternative 1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Table 4.3-9
Summary of Construction Impacts on Jurisdictional Resources under Alternative 1

Species	Solar Farm B (acres)	Gen-Tie Line A-1 (acres)	Red Bluff Substation A (acres)	Total (acres)
Desert Dry Wash – In Creosote Desert Scrub Habitat*				
Permanent disturbance acreage	170	9	22	**201**
Riparian – Desert Dry Wash Woodland				
Permanent disturbance acreage	35	37	29	**101**
Total (acres)	**205**	**46**	**51**	**302**

Notes: * Largely unvegetated desert dry washes found within creosote desert scrub habitat.

Operation and Maintenance

Solar Farm Layout B

Native Vegetation Communities

Installation of SF-B would have a direct impact on the geomorphic conditions and hydrology of the site and would potentially alter surface flow in desert dry wash woodland immediately downstream of the site (AECOM 2010). The relatively diverse hydrological conditions at the site would be modified by ground preparation to result in a more uniform, consistent condition. Without proper mitigation measures, the site would likely support rapidly migrating shallow channels, approximately two feet deep or less. In some cases, smaller features would be interrupted and routed parallel to the disturbance eventually merging with a larger wash. Washes that are interrupted may become less active resulting in less surface flow, subsurface infiltration, scour, and sediment deposition. These factors may lead to adverse effects on downstream vegetation within desert dry wash woodlands. Other washes may become more active resulting in an increase in surface water flow. When graded areas are routinely maintained, distinctly different conditions may form on the upstream and downstream side of a site as well.

Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology (to within one percent of pre-development hydraulic conditions).

Dust generated during maintenance of access roads could directly adversely affect offsite native vegetation communities immediately adjacent to the Project by covering stomata and reducing photosynthetic or respiratory activity. Over the proposed 26-month construction period, this could cause lowered growth rates, increased susceptibility to disease, lowered reproductive capacity, or lowered ability to compete with nonnative species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts. Finally, maintenance of access roads associated with SF-B would have the potential to introduce invasive plant species into areas of creosote desert scrub and desert dry wash woodland immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these invasive species impacts.

Special Status Plant Species

Maintenance of access roads associated with SF-B would have the potential to introduce invasive plant species into areas immediately adjacent to the access roads. Vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Dust generated during maintenance of access roads could directly adversely affect special status plant species adjacent to SF-B. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Sensitive Natural Communities

Operation and maintenance impacts on sensitive natural communities would be similar to impacts on *Native Vegetation Communities* described above. Implementing Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping would be negligible (less than 0.2 acre-feet per year, or about 300 gallons per day) during the operation and maintenance of SF-B and, therefore, would not further reduce groundwater levels in the area. However, groundwater monitoring associated with Mitigation Measure MM-BIO-5 would continue for the first five years of the Project (construction and operation) to verify that no such impacts would occur.*

Jurisdictional Resources

Impacts associated with operation and maintenance of SF-B would be similar to those described under the *Native Vegetation Communities* section above. Implementing Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping would be negligible (less than 0.2 acre-feet per year, or about 300 gallons per day) during the operation and maintenance of SF-B and, therefore, would not further reduce groundwater levels in the area. However, groundwater monitoring associated with Mitigation Measure MM-BIO-5 would continue for the first five years of the Project (construction and operation) to verify that no such impacts would occur.*

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, GT-A-1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Gen-Tie Line A-1

Impacts associated with operation and maintenance of GT-A-1 would be similar to those described for SF-B above.

Red Bluff Substation A

Impacts associated with operation and maintenance of Red Bluff Substation A would be similar to those described for SF-B above.

Summary of Operation and Maintenance Impacts

Native Vegetation Communities

Installation of Alternative 1 would have a direct impact on the geomorphic conditions and hydrology of the site and would potentially alter surface flow in desert dry wash woodland immediately downstream of the site (AECOM 2010). The relatively diverse hydrological conditions at the site would be modified by ground preparation to result in a more uniform, consistent condition. Without proper mitigation measures, the site would likely support rapidly migrating shallow channels, approximately two feet deep or less. In some cases, smaller features would be interrupted and routed parallel to the disturbance eventually merging with a larger wash. Washes that are interrupted may become less active resulting in less surface flow, subsurface infiltration, scour, and sediment deposition. These factors may lead to adverse effects on downstream vegetation within desert dry wash woodlands. Other washes may become more active resulting in an increase in surface water flow. When graded areas are routinely maintained, distinctly different conditions may form on the upstream and downstream side of a site as well.

Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology (to within one percent of pre-development hydraulic conditions).

Dust generated during maintenance of access roads could directly adversely affect native vegetation communities adjacent to Alternative 1. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts. Finally, maintenance of access roads associated with Alternative 1 would have the potential to introduce invasive plant species into areas of creosote desert scrub and desert dry wash woodland immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these invasive species impacts

Special Status Plant Species

Maintenance of access roads associated with Alternative 1 would have the potential to introduce invasive plant species into areas immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Dust generated during maintenance of access roads could directly adversely affect special status plant species adjacent to Alternative 1. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Sensitive Natural Communities

Operation and maintenance impacts on sensitive natural communities would be similar to impacts on *Native Vegetation Communities* described above. *Groundwater pumping would be substantially reduced during the operation and maintenance of Alternative 1 as compared to the construction phase, and would not be expected to significantly reduce groundwater levels in the area. However, groundwater monitoring associated with Mitigation Measure MM-BIO-5 would continue for the first five years of the Project (construction and operation) to verify that no such impacts would occur.*

Jurisdictional Resources

Impacts associated with operation and maintenance of Alternative 1 would be similar to those described under the *Native Vegetation Communities* section above. *Groundwater pumping would be substantially reduced during the operation and maintenance of Alternative 1 as compared to the construction phase, and would not be expected to significantly reduce groundwater levels in the area. However, groundwater monitoring associated with Mitigation Measure MM-BIO-5 would continue for the first five years of the Project (construction and operation) to verify that no such impacts would occur.*

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, the operation and maintenance of Alternative 1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Decommissioning

Solar Farm Layout B

Native Vegetation Communities

Decommissioning of the SF-B facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of native vegetation communities is not anticipated for decommissioning activities. However, potential impacts on the rate, volume, and quality of storm water runoff and the potential introduction of dust and invasive species associated with decommissioning activities could have direct and indirect effects on vegetation communities located immediately adjacent to SF-B (for invasive species), similar to the impacts associated with construction of SF-B. *Implementation of provisions in Applicant Measure AM-BIO-5 and MM-BIO-4 regarding the restoration of native vegetation during or following decommissioning would provide beneficial impacts to native vegetation.*

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of a SWPPP during decommissioning activities as discussed in Section 4.17, Water Resources, would reduce these impacts as well. In addition, implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Special Status Plant Species

Decommissioning of the SF-B facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of special status plant species is not anticipated for decommissioning activities. In addition, revegetation of the site would benefit special status plant species. However, dust impacts and the potential introduction of invasive species associated with decommissioning activities could have direct and indirect effects on special status plant species located immediately adjacent to SF-B, similar to the impacts associated with construction of SF-B.

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Sensitive Natural Communities

Impacts associated with decommissioning SF-B would be similar to those described under the *Native Vegetation Communities* section above. *In addition, groundwater pumping for dust control during decommissioning would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees off-site. This potential impact would be minimized by Mitigation Measure BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor for adjacent desert dry wash woodland areas.*

Jurisdictional Resources

Impacts associated with decommissioning SF-B would be similar to those described under the *Native Vegetation Communities* *and Sensitive Natural Communities* sections above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, GT-A-1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Gen-Tie Line A-1

Impacts associated with decommissioning GT-A-1 would be similar to those described for SF-B above.

Red Bluff Substation A

Impacts associated with decommissioning Red Bluff Substation A would be similar to those described for SF-B above.

Summary of Decommissioning Impacts

Native Vegetation Communities

Decommissioning of the Alternative 1 facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of native vegetation communities is not anticipated for decommissioning activities. However, potential impacts on the rate, volume, and quality of storm water runoff and the potential introduction of dust and invasive species associated with decommissioning activities could have direct and indirect effects on vegetation communities located immediately adjacent to Alternative 1 (for invasive species), similar to the impacts associated with construction of Alternative 1. *Implementation of provisions in Applicant Measure AM-BIO-5 and Mitigation Measure MM-BIO-4 regarding the restoration of native vegetation during or following decommissioning would provide beneficial impacts to native vegetation.*

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of a SWPPP during decommissioning activities as discussed in Section 4.17, Water Resources, would reduce these impacts. In addition, implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Special Status Plant Species

Removal of special status plant species is not anticipated under decommissioning activities for Alternative 1 and revegetation of the site would be beneficial to special status plant species. However, decommissioning activities could have direct and indirect impacts on special status plant species immediately adjacent to Alternative 1 facilities, similar to impacts associated with construction of Alternative 1, due to dust and the potential introduction of invasive species.

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Sensitive Natural Communities

Impacts associated with decommissioning Alternative 1 would be similar to those described under the *Native Vegetation Communities* section above. *In addition, groundwater pumping for dust control during decommissioning would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees off-site. This potential impact would be minimized by Mitigation Measure MM-BIO-5 which requires the Project owner to monitor groundwater levels and plant health and vigor for adjacent desert dry wash woodland areas.*

Jurisdictional Resources

Impacts associated with decommissioning Alternative 1 would be similar to those described under the *Native Vegetation Communities* *and Sensitive Natural Communities* sections above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, GT-A-1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Combined Impacts for Alternative 1

In summary, construction of Alternative 1 would result in the permanent disturbance of *4,072* acres of creosote desert scrub and *92* acres of desert dry wash woodland. In addition, without implementation of Applicant Measures or Mitigation Measures, direct impacts on desert dry wash woodland located downstream and immediately adjacent to the Alternative 1 site could occur as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts native vegetation communities located adjacent to Alternative 1 could also result due to dust and potential introduction of invasive species into these areas.

Construction of Alternative 1 would result in the direct loss of approximately *five individuals* of foxtail cactus, three individuals of the Emory's crucifixion thorn, *two* individuals of the California ditaxis, four individuals of the desert unicorn plant, and *one* individual of the slender-spined allthorn. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction. Although not detected during botanical surveys for the Proposed Project, there is also the chance that other special status plant species could emerge prior to construction and could be directly impacted by construction. Finally, direct and indirect impacts associated with dust and the potential introduction of invasive species could affect special status plant species immediately adjacent to the construction footprint of Alternative 1.

Construction of Alternative 1 would also result in the permanent disturbance of *302* acres of CDFG jurisdictional resources. In addition, without implementation of Applicant Measures or Mitigation Measures, direct impacts on jurisdictional resources could occur downstream of the Alternative 1 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts on jurisdictional resources located downstream of Alternative 1 and adjacent to Alternative 1 (Pinto Wash) could also result due to dust and potential introduction of invasive species into these areas.

While no additional direct impacts on vegetation are anticipated during operation and maintenance and decommissioning of Alternative 1 facilities, changes in the site's geomorphic conditions and site hydrology could adversely affect the hydrology and water quality of desert dry wash woodland and jurisdictional resources located downstream of the site. In addition, maintenance of access roads and decommissioning activities have the potential to introduce dust and invasive species into areas immediately adjacent to the site which could adverse effects on native vegetation communities, special status plant species, sensitive natural communities, and jurisdictional resources.

As described for SF-B, GT-A-1 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Applicant Measures and Mitigation Measures

While Applicant Measures AM-BIO-1 through AM-BIO-5 are proposed by the Applicant and would reduce Project impacts on vegetation, Mitigation Measures MM-BIO-1 through MM-BIO-5 would also be required to further reduce impacts. In some cases, the Mitigation Measures overlap with the Applicant Measures because BLM determined that additional mitigation or more specific mitigation was required to address a particular issue. For example, AM-BIO-5, which is to prepare and implement a Vegetation Resources Management Plan, overlaps with MM-BIO-3 and MM-BIO-4, which are to address transplantation of cacti and to establish salvage and restoration performance standards.

AM-BIO-1. A *Habitat Compensation Plan* (Ironwood Consulting 2010c) has been prepared and will be implemented by the Applicant to compensate for the loss of creosote desert scrub, desert dry wash woodland, and other jurisdictional resources. Compensation will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions under one of several programs including the recently approved mitigation program created by Senate Bill 34 (SB 34) *and as required under Mitigation Measure BIO-2, Off-site Compensation*. The *Habitat Compensation Plan* will be reviewed and approved by BLM, the USFWS, and CDFG. The precise details of the mitigation, including mitigation ratios, will be established in the BLM ROW grant, USFWS Biological Opinion, and CDFG 2080.1 Consistency Determination. The draft plan is provided in Appendix H.

At a minimum, mitigation ratios required in the NECO Plan/EIS are 1:1 for *permanent impacts* to creosote bush scrub, 3:1 for *permanent impacts* to desert dry wash woodland, and 5:1 for *permanent impacts* to the Chuckwalla DWMA and Chuckwalla CHU (see Section 4.4, Wildlife, for a discussion of impacts on wildlife). Mitigation ratios may be greater based upon the requirements of the USFWS and CDFG. Finally, areas occupied by the burrowing owl will be mitigated at 6.5 acres per occupied burrow (which will be covered by mitigation of creosote bush scrub habitat) and creation or enhancement of two burrows will be implemented for every active burrow.

AM-BIO-2. An *Integrated Weed Management Plan* (IWMP) (Ironwood Consulting 2010b) has been prepared pursuant to BLM's *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM 2007) and the *National Invasive Species Management Plan* (The National Invasive Species Council 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the Project. The draft plan is provided in Appendix H of this document and will be reviewed and approved by the BLM.

The following measures are required in the Plan and will be implemented by the Applicant to monitor and control invasive species:

- Preventative Measures During Construction
  - Equipment Cleaning: To prevent the spread of weeds into new habitats, and prior to entering the Project work areas, construction equipment will be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment will be inspected to ensure they are free of any dirt or mud that could contain weed seeds and the tracks, feet, tires, and undercarriage will be carefully washed, with special attention being paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis.

    All vehicles will be washed off-site when possible. Should off-site washing prove infeasible, an on-site cleaning station will be set up to clean equipment before it enters the work area. Either high-pressure water or air will be used to clean equipment and the cleaning site will be situated away from any sensitive biological resources. If possible, water used to wash vehicles and equipment will be collected and re-used.
  - Site Soil Management: Soil management will consist of limiting ground disturbance to the minimum necessary for construction activities and using dust suppressants to minimize the spread of seeds. Disturbed vegetation and topsoil will be re-deposited at or near the area from which they are removed to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. BLM-approved dust suppressants (e.g. water and/or palliative) will be minimized on the site as much as possible, but will use during construction to minimize the spread of airborne weed seeds, especially during very windy days.
  - Weed-free Products: Any use of hay or straw bales on the Project site will be limited to certified weed-free material. Other products such as gravel, mulch, and soil may also carry weeds and these products, too, will be certified weed-free. If needed,

mulch will be made from the local, on-site native vegetation cleared from the Project area. Soil will not be imported onto the Project site from off-site sources.

- Personnel Training. Weed management will be part of mandatory site training for all construction personnel and will be included in initial Worker Environmental Awareness Program training briefings. Training will include weed identification and the threat of impacts including impacts to local agriculture, vegetation communities, wildlife, and creating fire potential. Training will also cover the importance of preventing the spread of weeds.

- Containment and Control Measures

  When Project monitoring (see below) indicates that invasive species are spreading, invasive species will be removed using mechanical and chemical methods. The Applicant will use mechanical weed removal methods as the preferred method, but herbicides may be used when conditions (such as wind, proximity of native vegetation) are such that the effect on native species is expected to be minimal. During suppression or eradication activities, care will be taken to have the least affect on native plant species. Herbicides used will be limited to those approved by the BLM. Herbicides will be applied before the invasive species flower and set seed.

  If monitoring indicates the spread of athel, a woody invasive species, then athel will be controlled by cutting the trees and applying Garlon™ Ultra Herbicide to the stump immediately after cutting. Garlon™ is approved for use on athel by the BLM. All cut material generated during athel clearance will be removed from the site by truck. This material will be covered with a tarp or other material that will keep athel cuttings or seed from being spread by truck movement.

  The Applicant and its contractors will follow the BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the Record of Decision for the *Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement* (BLM 2007). Personnel responsible for weed control will be trained in the proper and safe use of all equipment and chemicals used for weed control.

- Monitoring

  Baseline weed conditions will be assessed during the pre-construction phase of the Project, during pre-construction surveys and staking and flagging of construction areas. A stratified random sampling technique will be used to identify and count the extent of weeds on the site.

  Monitoring will take place each year during construction, and annually for three years following the completion of construction. The purpose of annual monitoring will be to determine if weed populations identified during baseline surveys have increased in density or are spreading as a result of the Project. Control methods will be implemented when measurable weed increases, as well as visually verified increases, are detected during monitoring. This will include small patches of unusually high density weeds (e.g., concentrations in swales) that are growing as a result of Project activities.

  During construction, daily monitoring records will be kept by biological monitors that will include information relevant to invasive weeds. During Project operations and maintenance, the facility owner or appropriate designee will be required to continually update the potential noxious and invasive weed list and provide monitoring and management appropriate to any new species in coordination with the BLM.

After the three years of operations monitoring is complete, general management and monitoring of the Project area will be conducted by designated site personnel each year during both the germinating and early growing season (November through April) to eliminate new weed individuals prior to seed set. Throughout construction and long-term monitoring, personnel will be trained to identify weedy and native species and work with a trained vegetation monitor to determine where elimination is necessary.

- Reporting

  Results of monitoring and management efforts will be included in annual reports and a final monitoring report completed at the end of three years of post-construction monitoring. Copies of these reports will be kept on file at the site. Copies of each annual report as well as the final monitoring report will be sent to the BLM for review and comment. BLM will use the results of these reports to determine if any additional monitoring or control measures are necessary.

- Success Criteria

  Weed control will be ongoing on the Project site for the life of the Project, but plan success will be determined by BLM after the three years of operations monitoring through the reporting and review process. Success criteria will be defined as having no more than ten percent increase in a weed species or in overall weed cover in any part of the Project.

AM-BIO-3. Pre-Construction Surveys for Special Status Plant Species and Cacti. Prior to construction, the Applicant will stake and flag the construction area boundaries, including the construction areas for the Solar Farm site, Gen-Tie Lines, and Red Bluff Substation; construction laydown, parking, and work areas; and the boundaries of all and permanent access roads. A BLM-approved biologist will then survey all areas of proposed ground disturbance for special status plant species and cacti during the appropriate blooming period for those species having the potential to occur in the construction areas. *All cacti observed will be flagged for transplantation and special status plant species observed will be flagged for salvage.*

AM-BIO-4. Worker Environmental Awareness Program (WEAP). The Applicant will implement a WEAP to educate on-site workers about sensitive environmental issues associated with the Project. The program will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The program will:

- Be developed by or in consultation with a biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;

- Discuss the locations and types of sensitive biological resources on the Project site and adjacent areas, and explain the reasons for protecting these resources and penalties for harm or damage to these resources;
- Include a discussion of fire prevention measures to be implemented by workers during Project activities, including a request that workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
- Describe the temporary and permanent habitat protection measures to be implemented at the Project site;
- Identify whom to contact if there are further comments and questions about the material discussed in the program; and
- Include a training acknowledgement form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The training will place special emphasis on the special status species that have been observed in the Project locations or have a high likelihood to occur, including special status plant species, desert tortoise and other special status reptile species, Palm Springs round-tailed ground squirrel, burrowing owl, golden eagle, nesting bird species and bat species, and the American badger.

BLM will be responsible for ensuring that each construction worker at the site, throughout the duration of construction activities, receives the above training.

AM-BIO-5. The Applicant will prepare and implement a *Vegetation Resources Management Plan* that contains the following components:

- A *Vegetation Salvage Plan* which discusses the methods that will be used to transplant cacti present within the Project locations following BLM's standard operating procedures, as well as methods that will be used to transplant special status plant species that occur in the Project locations if feasible. The Plan will include the following:
    - Criteria for determining whether an individual plant is appropriate for salvage;
    - The appropriate season for salvage;
    - Equipment and methods for salvage, transport, and planting;
    - A requirement that plants be marked to identify the north-facing side prior to transport, and replanted in the same orientation;
    - Storage and/or pre-planting requirements for each species;
    - A requirement to collect seed and voucher specimens from the special status species located within the Project locations;
    - The proposed location and several alternative locations for transplanting the cacti;
    - A requirement for ten years of maintenance of the transplanted individuals, including removal of invasive species and irrigation (if necessary);

- A requirement for ten years of monitoring to determine the percentage of surviving plants each year and to adjust maintenance activities using an adaptive management approach.

- A *Restoration Plan* which discusses the methods that will be used to restore creosote bush scrub and desert dry wash woodland habitat that is temporarily disturbed by construction activities. The Plan will include the following:
  - A planting plan, including the number, size, and species of container plants and/or the amount and species of seed necessary to revegetate both habitat types;
  - The appropriate season for planting and/or seeding;
  - The methodology for planting and/or seeding;
  - A description of the method(s) for irrigation and an irrigation schedule for the restoration areas;
  - Success criteria for percent cover of native plant species over a ten year period following installation of container plants and/or completion of seeding, and a requirement for replacement plantings when success criteria are not met;
  - A requirement that the percent cover of invasive species in the restoration areas will be maintained no higher than 10 percent for up to *10* years following installation of container plants and/or completion of seeding;
  - A requirement for ten years of maintenance of the restored areas, including removal of invasive species and irrigation;
  - A requirement for ten years of monitoring of the restored areas to evaluate compliance with success criteria and to adjust maintenance activities using an adaptive management approach; and
  - A requirement for annual monitoring reports which will be submitted to BLM.

The Vegetation Salvage Plan and Restoration Plan will specify success criteria and performance standards as required per Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards. BLM will be responsible for reviewing and approving the Plan and for ensuring that the Applicant implements the Plan including maintenance and monitoring required in the Plan.

MM-BIO-1. Construction Monitoring. A BLM-approved biologist shall conduct construction monitoring during all construction activities to ensure that construction activities are contained within the staked and flagged construction areas at all times. The construction monitor shall also be present during all ground disturbing activities to either actively or passively relocate special status wildlife species, other than the desert tortoise, nesting bird species, and burrowing owl (e.g., rosy boa, chuckwalla, Palm Springs round-tailed squirrel, American badger, and Colorado Valley woodrat [and burro deer, Nelson's bighorn sheep, and mountain lion if need be]), found within the construction zones to a suitable location outside of the project footprint. *The construction monitor shall also inspect fencing and netting at all construction ponds to ensure that the ponds are not accessible to potential avian or canid desert tortoise predators or to wildlife that could drown or become entrapped within the exclosures. Netting and fencing must prevent the ponds from becoming water source "subsidies" to predators or from becoming hazards to native wildlife.* The construction monitor shall have the authority to stop work and report directly to the Applicant's

Environmental Manager to ensure compliance with the Project Description, applicant-proposed measures, and mitigation measures. The construction monitor shall provide the Applicant's Environmental Manager with weekly updates and quarterly monitoring reports. After construction has been completed, the construction monitor shall provide the Applicant's Environmental Manager with a final monitoring report. The Applicant's Environmental Manager shall provide BLM with weekly status updates on the status of construction and monitoring efforts and shall provide BLM with copies of the quarterly monitoring reports and the final monitoring report. BLM shall be responsible for ensuring that construction monitoring is conducted during all construction activities.

MM-BIO-2, Off-site Compensation:

1. *This Mitigation Measure provides further detail and specificity to the habitat compensation land requirements described in Applicant Measure AM-BIO-1. The draft Habitat Compensation Plan shall be revised to reflect acreages and habitat types as described herein. The revised habitat Compensation Plan shall be submitted for approval to BLM, USFWS, CDFG, and CPUC before its finalization and implementation. The Applicant (Sunlight or SCE) shall acquire and protect, in perpetuity, compensation habitat to mitigate impacts to biological resources listed below. The compensation lands shall be placed under conservation management to be funded through the terms described herein. The acreages and ratios shall be based upon final calculation of impacted acreage for each resource and on ratios set forth in Applicant Measure AM-BIO-1 and in the draft Habitat Compensation Plan dated 17 Dec 2010. Acreages of anticipated compensation requirements as summarized throughout this measure are based on impacts analysis of Alternative 1 in Sections 4.3 and 4.4 and ratios described in Applicant Measure AM-BIO-1. Acreages shall be adjusted as appropriate for other alternatives.*

    - *Desert dry wash woodland (101 acres at 3:1 ratio).*
    - *Occupied desert tortoise habitat (2,757 acres at 1:1 ratio; 1,214 acres at 2:1 ratio; 191 acres at 5:1 ratio).*
    - *occupied or suitable habitat for breeding or wintering burrowing owls (13 acres for each occupied burrow, estimated as two burrows),*
    - *state-jurisdictional streambeds (302 acres, including the desert dry wash woodland, above, at 3:1 ratio),*
    - *creosote bush scrub (4,072 acres at 1:1 ratio).*
    - *occupied foxtail cactus habitat (estimated as two acres, at 1:1 ratio),*
    - *undisturbed habitat for most wildlife species including desert kit fox and American badger (i.e., away from sources of noise or other disturbance such as highways, wind farms, etc.) (4,173 acres, at 1:1 ratio),*
    - *occupied chuckwalla and rosy boa habitat (Red Bluff Substation A site, 149 acres, at 1:1 ratio),*
    - *suitable/occupied upland shrubland nesting habitat for migratory birds (4,173 acres, at 1:1 ratio),*
    - *suitable foraging habitat for golden eagles, and within foraging range of a known nesting site (4,173 acres, at 1:1 ratio),*
    - *suitable or occupied roosting habitat for special status bats (101 acres desert dry wash woodland at Solar Farm B and 149 acres rocky slopes at Red Bluff Substation A), and*

- *suitable or occupied habitat for Palm Springs round-tailed ground squirrel (estimated as 92 acres, based on Gen-Tie Line A-1 disturbance), Colorado Valley woodrat (estimated as 149 acres at Red Bluff Substation A location).*

Of the resources listed above, BLM's focus is on desert dry wash woodland, occupied desert tortoise habitat, occupied or suitable habitat for breeding or wintering burrowing owls, and state-jurisdictional streambeds.

Under Alternative 1, a total of 4,176 acres would be disturbed. Total habitat compensation lands shall be no fewer than 6,707 acres, including, at minimum, 6,140 acres of occupied desert tortoise habitat and 819 acres of state-jurisdictional streambeds (including at least 288 acres of desert dry wash woodland). Further details are described in text and Table 4.3-10, below. Final compensation requirements shall be adjusted to account for any deviations in project disturbance, according to final design, as-built project footprint or, if a different Project alternative is approved, adjusted to reflect that alternative. Desert Sunlight shall be responsible for all compensation for habitat disturbance at the Solar Farm Layout and Gen-Tie Lines; SCE shall be responsible for all compensation for habitat disturbance at the Red Bluff Substation site.

Table 4.3-10
Minimum Total Compensation Acreage

Resource	***Acres of Impact***	***Compensation Ratio***	***Compensation Acres***
Previously disturbed (no compensation)	*3*	*0*	*0*
Desert tortoise habitat (moderate density)[1]	*1,214*	*2:1*	*2,428*
State-jurisdictional desert dry wash and desert dry wash woodland (302 ac.), less 24 acres desert dry wash woodland within DWMA/ CHU[2]	*278*	*3:1*	*834 (to include 288 acres dry wash woodland)*
Wildlife Management Areas Chuckwalla DWMA, Chuchwalla CH[3]	*191*	*5:1*	*955*
Balance of total project disturbance 4,176 – (3 + 1,214 + 278 + 191) = 2,490	*2,490*	*1:1*	*2,490*
Minimum Total Habitat Compensation Requirement			***6,707***

[1] *Draft Habitat Compensation Plan, Table 2 (Desert Sunlight Holdings, 17 Dec 2010)*
[2] *Table 4.3-5 Summary of Impacts on Jurisdictional Resources*
[3] *Table 4.4-5*

2. *Of the total acreage to be disturbed under Alternative 1, three (3) acres have been previously disturbed and no compensation is required; 1,214 acres are moderate-density occupied desert tortoise habitat to be compensated at a ratio of 2:1; 302 acres (including 101 acres of desert dry wash woodland) are state-jurisdictional streambeds to be compensated at a ratio of 3:1; and 191 acres are within the Chuckwalla DWMA and/or Chuckwalla Critical Habitat Unit, to be compensated at a ratio of 5:1.*

3. *Compensation habitat for biological resources may be "nested." For example, compensation for the roosting habitat of bats that roost in desert dry wash woodland (Appendix H) would be fulfilled by desert dry wash woodland compensation lands, and would be counted as providing compensation for both the roosting bats and desert dry wash woodland. Similarly, compensation for the roosting habitat of bats that roost in rock crevices (Appendix H) may be fulfilled by compensation lands that also provide habitat for rosy boa and chuckwalla. Thus, compensation for impacts to bat roosting habitat may be fully nested within other compensation requirements.*

4. *Where impacted habitats meet criteria as two or more compensation ratios, the highest ratio will apply. For example, the Red Bluff Substation A site would affect a total of 149 acres, all within the Chuckwalla DWMA and CHU (Table 4.4-5); impacts to the Chuckwalla DWMA and CHU would require*

mitigation at a 5:1 ratio. Although 29 of the 149 acres are desert dry wash woodland (Table 4.3-6) would require compensation at a lower, 3:1 ration (if they were outside the DWMA and CHU), all 149 acres of impacts to the Chuckwalla DWMA and CHU shall be compensated at the 5:1 ratio. However, compensation lands for desert dry wash woodland at the 3:1 ratio (i.e., 87 acres) may be nested within the overall 5:1 compensation,

5. *Compensation land selection criteria. Criteria for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of compensation lands for impacts to biological resources shall include all of the following:*

    a. *compensation lands selected for acquisition to meet BLM, USFWS, CDFG, and CPUC requirements shall be equal to or better than the quality and function of the habitat impacted;*

    b. *provide habitat acreage with capacity to regenerate naturally when disturbances are removed;*

    c. *be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;*

    d. *be contiguous and biologically connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover;*

    e. *not have a history of intensive recreational use or other disturbance that might cause future erosional damage or other habitat damage, and make habitat recovery and restoration infeasible;*

    f. *not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;*

    g. *not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat;*

    h. *must provide wildlife movement value equal to that on the Project site; and*

    i. *have water and mineral rights included as part of the acquisition, unless the BLM and CPUC, in consultation with CDFG and USFWS, agree in writing to the acceptability of land without these rights.*

    j. *Additional selection criteria for desert tortoise compensation lands.*

        i. *compensation lands for impacts to desert tortoise shall be within the Eastern Colorado Desert Tortoise Recovery Unit, and*

        ii. *shall have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;*

    k. *Additional Selection Criteria for special-status plant compensation lands. The compensation lands selected for acquisition for impacts to special-status plants shall include at least one of the following categories:*

        i. *Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).*

ii. *Unoccupied but Adjacent. The Project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat.*

l. *If all or any portion of the acquired compensation lands meets the habitat occupancy or suitability requirement for more than one of the resources listed above, that portion of those compensation lands may also be used to fulfill that portion of the obligation to acquire compensation lands to mitigate impacts to those resources.*

6. *The total amount of compensation mitigation lands required under this measure may exceed the requirements of AM BIO-1, in order to provide mitigation for all of the resources identified in this measure.*

7. *Review and Approval of Compensation Lands Prior to Acquisition. The Project owner (Sunlight or SCE) shall submit a formal acquisition proposal to the BLM, USFWS, CDFG, and CPUC describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands in relation to the selection criteria listed above, and must be approved by the BLM and CPUC in coordination with CDFG and USFWS.*

8. *Management Plan. The Project owner or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the biological resources. The Management Plan shall be submitted for review and approval to the BLM and CPUC, in consultation with CDFG and USFWS.*

9. *Compensation Lands Acquisition Requirements. The Project owner shall comply with the following requirements relating to acquisition of the compensation lands after the BLM, USFWS, CDFG, and CPUC have approved the proposed compensation lands:*

   a. *Preliminary Report. The Project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM, USFWS, CDFG, and CPUC. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM and CPUC. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.*

   b. *Title/Conveyance. The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the BLM USFWS, CDFG, and CPUC. Any transfer of a conservation easement or fee title must be to CDFG, to a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the BLM and CPUC. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the BLM and CPUC. If an entity other than CDFG holds a conservation easement over the compensation lands, the BLM and CPUC may require that CDFG or another entity approved by the BLM, USFWS, CDFG, and CPUC, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the BLM, USFWS, CDFG, and CPUC of the terms of any transfer of fee title or conservation easement to the compensation lands.*

c. *Initial Protection and Habitat Improvement. The Project owner shall fund activities that the BLM and CPUC require for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities are estimated to be $330 per acre of compensation land, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the BLM and CPUC in consultation with USFWS and CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.*

d. *Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the BLM and CPUC before it can be used to establish funding levels or management activities for the compensation lands.*

e. *Long-term Maintenance and Management Funding. The Project owner shall provide money to establish an account with non-wasting capital that will be used to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. Until an approved PAR or PAR-like analysis is conducted for the compensation lands, the amount of required funding is initially estimated to be $1,450 for every acre of compensation lands. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment, the Project owner shall either: (i) provide initial payment equal to the amount of $1,450 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation; or (ii) provide security to the BLM and CPUC under subsection (g), "Mitigation Security," below, in an amount equal to $1,450 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation. The amount of the required initial payment or security for this item shall be adjusted for any change in the Project Disturbance Area. If an initial payment is made based on the estimated per-acre costs, the Project owner shall deposit additional money as may be needed to provide the full amount of long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than $1,450 per acquired acre will be required for long-term maintenance and management, the excess paid will be returned to the Project owner. The Project owner must obtain the BLM and CPUC's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands. The BLM and CPUC will consult with USFWS and CDFG before deciding whether to approve an entity to hold the Project's long-term maintenance and management funds.*

   The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fund holder/manager to ensure the following requirements are met:

   i. *Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the BLM and CPUC and is designed to protect or improve the habitat values of the compensation lands.*

ii. *Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the BLM, USFWS, CDFG, and CPUC or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.*

iii. *Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the BLM, USFWS, CDFG, and CPUC.*

f. *Other Expenses. In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.*

g. *Mitigation Security. No fewer than 30 days prior to ground disturbance, the Project owner shall provide financial assurances to the BLM and CPUC to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the BLM, USFWS, CDFG, and CPUC in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the BLM, USFWS, CDFG, and CPUC. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the BLM, USFWS, CDFG, and CPUC, the Project owner shall obtain the BLM, USFWS, CDFG, and CPUC's approval of the form of the Security. The BLM, USFWS, CDFG, and CPUC may draw on the Security if the BLM, USFWS, CDFG, and CPUC determine the Project owner has failed to comply with the requirements specified in this condition. The BLM, USFWS, CDFG, and CPUC may use money from the Security solely for implementation of the requirements of this condition. The BLM, USFWS, CDFG, and CPUC's use of the Security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition, and the Project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Project owner in whole or in part upon successful completion of the associated requirements in this condition.*

Security for the requirements of this condition shall be calculated as shown in Table 4.3-11. However, regardless of the amount of the security or actual cost of implementation, the project owner shall be responsible for implementing all aspects of this condition, including acquisition and protection of additional habitat acreage if necessary to compensate for all impacts listed in Section 1 of this Mitigation Measure.

h. *The Project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to*

Table 4.3-11
Biological Resource Compensation/Mitigation Cost Estimate[1] / Table of Estimated Costs[2]

Task		Cost
1.	Land Acquisition (6,707 acres)	$1000 per acre[3]
2.	Level 1 Environmental Site Assessment (42 parcels at estimated 160-acre average parcel size)	$3000 per parcel[4]
3.	Appraisal	$5000 per parcel
4.	Initial site work - clean-up, enhancement, restoration	$330 per acre[5]
5.	Closing and Escrow Costs – 1 transaction includes landowner to 3rd party and 3rd party to agency	$5000 per transaction
6.	Biological survey for determining mitigation value of land (habitat based with species specific augmentation)	$5000 per parcel
7.	3rd party administrative costs - includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acres to acquire….	10% of land acquisition cost (#1)
8.	Agency costs to review and determine accepting land donation - includes 2 physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed and deed restrictions; issue escrow instructions; mapping the parcels.	15% of land acquisition costs (#1) × 1.17 (17% of the 15% for overhead)
	Subtotal - Acquisition & Initial Site Work	$11,524,000
9.	Long-term Management and Maintenance (LTMM) Fund - includes land management; enforcement and defense of easement or title [short and long term]; monitoring….	$1450 per acre[6]
	Total (if compensation not implemented through NFWF account)	**$21,249,000**
NFWF Fees		
10.	Establish the project specific account	$12,000
11.	NFWF management fee for acquisition & initial site work	3% of SUBTOTAL
12.	NFWF Management fee for LTMM Fund	1% of LTMM Fund
	Total for deposit in REAT-NFWF Project Specific Account	**$21,704,000**

[1] All costs are best estimates as of spring 2011. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
[2] Companion table to the excel spreadsheet with formulas.
[3] Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18-24 month window to acquire the land after agency decisions are made. If the agencies, developer, or 3rd party has better, credible information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
[4] For the purposes of determining costs, a parcel is 160 acres.
[5] Based on information from CDFG.
[6] Estimate for purposes of calculating general costs. The actual long term management and maintenance costs will be determined using a Property Assessment Report (PAR) tailored to the specific acquisition.

the estimated costs (as set forth in the Security section of this condition) of implementing the requirement and additional fees, management funds, and other costs associated with the NFWF account. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Project owner, the Project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR *projections are less than the amount initially transferred by the applicant, the remaining balance shall be returned to the Project owner.*

i. *The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM, USFWS, CDFG, and CPUC. Such delegation shall be subject to approval by the BLM and CPUC, in consultation with CDFG and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the BLM and CPUC's certification of the Project.*

j. *The Applicant may choose to compensate and mitigate for impacts to state-listed endangered species pursuant to §2081 of the California Endangered Species Act using one or both of the "in-lieu fee" or "advance mitigation" mechanisms set forth in SB 34. Compensation lands acquired through SB 34 may in whole or in part satisfy the compensation habitat requirements set forth in this mitigation measure, only to the extent that they do in fact provide habitat values and mitigation for significant impacts to the species and biological resources identified above, and are consistent with the selection criteria described above.*

MM-BIO-3, Implement Transplantation and WEAP training. Cacti flagged for transplantation per AM-BIO-3 shall be transplanted per the Vegetation Salvage Plan described in AM-BIO-5 and special status plant species shall be salvaged per the Vegetation Salvage Plan described in AM-BIO-5. The Applicant and SCE shall be responsible for ensuring that all workers at the site, throughout the duration of construction, operation, and decommissioning activities, receives the training described in AM-BIO-4, above. Specific language in Mitigation Measure BIO-3 will take precedence over any discrepancy with the Applicant Measures cited herein.

MM-BIO-4, Salvage and Restoration Plan Performance Standards. Salvage will occur prior to construction in any area of the proposed Project as described in the approved Vegetation Salvage Plan (described in AM-BIO-5). Post-Project seeding and planting (revegetation) will occur at the decommissioning phase of the Project as described under an approved Restoration Plan (AM-BIO-5). Both salvage and revegetation efforts shall be monitored yearly and shall continue for a period of no less than 10 years or until the defined performance standards are achieved (whichever is sooner).

The following performance standards must be met by the end of the monitoring period: (a) at least 80% of the species and vegetative cover observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; (b) absolute cover and density of native plant species within the revegetated areas shall equal at least 60% of the pre-disturbance or reference vegetation cover; and (c) the site shall have gone without irrigation or remedial planting for a minimum of three years prior to completion of monitoring.

Remediation activities (e.g., whether additional planting, removal of non-native invasive species, or erosion control) shall be taken during the 10-year period if necessary to ensure the success of the revegetation effort. If the mitigation fails to meet the established performance standards after the 10-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the 10-year period until the performance standards are met, unless otherwise specified by the BLM and CPUC.

As needed to achieve performance standards, the Project owner shall be responsible for replacement planting or other remedial action as agreed to by BLM and CPUC. Replacement plants shall be monitored with the same survival and growth requirements as required for original revegetation plantings.

If a fire or flood damages a revegetation area within the 10-year monitoring period, the owner shall be responsible for a one-time replacement. If a second fire or flood occurs, no replanting is required, unless the event is caused by the owner's activity (as determined by BLM or other firefighting agency investigation).

MM-BIO-5, Desert Dry Wash Woodland Monitoring and Reporting Plan. In addition to complying with MM-WAT-3 (Groundwater Level Monitoring, Mitigation, and Reporting), the Project owner shall prepare and submit a Desert Dry Wash Woodland Monitoring and Reporting Plan to BLM and CPUC for review and approval prior to commencing project-related pumping activities. Upon approval, the Project owner shall finalize and implement the Plan. The Desert Dry Wash Woodland Monitoring and Reporting Plan shall outline the following information and actions:

1. *Prior to Project operations, the baseline health and vigor of four (4) groundwater dependent plant species (desert ironwood, blue palo verde, desert willow, and smoke tree) shall be recorded within four zones: immediately off-site at the project boundary, and at ¼-mile, ½-mile and 1-mile distances from proposed Project groundwater supply well locations. At minimum, the baseline conditions for 10 individuals for each of the target species within each sampling zone shall be recorded. At least one "control" site, at least 2 miles from the project site, shall also be sampled.*
2. *A qualified botanist or plant physiologist shall develop a sampling protocol to be carried out in desert dry wash woodland at each sampling zone (above) and control site to monitor stress and mortality of target plants once operations begin. The protocol shall include a measure of pre-dawn water potential, as measured by standard plant physiology techniques. Through corresponding this data to climate factors and groundwater monitoring data collected under MM-WAT-3 as well as the control site, the survey shall, where possible, identify under what circumstances each factor may have the greatest effect on plants. This protocol shall be developed in coordination with BLM, CDFG, and CPUC and shall be approved by BLM, CDFG, and CPUC.*
3. *If a significant difference in plant stress or mortality are shown in one or more sample locations in comparison to the control site, the Project owner shall coordinate with BLM, CPUC, and CDFG to determine if the plant stress is due to climate factors (e.g., drought), pathogens (disease, insect infestation, etc.), or project activities. The Desert Dry Wash Woodland Monitoring and Reporting Plan shall identify what constitutes a significant difference in plant stress or mortality under this mitigation measure. If it is related to project activities, then the Project owner shall either refrain from pumping, reduce groundwater pumping to allow for recovery of the groundwater table, or provide additional habitat compensation as described below.*

Monthly Desert Dry Wash Woodland Monitoring summary memos shall be submitted to BLM, CDFG, and CPUC during the construction period of the Project. In addition, annual Desert Dry Wash Woodland Monitoring reports shall be submitted for at least the first three years following completion of construction of the Project, if found necessary. The summary memos shall contain the monitoring data required as part of the monitoring program requirements under MM-WAT-3. In addition, each Desert Dry Wash Woodland Monitoring Report shall provide maps and text discussion of each study site, changes in plant health and vigor, changes in groundwater levels in the production wells, and the year's monitoring data.

If results of the groundwater monitoring program under MM-WAT-3 indicate that the project pumping has resulted in water level decline of one foot or more below the baseline trend, and vegetation monitoring for plant stress, mortality, and water potential have documented one or more of the sampling sites for the four groundwater dependent plant species as reaching the threshold (above), the Project owner shall reduce groundwater pumping until water levels stabilize or recover, provide for temporary supplemental watering, or compensate for additional impacts to desert dry wash woodland at the ratio of 3:1, consistent with Mitigation Measure MM-BIO-2. Estimated acreage of additional dry wash woodland impacts shall be submitted to BLM and CPUC for approval. Upon approval, the Project owner shall *initiate compensation according to the requirements and conditions for habitat compensation as described in Mitigation Measure MM-BIO-2.*

At the conclusion of the three-year monitoring period for Desert Dry Wash Woodland following completion of Project construction, the Project owner, CPUC, and BLM shall jointly evaluate the effectiveness of the Desert Dry Wash Woodland Monitoring and Reporting Plan and determine if monitoring frequencies or procedures should be revised, extended to the operation and decommissioning periods, or eliminated. Should additional data be forthcoming to demonstrate that this potential impact is not verifiable or attributable to this specific project or found inconsistent with state or federal statute, it may be modified or eliminated.

CEQA Significance Determination

Solar Farm Layout B

Impact BIO-1 – Direct and Indirect Impacts to Native Vegetation Communities

Native vegetation communities, such as creosote desert scrub and desert dry wash woodland, are limited in distribution within California and contain special status plants species; these communities are integral to maintaining biological diversity. The direct loss of 3,877 acres of creosote desert scrub and 35 acres of desert dry wash woodland would be a significant impact. *During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Implementation of the Habitat Compensation Plan included in Appendix H and required in Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 would require that the loss of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. Implementation of Mitigation Measure MM-BIO-1 would require construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas.*

Implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 would require that equivalent habitat to compensate for the loss of native vegetative communities is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species that characterize that vegetative community. Additionally, MM-BIO-2 requires, among other things, that the proposed compensation lands are composed of specific habitat types which provide values to the vegetation and wildlife species of concern, meet selection criteria, and are managed under an approved management plan. Applicant Measure AM-BIO-4 and Mitigation Measure MM-BIO-1 would implement protection measures for this vegetation community by ensuring construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts. MM-BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure performance standards are met.

Through implementation of the aforementioned Applicant and Mitigation Measures and by avoiding and/or minimizing the potential for impacts to native vegetative communities, impacts to native vegetation communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of SF-B could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream of SF-B. However, implementation of a SWPPP during construction (an applicant measure), as discussed in Section 4.17, Water Resources, would reduce construction impacts. In addition, proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010).

Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology (to within one percent of pre-development hydraulic conditions). As a result, implementation of these mitigation measures would bring operation and maintenance impacts to less than significant levels.

Due to the large size of SF-B, potential indirect construction, operation and maintenance, and decommissioning impacts on adjacent vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and proposed in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction and operation of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to less than significant levels by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control applicant measures and mitigation measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of *five* individual foxtail cactus, one individual Emory's crucifixion thorn, and five slender-spined allthorn during construction of SF-B would not significantly affect the *health and abundance of the overall* populations of these species, however, because these are special status species, impacts to these individuals would be considered significant. *Additionally, the loss of individual cacti among the eight cacti species that are present in the footprint of SF-B would be considered significant.*

As indicated in Figure 3.3-3, the location of SF-B was designed to avoid the largest concentrations of foxtail cactus in the area, the most prevalent special status plant species in the Project Study Area. Implementation of Applicant Measure BIO-1 *and Mitigation Measure BIO-2 would require that equivalent habitat for these species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM-BIO-3 and AM-BIO-5 and Mitigation Measures MM-BIO-3 and MM-BIO-4 would require that* cacti will be transplanted and all other special status plant species will be salvaged to the extent feasible*. Applicant Measure BIO-4 would require the implementation of protection measures for special status plant species by ensuring construction workers are aware of the required avoidance measures.*

Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. *In an effort to avoid or reduce that potential impact*, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to enforce the requirement that construction activities remain within the staked and flagged areas.

Implementation of these Applicant Measures and Mitigation Measures would reduce impacts to special status plant species below a level of significance.

Due to the large size of SF-B, potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would reduce these impacts to a less than significant level.

In addition, due to the large size of SF-B, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would require that adequate steps are taken to prevent the spread of invasive species, monitoring for invasives, and removal of invasives if observed. *Implementation of Applicant Measure BIO-2 would reduce the potential impact of invasive non-native species on special status plants and animals below a level of significance.*

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

Sensitive natural communities, such as desert dry wash woodland, are limited in distribution within California and contain special status plants species; these communities are integral to maintaining biological diversity. The direct loss of *37* acres of desert dry wash woodland would be a significant impact. *Additionally, there remains the risk that construction equipment could stray outside of the staked and flagged areas during construction and disturb a larger area than is anticipated. Implementation of the Habitat Compensation Plan included in Appendix H and required in Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that the loss of sensitive natural communities is adequately compensated for and equivalent habitat would be protected off-site. Implementation of Mitigation Measure BIO-1 would require monitoring during all construction activities to ensure that construction remains within the staked and flagged areas.*

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat to compensate for the loss of sensitive natural communities is preserved elsewhere, and that it is occupied by viable, stable, or increasing target plant species that characterize that vegetative community. Applicant Measure BIO-4 and Mitigation Measure BIO-1 would implement protection measures for these communities by ensuring construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts.

Additionally, as discussed under Impact BIO-1, Mitigation Measure BIO-2 requires, among other things, that the proposed compensation lands are composed of specific habitat types that provide values to the vegetation and wildlife species of concern, meet selection criteria, and are managed under an approved management plan. Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure performance standards are met.

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of SF-B could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream of SF-B. However, implementation of a SWPPP during construction (an applicant measure), as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is expected to also substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology (to within one percent of pre-development hydraulic conditions). As a result, implementation of these mitigation measures would bring operation and maintenance impacts to less than significant levels.

Due to the large size of SF-B, potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction and operation of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to less than significant levels by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of 205 acres of *state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-9).* would be a significant impact. *The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).* Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-2 *and Mitigation Measure BIO-2* would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of SF-B could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream of SF-B. However, implementation of a SWPPP during construction (an applicant measure), as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is expected to also substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these mitigation measures would bring operation and maintenance impacts to less than significant levels.

Due to the large size of SF-B, potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction and operation of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to a less than significant level by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and it is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under significance criterion BIO-5.

Gen-Tie Line A-1

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

Native vegetation communities, such as creosote desert scrub and desert dry wash woodland, are limited in distribution within California and contain special status plants species; these communities are integral to maintaining biological diversity. The direct loss of *147* acres of creosote desert scrub and *24* acres of desert dry wash woodland would be a significant impact.

However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2 would require* that the permanent loss of this habitat is adequately compensated for *and replaced* and equivalent habitat would be protected offsite. Implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored with native vegetation. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. *Additionally, as discussed for SF-B, implementation of Applicant Measure BIO-1, BIO-4, Mitigation Measure BIO-1, BIO-2, and BIO-4, and the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-1 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these mitigation measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-1, potential indirect construction, operation and maintenance, and decommissioning impacts on native vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of these measures, impacts would be reduced to less than significant levels.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of *one* desert unicorn plant during construction of GT-A-1 would not significantly affect the populations of th*is* species, however, given that these are special status species, impacts on these individuals would be considered significant. *The loss of individual cacti among the eight cacti species that are present in the footprint of GT-A-1 would be considered significant.*

As discussed under SF-B, implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat for these species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM-BIO-3 and AM-BIO-5 would require that cacti will be transplanted and all other special status plant species will be salvaged to the extent feasible. *Applicant Measure AM-BIO-4 and Mitigation Measure MM-BIO-1 would implement protection measures for special status plant species by ensuring construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts. Additionally, impacts to special status plant species would be further reduced through implementation of Applicant Measure AM BIO-1, and AM BIO-4 and Mitigation Measure MM BIO-1, MM BIO-2, and MM BIO-4. Thus, with implementation of the aforementioned applicant and mitigation measures impacts to special status plant species would be reduced to a level below significance.*

Due to the linear nature of GT-A-1, potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, due to the linear nature of GT-A-1, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure *AM-*BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure *AM-*BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of *24* acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure MM-BIO-2, Off-site Compensation*, would ensure that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure *AM-*BIO-5 would ensure that areas of disturbance are adequately restored with native vegetation. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure *MM-*BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. *Additionally, impacts to sensitive natural communities would be further reduced through implementation of AM-BIO-1, and AM-BIO-4 and MM-BIO-1, MM-BIO-2,* *and MM-BIO-4. Thus, with implementation of the aforementioned applicant and mitigation measures impacts to sensitive natural communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-1 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these mitigation measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-1, potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of 46 *acres of state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-9).*would be a significant impact. *The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3)* Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2, Off-site Compensation,* would ensure that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-1 could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-1, potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Red Bluff Substation A

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of *130* acres of creosote desert scrub and *29* acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2, Off-site Compensation*, would ensure that the loss of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. *Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore or increase viable native vegetation communities are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas. Additionally, as discussed for SF-B, implementation of Applicant Measures AM-BIO-1 and AM-BIO-4, and Mitigation Measures MM-BIO-1, MM-BIO-2 and MM-BIO-4, and the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation A could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on adjacent vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree). This potential impact would be reduced to less than significant levels by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of two individual California ditaxis during construction of Red Bluff Substation A would not significantly affect the populations of th*is* species, however, because these are special status species, impacts on these individuals would be significant. Construction would also directly impact two individuals of foxtail cactus distributed over an two-acre area which would be considered significant. However, implementation of Applicant Measure BIO-1 *and Mitigation Measure BIO-1* would ensure that equivalent habitat for these species is preserved elsewhere which is expected to benefit the overall populations of these species. Applicant Measures *AM-*BIO-3 and *AM-*BIO-5 would ensure that any special status plant species found within the Project locations would be salvaged and transplanted if feasible. *Mitigation Measure MM-BIO-2 would require that specific success criteria are met and that all attempts to restore or increase viable populations of special status plants are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas. Additionally, impacts to special status plant species would be further reduced through implementation of Applicant Measures AM-BIO-1, and AM-BIO-4 and Mitigation Measures MM BIO-1, MM BIO-2, and MM BIO-4. Thus, with implementation of the aforementioned applicant and mitigation measures impacts to special status plant species would be reduced to a level below significance.*

Applicant Measure *AM-*BIO-4 would ensure that construction workers are aware of the protection measures for special status plant species.

Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure *MM-*BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

The loss of individual cacti among the eight cacti species that are present in the footprint of Red Bluff Substation A would be considered significant. However, the loss of these individuals is not expected to affect the species' populations. In addition, implementation of Applicant Measures *AM-*BIO-3 and *AM-*BIO-5 would ensure that all individuals of these species are salvaged where feasible. Therefore, significant impacts would be reduced to less than significant levels.

Potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure *AM-*BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure *AM-*BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of *29* acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2, Off-site Compensation*, would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. *Additionally, impacts to sensitive natural communities would be further reduced through implementation of Applicant Measures BIO-1, and -4 and Mitigation Measures BIO-1, -2, and -4. Thus, with implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation A could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-3 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to less than significant levels by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of *51* acres of *state* jurisdictional resources *(i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-9)* would be a significant impact. *The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).* However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2* would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under the *Sensitive Natural Communities* section above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red

Bluff Substation A could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-3 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to a less than significant level by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Unavoidable Adverse Effects

With implementation of mitigation measures, there would be no unavoidable *adverse* impacts *to native vegetation communities, special-status plant species, sensitive natural communities, jurisdictional resources, or local policies or ordinances protecting biological resources* with Alternative 1. *Under CEQA, there would be no unavoidable significant impacts to these resources with Alternative 1.*

4.3.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Impacts from construction and operation of GT-B-2 would be nearly identical in type and magnitude to those described for GT-A-1, since the two lines overlap for a portion of their length. Impacts would be slightly different where these two Gen-Tie Lines diverge at their southern ends.

Native Vegetation Communities

A total of 27 acres of creosote desert scrub would be permanently removed to construct GT-B-2 (Table 4.3-*12*). Acreages of desert dry wash woodland that would be disturbed are discussed below under *Sensitive Natural Communities*. Implementation of Applicant Measures *AM-*BIO-1 and AM-BIO-5 and Mitigation Measure*s MM-BIO-1 and MM-*BIO-*2* would reduce *or mitigate* these impacts.

Other direct and indirect impacts on native vegetation communities would be similar to those described under SF-B. However, given the linear nature of the GT-B-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure *AM-*BIO-2 would reduce impacts.

Special Status Plant Species

Clearing and grading activities to construct GT-B-2 would cause the direct loss of *178* California ditaxis (CNPS List 2.2) (Table 4.3-*13*). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *68* acres of permanent disturbance caused by construction of GT-B-2. As for SF-B, although not observed during botanical surveys there is the potential for new special status species to emerge within GT-B-2 prior to construction. If present, these species would be directly impacted as well. Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-3 through *AM-*BIO-5 and Mitigation Measure*s MM-*BIO-*2 through MM-BIO-4* would reduce these impacts.

Other direct and indirect impacts on special status plant species would be similar to those described under SF-B. However, given the linear nature of the GT-B-2 footprint, there is an even greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure *AM-*BIO-2 would reduce these impacts.

Sensitive Natural Communities

A total of *49* acres of desert dry wash woodland would be permanently removed to construct GT-B-2 (Table 4.3-*14*). Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-5 and Mitigation Measure*s MM-*BIO-*2 through MM-BIO-4* would reduce these impacts.

Other direct and indirect impacts on desert dry wash woodland would be similar to those described under SF-B. However, given the linear nature of the GT-B-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping would have the potential to reduce local ground water levels and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Jurisdictional Resources

Table 4.3-*15* presents the acres of CDFG jurisdictional resources that would be temporarily and permanently disturbed as a result of construction of GT-B-2. A total of *52* acres would be permanently disturbed by construction of GT-B-2. Implementation of Applicant Measures *AM*-BIO-1 and *AM*-BIO-5 and Mitigation Measure*s* *MM*-BIO-1 *and MM-BIO 2* would reduce these impacts.

Other direct and indirect impacts on jurisdictional resources would be similar to those described under SF-B. However, given the linear nature of the GT-B-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As described under SF-B, Alternative 2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Red Bluff Substation B

Native Vegetation Communities

A total of *111* acres of creosote desert scrub and 9 acres of desert dry wash woodland would be permanently removed to construct Red Bluff Substation B (Table 4.3-*12*). Implementation of Applicant Measures *AM*-BIO-1 and *AM*-BIO-5 and Mitigation Measure*s* BIO-1 and *MM*-BIO-2 would *mitigate* these impacts.

Other direct and indirect impacts on native vegetation communities would be similar to those described for SF-B.

Special Status Plant Species

Clearing and grading activities to construct the Red Bluff Substation B and all of its associated improvements would cause the direct loss of *one* foxtail cactus and *426* California ditaxis (CNPS List 2.2) (Table 4.3-*13*). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *172* acres of permanent disturbance caused by construction of Red Bluff Substation B *and substation-related elements*. As for SF-B, although not observed during botanical surveys conducted for the Project, there is a chance that new special status plant species could emerge within Red Bluff Substation B prior to construction. If present, these species would be directly impacted as well. Implementation of Applicant Measures *AM*-BIO-1 and *AM*-BIO-3 through *AM*-BIO-5 and Mitigation Measure *MM*-BIO-1 *through MM-BIO-2* would reduce *or mitigate* these impacts.

Similar direct and indirect impacts associated with dust and the potential introduction of invasive species would also result from construction of Red Bluff Substation B as for SF-B.

Sensitive Natural Communities

A total of 9 acres of desert dry wash woodland would be permanently removed to construct Red Bluff Substation B (Table 4.3-*14*). Implementation of Applicant Measure *AM-*BIO-1 and Mitigation Measure *MM-*BIO-*2*would reduce these impacts.

Other direct and indirect impacts on desert dry wash woodland would be similar to those described for SF-B. *Implementing Applicant Measure AM-BIO-2 would reduce these impacts. Groundwater pumping during construction and operation at the substation would have the potential to reduce local ground water levels and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Jurisdictional Resources

A total of *33* acres of CDFG jurisdictional resources would be permanently removed to construct Red Bluff Substation B (Table 4.3-*15*). Implementation of Applicant Measure *AM-*BIO-1 and Mitigation Measure BIO-*2* would reduce these impacts. *Groundwater pumping during construction and operation at the substation would have the potential to reduce local ground water levels and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Other direct and indirect impacts on these resources would be similar to those described for SF-B.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, Alternative 2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Construction Impacts

Native Vegetation Communities

Table 4.3-*12* summarizes the construction impacts on creosote desert scrub and desert dry wash woodland under Alternative 2. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite native vegetation communities *located* immediately adjacent to the Project. Direct impacts on desert dry wash woodland could occur downstream of the Alternative 2 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on adjacent vegetation communities could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*12*
Summary of Construction Impacts on Vegetation Communities under Alternative 2

Project Feature	Solar Farm B	Gen-Tie Line B-2 Permanent Disturbance	Red Bluff Substation B Permanent Disturbance	Total Permanent Disturbance
Creosote Desert Scrub	3,877	*27*	*111*	*4,015*
Desert Dry Wash Woodland	35	*49*	*9*	93
Disturbed Areas	0	*2*	0	2

Note: Numbers are shown in acres.

Special Status Plant Species

Table 4.3-*13* summarizes the direct construction impacts on special status plant species known to occur in the disturbance footprint of Alternative 2. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction. Although not observed during botanical surveys for the Project, new special status plant species have the potential to emerge in this footprint and could be directly impacted by construction. Finally, direct and indirect impacts associated with dust and the potential introduction of invasive species could affect special status species immediately adjacent to the construction footprint of Alternative 2. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*13*
Summary of Construction Impacts on Observed Special Status Plant Species under Alternative 2

Species	Solar Farm B	Gen-Tie Line B-2	Red Bluff Substation B	Total
Foxtail cactus (CNPS List 4.3)	*1*	0	*1*	***2***
Emory's crucifixion thorn (CNPS List 2.3)	1	*0*	0	***1***
Las Animas colubrina (CNPS List 2.3)	0	0	0	**0**
California ditaxis (CNPS List 2.2)	0	*178*	*426*	***604***
Desert unicorn plant (CNPS List 4.3)	0	*0*	0	***0***
Slender-spined althorn (CNPS List 2.2)	5	0	0	**5**

Note: Numbers of individuals present in the Project *disturbance areas* shown.

Sensitive Natural Communities

Table 4.3-*14* summarizes the direct construction impacts on desert dry wash woodland under Alternative 2. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite sensitive natural communities immediately adjacent to the Project. Direct impacts on desert dry wash woodland

Table 4.3-*14*
Summary of Construction Impacts on Desert Dry Wash Woodland under Alternative 2

Species	Solar Farm B (acres)	Gen-Tie Line B-2 (acres)	Red Bluff Substation B (acres)	Total (acres)
Desert dry wash woodland permanent disturbance acreage	35	49	9	**93**

could occur downstream of the Alternative 2 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on desert dry wash woodland located downstream of Alternative 2 and adjacent to Alternative 2 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Jurisdictional Resources

Table 4.3-*15* summarizes the direct construction impacts on CDFG jurisdictional resources under Alternative 2. Similar to impacts described in the Sensitive Natural Communities section, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite jurisdictional resources immediately adjacent to the Project. Direct impacts on jurisdictional resources could occur downstream of the Alternative 2 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on desert dry wash woodland located downstream of Alternative 2 and adjacent to Alternative 2 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*15*
Summary of Construction Impacts on Jurisdictional Resources under Alternative 2

Species	Solar Farm B (acres)	Gen-Tie Line B-2 (acres)	Red Bluff Substation B (acres)	Total (acres)
Desert Dry Wash – In Creosote Desert Scrub Habitat*				
Permanent disturbance acreage	*170*	*3*	*24*	***197***
Riparian – Desert Dry Wash Woodland				
Permanent disturbance acreage	35	*49*	*9*	93
Total (acres)	***205***	**52**	***33***	***290***

Notes: *Largely unvegetated desert dry washes found within creosote desert scrub habitat.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, Alternative 2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from *operation and maintenance of* SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Impacts associated with operation and maintenance of GT-B-2 would be similar to those described for SF-B above *under Alternative 1*.

Red Bluff Substation B

Impacts associated with operation and maintenance of Red Bluff Substation B would be similar to those described for SF-B above *under Alternative 1*.

Summary of Operation and Maintenance Impacts

Native Vegetation Communities

Installation of Alternative 2 would have a direct impact on the geomorphic conditions and hydrology of the site and would potentially alter surface flow in desert dry wash woodland immediately downstream of the site (AECOM 2010). The relatively diverse hydrological conditions at the site would be modified by ground preparation to result in a more uniform, consistent condition. Without proper mitigation measures, the site would likely support rapidly migrating shallow channels, approximately two feet deep or less. In some cases, smaller features would be interrupted and routed parallel to the disturbance eventually merging with a larger wash. Washes that are interrupted may become less active resulting in less surface flow, subsurface infiltration, scour, and sediment deposition. These factors may lead to adverse effects on downstream vegetation within desert dry wash woodlands. Other washes may become more active resulting in an increase in surface water flow. When graded areas are routinely maintained, distinctly different conditions may form on the upstream and downstream side of a site as well.

Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology.

Dust generated during maintenance of access roads could directly adversely affect offsite native vegetation communities immediately adjacent to the Project. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Finally, maintenance of access roads associated with Alternative 2 would have the potential to introduce invasive plant species into areas of creosote desert scrub and desert dry wash woodland immediately adjacent to the access roads. *Operations and maintenance* vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measures *AM-*BIO-2 would reduce these invasive species impacts

Special Status Plant Species

Maintenance of access roads associated with Alternative 2 would have the potential to introduce invasive plant species into areas immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure *AM-*BIO-2 would reduce these impacts.

Dust generated during maintenance of access roads could directly adversely affect offsite special status plant species immediately adjacent to the Project. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Sensitive Natural Communities

Operation and maintenance impacts on sensitive natural communities would be similar to impacts on *Native Vegetation Communities* described above. *Implementing Applicant Measure AM-BIO-2 would reduce these impacts.*

Jurisdictional Resources

Impacts associated with operation and maintenance of Alternative 2 would be similar to those described in the *Native Vegetation Communities* section above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, *GT-B-2* would be consistent with the open space protection policies of the County of Riverside's General Plan.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Impacts associated with decommissioning GT-B-2 would be similar to those described for SF-B above.

Red Bluff Substation B

Impacts associated with decommissioning Red Bluff Substation B would be similar to those described for SF-B above.

Summary of Decommissioning Impacts

Native Vegetation Communities

Decommissioning of the Alternative 2 facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of native vegetation communities is not anticipated for decommissioning activities. However, potential impacts on the rate, volume, and quality of storm water runoff and the potential introduction of dust and invasive species associated with decommissioning activities could have indirect effects on vegetation communities located immediately adjacent to Alternative 2 (for invasive species), similar to the impacts associated with construction of Alternative 2. *Implementation of provisions in Applicant Measure AM-BIO-5 and Mitigation Measure MM-BIO-4 regarding the restoration of native vegetation during or following decommissioning would provide beneficial impacts to native vegetation.*

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of a SWPPP during decommissioning activities as discussed in Section 4.17, Water Resources, would reduce these impacts. In addition, implementation of Applicant Measure *AM-*BIO-2 would reduce the potential for the introduction of invasive species.

Special Status Plant Species

Removal of special status plant species is not anticipated under decommissioning activities for Alternative 2 and revegetation of the site would be beneficial to special status plant species. However, decommissioning activities could have direct and indirect impacts on special status plant species immediately adjacent to Alternative 2 facilities, similar to impacts associated with construction of Alternative 2, due to dust and the potential introduction of invasive species.

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Sensitive Natural Communities

Decommissioning impacts on sensitive natural communities would be similar to impacts on *Native Vegetation Communities* described above. *In addition, groundwater pumping for dust control during decommissioning would have the potential to reduce local groundwater levels and cause mortality to desert dry wash woodland trees off-site. This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline ground water levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Jurisdictional Resources

Impacts associated with decommissioning Alternative 2 would be similar to those described in the *Native Vegetation Communities and Sensitive Natural Communities* sections above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-B, GT-B-2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Combined Impacts for Alternative 2

In summary, construction of Alternative 2 would also result in the permanent disturbance of *4,015* acres of creosote desert scrub and *93* acres of desert dry wash woodland. In addition, without implementation of Applicant Measures or Mitigation Measures, indirect impacts on desert dry wash woodland located downstream and immediately adjacent to the Alternative 2 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts native vegetation communities located adjacent to Alternative 2 could also result due to dust and potential introduction of invasive species into these areas.

Construction of Alternative 2 would result in the direct loss of approximately two individual foxtail cactus, *one* individual of the Emory's crucifixion thorn, *604* individuals of California ditaxis, and five individuals of the slender-spined allthorn. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction. Although not observed during botanical surveys for the Project, new special status plant species have the potential to emerge in this footprint prior to construction and could be directly impacted by construction. Finally, direct and indirect impacts associated with dust and the potential introduction of invasive species could affect special status plant species immediately adjacent to the construction footprint of Alternative 2.

Construction of Alternative 2 would also result in the permanent disturbance of *93* acres of desert dry wash woodland and *290* acres of CDFG jurisdictional resources. In addition, without implementation of Applicant Measures or Mitigation Measures, direct impacts on desert dry wash woodland and jurisdictional resources could occur downstream of the Alternative 2 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts on desert dry wash woodland and jurisdictional resources located downstream of Alternative 2 and adjacent to Alternative 2 (Pinto Wash) could also result due to dust and potential introduction of invasive species into these areas.

While removal of vegetation is not anticipated during operation and maintenance and decommissioning of Alternative 2 facilities, changes in the site's geomorphic conditions and site hydrology could adversely affect the hydrology and water quality of desert dry wash woodland and jurisdictional resources located downstream of the site. In addition, maintenance of access roads and decommissioning activities have the potential to introduce dust and invasive species into areas immediately adjacent to the site which could adverse effects on special status plant species, sensitive natural communities, and jurisdictional resources.

Because Alternative 2 was sited to avoid pristine or biologically sensitive areas, Alternative 2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Applicant Measures and Mitigation Measures

The mitigation measures would be the same as those described under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B would be the same as that discussed under Alternative 1.

Gen-Tie Line B-2

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of 27 acres of creosote desert scrub and 49 acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in

Appendix H of this document and required in Applicant Measure BIO-1 and *Mitigation Measure BIO-2, Off-site Compensation*, would *require* that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would require that areas of disturbance are adequately restored with native vegetation. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. *Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore or increase viable populations of special status plants are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas. Additionally, impacts to native vegetation communities would be further reduced through implementation of AM BIO-1, and -4 and MM BIO-1, -2, and -4. Thus, with implementation of the aforementioned applicant and mitigation measures impacts to native vegetation communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-B-2 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-B-2, potential indirect construction, operation and maintenance, and decommissioning impacts on native vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

Construction of *GT-B-2* would directly impact *178* individuals of California ditaxis and where the species was found to be most concentrated during botanical surveys conducted for the Project (see Figure 3.3-3). *Indirect impacts may occur during construction; there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. The loss of individual cacti among the eight cacti species that are present in the footprint of GT-B-2 would be considered significant even though the loss of these individuals is not expected to affect the species' populations.* Impacts on this species would be considered significant.

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat for this species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM-BIO-3 and AM-BIO-5 would require that special status plant species will be salvaged to the extent feasible. Applicant Measure AM-BIO-4 would require the implementation of protection measures for special status plant species by ensuring construction workers are aware of the required avoidance measures.

Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. In an effort to avoid or reduce that potential impact, Mitigation Measure MM-BIO-1 requires monitoring during all construction activities to enforce the requirement that construction remains within the staked and flagged areas.

Additionally, in addition to the aforementioned Applicant and Mitigation Measures implementation of AM BIO -4 and MM BIO-1 and MM BIO-4 would reduce impacts to special status plant species a level below significance.

Due to the linear nature of GT-B-2, potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, due to the linear nature of GT-B-2, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure AM-BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure AM-BIO-3 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of 49 acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 and *implementation of Mitigation Measure BIO-2, Off-site Compensation*, would ensure that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored with native vegetation. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas.

Additionally, impacts to sensitive natural communities would be further reduced through implementation of Applicant Measures BIO-1, and -4 and Mitigation Measures BIO-1, -2, and -4. Thus, with implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-B-2 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-B-2, potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-3 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of 52 acres *of state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-14) would be a significant impact. The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).* Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2* would ensure that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-B-2 could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-B-2, potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Red Bluff Substation B

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of *111* acres of creosote desert scrub and *9* acres of desert dry wash woodland would be a significant impact. *During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated.*

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 would *require* that the loss of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. *Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore and/or increase viable populations of vegetation communities are made. Mitigation Measure BIO-1 requires monitoring during all construction to keep construction activities within the staked and flagged areas.* Implementation of Applicant Measure BIO-5 would *require* that areas of disturbance are adequately restored. Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. *Additionally, impacts to native vegetation communities would be further reduced through implementation of Applicant Measures BIO-1, and -4 and Mitigation Measures BIO-2 and -4. Thus, with implementation of the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.*

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation B could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on adjacent vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to a less than significant level by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

Construction of Red Bluff Substation B would directly impact *one* individual of foxtail cactus and would directly impact *426* individuals of California ditaxis which would be considered significant. As indicated in Figure 3.3-3, the largest concentration of foxtail cactus in the area is located outside of the footprint of Red Bluff Substation B. On the other hand, construction would directly impact several individuals of California ditaxis where the species was found to be most concentrated during botanical surveys conducted for the Project (see Figure 3.3-3). Although the loss of these individuals is not expected to significantly affect either of the species' populations, because these species are special status species, impacts on individuals would be considered significant.

Indirect impacts may occur during construction; there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. The loss of *individual cacti that are present in the footprint would be considered significant, even though the loss of these individuals is not expected to affect the species' populations.*

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat for these species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM BIO-3 and AM BIO-5 would require that special status plant species will be salvaged to the extent feasible.

Applicant Measure AM BIO-4 would require the implementation of protection measures for special status plant species by ensuring construction workers are aware of the required avoidance measures. Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. In an effort to avoid or reduce that potential impact, Mitigation Measure MM BIO-1 requires monitoring during all construction activities to enforce the requirement that construction remains within the staked and flagged areas.

Additionally, in addition to the aforementioned Applicant and Mitigation Measure, implementation of Applicant Measure AM BIO-4 and Mitigation Measure MM BIO-1 and MM BIO-4 would reduce impacts to special status plant species a level below significance.

The loss of individual cacti among the eight cacti species that are present in the footprint of Red Bluff Substation B would be considered significant. However, the loss of these individuals is not expected to affect the species' populations. In addition, implementation of Applicant Measures BIO-3 and BIO-5 would ensure that all individuals of these species are salvaged where feasible. Therefore, significant impacts would be reduced to less than significant levels.

Potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure *AM-*BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure *AM-*BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of 9 acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2, Off-site Compensation,* would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas.

Additionally, impacts to sensitive natural communities would be further reduced through implementation of Applicant Measures BIO-1, and -4 and Mitigation Measures BIO-1, -2, and -4. Thus, with implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation B could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and monitor for plant health and vigor. With implementation of Mitigation Measure BIO-5, this potential impact would be reduced below a level of significance.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of *33* acres of *state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-14) would be a significant impact. The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).*

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2, Off-site Compensation,* would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation B could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than five feet in adjacent desert dry wash woodland areas and to monitor for plant and vigor. With implementation of Mitigation Measure BIO-5, this potential impact would be reduced below a level of significance.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Unavoidable Adverse Effects

With implementation of mitigation measures, there would be no unavoidable adverse impacts *to Special-status Plant Species, Sensitive Natural and Native Vegetation Communities with Alternative 2. Under CEQA, there would be no unavoidable significant impacts to these resources.*

4.3.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Native Vegetation Communities

Clearing and grading activities for Project construction and infrastructure (such as access roads, staging areas, the footprint of the PV arrays, on-site substation, Visitor's Center, and O&M facility) would cause the direct loss of native vegetation within the SF-C boundaries. Vegetation communities affected would include creosote desert scrub and desert dry wash woodland. All surface disturbances would have permanent impacts. Total permanent disturbance would be approximately 3,045 acres. The creosote desert scrub community would receive the greatest impact (3,010 acres), as it is the dominant vegetation community within SF-C. *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2 and MM BIO 4 would reduce or mitigate these impacts to a level below significant.*

Dust generated during construction could directly adversely affect offsite native vegetation communities immediately adjacent to the Project by covering stomata and reducing photosynthetic or respiratory activity. Over time, this could cause lowered growth rates, increased susceptibility to disease, lowered reproductive capacity, or lowered ability to compete with nonnative species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, grading activities during construction could also have direct effects on the water quality and hydrology of desert dry washes located downstream of SF-C during rain events. Specifically, without implementation of erosion control measures, site compaction and grading activities would result in an increase in the rate and volume and sediment load in storm water runoff traveling offsite. Implementation of a Storm Water Pollution Prevention Plan (SWPPP) during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

Finally, clearing and grading activities within SF-C would disturb soil and remove vegetation. This could indirectly affect adjacent native vegetation communities by creating opportunities for nonnative invasive weed species to colonize or spread into the disturbed areas and then possibly into undisturbed areas located adjacent to SF-C (including Pinto Wash). Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Special Status Plant Species

As stated in Section 3.3, no federally-listed, state-listed, or proposed listed plant species have been observed in the Project locations and are not expected to be affected by the Project. Clearing and grading activities to construct SF-C would cause the direct loss of one individual foxtail cactus (CNPS List 4.3) (with an estimated distribution of one acre), one crucifixion thorn (CNPS List 2.3), and five individuals of the slender-spined allthorn (Table 4.3-15). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the 3,045 acres of permanent disturbance caused by construction of SF-C. Although not observed during botanical surveys conducted for the Project, there is the potential for new special status species to emerge within SF-C prior to construction. If present, these species would be directly impacted as well. *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2, and MM BIO-4 would reduce or mitigate these impacts.*

Dust generated during construction could also directly adversely affect foxtail cactus and other cacti species located immediately adjacent to SF-C (see Figure 3.3-3) by covering stomata and reducing photosynthetic or respiratory activity. Over the proposed 26-month construction period, this could cause lowered growth rates, increased susceptibility to disease, lowered reproductive capacity, or lowered ability to compete with nonnative species. Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Finally, clearing and grading activities within SF-C would disturb soil and remove vegetation. This could indirectly affect special status plant species by creating opportunities for nonnative invasive weed species to colonize or spread into the disturbed areas and then possibly into undisturbed areas located adjacent to SF-C. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementing Applicant Measure BIO-2 would reduce these impacts.

Sensitive Natural Communities

A total of 35 acres of desert dry wash woodland would be permanently removed to construct SF-C (Table 4.3-*18*). *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2, and MM BIO-4 would reduce or mitigate these impacts.*

In addition, grading activities during construction could also have direct effects on the water quality and hydrology of desert dry washes located downstream of SF-C during rain events. Specifically, without implementation of erosion control measures, site compaction and grading activities would result in an increase in the rate and volume and sediment load in storm water runoff traveling offsite. Implementation of a SWPPP during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

As described for *Native Vegetation Communities*, dust generated during construction could also directly adversely affect desert dry wash woodland located immediately adjacent to SF-C. Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999).

Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be reduced to a less than significant level by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and monitor for plant health and vigor.

Finally, clearing and grading activities within SF-B would disturb soil and remove vegetation. This could indirectly affect desert dry wash woodland by creating opportunities for nonnative invasive weed species to colonize or spread into the disturbed areas and then possibly into undisturbed areas located downstream and adjacent to SF-C (including Pinto Wash). Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure *AM-*BIO-*2* would reduce these impacts.

Jurisdictional Resources

Table 4.3-*19* presents the acres of CDFG jurisdictional resources that would be permanently disturbed as a result of construction of SF-C. Approximately *166* acres of *jurisdictional resources subject to* subject to CDFG's Lake and Streambed Alteration Agreement Program jurisdiction would be permanently disturbed to construct the SF-C site. Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-1 *and BIO-2* would reduce these impacts.

No areas were found that meet the USACE technical criteria for being classified as wetlands. Areas mapped as desert dry wash occurring within creosote desert scrub habitat and desert dry wash woodland habitat did meet the technical criteria for other waters of the US due to the presence of an ordinary high water mark. However, following joint USACE/USEPA guidance resulting from relatively recent US Supreme Court decisions, these areas *are* excluded from USACE jurisdiction because they are non-navigable intrastate waters, have not been used for navigation in the past, do not have a surface connection to a traditional navigable water, and have not been used and are not currently being used for interstate or foreign commerce. An official verification of this finding by the USACE *has been received by the Applicant*.

As described under the *Sensitive Natural Communities* section above, direct impacts to the water quality of jurisdictional resources located downstream of SF-C could result from construction activities due to an increase in the rate and volume and sediment load of storm water runoff traveling offsite. Implementation of a SWPPP during construction as discussed in Section 4.17, Water Resources, would be employed to reduce these impacts.

As described for *Native Vegetation Communities*, dust generated during construction could also directly adversely affect jurisdictional resources located immediately adjacent to SF-C. Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

In addition, construction of SF-C would also have the potential to introduce invasive species into jurisdictional resources located downstream and adjacent to SF-B as well, as described above under the *Sensitive Natural Communities* section. Implementation of Applicant Measure BIO-2 would reduce these impacts. *Groundwater pumping would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure MM-*

BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Local Policies or Ordinances Protecting Biological Resources

Local open space Policy DCAP 10.1 of the Desert Center Area Plan of the County of Riverside's General Plan states the following:

> *DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.*

The site for SF-C was chosen in part because of its proximity to existing development, particularly existing transmission and transportation infrastructure. Thus, SF-C is consistent with this policy.

Gen-Tie Line A-2

Native Vegetation Communities

A total of *40* acres of creosote desert scrub would be permanently removed to construct GT-A-2 (Table 4.3-*16*). Acreages of desert dry wash woodland that would be disturbed are discussed below under *Sensitive Natural Communities*. *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2 and MM BIO 4 would reduce these impacts to a level below significant.*

Other direct and indirect impacts on native vegetation communities would be similar to those described under SF-C. However, given the linear nature of the GT-A-2 footprint, there is an even greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure *AM-*BIO-2 *and Mitigation Measure MM-BIO-2* would reduce *or mitigate* these impacts.

Special Status Plant Species

Clearing and grading activities to construct GT-A-2 would cause the direct loss of *two* crucifixion thorns (CNPS List 2.3), and one desert unicorn plant (CNPS List 4.3) (Table 4.3-*17*). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *86* acres of permanent disturbance caused by construction of GT-A-2. Although not observed during botanical surveys conducted for the Project, there is the potential for new special status species to emerge within GT-A-2 prior to construction. If present, these species would be directly impacted as well. Implementation of Applicant Measures *AM* BIO-1, and *AM* BIO-3 through *AM* BIO-5, and Mitigation Measures *MM* BIO-1 *through MM-BIO-4 would reduce these impacts.*

Other direct and indirect impacts on special status plant species would be similar to those described for SF-C. However, given the linear nature of the GT-A-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure *AM-*BIO-2 *and Mitigation Measure MM-BIO-2* would reduce these impacts.

Sensitive Natural Communities

A total of *38* acres of desert dry wash woodland would be permanently removed to construct GT-A-2 (Table 4.3-18). *Implementation of Applicant Measures AM BIO-1 and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2 and MM BIO-4 would reduce or mitigate these impacts.*

Groundwater pumping would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and monitor for plant health and vigor.

Other direct and indirect impacts on desert dry wash woodland would be similar to those described for SF-C. However, given the linear nature of the GT-A-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure BIO-2 *and Mitigation Measure BIO-2* would reduce these impacts.

Jurisdictional Resources

Table 4.3-*19* presents the acres of CDFG jurisdictional resources that would be temporarily and permanently disturbed as a result of construction of GT-A-2. A total of *56* acres would be permanently disturbed by construction of GT-A-2. Implementation of Applicant Measures *AM-*BIO-1 and *AM-*BIO-5 and Mitigation Measure *MM-*BIO-1 *through MM-BIO-4* would reduce these impacts.

Other direct and indirect impacts on jurisdictional resources would be similar to those described for SF-C. However, given the linear nature of the GT-A-2 footprint, there is a greater risk that weeds could be introduced and spread over a large area. Implementation of Applicant Measure *AM-*BIO-2 would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As described under SF-C, Alternative 3 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Red Bluff Substation A

Native Vegetation Communities

A total of *130* acres of creosote desert scrub and *29* acres of desert dry wash woodland would be permanently removed to construct Red Bluff Substation A (Table 4.3-16). *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measure MM BIO-1, MM BIO-2 and MM BIO 4 would reduce or mitigate these impacts.*

Other direct and indirect impacts on native vegetation communities would be similar to those described for SF-C.

Special Status Plant Species

Clearing and grading activities to construct the Red Bluff Substation A and all of its associated improvements (including Access Road 2 and the Telecommunications Site) would cause the direct loss of *four* foxtail cactus, and *two* California ditaxis (Table 4.3-*17*). Eight other species of cacti have been recorded in the Project locations as well (see Table 3.3-2) and would be directly impacted by the *172* acres of permanent disturbance caused by construction of Red Bluff Substation A. Although not observed during botanical surveys conducted for the Project, there is the potential for new special status species to emerge within Red Bluff Substation A prior to construction. If present, these species would be directly impacted as well. *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1though MM BIO 4 would reduce or mitigate these impacts.*

Similar direct and indirect impacts associated with dust and the potential introduction of invasive species would also result from construction of Red Bluff Substation A as for SF-C.

Sensitive Natural Communities

A total of *29* acres of desert dry wash woodland would be permanently removed to construct Red Bluff Substation A (Table 4.3-*18*). *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1 MM BIO-2 and MM BIO 4 would reduce or mitigate these impacts.*

Other direct and indirect impacts on desert dry wash woodland would be similar to those described for SF-C. *Groundwater pumping during construction of the substation would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential impact will be minimized by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas.*

Jurisdictional Resources

A total of *51* acres of CDFG jurisdictional resources would be permanently removed to construct Red Bluff Substation A under this Alternative (Table 4.3-*19*). Implementation of Applicant Measures *AM-*BIO-1 and Mitigation Measure*s MM-*BIO-1 *and MM-BIO-2* would reduce these impacts. *Groundwater pumping during construction and operation at the substation would have the potential to reduce local groundwater levels and cause mortality of desert dry wash woodland trees. This potential impact will be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas.*

Other direct and indirect impacts on these resources would be similar to those described for SF-C.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-C, Alternative 3 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Construction Impacts

Native Vegetation Communities

Table 4.3-*16* summarizes the direct construction impacts on creosote desert scrub and desert dry wash woodland under Alternative 3. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite native

Table 4.3-*16*
Summary of Construction Impacts on Vegetation Communities under Alternative 3

Project Feature	Solar Farm C	Gen-Tie Line A-2 Permanent Disturbance	Red Bluff Substation A Permanent Disturbance	Total Permanent Disturbance
Creosote Desert Scrub	3,010	*40*	*130*	*3,180*
Desert Dry Wash Woodland	35	38	*29*	*102*
Disturbed Areas	0	*20*	1	*21*

Note: Numbers are shown in acres.

vegetation communities immediately adjacent to the Project. Direct impacts on desert dry wash woodland could occur downstream of the Alternative 3 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on adjacent vegetation communities could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Special Status Plant Species

Table 4.3-*17* summarizes the direct construction impacts on special status plant species known to occur in the disturbance footprint of Alternative 3. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction. There is the potential for new special status species to emerge within this footprint prior to construction and could be directly impacted by construction. Finally, direct and indirect impacts associated with dust and the potential introduction of invasive species could affect special status species immediately adjacent to the construction footprint of Alternative 3. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*17*
Summary of Construction Impacts on
Observed Special Status Plant Species under Alternative 3

Species	Solar Farm C	Gen-Tie Line A-2	Red Bluff Substation A	Total
Foxtail cactus (CNPS List 4.3)	1	0	*4*	***5***
Emory's crucifixion thorn (CNPS List 2.3)	1	*2*	0	***3***
Las Animas colubrina (CNPS List 2.3)	0	0	*0*	***0***
California ditaxis (CNPS List 2.2)	0	0	*2*	***2***
Desert unicorn plant (CNPS List 4.3)	0	1	0	**1**
Slender-spined althorn (CNPS List 2.2)	5	0	0	**5**

Note: Numbers of individuals present in the Project *disturbance areas* shown. *For example, although no Las Animas Colubrina were found in Project disturbance areas, two individuals were found near Alternative 1 within the Study Area*.

Sensitive Natural Communities

Table 4.3-*18* summarizes the direct construction impacts on desert dry wash woodland under Alternative 3. In addition, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite sensitive natural communities immediately adjacent to the Project. Direct impacts on desert dry wash woodland could occur downstream of the Alternative 3 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on desert dry wash woodland located downstream of Alternative 3 and adjacent to Alternative 3 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*18*
Summary of Construction Impacts on Desert Dry Wash Woodland under Alternative 3

Species	Solar Farm C (acres)	Gen-Tie Line A-2 (acres)	Red Bluff Substation A (acres)	Total (acres)
Desert dry wash woodland permanent disturbance acreage	35	*38*	*29*	***102***

Jurisdictional Resources

Table 4.3-*19* summarizes the direct construction impacts on CDFG jurisdictional resources under Alternative 3. Similar to impacts described under the *Sensitive Natural Communities* section, without implementation of Applicant Measures or Mitigation Measures, dust generated during construction could directly adversely affect offsite jurisdictional resources immediately adjacent to the Project. Direct impacts on jurisdictional resources could occur downstream of the Alternative 3 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Indirect impacts on desert dry wash woodland located downstream of Alternative 3 and adjacent to Alternative 3 (Pinto Wash) could also result due to potential introduction of invasive species into these areas. Implementation of the mitigation measures discussed above would reduce impacts.

Table 4.3-*19*
Summary of Construction Impacts on Jurisdictional Resources under Alternative 3

Species	Solar Farm C (acres)	Gen-Tie Line A-2 (acres)	Red Bluff Substation A (acres)	Total (acres)
Desert Dry Wash – In Creosote Desert Scrub Habitat*				
Permanent disturbance acreage	131	*18*	*22*	***177***
Riparian – Desert Dry Wash Woodland				
Permanent disturbance acreage	35	*38*	*29*	***102***
Total (acres)	**166**	**56**	***51***	***273***

Notes: *Largely unvegetated desert dry washes found within creosote desert scrub habitat.

Local Policies or Ordinances Protecting Biological Resources

As described under SF-C, Alternative 3 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Operation and Maintenance

Solar Farm Layout C

Native Vegetation Communities

Installation of SF-C would have a direct impact on the geomorphic conditions and hydrology of the site and would potentially alter surface flow in desert dry wash woodland immediately downstream of the site (AECOM 2010). The relatively diverse hydrological conditions at the site would be modified by ground preparation to result in a more uniform, consistent condition. Without proper mitigation measures, the site would likely support rapidly migrating shallow channels, approximately two feet deep or less. In some cases, smaller features would be interrupted and routed parallel to the disturbance eventually merging with a larger wash. Washes that are interrupted may become less active resulting in less surface flow, subsurface infiltration, scour, and sediment deposition. These factors may lead to adverse effects on downstream vegetation within desert dry wash woodlands. Other washes may become more active resulting in an increase in surface water flow. When graded areas are routinely maintained, distinctly different conditions may form on the upstream and downstream side of a site as well.

Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology.

Dust generated during maintenance of access roads could directly adversely affect offsite native vegetation communities immediately adjacent to the Project by covering stomata and reducing photosynthetic or respiratory activity. Over the proposed 26-month construction period, this could cause lowered growth rates, increased susceptibility to disease, lowered reproductive capacity, or lowered ability to compete with nonnative species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Finally, maintenance of access roads associated with SF-C would have the potential to introduce invasive plant species into areas of creosote desert scrub and desert dry wash woodland immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these invasive species impacts

Special Status Plant Species

Maintenance of access roads associated with SF-C would have the potential to introduce invasive plant species into areas immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. *Implementation of Applicant Measures AM BIO-1, and AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1, MM BIO-2 and MM BIO 4 would reduce these impacts to a level below significant.*

Dust generated during maintenance of access roads could directly adversely affect offsite special status plant species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Sensitive Natural Communities

Impacts associated with operation and maintenance of SF-C would be similar to those described in the *Native Vegetation Communities* section above.

Jurisdictional Resources

Impacts associated with operation and maintenance of SF-C would be similar to those described in the *Native Vegetation Communities* section above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-C, GT-A-2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Gen-Tie Line A-2

Impacts associated with operation and maintenance of GT-A-2 would be similar to those described for SF-C above.

Red Bluff Substation A

Impacts associated with operation and maintenance of Red Bluff Substation A would be similar to those described under SF-C above.

Summary of Operation and Maintenance Impacts

Native Vegetation Communities

Installation of Alternative 3 would have a direct impact on the geomorphic conditions and hydrology of the site and would potentially alter surface flow in desert dry wash woodland immediately downstream of the site (AECOM 2010). The relatively diverse hydrological conditions at the site would be modified by ground preparation to result in a more uniform, consistent condition. Without proper mitigation measures, the site would likely support rapidly migrating shallow channels, approximately two feet deep or less. In some cases, smaller features would be interrupted and routed parallel to the disturbance eventually merging with a larger wash. Washes that are interrupted may become less active resulting in less surface flow, subsurface infiltration, scour, and sediment deposition. These factors may lead to adverse effects on downstream vegetation within desert dry wash woodlands. Other washes may become more active resulting in an increase in surface water flow. When graded areas are routinely maintained, distinctly different conditions may form on the upstream and downstream side of a site as well.

Proposed soil decompaction is expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology.

Dust generated during maintenance of access roads could directly adversely affect offsite native vegetation communities. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts. Finally, maintenance of access roads associated with Alternative 3 would have the potential to introduce invasive plant species into areas of creosote desert scrub and desert dry wash woodland immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Mitigation Measures BIO-2 and BIO-3 would reduce these invasive species impacts.

Special Status Plant Species

Maintenance of access roads associated with Alternative 3 would have the potential to introduce invasive plant species into areas immediately adjacent to the access roads. Construction vehicles and crews could inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. Implementation of Applicant Measure BIO-2 would reduce these impacts.

Dust generated during maintenance of access roads could directly adversely affect offsite special status plant species. Implementation of dust control measures as discussed in Section 4.2, Air Resources, would be employed to reduce these impacts.

Sensitive Natural Communities

Impacts associated with operation and maintenance of Alternative 3 would be similar to those described in the *Native Vegetation Communities* section above.

Jurisdictional Resources

Impacts associated with operation and maintenance of Alternative 3 would be similar to those described under *Native Vegetation Communities* above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-C, Alternative 3 would be consistent with the open space protection policies of the County of Riverside’s General Plan.

Decommissioning

Solar Farm Layout C

Native Vegetation Communities

Decommissioning of the SF-C facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of native vegetation communities is not anticipated for decommissioning activities. However, potential impacts on the rate, volume, and quality of storm water runoff and the potential introduction of dust and invasive species associated with decommissioning activities could have direct and indirect effects on vegetation communities located immediately adjacent to SF-C (for invasive species), similar to the impacts associated with construction of SF-C. *Implementation of provisions in Applicant Measure AM-BIO-5 and Mitigation Measure MM-BIO-4 regarding the restoration of native vegetation during or following decommissioning would provide beneficial impacts to native vegetation.*

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of a SWPPP during decommissioning activities as discussed in Section 4.17, Water Resources, would reduce these impacts. In addition, implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Special Status Plant Species

Decommissioning of the SF-C facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of special status plant species is not anticipated for decommissioning activities. In addition, revegetation of the site would benefit special status plant species. However, dust impacts and the potential introduction of invasive species associated with decommissioning activities could have direct and indirect effects on special status plant species located immediately adjacent to SF-C, similar to the impacts associated with construction of SF-C.

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Sensitive Natural Communities

Impacts associated with decommissioning SF-C would be similar to those described in the *Native Vegetation Communities* section above. *In addition groundwater pumping for dust control during decommissioning would have the potential to reduce local groundwater and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Jurisdictional Resources

Impacts associated with decommissioning SF-C would be similar to those described in the *Native Vegetation Communities and Sensitive Natural Communities* sections above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-C, GT-A-2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Gen-Tie Line A-2

Impacts associated with decommissioning GT-A-2 would be similar to those described for SF-C above.

Red Bluff Substation A

Impacts associated with decommissioning Red Bluff Substation A would be similar to those described for SF-C above.

Summary of Decommissioning Impacts

Native Vegetation Communities

Decommissioning of the Alternative 3 facilities is anticipated to only directly impact areas previously disturbed by installation of the facilities. Removal of native vegetation communities is not anticipated for decommissioning activities. However, potential impacts on the rate, volume, and quality of storm water runoff and the potential introduction of dust and invasive species associated with decommissioning activities could have direct and indirect effects on vegetation communities located immediately adjacent to Alternative 3 (for invasive species), similar to the impacts associated with construction of Alternative 3. *Implementation of provisions in Applicant Measure AM-BIO-5 and Mitigation Measure MM-BIO-4 regarding the restoration of native vegetation during or following decommissioning would provide beneficial impacts to native vegetation.*

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of a SWPPP during decommissioning activities as discussed in Section 4.17, Water Resources, would reduce these impacts. In addition, implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Special Status Plant Species

Removal of special status plant species is not anticipated under decommissioning activities for Alternative 3 and revegetation of the site would be beneficial to special status plant species. However, decommissioning activities could have direct and indirect impacts on special status plant species immediately adjacent to Alternative 3 facilities, similar to impacts associated with construction of Alternative 3, due to dust and the potential introduction of invasive species.

Implementation of the dust control mitigation measures discussed in Section 4.2, Air Resources, would be employed to reduce these dust impacts. Implementation of Applicant Measure BIO-2 would reduce the potential for the introduction of invasive species.

Sensitive Natural Communities

Impacts associated with decommissioning Alternative 3 would be similar to those described in the *Native Vegetation Communities* section above. *In addition, groundwater pumping for dust control during decommissioning would have the potential to reduce local groundwater and cause mortality of desert dry wash woodland trees. This potential impact would be minimized by Mitigation Measure BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.*

Jurisdictional Resources

Impacts associated with decommissioning Alternative 3 would be similar to those described in the *Native Vegetation Communities and Sensitive Natural Communities* section above.

Local Policies or Ordinances Protecting Biological Resources

As described for SF-C, GT-A-2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Summary of Combined Impacts for Alternative 3

In summary, construction of Alternative 3 would also result in the permanent disturbance of *3,180* acres of creosote desert scrub and *102* acres of desert dry wash woodland. In addition, without implementation of Applicant Measures or Mitigation Measures, direct impacts on desert dry wash woodland located downstream and immediately adjacent to the Alternative 3 site could occur as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts native vegetation communities located adjacent to Alternative 3 could also result due to dust and potential introduction of invasive species into these areas.

Construction of Alternative 3 would result in the direct loss of approximately *five individual* foxtail cactus, *three* individuals of the Emory's crucifixion thorn, *two* California ditaxis, one individual of the desert unicorn plant, and five individuals of the slender-spined allthorn. In addition, eight other cacti species are known to occur in this footprint and would be directly impacted by construction. Although not observed during botanical surveys for the Project, new special status species have the potential to emerge in this footprint prior to construction and could be directly impacted by construction. Finally, direct and indirect impacts associated with dust and the potential introduction of invasive species could affect special status plant species immediately adjacent to the construction footprint of Alternative 3.

Construction of Alternative 3 would also result in the permanent disturbance of *102* acres of desert dry wash woodland and *273* acres of CDFG jurisdictional resources. In addition, without implementation of Applicant Measures or Mitigation Measures, direct impacts on desert dry wash woodland and jurisdictional resources could occur downstream of the Alternative 3 site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct and indirect impacts on desert dry wash woodland and jurisdictional resources located downstream of Alternative 3 and adjacent to Alternative 3 (Pinto Wash) could also result due to potential introduction of invasive species into these areas.

While removal of vegetation is not anticipated during operation and maintenance and decommissioning of Alternative 3 facilities, changes in the site's geomorphic conditions and site hydrology could adversely affect the hydrology and water quality of desert dry wash woodland and jurisdictional resources located downstream of the site. In addition, maintenance of access roads and decommissioning activities have the potential to introduce dust and invasive species into areas immediately adjacent to the site which could adverse effects on special status plant species, sensitive natural communities, and jurisdictional resources.

As described for SF-C, GT-A-2 would be consistent with the open space protection policies of the County of Riverside's General Plan.

Applicant Measures and Mitigation Measures

The mitigation measures would be the same as those described under Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of *28* acres of creosote desert scrub and *38* acres of desert dry wash woodland would be a significant impact. *During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated.*

However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 would ensure that the loss of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. *Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore and/or increase viable native vegetation communities are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas. Additionally, implementation of Applicant Measures AM BIO-3 through AM BIO-5, and Mitigation Measures MM BIO-1 and MM BIO-4 would further reduce these impacts.*

Through implementation of the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of SF-C could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream of SF-C. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the large size of SF-C, potential indirect construction, operation and maintenance, and decommissioning impacts on adjacent vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999.) Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree). This potential impact would be minimized by

Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and monitor for plant health and vigor. With implementation of Mitigation Measure MM-BIO-5, this potential impact would be reduced below a level of significance.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of one individual foxtail cactus, one individual Emory's crucifixion thorn, and five individuals of the slender-spined allthorn during construction of SF-C would not significantly affect the populations of these species, however, because they are special status species, impacts on these individuals would be considered significant. As indicated in Figure 3.3-3, the location of SF-C was designed to avoid the largest concentrations of foxtail cactus in the area, the most prevalent special status plant species in the Project Study Area.

In direct impacts may occur during construction; there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. The loss of individual cacti that are present in the footprint would be considered significant, even though the loss of these individuals is not expected to affect the species' populations.

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat for these species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM BIO-3 and AM BIO-5 would require that cacti will be transplanted and all other special status plant species will be salvaged to the extent feasible. *Applicant Measure AM BIO-4 would require the implementation of protection measures for special status plant species by ensuring construction workers are aware of the required avoidance measures. Mitigation Measure MM BIO-4 would require that the Salvage and Restoration Plan include a 10-year monitoring program which must met specified performance standards.*

Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. In an effort to avoid or reduce that potential impact, Mitigation Measure MM BIO-1 requires construction monitoring during all construction activities to enforce the requirement that construction activities remain within the staked and flagged areas.

Thus, implementation of the aforementioned applicant and mitigation measures would reduce impacts to special status plant species to a level below significance.

The loss of individual cacti among the eight cacti species that are present in the footprint of SF-C would be considered significant. However, the loss of these individuals is not expected to affect the species' populations. In addition, implementation of Applicant Measures *AM-*BIO-3 and *AM-*BIO-5 would ensure that all individuals of these species are salvaged where feasible. Therefore, significant impacts would be reduced to less than significant levels.

Potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure *AM-*BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure *AM-*BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of 35 acres of desert dry wash woodland would be a significant impact. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and implementation of Mitigation Measure BIO-2, Off-Site Compensation,* would require that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. *Additionally, during construction there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated.*

Implementation of the Habitat Compensation Plan included in Appendix H and required in Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that the loss of sensitive natural communities is adequately compensated for and equivalent habitat would be protected offsite. These measures would require that equivalent habitat to compensate for the loss of sensitive natural communities is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species that characterize that vegetative community. Implementation of Mitigation Measure BIO-1 would require construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. Applicant Measure BIO-4 and Mitigation Measure BIO-1 would implement protection measures for these communities by ensuring construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts.

Additionally, as discussed under Impact BIO-1, Mitigation Measure BIO-2 requires, among other things, that the proposed compensation lands are composed of specific habitat types that provide values to the vegetation and wildlife species of concern, meet selection criteria, and are managed under an approved management plan. Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years and that specific performance standards are met.

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of SF-C could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream of SF-C. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts.

Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-3 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be less than significant with implementation of Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of 166 acres of *state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-19) would be a significant impact. The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).* would be a significant impact Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2, Off-site Compensation,* would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures and mitigation measures, construction and operation and maintenance of SF-C could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree; perhaps also catclaw acacia). This potential impact would be less than significant with implementation of Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Gen-Tie Line A-2

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of 40 acres of creosote desert scrub and 38 acres of desert dry wash woodland would be a significant impact. *During construction, there remains the risk that construction equipment could stray outside* *of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures.*

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 would *require* that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. *These measures would require that equivalent habitat to compensate for the loss of native vegetative communities is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species that characterize that vegetative community. Additionally, Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore and/or increase viable populations of vegetation communities are made.*

Implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored with native vegetation. *Implementation of Mitigation Measure BIO-1 would require monitoring during all construction activities to ensure that construction remains within the staked and flagged areas and that all construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts. Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure meet specific performance standards are met.*

Through implementation of the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-2 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-2, potential indirect construction, operation and maintenance, and decommissioning impacts on native vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operations and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of one individual desert unicorn plant during construction of GT-A-2 would not significantly affect the population of this species. Construction of GT-A-2 would directly impact *two* individuals of Emory's crucifixion thorn. *Although* the loss of these individuals is not expected to significantly affect the species' population, because these species are special status species, impacts on these individuals would be considered significant. *The loss of individual cacti among the eight cacti species that are present in the footprint of GT-A-2 would be considered significant. However, the loss of these individuals is also not expected to affect the species' populations. Indirect impacts could occur during construction as there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than is anticipated.*

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat for these species is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species thereby benefiting the overall populations of these species. Applicant Measures AM BIO-3 and AM BIO-5 would require that cacti will be transplanted and all other special status plant species will be salvaged to the extent feasible. *Applicant Measure AM BIO-4 would require the implementation of protection measures for special status plant species by ensuring construction workers are aware of the required avoidance measures.*

Nevertheless, during construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. In an effort to avoid or reduce that potential impact, Mitigation Measure MM BIO-1 requires monitoring during all construction activities to enforce the requirement that construction remains within the staked and flagged areas.

Implementation of the aforementioned applicant and mitigation measures would reduce impacts to special status plant species a level below significance.

Due to the linear nature of GT-A-2, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, due to the linear nature of GT-A-2, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of these measures, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of *38* acres of desert dry wash woodland would be a significant impact. *Additionally, during construction there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Implementation of the Habitat Compensation Plan included in Appendix H and required in Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that the loss of sensitive natural communities is adequately compensated for and equivalent habitat would be protected offsite.*

Implementation of Mitigation Measure BIO-1 would require monitoring during all construction activities to ensure that construction remains within the staked and flagged areas.

Implementation of Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that equivalent habitat to compensate for the loss of sensitive natural communities is preserved elsewhere, and that it is occupied by viable, stable or increasing target plant species that characterize that vegetative community. Applicant Measure BIO-4 and Mitigation Measure BIO-1 would implement protection measures for these communities by ensuring construction workers are educated about the required avoidance measures and that a qualified biologist is on site to prevent incidental impacts.

Additionally, as discussed under Impact BIO-1, MM-BIO-2 requires, among other things, that the proposed compensation lands are composed of specific habitat types that provide values to the vegetation and wildlife species of concern, meet a selection criteria, and are managed under an approved management plan. Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure meet specific performance standards are met.

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to sensitive natural communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-2 could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-2, potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby sensitive natural communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of 56 acres of *state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-19) would be a significant impact. The US Army Corps of*

Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3). Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-1, Off-site Compensation,* would ensure that the permanent loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of GT-A-2 could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Due to the linear nature of GT-A-2, potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no *significant* construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Red Bluff Substation A

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The direct loss of *130* acres of creosote desert scrub and *29* acres of desert dry wash woodland would be a significant impact. *During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than is anticipated.*

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 would ensure that the loss of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. *Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore or increase viable populations of vegetation communities are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas.* Applicant Measure BIO-5 would *require* that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. *Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10-years to ensure meet specific performance standards are met.*

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to native vegetation communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation A could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within 5 percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures (e.g., rip rap or gabion siltation basins) discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on adjacent vegetation communities from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999).

Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree). This potential impact would be minimized by Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor. With implementation of Mitigation Measure MM-BIO-5, this potential impact would be reduced below a level of significance.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The direct loss of *four foxtail cactus* and *four* California ditaxis during construction of Red Bluff Substation A would not significantly affect the population of these species. Construction would also directly impact four individuals of foxtail cactus distributed over a four-acre area. However, as indicated in Figure 3.3-3, the largest concentration of foxtail cactus in the area is located outside of the footprint of Red Bluff Substation A. Therefore, the direct loss of these individuals is not anticipated to significantly affect the populations of these species. Nevertheless, because these species are special status species, impacts on these individuals would be considered significant.

In direct impacts may occur during construction; there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger number of special status plant species than anticipated. The loss of individual cacti that are present in the footprint would be considered significant even though the loss of these individuals is not expected to affect the species' populations.

Applicant Measure BIO-1 and Mitigation Measure BIO-2 would require that specific success criteria are met and that all attempts to restore or increase viable populations of special status plants are made. Mitigation Measure BIO-1 requires monitoring during all construction activities to keep construction within the staked and flagged areas. Applicant Measure BIO-3 and BIO-5 would require that any special status plant species found within the Project locations would be salvaged and transplanted if feasible. Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure meet specific performance standards are met.

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to special status plant species would be reduced to a level below significance.

The loss of individual cacti among the eight cacti species that are present in the footprint of Red Bluff Substation A would be considered significant. However, the loss of these individuals is not expected to affect the species' populations. In addition, implementation of Applicant Measures *AM-*BIO-3 and *AM-*BIO-5 would ensure that all individuals of these species are salvaged where feasible. Therefore, significant impacts would be reduced to less than significant levels.

Potential construction, operation and maintenance, and decommissioning impacts on special status plant species from dust would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would ensure that these impacts are less than significant.

In addition, potential indirect construction, operation and maintenance, and decommissioning impacts on special status plant species from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure *AM-*BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure *AM-*BIO-2 would ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The direct loss of *29* acres of desert dry wash woodland would be a significant impact. Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2, Off-site Compensation*, would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels. *Mitigation Measure BIO-4, Salvage and Restoration Plan Performance Standards, requires that compensation lands be monitored for 10 years to ensure meet specific performance standards are met.*

Thus, implementation of the aforementioned applicant and mitigation measures, impacts to Sensitive Natural Communities would be reduced to a level below significance.

Without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation A could affect the hydrology and quality of storm water runoff quality in desert dry wash woodland downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site’s hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on desert dry wash woodland from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to: prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

In addition, groundwater pumping for construction of the Project could lower local groundwater levels. Groundwater pumping for agriculture has caused loss of phreatophytic woodlands in Arizona (Jackson and Comus 1999). Depending on the rate and extent of groundwater drawdown and on the ability for groundwater dependent plants to adjust by extending their root systems, groundwater pumping could cause mortality of off-site desert dry wash woodland trees (desert ironwood, blue palo verde, desert willow, and smoke tree). This potential impact would be reduced to less than significant levels with the implementation of Mitigation Measure MM-BIO-5, groundwater monitoring, which requires the Project operator to avoid causing baseline groundwater levels to drop more than one foot in adjacent desert dry wash woodland areas and to monitor for plant health and vigor.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby native vegetation communities. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The direct loss of *51* acres of *state jurisdictional resources (i.e., streambeds, as regulated through CDFG Lake and Streambed Alteration Agreements; see Table 4.3-19) would be a significant impact. The US Army Corps of Engineers has determined that no federally jurisdictional Waters of the US are within the Project area (Section 3.3).* would be a significant impact. Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2, Off-site Compensation*, would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. In addition, implementation of Applicant Measure BIO-5 would ensure that areas of disturbance are adequately restored. During construction, there remains the risk that construction equipment could stray outside of the staked and flagged areas and disturb a larger area than anticipated. Therefore, impacts would remain significant even after implementation of applicant measures. However, Mitigation Measure BIO-1 requires construction monitoring during all construction activities to ensure that construction activities remain within the staked and flagged areas. With implementation of this mitigation measure, impacts would be reduced to less than significant levels.

As discussed under *Sensitive Natural Communities* above, without implementation of applicant measures or mitigation measures, construction and operation and maintenance of Red Bluff Substation A could affect the hydrology and quality of storm water runoff quality in jurisdictional resources downstream. However, implementation of a SWPPP during construction, as discussed in Section 4.17, Water Resources, would reduce construction impacts. Proposed soil decompaction is also expected to substantially mitigate the potential for an increase in offsite channelization and sedimentation, bringing the change in hydrology down to within five percent of pre-development hydraulic conditions (AECOM 2010). Nevertheless, impacts would remain significant without additional control of the site's hydrology. Implementation of additional mitigation measures discussed in Section 4.17, Water Resources, would be employed to further reduce the magnitude of change in onsite and offsite hydrology. As a result, implementation of these measures would bring operation and maintenance impacts to less than significant levels.

Potential indirect construction, operation and maintenance, and decommissioning impacts on jurisdictional resources from the potential introduction of invasive species into adjacent areas would be significant. Implementation of the *Invasive Weed Management Plan* contained in Appendix H and required in Applicant Measure BIO-2, would ensure that adequate steps are taken to prevent the spread of invasive species, to monitor for invasives, and to remove invasives if observed. Finally, Applicant Measure BIO-2 would also ensure that construction personnel are adequately trained on how to prevent the spread of invasive species. With implementation of this measure, impacts would be reduced to less than significant levels.

Finally, dust from construction, operation and maintenance, and decommissioning activities could adversely affect nearby jurisdictional resources. However, dust control measures required in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

The Project would not conflict with any local policies or ordinances protecting biological resources and is consistent with the open space protection policy of the County of Riverside's General Plan. Thus, there would be no construction, operation and maintenance, or decommissioning impacts under criterion BIO-5.

Unavoidable Adverse Effects

With implementation of mitigation measures, there would be no unavoidable adverse impacts *to special-status plant species, and sensitive natural vegetation communities, jurisdictional resources* or local policies or ordinances protecting biological resources *with Alternative 3. Under CEQA, there would be no unavoidable significant impacts to these resources with Alternative 3.*

4.3.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, none of the impacts on biological resources from construction or operation of the proposed Project would occur. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on this or in other locations.

4.3.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (*No Project with Plan Amendment*)

Under this alternative, the proposed Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, the biological resources of the site are not expected to change noticeably from existing conditions and, as such, this No Action Alternative would have no adverse impact to biological resources at the site in the long term. However, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on this or in other locations.

4.3.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (*No Project with Plan Amendment*)

Under this alternative, the proposed Project (including the Solar Farm, Gen-Tei Line, and Red Bluff Substation) would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, biological impacts would result from the construction and operation of the solar technology and resulting ground disturbance and would likely be similar to the biological impacts from the proposed Project. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No *Project* Alternative could result in biological impacts similar to the impacts under the proposed Project.

4.3.9 Cumulative Impacts

Geographic Scope

The majority of this cumulative impact analysis makes a broad, regional evaluation of the impacts of existing and reasonably foreseeable future projects that threaten plant communities within the context or geographic scope of the NECO Plan. The NECO planning area was selected as the geographical scope of the cumulative impacts analysis on vegetation communities in general and on special status plant species because it is the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species.

The proposed Project is also located within the Palen Watershed which is a subset of the NECO planning area. For the cumulative impact analysis on sensitive vegetation communities (i.e., desert dry wash woodland) and jurisdictional resources, the Palen Watershed was selected as the geographical scope for this cumulative impacts analysis, given potential impacts at the watershed-scale.

Regional Overview

This overview of regional impacts is followed by a more detailed discussion of the effects of past, present, and future projects to biological resources of the Project vicinity.

The California Desert remained a *sparsely populated* area for the first few decades of the 20th century. Disturbance was more or less restricted to highways, railroad, and utility corridors, scattered mining, and sheep grazing. In the 1940s, several large military reservations were created for military training, testing, and staging areas. The deserts of eastern Riverside County comprise 40 percent of the County's land area but less than one percent of its population. Outside of the small urban-agricultural center of Blythe, near the Colorado River and Arizona border, there are only a few scattered, small residential and agricultural areas between Indio (to the west) and Blythe; most of the lands are administered by BLM.

In the areas identified for renewable energy development in eastern Riverside County, some of the many sensitive vegetation resources at risk include: desert washes and desert dry wash woodland; native, slow-growing vegetation; and special status plants.

The introduction of nonnative plant species has also contributed to habitat degradation, population declines, and range contractions for many special status plant species (Boarman 2002a). Combined with the effects of historical grazing and military training, and fragmentation of habitat from highway and aqueduct construction, the proposed wind and solar energy projects have the potential to further reduce and degrade native plant populations. In the context of this large-scale habitat loss, the Desert Sunlight Solar Farm Project would contribute, at least incrementally, to the cumulative loss and degradation of habitat for desert plants in the Chuckwalla Valley and NECO planning area.

Existing Cumulative Conditions

Details of the vegetation resources within the cumulative study area are summarized here. The NECO planning area is located mostly within the Sonoran Desert, which is composed of a diverse range of vegetation communities typical of those found in the Sonoran Desert. These habitat types include desert scrub, desert wash, and sand dunes. The cumulative impacts area also includes several dry lake beds, numerous drainages, and areas relatively devoid of native vegetation including developed areas, paved roads, highways, access roads, and other disturbed areas. Invasive and noxious weed species have been identified throughout the cumulative impacts area. The area supports habitat for, and populations of, numerous special status plant species, as described in Section 3.3.

Past, Present, and Reasonably Foreseeable Future Projects

Land use in the cumulative analysis area has been historically altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative impacts area characterize overall development trends in the Chuckwalla Valley *as well as in the larger NECO planning area. Ongoing* development in the area is dominated by renewable energy development. Major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system.

Other projects in the cumulative study area include several transmission line*s (including the Devers-Palo Verde 2 Transmission Line and Desert Southwest Transmission Line)* and non-renewable energy development*s* *(including the Colorado River Substation Expansion),* as well as residential and commercial development *(including the Chuckwalla Valley Raceway). Detailed lists of cumulative projects are found in Tables 3.18-2 and 3.18-3.*

In addition to one-time construction impacts, the Project would have ongoing operational impacts on biological resources. Therefore, all projects that might contribute impacts over time in the cumulative area are considered for this analysis. This would include non-renewable energy, transmission lines, wind power, and solar power projects.

Cumulative Impact Analysis

There would be no cumulative vegetation impacts under the No Action/No Project Alternatives (Alternatives 4 or 5) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. The No Project Alternative 6 could contribute to cumulative vegetation impacts because the CDCA Plan would be amended to allow solar development of the site. However, any future proposals for use of the site would be subject to separate environmental analysis.

In summary, impacts to Native Vegetation Communities, Special Status Plant Species and Sensitive Natural Communities resulting from the Project would be reduced to a level that is less than cumulatively considerable for all alternatives, as discussed below. Impacts to Jurisdictional Resources and Local Policies and Ordinances Protecting Biological Resources resulting from the Project would not be cumulatively considerable, as discussed below.

Impact BIO-1– Direct and Indirect Impacts to Native Vegetation Communities

The development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. Table 4.3-*20* presents the total acreage of vegetation communities within the NECO planning area the cumulative impacts on each community type from existing projects and foreseeable future projects. These acreages were compiled for the Blythe Solar Power Project Final EIS (BLM 2010a) using the NECO plant communities dataset which is based on the 1996 California Gap Analysis Project conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division.

The total projected loss of 6.2 percent of the Sonoran creosote bush scrub and 7.5 percent of the desert dry wash woodland habitat in the NECO planning area from existing and foreseeable future projects would constitute a significant cumulative impact. As shown in Table 4.3-*20*, implementation of Alternatives 1, 2, and 3 would contribute between 1.4 and 1.*8* percent (of impacts resulting from future projects) to this cumulative impact on Sonoran creosote bush scrub and between 0.20 to 0.21 percent to the cumulative impact on desert dry wash woodland. Due to the sensitivity of these vegetation communities, Alternatives 1, 2, and 3 would have a considerable contribution to cumulative impacts on these resources.

However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2* would ensure that the loss of both of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of these measures, the Project's contribution *to the cumulative loss of native vegetation would be reduced to a level that is less than cumulatively considerable.*

Table 4.3-*20*
Summary of Cumulative Impacts on Native Vegetation Communities

Vegetation Community[a]	Total Vegetation Communities in the NECO Planning Area[a]	Impacts to Vegetation Community from Existing Projects (percent of vegetation community in NECO planning area)[b]	Impacts to Vegetation Community from Foreseeable Future Projects (percent of vegetation community in NECO planning area)[c]	Contribution of Alternative 1 to Future Cumulative Impacts (percent of total impacts from future projects)	Contribution of Alternative 2 to Future Cumulative Impacts (percent of total impacts from future projects)	Contribution of Alternative 3 to Future Cumulative Impacts (percent of total impacts from future projects)
Mojave Creosote Scrub	805,832 acres	157 acres (0.02%)	43,320 acres (5.4%)	**0 acres**	**0 acres**	**0 acres**
Sonoran Creosote Scrub	3,829,999acres	11,871 acres (0.3%)	226,954 acres (5.9%)	***4,072acres (1.8%)***	***4,015 acres (1.8%)***	***3,180 acres*** **(1.4%)**
Desert Dry Wash Woodland	682,027 acres	2,971 acres (0.4%)	47,585 acres (7.0%)	***96 acres (0.20%)***	**93 acres (0.20%)**	***97 acres (0.20%)***
Playa/Dry Lake	88,110 acres	11 acres (0.01%)	18,634 acres (21.1%)	**0 acres**	**0 acres**	**0 acres**
Sand Dunes	62,140 acres	14 acres (0.02%)	56 acres (0.09%)	**0 acres**	**0 acres**	**0 acres**
Chenopod Scrub	2,113 acres	10 acres (0.1%)	0 acres	**0 acres**	**0 acres**	**0 acres**
Agriculture, Developed	94,187 acres	4,856 acres (5.2%)	1,017 acres (1.1%)	**3 acres (0.29%)**	**2 acres (0.20%)**	**21 acres (2.1%)**
Pinyon-Juniper Woodland	1,928 acres	0 acres	0 acres	**0 acres**	**0 acres**	**0 acres**

Source: Blythe Solar Power Project Final EIS (BLM 2010a).
Notes:
[a]Based on the BLM NECO Plant Communities dataset (BLM CDD 2002) conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO Plan/EIS [BLM and CDD 2002]).
[b]Includes only those existing projects between Desert Center and the Colorado River for which GIS-based spatial data was available at the time of the analysis.
[c]Includes only BLM Renewables that had submitted a Plan of Development (POD) at the time of the analysis and those additional future projects.

Impact BIO-2 – Direct and Indirect Impacts to Special Status Plant Species

The proposed Project is not anticipated to significantly impact any populations of special status species or cacti, although a number of individuals would be impacted *under* Alternative*s 1, 2 and 3* (as described above and summarized in Table 4.3-3). However, as discussed under Impact BIO-1 above, the development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses, which would remove habitat for many special status plant species and cacti. Therefore, the loss of this habitat is anticipated to result in significant cumulative impacts on populations of many special status plant species and cacti and, as described in Impact BIO-1 above, the proposed Project's contribution to these cumulative impacts would be considerable.

However, implementation of the Habitat Compensation Plan included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2* would ensure that the loss of creosote bush scrub and desert dry wash woodland is adequately compensated for and equivalent habitat would be protected offsite. In addition, Applicant Measures *AM-*BIO-3 and *AM-*BIO-5 would ensure that special status species and cacti are transplanted, if feasible. Therefore, with implementation of these measures, the Project's *incremental direct and indirect contribution to cumulative effects to special status plants would be reduced to a level that is less than cumulatively considerable.*

Impact BIO-3 – Direct and Indirect Impacts to Sensitive Natural Communities

The proposed Project affects desert dry wash woodland habitat within the Big Wash system which is part of the overall Palen Watershed (see Figure 7 of the BRTR contained in Appendix H). The development of numerous large-scale projects, such other wind and solar generation facilities, within the Palen Watershed would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. Table 4.3-*21* presents the total acreage of desert dry wash woodland within the Palen Watershed, as well as the acreages of disturbance associated with the existing and foreseeable future projects within the watershed calculated by Aspen Environmental for the Palen Solar Power Project EIS (BLM and CEC 2010). Aspen Environmental used the 2010 USGS National Hydrographic Dataset within the watershed boundary as defined by the California Interagency Watershed Map of 1999 to calculate these acreages.

The total projected loss of 10.5 percent of the desert dry wash woodland habitat in the Palen Watershed from existing and foreseeable future projects would constitute a significant cumulative impact. As shown in Table 4.3-*21*, implementation of Alternatives 1, 2, and 3 would contribute between 0.8 and 0.9 percent to this cumulative impact. Due to the sensitivity of this vegetation community, Alternatives 1, 2, and 3 would have a considerable contribution to cumulative impacts on this resource. Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 and Mitigation Measure BIO-2 would ensure that the loss of desert dry wash woodland is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of these measures, the Project's contribution *to the cumulative loss of Sensitive Natural Communities would be reduced to a level that is less than cumulatively considerable.*

Impact BIO-4 – Direct and Indirect Impacts to Jurisdictional Resources

The extent of jurisdictional resources within the Palen Watershed is unknown, however, desert dry wash woodland habitat is a subset of these resources and can be used as a proxy to evaluate cumulative impacts on jurisdictional resources. As discussed in Impact BIO-3 above, the Proposed Project would have a considerable contribution to significant cumulative impacts on desert dry wash woodland in the Palen Watershed.

Implementation of Alternatives 1, 2, and 3 would directly affect approximately *302* acres, *290* acres, and *273* acres of jurisdictional resources, respectively (see Table 4.3-5). Therefore, the Proposed Project can also be expected to have a considerable contribution to cumulative impacts on

Table 4.3-*21*
Summary of Cumulative Impacts on Desert Dry Wash Woodland within the Palen Watershed

Vegetation Community[a]	Total Vegetation Communities in the Palen Watershed[a]	Impacts to Vegetation Community from Existing Projects (percent of vegetation community in Palen Watershed)[b]	Impacts to Vegetation Community from Foreseeable Future Projects (percent of vegetation community in Palen Watershed)[c]	Contribution of Alternative 1 to Future Cumulative Impacts (percent of total impacts from future projects)	Contribution of Alternative 2 to Future Cumulative Impacts (percent of total impacts from future projects)	Contribution of Alternative 3 to Future Cumulative Impacts (percent of total impacts from future projects)
Desert Dry Wash Woodland	148,856 acres	4,566 acres (3.1%)	10,950 acres (7.4%)	***101 acres*** **(0.9%)**	**93 acres (0.8%)**	***102 acres*** **(0.9%)**

Source: Palen Solar Power Project Draft EIS (BLM and CEC 2010)
Notes:
[a]Based on the BLM NECO Plant Communities dataset (BLM CDD 2002) conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO Plan/EIS [BLM and CDD 2002]).
[b]Includes only those existing projects between Desert Center and the Colorado River for which GIS-based spatial data was available at the time of the analysis. Acreage presented here are likely an overestimate of the actual existing acreage given that this value is larger than the total acreage of desert dry wash woodland reported to be disturbed in the entire NECO planning area in the Blythe Solar Power Project EIS (Table 4.3-*20*) which was published in August 2010 (while the Palen Solar Power Project Draft EIS was published in March 2010).
[c]Includes only BLM Renewables that had submitted a Plan of Development (POD) at the time of the analysis and those additional future projects.

jurisdictional resources. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure BIO-1 *and Mitigation Measure BIO-2* would ensure that the loss of jurisdictional resources is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of these measures, the Project's contribution to *the cumulative loss of jurisdictional resources would be reduced to a level that is less than cumulatively considerable.*

Impact BIO-5 – Local Policies or Ordinances Protecting Biological Resources

Because the proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan, there would be no Project-specific impacts or a contribution to cumulative impacts. *No significant impact would occur under CEQA.*

4.4 WILDLIFE

4.4.1 Methodology for Analysis

A summary of the overall acreages of disturbance associated with each Alternative is provided in Table 4.4-1. Acreages calculated for impacts were based on the best information available at the time of publication of the EIS for permanent disturbance areas. *These acreages are based on information provided by Sunlight and SCE regarding construction of each project component.*

Table 4.4-1
Comparison of Action Alternative Features Relevant to Wildlife Impacts

Project Feature	Alternative 1	Alternative 2	Alternative 3
Solar Farm Acreage	*3,912*	*3,912*	3,045
Gen-Tie Line Disturbance Acreage	*92*	*68*	*86*
Red Bluff Substation (and related elements) Disturbance Acreage	*172*	*130*	*172*
Total Disturbance Acreage	*4,176*	*4,110*	*3,303*

For the purposes of this analysis, *and following CDFG guidance, all ground disturbance activity is considered a permanent impact as a result of the long time period for natural revegetation to occur in the desert.* Natural recovery rates from disturbance in desert ecosystems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), whereas more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery and complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999).

Table 4.4-2 summarizes the special status species that have either been observed to occur within each Alternative's footprint, or are expected to occur based upon their habitat requirements and occurrences nearby. All creosote bush scrub and desert dry wash woodland present within the Project locations provide habitat for each of the species listed in Table 4.4-2. More details are provided in Section 3.4.

Table 4.4-3 summarizes the acreages of the Chuckwalla DWMA and the Chuckwalla CHU that would be affected by each Alternative.

Direct and indirect impacts of each action Alternative on wildlife are discussed in Sections 4.4.3, 4.4.4, and 4.4.5. Direct impacts on wildlife are considered to include injury or death to an individual, habitat loss or degradation, adverse effects on movement, increased predation, and disturbance from noise, light, or dust.

Indirect impacts can occur later in time or are farther removed in distance while still being reasonably foreseeable and related to the project. Potential indirect impacts include introduction of invasive species by various vectors or conditions that compete with native species and can result in habitat degradation.

Table 4.4-2
Overall Summary of Impacts on Special Status Wildlife Species

Species	Alternative 1	Alternative 2	Alternative 3
Reptiles			
Desert tortoise	C (*16/4*)	C (*19/12*)	C (9/2)
Rosy boa	P	P	P
Chuckwalla	C	P	C
Birds			
Burrowing owl	C (1)	C	C
Northern harrier	C	C	C
Loggerhead shrike	C (*9*)	C (*11*)	C (*5*)
LeConte's thrasher	C (2)	C (2)	C (2)
Short-eared or long-eared owl	P	P	P
Golden eagle	P	P	P
Mammals			
Palm Springs round-tailed ground squirrel	C	C	P
Pallid bat	P	P	P
Western mastiff bat	P	P	P
Pocketed free-tailed bat	P	P	P
Townsend's big-eared bat	P	P	P
California leaf-nosed bat	P	P	P
Colorado Valley woodrat	P	P	P
Nelson's bighorn sheep	P	P	P
Burro deer	C	P	C
American badger	P	P	P

Note: Numbers of individuals observed *within the Project's disturbance footprint are* shown in parentheses, except for the desert tortoise where the number of active burrows is shown first followed by the number of live tortoises observed.
Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed

Table 4.4-3
Overall Summary of Impacts on Wildlife Management Areas

Species	Alternative 1	Alternative 2	Alternative 3
Chuckwalla DWMA			
Permanent disturbance acreage	*185*	*53*	*160*
Chuckwalla CHU			
Permanent disturbance acreage	*182*	*134*	*163*
Total *Acres in Wildlife Management Areas**	***213***	***166***	***171***

****Note:*** *The total within wildlife management areas is not the sum of the DWMA and CHU due to places where these areas overlap. Some areas of the Proposed Project are in areas that are DWMA only, some are CHU only, and some are both.*

A *Desert Tortoise Relocation Plan* (Ironwood Consulting 2010d), *Raven Management Plan* (Ironwood Consulting 2010e), and *Avian and Bat Protection Plan* (Ironwood Consulting 2010f) have been prepared to reduce direct and indirect impacts on wildlife. Draft plans are contained in Appendix H of this document.

4.4.2 CEQA Significance Criteria

The proposed Project would have a significant impact on wildlife if it would:

WIL-1. Have a substantial adverse effect on wildlife habitat, including direct and indirect effects;

WIL-2. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for state or federal listing as threatened or endangered, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (CDFG) or US Fish and Wildlife Service (USFWS);

WIL-3 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

WIL-4 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

WIL-5 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.4.3 Alternative 1 – Proposed Action

Construction

<u>Solar Farm Layout B</u>

<u>Wildlife Habitat</u>

Removal of *<u>3,912</u>* acres of habitat and installation of exclusion fencing around the site would have a direct *<u>e</u>*ffect on wildlife species through habitat loss (see below for separate discussions of impacts on special status wildlife species and wildlife movement and breeding). Implementation of the *Habitat Compensation Plan* required in Applicant Measure *<u>AM-</u>*BIO-1 discussed in Section 4.3, Vegetation, *<u>and Mitigation Measure MM-BIO-2</u>* would reduce these impacts.

Construction of SF-B would increase noise, night lighting, and dust which could disturb wildlife species adjacent to the construction zones*<u>, although little is known as to the extent of these impacts on specific wildlife.</u>* Most wildlife species are very sensitive to visual and noise disturbances which could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting could attract wildlife to the site, thus disrupting their normal pattern of behavior. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. Because no mirrors are proposed on the solar array, there would be no impacts associated with glare. Implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust. *Implementation of measures identified in Section 4.10, Noise, would reduce noise impacts resulting from construction. Implementation of measures identified in Section 4.16, Visual Resources, would reduce impacts associated with night lighting.*

Storm water retention ponds would be constructed, however, given the rate of evaporation in the desert ecosystem, they are not expected to hold water for a long enough period of time to attract wildlife species. Because the Proposed Project does not utilize water to generate power, no evaporation ponds are proposed *as part of the Solar Farm*.

A total of seven temporary water storage ponds are planned around the construction of the Solar Farm. These ponds would be used to supply water for dust suppression purposes during construction. It is anticipated that each pond would occupy approximately one acre and would hold approximately two million gallons. No more than two or three ponds would be operating at any one time; one pond would be open for every roughly 400 acres that are actively undergoing site preparation activities at any one time. These ponds could attract wildlife and birds, including ravens. The temporary ponds would be approximately 6 to 8 feet deep and would be fenced and lined for safety. They would be covered with netting to deter ravens and would be designed, constructed, and operated to comply with all applicable regulatory requirements with respect to design, operation and maintenance, protection of migratory water fowl, and raven management. To minimize earthwork, most of the ponds would be co-located with planned retention basins that would be used during Project operation. Implementation of Applicant Measure AM-WIL-4 would reduce impacts associated with these ponds.

As discussed in Section 4.3, Vegetation, construction of SF-B would also have the potential to introduce invasive plant species into areas adjacent to SF-B which could result in the degradation of additional wildlife habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

A summary of the special status species observed or expected to occur within SF-B is provided in Table 4.4-4.

Table 4.4-4
Summary of Construction Impacts on Special Status Wildlife Species under Alternative 1

Species	Solar Farm B	Gen-Tie Line A-1	Red Bluff Substation A
Reptiles			
Desert tortoise	C (13/4)	C (2/*0*)	C (1/0)
Rosy boa	U	U	P
Chuckwalla	U	U	C
Birds			
Burrowing owl	C *(1)*	C (1)	P
Northern harrier	C	P	P
Loggerhead shrike	C (9)	C	C
LeConte's thrasher	C (2)	P	P
Short-eared or long-eared owl	P	P	P
Golden eagle	P	P	P

Table 4.4-4 (continued)
Summary of Construction Impacts on Special Status Wildlife Species under Alternative 1

Species	Solar Farm B	Gen-Tie Line A-1	Red Bluff Substation A
Mammals			
Palm Springs round-tailed ground squirrel	P	C	P
Pallid bat	P	P	P
Western mastiff bat	P	P	P
Pocketed free-tailed bat	P	P	P
Townsend's big-eared bat	P	P	P
California leaf-nosed bat	P	P	P
Mountain lion	P	P	P
Colorado Valley woodrat	P	P	P
Nelson's bighorn sheep	P	P	P
Burro deer	P	P	C
American badger	P	P	P

Note: Numbers of individuals observed *within the Project's disturbance footprint are* shown in parentheses, except for the desert tortoise where the number of active burrows is shown first followed by the number of live tortoises observed,
Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed

Desert Tortoise

The proposed Solar Farm layout B is occupied desert tortoise habitat (Section 3.4). Potential impacts of Solar Farm construction to desert tortoises include habitat loss, direct harm (take) of desert tortoises, and indirect impacts such as degradation of surrounding habitat or increased predation by ravens, coyotes, or feral animals. These impacts, and mitigation measures proposed to reduce them, are described below.

Estimated number of desert tortoises*. Four living desert tortoises were located above-ground during field surveys of Solar Farm Layout B (note that Appendix H reports six tortoises, based on a slightly larger configuration of the Solar Farm, as then proposed). However, the actual number of desert tortoises on the project site cannot be determined from field survey data alone, due to the possibility that some tortoises, particularly juveniles, may have been overlooked during surveys (e.g., they may have been in deep burrows where they could not be seen).*

Based on the observed four tortoises, and presuming that all four were adults or subadults, the USFWS's equation would predict that eight adult or subadult tortoises should be expected on the site. In addition, most juvenile tortoises and tortoise eggs are not detected during field surveys. Based on estimates that juveniles account for about 30% to 50% of a population (Turner et al. 1987), the site would be expected to support a total of about 12 to 16 tortoises, including eight adults and four to eight juveniles.

The number of tortoise eggs expected on the site was estimated based on the assumption of a 1:1 sex ratio and every female tortoise on the site would be expected to lay eggs (clutch) in a given year. Thus, four of the eight adult desert tortoises expected onsite are presumed to be a reproductive female. On average, female tortoises produce 1.6 egg clutches per year (Turner et al. 1984), and the average number of eggs per clutch is 5.8 (USFWS 1994). Therefore, about 37 eggs would be expected on the site during months when eggs are present (approximately April through August) in a typical year. Note that these estimates are extrapolated from field survey data and are not intended to represent the *actual numbers of tortoises or eggs on the site, rather, these are reasonable assumptions based on survey results and the biology of the species.*

Desert tortoise habitat loss and compensation*. Solar Farm construction would result in the permanent loss of occupied desert tortoise habitat throughout the Solar Farm site. This habitat would be converted to an incompatible land use and fenced to prevent desert tortoises from accessing the site where they would be subject to injury or mortality by road strikes or other construction or operations activity. Habitat loss would be mitigated through implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2, which require the applicant to acquire, protect and improve off-site habitat as compensation for this impact.*

Acquisition of mitigation lands to compensate for the loss of population and for habitat loss must be accompanied by (1) permanent protection and management of the lands for desert tortoise, and (2) enhancement actions. Permanent protection is an essential feature of compensation habitat because it allows the lands to be managed in a way that excludes multiple threats and incompatible uses (e.g., grazing, off-highway vehicle use, roads and trails, utility corridors, military operations, construction, mining, grazing by livestock and feral burros, invasive species, fire, and environmental contaminants). Without this protection and management, desert tortoise populations on the acquired lands would be subject to the same threats that led to its population declines and threatened status. Enhancement actions on the compensation lands to improve desert tortoise survival and reproduction are of equal importance to permanent protection. These actions could include habitat restoration, invasive plant control, road closures or road fencing, reducing livestock and burro grazing, and controlling ravens and other predators.

In order to ensure that compensation is effective and that adequate funding is provided to implement the required compensation, Mitigation Measure MM-BIO-2 requires that lands acquired as mitigation for desert tortoise habitat must be managed and protected in perpetuity for the benefit of that species, and that funds be provided as a security in an amount estimated sufficient to fund the compensation. Mitigation Measure MM-BIO-2 specifies security for acquisition, dedication, and protection of habitat and provides estimates of each associated cost. It is important to note that these are estimates based on current cost estimates; the requirement is defined in terms of compensation habitat acreage, not cost, and actual costs may vary. Funding for the initial habitat improvements supports those actions needed immediately upon acquisition of the property to secure it and remove hazards. These activities might include fencing or debris clean-up, or other urgent remedial action identified prior to when the parcels were acquired. When the management plan is completed for the acquired parcel, further enhancement activities would be funded from the long-term management maintenance fund.

Mitigation Measure MM-BIO-2 provides options to satisfy the compensation requirement. Regardless of which option may be exercised, mitigation implementation must satisfy the mitigation requirements under CEQA and NEPA as described herein.

Minimization of take and impacts of translocation. *During project construction, desert tortoises or eggs could be harmed during clearing, grading, and trenching activities; or tortoises could become entrapped within open trenches or construction materials. Construction activities could also cause direct mortality, injury, or harassment of tortoises or eggs as a result of vehicle strikes. Other direct effects could include individual tortoises or eggs being crushed or entombed in their burrows, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises may also be attracted to the construction area by shade beneath vehicles, equipment, or materials, or water applied to control dust, placing them at higher risk of injury or mortality. Also, tortoises may take shelter under parked vehicles where they could be killed, injured, or harassed when the vehicle is moved. These potential impacts would be avoided, minimized or mitigated by implementing Applicant Measure AM-WIL-1 (Desert Tortoise*

Translocation Plan), Mitigation Measure WIL-7 (alternate to long-distance translocation), Mitigation Measure WIL-8 (requiring USFWS, CDFG to review plans required by Applicant Measures) and Mitigation Measure MM-BIO-1 (Construction Monitoring).

Although all tortoises encountered during preconstruction clearance surveys would be removed from the construction area, it is likely that some tortoises, particularly juveniles, and tortoise eggs, would be overlooked during clearance surveys because of the cryptic nature of tortoises, especially the juveniles and hatchlings and location of egg clutches below ground. These tortoises and eggs would be subject to mortality from project activities within the tortoise exclusion fence during construction and future operation of the project. For tortoises near but not within the site, fencing off habitat within their home ranges would likely result in displacement stress that could result in decreased health, exposure, increased risk of predation, increased intraspecific competition, or death.

Desert tortoise clearance surveys and translocation, as described in the Applicant's draft Desert Tortoise Translocation Plan, have inherent risks and could themselves result in direct adverse effects to desert tortoises, such as mortality, injury, or harassment of desert tortoises due to equipment operation, fence installation, removal of tortoise burrows, tortoise translocation, and handling of desert tortoises off-site for disease testing and installation of GPS transmitters, in accordance with USFWS and CDFG translocation requirements. The relative benefits and drawbacks of desert tortoise translocation to overall conservation and management are currently under review by the USFWS (R. Bransfield, public presentation, "Alternative Energy vs. Arid Land Resources" symposium, The Wildlife Society Western Section, Riverside, Calif., 10 Feb 2011).

Because handling and translocation causes risk to tortoise survival, USFWS (2010a) translocation guidelines require that all translocated tortoises must be radio-tagged and monitored to evaluate translocation success. If five or more tortoises are translocated, additional monitoring and disease-testing is required at translocation sites and control sites. Under the USFWS guidelines, desert tortoise translocation would require a series of actions including but not limited to the following:

1. *Identification of the proposed translocation and control sites;*
2. *Evaluation of the habitat at the translocation and control sites;*
3. *Determination of existing tortoise density at the translocation site and an assessment of the site's ability to accommodate additional tortoises above baseline conditions;*
4. *Pre-construction fencing and clearance surveys of the project site;*
5. *Construction of holding pens for quarantined translocated tortoises prior to their release into host populations;*
6. *Pre-construction surveys of the proposed translocation sites;*
7. *Placement of tracking units (e.g., GPS transmitters) on tortoises from the project site and, if five or more animals are translocated, at the translocation site and control site;*
8. *Disease testing for tortoises translocated more than 500 m and at the host and control sites;*
9. *Long term monitoring and reporting of control and translocated and host populations; and*
10. *Implementation of remedial actions should excessive predation or mortality be observed.*

Implementation of translocation as a mitigation measure would have additional adverse impacts to desert tortoises. Capturing, handling, and translocating desert tortoises could result in harassment and possibly injury or death. Impacts of translocation upon desert tortoises may include elevated stress hormone levels, changes in behavior and social structure dynamics, increased movement (caused by courting or aversive behavior with other tortoises, avoidance of predators or anthropogenic influence, homing, or seeking out of preferred or familiar habitat), spread of disease, increased competition *for resources, and increased predation. Furthermore, handling, holding, and transport protocols may compound with abiotic factors to affect the outcome for translocated individuals, particularly during extreme temperatures, or if they void their bladders. If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens may be spread among the tortoises, both resident and translocated animals. The USFWS (2010) provides guidelines to minimize these impacts. This document describes timing of translocations; disease testing and monitoring requirements for tortoises that are translocated and those already at recipient sites; and control site monitoring for translocation projects involving more than 5 desert tortoises. USFWS standards require disease testing and quarantine for any tortoise translocated more than 500 meters (985 feet). This requirement is intended to limit the potential exposure risk to healthy tortoises in adjacent habitat. However, these requirements have the potential to impact not only the tortoises located from the project site, but resident tortoises at the translocation sites, and in some cases, tortoises on control sites from transmitting, handling during health assessments (including drawing blood samples), and being physically removed from their home ranges, or potential disease exposure from translocated tortoises.*

Adverse effects of translocation are expected to be greater when tortoises are moved outside their home ranges, into unfamiliar territory.

Tortoises moved outside their home ranges may attempt to return to the area from which they were moved, therefore making it difficult to isolate them from the potential adverse effects associated with project construction. Mortality of translocated desert tortoise may be 25% after two years (Gowan and Berry 2010). Reliability of these estimates may be uncertain, however, due to drought and other factors affecting the Fort Irwin translocation effort. The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee (SAC) has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

> *"… consensus (if not unanimity) exists among the SAC and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted Populations in areas containing "good" habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demo-graphics or population status currently do not exist, and a specific measure of "depleted" (e.g., ratio of dead to live tortoises in surveys of the potential trans-location area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition."*

The Renewable Energy Action Team (REAT, a cooperative effort among public agencies) is preparing a Desert Renewable Energy Conservation Plan (DRECP) to address regional impacts and mitigation of renewable energy projects in California. As a part of that planning effort, the REAT convened a group of independent science advisors to report on recommended conservation planning. That report states: "…the advisors do not recommend translocation of desert tortoise as effective mitigation or conservation action, in part because translocated tortoises suffer high mortality rates" (DRECP Independent Science Advisors 2010).

These adverse effects of translocation are generally less for shorter translocation distances. When tortoises can simply be moved out of harm's way during construction at a small construction site, then survivorship and overall success is expected to be high. Similarly, when tortoises can be moved to other suitable habitat areas within or near their known home ranges (i.e., "short distance translocations" of distances to 500 meters), then they are expected to find suitable burrows and other habitat resources.

In recognition of the concerns about desert tortoise translocation and the ongoing research needs to improve the effectiveness of translocation, Mitigation Measure MM-WIL-7 requires the applicant to prepare an alternate strategy, in which desert tortoises would be removed from the wild at the project site and placed permanently into conservation in facilities approved by USFWS and CDFG. Upon completion of a final Desert Tortoise Translocation Plan and issuance of the Biological Opinion from USFWS and Incidental Take permit from CDFG, the applicant (Sunlight and/or SCE), shall either translocate tortoises into the wild or shall permanently place them in approved facilities. This measure is intended to inform and improve translocation efforts, enhance the Draft Desert Tortoise Translocation Plan's (AM WIL-1) ability to minimize impacts associated with take of desert tortoises and overall impacts to the species.

Additionally, USFWS and/or CDFG may also incorporate measures to reduce impacts associated with long-distance translocation in a Biological Opinion or through permitting processes under the federal or state Endangered Species Acts, respectively.

Additionally, USFWS and/or CDFG may also incorporate measures to reduce impacts associated with long-distance translocation in a Biological Opinion or through permitting processes under the federal or state Endangered Species Acts, respectively.

Indirect Effects to Desert Tortoise. *Construction-related indirect effects to desert tortoises would be similar to those described for common wildlife, above. Additional indirect effects to desert tortoises would occur during project operations. These include loss of forage, burrowing sites, and cover sites, the spread of non-native invasive plants, partial loss of dispersal areas and connectivity to other areas, reduced home ranges, and increased risk of predation by animals (primarily ravens) attracted to the area by increased human activity and project features that enable more efficient predation (such as structures that provide perches for ravens). Applicant Measure AM-WIL-2 would require raven management on-site and payment on a per-acre basis into a region-wide raven management plan. Each of these impacts is discussed in more detail below, under the discussion of operational impacts.*

Finally, construction of SF-B would increase dust in desert tortoise habitat adjacent to the Solar Farm site which could have an adverse effect on the health of the species. Implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce these impacts.

As discussed in Section 4.3, Vegetation, construction of SF-B would also have the potential to introduce invasive plant species into areas adjacent to SF-B which could result in the degradation of additional habitat for the desert tortoise. Implementation of an *Integrated Weed Management Plan* required in Applicant Measure BIO-2 and discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Other Reptiles

No other special status reptile species are expected to occur in SF-B*, though there is a low probability that Mojave fringe-toed lizard may occur in very low numbers (see Section 3.4). With implementation of Mitigation Measure MM-WIL-4, Mojave Fringed-toed Lizard Protection Plan, any potential impacts to Mojave fringe-toed lizard or suitable habitat would be reduced.*

Birds

Removal of *3,912* acres of habitat and installation of exclusion fencing around the *Solar Farm* site would have a direct effect on bird species through the loss of foraging and breeding habitat. As discussed in Section 3.4, an active *golden eagle* nesting *site* is located approximately *four* miles from the boundary of the Solar Farm site. Because the home range of golden eagles can reach approximately 6.2 miles from their nests, it was conservatively estimated that the entire Project site is located within the active territory of this pair. Out of the total 76,800 acres of foraging habitat in the active territory of this pair, removal of *4,176* acres associated with *Alternative 1* would comprise *less than* 5.5% of the foraging habitat for this pair. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Special status bird species that are nesting and other nesting bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code could be directly impacted by construction activities, including their nests, eggs, and young. Nests could be destroyed or abandoned. Due to their fossorial nature, burrowing owls are particularly sensitive to disturbance by construction activities. Construction equipment could crush their burrows and could harm, kill, or harass burrowing owls not able to escape in time. Implementation of the *Avian and Bat Protection Plan* required in Applicant Measure *AM-*WIL-3 *and Mitigation Measure MM-WIL-8; additional measures to protect golden eagles (below);* and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4 discussed in Section 4.3, Vegetation, would reduce these impacts.

Special status bird species that are nesting and other nesting bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code could be directly impacted by construction activities, including their nests, eggs, and young. Nests could be destroyed or abandoned. Due to their fossorial nature, burrowing owls are particularly sensitive to disturbance by construction activities. Construction equipment could crush their burrows and could harm, kill, or harass burrowing owls not able to escape in time. Implementation of the *Avian and Bat Protection Plan* required in Applicant Measure WIL-3 and a *Worker Environmental Awareness Program* required in Applicant Measure BIO-4 discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of SF-B would increase noise, night lighting, and dust which could disturb bird species adjacent to the construction zones. Most wildlife species are very sensitive to visual and noise disturbances which could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting could attract wildlife to the site, thus disrupting their normal pattern of behavior. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of SF-B would also have the potential to introduce invasive plant species into areas adjacent to SF-B which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Golden eagle

The Solar Farm site does not provide suitable golden eagle nesting habitat and project construction would not directly take nest sites. However, there are several golden eagle nesting territories, some active and some inactive in 2010, within a 10-mile radius of the site. Depending on distances to nest sites and eagle activity (if any) at the sites, project construction would have the potential to disturb nesting golden eagles or reduce available foraging habitat for local territories. Human intrusions near golden eagle nest sites have resulted in nest abandonment; high nestling mortality when young go unattended due to altered behavior by the parent birds; premature fledging; and ejection of eggs or young *from the nest (reviewed by Pagel 2010). Nest-site abandonment would constitute take under the Bald and Golden Eagle Protection Act. Potential disturbance to golden eagle nest sites would be avoided by implementing Mitigation Measure MM-WIL-6.*

The entire project area provides suitable foraging habitat for golden eagles year-around, particularly during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges. Reduced foraging habitat availability could have the effect of causing nearby nesting golden eagles to alter behavior by ranging more widely in search of prey, or could cause reduced prey availability for the eagles and their young. The impact of reduced foraging habitat availability would be mitigated by implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2.

Mammals

As summarized in Table 4.4-4, no special status mammal species have been observed at the Solar Farm site, however, five bat species, the Palm Springs round-tailed ground squirrel (*formerly* a federal candidate for listing), mountain lion, Colorado Valley woodrat, Nelson's bighorn sheep, burro deer, *desert kit fox,* and American badger, could potentially occur based on presence of suitable habitat and nearby occurrences.

Removal of *3,912* acres of habitat and installation of exclusion fencing around the site would have a direct effect on these mammal species through habitat loss. Removal of this habitat would constitute a loss of foraging habitat for all of these species and a loss of breeding habitat for the bat species (as well as roosting habitat), Palm Springs round-tailed ground squirrel, Colorado Valley woodrat, *desert kit fox,* and American badger. *As discussed in Section 3.4, Wildlife, loss of this habitat would have significant effects to Nelson's bighorn sheep and Palm Springs ground squirrel. Nelson's bighorn sheep are known to demonstrate considerable intermountain movements across broad, sandy valley floors and may use the Project areas for seasonal movements; fencing around the project boundaries and human occupation may limit their use of these areas. Additionally, loss of this habitat would affect the Palm Springs ground squirrel, as this species' habitat and range are limited. Construction of movement barriers (e.g. fences, roads, etc) would further habitat fragmentation and sever gene flow amongst the population. Implementation of the Habitat Compensation Plan required in Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 discussed in Section 4.3, Vegetation, Mitigation Measures MM-WIL-2, MM-WIL-3 and MM-WIL-8 would reduce these impacts.*

Fossorial mammals (i.e., *digging or burrowing mammals like the* Palm Springs round-tailed ground squirrel, Colorado Valley woodrat, *desert kit fox,* and American badger) and roosting bats are especially susceptible to disturbance from construction activities. Entire bat roosts could be destroyed by construction equipment and individuals could be harmed, killed, or harassed. Similarly, dens or burrows of the fossorial mammals could be destroyed by construction equipment and individuals could be harmed, killed, or harassed. Implementation of the *Avian and Bat Protection Plan* as required in Applicant Measure *AM-*WIL-3 *and Mitigation Measure MM-BIO-8;* construction monitoring during ground disturbing activities as required in Mitigation Measure *MM-*BIO-1*;* and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4, discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of SF-B would increase noise, night lighting, and dust which could disturb mammal species adjacent to the construction zones. Most wildlife species are very sensitive to visual and noise disturbances which could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting could attract wildlife to the site, thus disrupting their normal pattern of behavior. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of SF-B would also have the potential to introduce invasive plant species into areas adjacent to SF-B which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Wildlife Movement or Nursery Sites

Construction of SF-B would create an obstacle to intermountain and localized movements of wildlife including, but not limited to, Nelson's bighorn sheep, desert tortoise and Palm Springs round-tailed ground squirrel. If wildlife used the Project area to move between Joshua Tree National Park, Joshua Tree Wilderness and Chuckwalla Mountains Wilderness, construction of SF-B would cause species to alter intermountain movement and may partially obstruct wildlife movement across the valley floor.

Any potential wildlife movement across Solar Farm Layout B would be directly impacted by habitat loss and disturbance during construction, as well as fencing during and after construction. The upper Chuckwalla Valley, including the Project area and surrounding lands have been identified as an important area for wildlife movement in a state-wide study (Spencer et al. 2010), but preliminary BLM modeling on a more localized basis does not indicate the Solar Farm site is within a priority habitat connectivity area (see Section 3.4, Wildlife). As discussed in Section 3.4, Wildlife, the valley floor may serve as an important intermountain movement corridor for Nelson's bighorn sheep and other wildlife species.

Exclusion fencing surrounding the entire construction area would prevent or obstruct the movement of most ground-dwelling wildlife across the site. By design, many animals, including desert tortoise, would be excluded from the site in order to prevent road strikes or other adverse impacts. Some animals, such as lizards and small rodents, would be able to access the site through the fence, but would be unlikely to successfully travel across the solar farm site and escape at the opposite side due to the broad area of unsuitable habitat and construction-related disturbance.

Therefore, the Solar Farm site itself would be unavailable to ground-dwelling wildlife for movement either north-south or east-west through the area. However, extensive open space habitat, especially to the north of Solar Farm B, would continue to provide suitable wildlife movement habitat east and west, between the Eagle Mountains and Coxcomb Mountains. Solar Farm B is not located near potential north-south wildlife crossings beneath the I-10 Freeway, and would not significantly impede wildlife movement north-south between Joshua Tree National Park and the Chuckwalla Mountains. However, implementation of the Habitat Compensation Plan included in Appendix H of this document and required in Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 as discussed in Section 4.3, Vegetation, and Mitigation Measures MM-WIL-2, MM-WIL-3, MM-WIL-4 and MM-WIL-5 would serve to further reduce this impact by providing compensation habitat offsite and project-specific protection plans for selected wildlife species.

As discussed under *Special Status Wildlife Species* above, construction of SF-B would have similar direct and indirect impacts on breeding (nursery) sites of other non-special status amphibian, reptile, bird, and mammal species in the area. Nesting birds are particularly sensitive to visual and noise disturbances, which could lead to nest abandonment and reduced reproductive success. It could also lead to increased stress and habitat avoidance which could also lead to decreased foraging success.

Implementation of construction monitoring required in Mitigation Measure MM-BIO-1, an *Integrated Weed Management Plan* (Applicant Measure AM-BIO-2), a *Habitat Compensation Plan* (Applicant Measure AM-BIO-1), and a *Worker Environmental Awareness Program* required in Applicant Measure AM-BIO-4, discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as an *Avian and Bat Protection Plan* (Applicant Measure AM-WIL-3), would reduce impacts on wildlife breeding sites.

Desert dry wash woodland habitat within and adjacent to SF-B (e.g., Pinto Wash) likely serves as important wildlife movement corridors in the area. As discussed in Section 3.4, due to its size, Pinto Wash, located immediately to the east of SF-B may be especially important in the region, especially for larger mammals such as mountain lion, Nelson's bighorn sheep, and burro deer.

Pinto Wash would not be affected directly by the proposed Project; however, desert dry wash woodland within SF-B would be directly impacted by construction. Exclusion fencing surrounding the entire 3,912-acre site would also directly impact the movement of wildlife in the region in general.

The Chuckwalla DWMA and CHU are also areas that are likely important movement corridors for the desert tortoise. A discussion of impacts on these areas is provided below.

Local Policies or Ordinances Protecting Biological Resources

The Desert Center Area Plan of the County of Riverside's General Plan contains the following local open space policies:

DCAP 10.1 *Encourage clustering of development for the preservation of contiguous open space.*

DCAP 10.2 *Work to limit off-road vehicle use within the Desert Center Area Plan.*

DCAP 10.3 *Require new development to conform with Desert Tortoise Critical Habitat designation requirements.*

The site for SF-B was chosen in part because of its proximity to existing development, particularly existing transmission and transportation infrastructure. Additionally, SF-B would not create any new roads that would be accessible to off-road vehicles. Thus, SF-B is consistent with policies DCAP 10.1 and DCAP 10.2.

SF-B is located outside of designated critical habitat for the desert tortoise; therefore, SF-B is consistent with policy DCAP 10.3.

Wildlife Management Areas and Critical Habitat

SF-B is not within either the Chuckwalla DWMA or Chuckwalla CHU. The western edge of SF-B is adjacent to the Chuckwalla DWMA, and construction activities have the potential to directly and indirectly impact species utilizing this protected area as a result of noise, night lighting, dust, and the potential to introduce invasive plant species. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of the following measures would reduce impacts: dust control mitigation measures discussed in Section 4.2, Air Resources; and the *Integrated Weed Management Plan* required in Applicant Measure AM-BIO-2 discussed in Section 4.3, Vegetation.

As discussed in Section 3.4, Wildlife, the Chuckwalla Critical Habitat Unit (CHU) is located west of Kaiser Road. Portions of all four Gen-Tie Lines intersect the CHU. The Red Bluff Substation B is the not located within the Chuckwalla CHU as it is located on private land. The SF-B and SF-C are also located outside of the Chuckwalla CHU. As these areas are essential for the conservation of the desert tortoise that support physical and biological features essential for desert tortoise survival, and that require special management considerations or protection, construction of the Project in these areas would constitute a significant impact. Implementation of Applicant Measures AM-BIO-1, AM-WIL-1 and Mitigation Measures MM-BIO-1 MM-BIO-2, and MM-BIO-8 would reduce these impacts.

Polarized Light

Glare is not anticipated to be a concern, as the solar panels will not use mirrors that would create sources of bright light caused from the diffuse reflection of the sun. Rather, the proposed project's solar panels will produce polarized light pollution that could confuse insects and potentially birds. Polarized light is used by many animals. Unpolarized light becomes strongly polarized, or aligned in a single, often horizontal plane, by reflection. The primary natural source of polarized light in the environment is water. Polarized light is used by at least 300 species of insects to recognize the surface of water bodies as a suitable place to lay their eggs, and many waterbird species may also use polarized light to locate water bodies (Horvath et al., 2009). It has also been documented that polarized-light pollution can affect the ability for a variety of birds, reptiles, and fish to detect natural polarized light patterns in the sky, which can lead to effects on their navigation ability and ultimately effects on dispersal and reproduction (Horvath et al., 2009).

Light that has been highly and horizontally polarized by artificial surfaces such as smooth, dark buildings or solar panels alters the natural patterns of polarized light within the environment, resulting in polarized light pollution (Horvath et al., 2009). The smoother and darker a surface, the more polarized light pollution it produces. Glass buildings, asphalt roads, and dark paint, and dark, conventional solar cells produce polarized light pollution. The degree of polarization for light reflected from solar panels approaches 100 percent, far above the typical polarization for water, which is typically 30 to 70 percent (Horvath et al., 2010).

Potential direct effects caused by polarized-light pollution resulting from the development of the Project include the following:

> *The highly polarizing nature of solar panels may negatively affect the ability of animals to judge suitable habitats and egg laying sites, especially for organisms normally associated with water; artificial polarizing surfaces can be more attractive than water because of a stronger polarization signature. This stronger signature can result in the attraction of insects that either waste resources (time and energy) on the surfaces, lay eggs on them resulting in reproductive failure, become easy targets for predators, or dehydrate and die (Horvath et al., 2009). Horvath et al. (2010) documented that many insect taxa, including mayflies (Ephemeroptera), stoneflies (Trichoptera), dolichopodid dipterans, and tabanid flies (Tabanidae) are attracted to the polarized light reflected by solar panels (polarotactic) and will lay eggs above solar panels more often than above water. Because these insects are normally associated with water, they may not exist in the Project area. Mitigation Measure MM-WIL-5 requires data collection and annual reports on polarized light effects.*
>
> *Polarized light pollution can create unfavorable environments that result in mutualistic species necessary for native plant life cycles, such as seed dispersers and pollinators, to be extirpated from an affected area. Many animals including potential pollinators such as bees, desert ants, and beetles also use polarized light patterns for orientation and navigation (von Frisch, 1967; Labhart and Meyer, 2002; Dacke et al., 2003). Therefore, polarized light produced by solar panels may be confused for natural polarized light and attract or confuse dispersing and migrating individuals, and may reduce successful plant reproduction on the proposed project site by confusing and disorienting pollinators.*

> *The large scale of the solar site could attract migrating waterbirds, resulting in lost migration time and energy, or potentially to injury, stranding, and death. However, the role of polarized light for water detection is not well understood for migrating waterbirds (Horvath et al., 2009).*

Potential indirect effects caused by polarized-light pollution from development of the proposed project are as follows:

> *Solar power production facilities can function as an ecological trap, resulting in mortality or reproductive failure, and could lead to population declines in affected species. Local population collapse could be a result, with cascading impacts on predators and other species up the food chain.*
>
> *According to Horvath et al. (2010), the most recent study available, "the potential effects of polarized light pollution associated with solar panels on populations of aquatic insects remains unclear, but they are predicted to cause rapid and potentially large population declines." Large-scale solar facilities present a new and relatively un-researched risk for bird collisions.*
>
> *Fragmenting the solar-active surface of solar panels lessens their attractiveness to polarotactic insects. Horvath et al. (2010) found that breaking up the polarizing black surface of solar panels with non-polarizing white borders and white grids produced a 10 to 26 fold reduction in the likelihood of aquatic insects mistaking the panels for water and depositing eggs on them. Horvath et al. (2010) estimated that, depending on the amount of space the white strips cover, the effectiveness of the solar cells may be reduced by approximately 1.8 percent.*

Construction of the project will produce polarized light pollution that could confuse insects and likely birds, resulting in a significant impact. Mitigation Measure MM-WIL-5, Bird Monitoring and Avoidance Plan, would require the Applicant to conduct long-term avian mortality studies on the project site, including the solar arrays. The study would document the level of bird mortality and if the county and regulatory agencies deem the mortality excessive, would require the Applicant to take corrective actions including the installation of non-polarizing white borders or white grids that break up the polarizing black surface of solar panels. With implementation of Mitigation Measure MM-BIO-5, impacts from polarized light pollution would be less than significant.

Gen-Tie Line A-1

Wildlife Habitat

Permanent removal of *65* acres of creosote desert scrub and *37* acres of desert dry wash woodland habitat would have a direct effect on wildlife species through habitat loss. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of GT-A-1 would increase noise, night lighting, and dust which could disturb wildlife species adjacent to the construction zones. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of GT-A-1 would also have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional wildlife habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

A summary of the special status species observed or expected to occur within GT-A-1 is provided in Table 4.4-4. Under SF-B, the Palm Springs round-tailed ground squirrel had the potential to occur, whereas, the species has actually been observed in the footprint of the GT-A-1. Similarly, one individual burrowing owl was observed in the footprint of GT-A-1.

Potential direct and indirect impacts on special status wildlife species would be similar to those discussed under SF-B. Exclusion fencing would not be installed around the GT-A-1 site, however, construction monitors would translocate all desert tortoises observed in the construction zone. Rather than translocating desert tortoises to a recipient site, tortoises would be moved out of harms way pursuant to USFWS guidance *(U.S. Fish and Wildlife Service. 2009. Desert Tortoise Field Manual. Ventura Fish and Wildlife Office, Ventura, California)*. Therefore, movement of the species through the construction zone would still be affected during construction. Implementation of construction monitoring required in Mitigation Measure *MM-*BIO-1, an *Integrated Weed Management Plan* (Applicant Measure *AM-*BIO-2), a Worker Environmental Awareness Program (Applicant Measure *AM-*BIO-4), and a *Habitat Compensation Plan* (Applicant Measure *AM-*BIO-1) as discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as Applicant Measures *AM-*WIL-1 through *AM-WIL-*3, *and Mitigation Measure MM-WIL-8,* below, would reduce impacts.

Desert tortoise

Gen-tie line construction would eliminate desert tortoise habitat and could cause direct mortality to adult or juvenile desert tortoises, or their eggs. These impacts, and mitigation for habitat loss by acquiring compensation lands, are similar to those as described above (Solar Farm A construction). Gen-tie line impacts to critical habitat are described below (Wildlife Management Areas and Critical Habitat). One desert tortoise and two active burrows were found along Gen-Tie Line A-1 during field surveys (Appendix H), but the actual number of tortoises expected at construction sites cannot be estimated reliably due to the mobility of the animals and the small size and spacing of transmission line tower sites for gen-tie lines. Transmission line construction could cause take of desert tortoises. Take would be avoided or minimized by allowing them to leave the construction area or moving them short distances out of potential danger. Short-distance translocation is described above (Solar Farm A construction).

Golden eagle

The gen-tie alignment does not provide suitable golden eagle nesting habitat and project construction would not directly take nest sites. However, there are several golden eagle nesting territories, some active and some inactive in 2010, within a 10-mile radius of the alignment. Depending on distances to nest sites and eagle activity (if any) at the sites, project construction would have the potential to disturb nesting golden eagles or reduce available foraging habitat, as described above for Solar Farm Layout B. Potential disturbance to golden eagle nest sites would be avoided by implementing Mitigation Measure MM-WIL-6. The impact of reduced foraging habitat availability would be mitigated by implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2.

Gen-tie line construction has the potential to cause golden eagle mortality if golden eagles collide in flight with the conductors or make simultaneous contact with conductors and ground or with two conductors. This potential impact would be minimized by implementing avian-safe design requirements in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006), as required by Mitigation Measure MM-WIL-5.

Wildlife Movement or Nursery Sites

Construction of Gen-Tie Line A-1 would create minimal obstacles to intermountain and localized movements of wildlife including, but not limited to, Nelson's bighorn sheep, desert tortoise and Palm Springs round-tailed squirrel. If wildlife cross the Gen-Tie Line alignment to move between Joshua Tree National Park, Joshua Tree Wilderness and Chuckwalla Mountains Wilderness, construction of Gen-Tie Line A-1 could cause species to alter intermountain movement during the active construction period, to avoid noise and other activity. However, Gen-Tie Line construction would have minimal effect on long-term wildlife movement through the area and would not fragment local populations of wildlife using the valley floor.

Potential direct and indirect impacts on wildlife movement or nursery sites would be *limited to localized construction sites along the linear Gen-Tie Line alignment*. Exclusion fencing would not be installed around the GT-A-1 site, therefore, although disturbance due to construction activities would occur, movement through the construction zone would not be physically disrupted. Implementation of construction monitoring required in Mitigation Measure *MM-*BIO-1, an *Integrated Weed Management Plan* (Applicant Measure *AM-*BIO-2) and a *Habitat Compensation Plan* (Applicant Measure *AM-*BIO-1) as discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as an *Avian and Bat Protection Plan* (Applicant Measure *AM-*WIL-3), would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As discussed under SF-B, the Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan.

GT-A-1 is within designated critical habitat for the desert tortoise. Formal Section 7 consultation will be conducted with the USFWS regarding potential Project impacts on designated critical habitat for the desert tortoise. Therefore, GT-A-1 is consistent with policy DCAP 10.3.

Wildlife Management Areas and Critical Habitat

Table 4.4-5 shows the acres within the Chuckwalla DWMA and Chuckwalla CHU that would be temporarily and permanently disturbed as a result of construction of GT-A-1 (see Figure 3.4-5 also). GT-A-1 goes through the Chuckwalla DWMA and a portion of the Chuckwalla CHU. GT-A-1 would permanently impact *37* acres and *34* acres within the Chuckwalla DWMA and CHU, respectively. The NECO plan allows for development in one percent of the BLM-administered lands within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *37* acres within the DWMA under GT-A-1 would represent a negligible percentage (0.0009%) of the allowable development within the DWMA. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, *Applicant Measure AM-WIL-1, Mitigation Measures MM-BIO-1, MM-BIO-2, and MM-BIO-8 would reduce this impact.*

Construction activities have the potential to directly and indirectly impact areas within the Chuckwalla DWMA and Chuckwalla CHU located outside of the construction footprint as a result of noise, night lighting, dust, and the potential to introduce invasive plant species. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation

Table 4.4-5
Summary of Construction Impacts on Wildlife Management Areas under Alternative 1

Species	Solar Farm B	Gen-Tie Line A-1	Red Bluff Substation A
Chuckwalla DWMA			
Permanent disturbance acreage	0	_37_	_172_
Chuckwalla CHU			
Permanent disturbance acreage	0	_34_	_172_
Total _Acres in Wildlife Management Areas*_	**0**	**_63_**	**_172_**

*Note: The total within wildlife management areas is not the sum of the DWMA and CHU due to places where these areas overlap. Some areas of the proposed Project are in areas that are DWMA only, some are CHU only, and some are both.

of the following measures would reduce impacts: dust control mitigation measures discussed in Section 4.2, Air Resources; and the *Integrated Weed Management Plan* required in Applicant Measure _AM-_BIO-2 discussed in Section 4.3, Vegetation.

Polarized Light

There would be no polarized light impacts to wildlife from construction of the Gen-Tie Line.

Red Bluff Substation A

Wildlife Habitat

Removal of _172_ acres of habitat and installation of exclusion fencing around the _substation_ site _and removal of habitat for other substation-related elements_ would have a direct affect on wildlife species through habitat loss. Implementation of a *Habitat Compensation Plan* required in Applicant Measure _AM-_BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of Red Bluff Substation A would increase noise, night lighting, and dust which could disturb wildlife species adjacent to the construction zones. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of Red Bluff Substation A would also have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional wildlife habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure _AM-_BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

A summary of the special status species observed or expected to occur within the Red Bluff Substation A footprint is provided in Table 4.4-4. In Red Bluff Substation A, the chuckwalla and the rosy boa have either been observed or have the potential to occur in rocky areas. The burrowing owl was not observed in this area, but has the potential to occur. _No desert tortoises or active burrows were located within the Red Bluff Substation A site (Appendix H), but the site is within occupied desert tortoise habitat_ *and construction of the substation has the potential to take desert tortoises and their habitat as described above for Solar Farm Layout B. Mitigation for impacts to desert tortoises would also be as described above for Solar Farm Layout B.*

Potential direct and indirect impacts on special status wildlife species would be similar to those discussed under SF-B. Impacts on the chuckwalla and rosy boa would be similar to impacts on the desert tortoise.

Implementation of an *Integrated Weed Management Plan* (Applicant Measure *AM*-BIO-2), a Worker Environmental Awareness Program (Applicant Measure *AM*-BIO-4), a *Habitat Compensation Plan* (Applicant Measure *AM*-BIO-1), and construction monitoring required in Mitigation Measure *MM*-BIO-1 as discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as Applicant Measures *AM*-WIL-1 through 3 below, would reduce impacts.

Wildlife Movement or Nursery Sites

Potential direct and indirect impacts *of Red Bluff Substation A construction* on wildlife movement or nursery sites would be similar to those discussed under SF-B *above, however impacts would be lower given the smaller area of impact. Due to the location of Red Bluff Substation A on the bajada below the Chuckwalla Mountains and the I-10 Freeway, the substation has the potential to interfere with east-west wildlife movement routes parallel to the freeway. However, Red Bluff Substation A would be located in an area where a relatively wide bajada area is available for east-west wildlife movement below the Chuckwalla Mountain slopes. The substation would obstruct a part of the available wildlife movement area, but adequate area for east-west movement on the bajada slopes would remain to the south of Red Bluff Substation A. The location of Red Bluff Substation A is well away from major freeway road and wash underpasses which may serve as north-south wildlife crossings, and the substation would not be expected to interfere with north-south wildlife movement. Impacts associated with the new towers installed for Red Bluff Substation A would also be similar to those described under GT-A-1.*

Implementation of an *Integrated Weed Management Plan* (Applicant Measure *AM*-BIO-2), a *Worker Environmental Awareness Program* (Applicant Measure *AM*-BIO-4), a *Habitat Compensation Plan* (Applicant Measure *AM*-BIO-1), and construction monitoring required in Mitigation Measure *MM*-BIO-1 as discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as an *Avian and Bat Protection Plan* (Applicant Measure *AM*-WIL-3) below, would reduce these impacts.

Local Policies or Ordinances Protecting Biological Resources

As discussed under GT-A-1, the Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

Table 4.4-5 shows the acres within the Chuckwalla DWMA and Chuckwalla CHU that would be disturbed as a result of construction of Red Bluff Substation A (see Figure 3.4-5 also). Construction activities would permanently impact *172* acres within the Chuckwalla DWMA and CHU *(the acreage for both areas is common for the Substation and its associated elements).* The NECO plan allows for development in one percent of the BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *172* acres within the DWMA under the Red Bluff Substation A would represent a small percentage (0.03%) of the allowable development within the DWMA. Implementation of a *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 as discussed in Section 4.3, Vegetation, would reduce this impact.

Similar indirect impacts on the Chuckwalla DWMA and Chuckwalla CHU would result from construction of Red Bluff Substation A as under SF-B.

Polarized Light

There would be no polarized light impacts to wildlife from construction of the Substation.

Summary of Construction Impacts

Wildlife Habitat

Table 4.3-6 (in Section 4.3, Vegetation) summarizes the acreage of wildlife habitat (creosote desert scrub and desert dry wash woodland) that would be lost from construction of Alternative 1. In addition, the potential to introduce invasive species and dust, noise, and lighting associated with construction activities could adversely affect wildlife habitat in adjacent areas.

Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* discussed in Section 4.3, Vegetation, would reduce these impacts. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust. Finally, implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

A summary of the special status species observed or expected to occur within the Alternative 1 site is provided in Table 4.4-4.

Desert Tortoise

Active desert tortoise sign was found within each of the components of Alternative 1. Therefore, there is potential to cause harm to a desert tortoise during the construction of Alternative 1. Individual tortoises could be harmed by vehicles and construction equipment directly or by the crushing of occupied burrows. Individual tortoises could fall into open trenches or pits with the potential to cause mortality. Implementation of the *Desert Tortoise Translocation Plan* required in Applicant Measure *AM-*WIL-1 *and Mitigation Measure MM-WIL-8, or alternate measures under Mitigation Measure MM-WIL-7,* and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4 discussed in Section 4.3, Vegetation, would reduce these impacts.

During construction of Alternative 1, the desert tortoise exclusion fencing that would be installed around SF-B and Red Bluff Substation A and removal of potential habitat for the species (creosote desert scrub and desert dry wash woodland) in all areas would have direct effects on the local desert tortoise population. Exclusion fencing would not be installed around the GT-A-1 site, however, construction monitors would translocate all desert tortoises observed in the construction zone. Therefore, movement of the species through the construction zone would still be affected during construction. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM*-BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of all four Gen-Tie Lines would impact Chuckwalla CHU for desert tortoise. Loss of this critical habitat would constitute a significant impact. Implementation of Applicant Measure AM-WIL-1 and Mitigation Measure MM-BIO-1 and MM-BIO-2 would reduce these impacts.

Trash and debris generated by construction activities could attract predators of desert tortoise, common ravens, to the construction site. Implementation of the *Raven Management Plan* required in Applicant Measure *AM*-WIL-2 would reduce these impacts.

Construction would increase dust in adjacent desert tortoise habitat which could have an adverse effect on the health of the species. Implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce these impacts.

As discussed in Section 4.3, Vegetation, construction of Alternative 1 would also have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat for the desert tortoise. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM*-BIO-2 discussed in Section 4.3, Vegetation, would reduce these impacts.

Other Reptiles

The chuckwalla and rosy boa have either been observed or have the potential to occur in rocky areas at Red Bluff Substation A. Construction would have similar potential direct and indirect impacts on these species as on the desert tortoise.

Birds

As discussed in Section 3.4, the northern harrier and golden eagle have the potential to forage in the Alternative 1 area, but are not expected to nest there. The burrowing owl has been observed in the Alternative 1 site and was not observed to be nesting. However, the site does provide nesting habitat for the species. The loggerhead shrike and LeConte's thrasher have also been observed in Alternative 1 and the site provides nesting habitat for these species as well. Either the short-eared owl or long-eared owl has been observed adjacent to SF-B; therefore, Alternative 1 provides suitable habitat for this species as well. Finally, a number of other bird species have the potential to nest in SF-B and their nests, eggs, and young are protected by the Migratory Bird Treaty Act and California Fish and Game Code.

Removal of habitat would have a direct affect on bird species through the loss of foraging and breeding habitat. As discussed in Section 3.4, an active territory of a pair of golden eagles is located approximately *four* miles from the boundary of the Solar Farm site. Because the home range of golden eagles can reach approximately 6.2 miles from their nests, it was conservatively estimated that the entire Project site is located within the active territory of this pair. Out of the total 76,800 acres of foraging habitat in the active territory of this pair, removal of *4,176* acres associated with Alternative 1 would comprise *less than* 5.4% of the foraging habitat for this pair. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Special status bird species that are nesting and other nesting bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code could be directly impacted by construction activities, including their nests, eggs, and young. Nests could be destroyed or abandoned. Due to their fossorial nature, burrowing owls are particularly sensitive to disturbance by construction activities. Construction equipment could crush their burrows and could harm, kill, or harass burrowing owls not able to escape in time. Implementation of the *Avian and Bat Protection Plan* required in Applicant Measure *AM-*WIL-3 and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4 discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of Alternative 1 would increase noise, night lighting, and dust which could disturb bird species adjacent to the construction zones. Most wildlife species are very sensitive to visual and noise disturbances which could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting could attract wildlife to the site, thus disrupting their normal pattern of behavior. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of Alternative 1 would also have the potential to introduce invasive plant species into areas adjacent to the Project which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Golden eagle

The Project site does not provide suitable golden eagle nesting habitat and project construction would not directly take nest sites. However, there are several golden eagle nesting territories, some active and some inactive in 2010, within a 10-mile radius of the project components. Depending on distances to nest sites and eagle activity (if any) at the sites, project construction would have the potential to disturb nesting golden eagles or reduce available foraging habitat for local territories. Human intrusions near golden eagle nest sites have resulted in nest abandonment; high nestling mortality when young go unattended due to altered behavior by the parent birds; premature fledging; and ejection of eggs or young from the nest (reviewed by Pagel 2010). Nest-site abandonment would constitute take under the Bald and Golden Eagle Protection Act. Potential disturbance to golden eagle nest sites would be avoided by implementing Applicant Measure AM-WIL-3 and Mitigation Measures MM-WIL-6 and MM-WIL-8.

The entire project area provides suitable foraging habitat for golden eagles year-round, particularly during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges. Reduced foraging habitat availability could have the effect of causing nearby nesting golden eagles to alter behavior by ranging more widely in search of prey, or could cause reduce prey availability for the eagles and their young. The impact of reduced foraging habitat availability would be mitigated by implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2.

Generator Tie-Line construction has the potential to cause golden eagle mortality if golden eagles collide in flight with the conductors or make simultaneous contact with conductors and ground or with two conductors. This potential impact *would be minimized by implementing avian-safe design requirements in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006), as required by Mitigation Measure MM-WIL-5.*

Mammals

As summarized in Table 4.4-4, five bat species, the Palm Springs round-tailed ground squirrel (a federal candidate for listing), mountain lion, Colorado Valley woodrat, Nelson's bighorn sheep, burro deer, and American badger, could potentially occur based on presence of suitable habitat and nearby occurrences.

Removal of *4,176* acres of habitat and installation of exclusion fencing around the site would have a direct affect on these mammal species through habitat loss. Removal of this habitat would constitute a loss of foraging habitat for all of these species and a loss of breeding (and roosting) habitat for the bat species, Palm Springs round-tailed ground squirrel, Colorado Valley woodrat, and American badger. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Fossorial mammals and roosting bats are especially susceptible to disturbance from construction activities. Entire bat roosts could be destroyed by construction equipment and individuals could be harmed, killed, or harassed. Similarly, dens of the fossorial mammals could be destroyed by construction equipment and individuals could be harmed, killed, or harasses. Implementation of the *Avian and Bat Protection Plan* as required in Applicant Measure *AM-*WIL-3 and construction monitoring during ground disturbing activities as required in Mitigation Measure *MM-*BIO-1 and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4, discussed in Section 4.3, Vegetation, would reduce these impacts.

Construction of Alternative 1 would increase noise, night lighting, and dust which could disturb mammal species adjacent to the construction zones. Most wildlife species are very sensitive to visual and noise disturbances which could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting could attract wildlife to the site, thus disrupting their normal pattern of behavior. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of dust control mitigation measures discussed in Section 4.2, Air Resources, would reduce impacts associated with dust.

As discussed in Section 4.3, Vegetation, construction of Alternative 1 would also have the potential to introduce invasive plant species into areas adjacent to the Project which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Wildlife Movement or Nursery Sites

As discussed under *Special Status Wildlife Species* above, construction of Alternative 1 would have similar direct and indirect impacts on breeding (nursery) sites of other non-special status amphibian, reptile, bird, and mammal species in the area. Nesting birds are particularly sensitive to visual and noise disturbances, which could lead to nest abandonment and reduced reproductive success. It could also lead to increased stress and habitat avoidance which could also lead to decreased foraging success. Implementation of construction monitoring required in Mitigation Measure *MM-*BIO-1, an *Integrated Weed Management Plan* (Applicant Measure *AM-*BIO-2), a *Habitat Compensation Plan* (Applicant Measure *AM-*BIO-1), and a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4, discussed in Section 4.3, Vegetation; dust control mitigation measures discussed in Section 4.2, Air Resources; as well as an *Avian and Bat Protection Plan* (Applicant Measure *AM-*WIL-3), would reduce impacts on wildlife breeding sites.

Construction of Alternative 1 would create obstacles to intermountain and localized movements of wildlife including, but not limited to, Nelson's bighorn sheep, desert tortoise and Palm Springs round-tailed squirrel. Potential for intermountain wildlife movement among Joshua Tree National Park, Joshua Tree Wilderness and Chuckwalla Mountains Wilderness would be altered. Construction of the Gen-Tie Line A-1 and the access road would minimally affect movement of wildlife among these open space areas. Red Bluff Substation A would be located on the bajada below the Chuckwalla Mountains, where adequate area would remain available for east-west wildlife movement south of the I-10 Freeway.

Extensive open space habitat, especially to the north of Solar Farm B, would continue to provide suitable wildlife movement habitat east and west, between the Eagle Mountains and Coxcomb Mountains. None of the Alternative 1 project components is located near potential north-south wildlife crossings beneath the I-10 Freeway, and Alternative 1 would not significantly impede wildlife movement north-south between Joshua Tree National Park and the Chuckwalla Mountains. Implementation of the Habitat Compensation Plan included in Appendix H of this document and required in Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 as discussed in Section 4.3, Vegetation, and Mitigation Measures MM-WIL-2, MM-WIL-3, MM-WIL-4 and MM-WIL-5 would serve to further reduce this impact by providing compensation lands for and equivalent habitat would be protected offsite and project-specific protection plans for selected wildlife species.

Desert dry wash woodland habitat within and adjacent to Alternative 1 (e.g., Pinto Wash) likely serves as important wildlife movement corridors in the area. As discussed in Section 3.4, due to its size, Pinto Wash, located immediately to the east of SF-B may be especially important in the region, especially for larger mammals such as mountain lion, Nelson's bighorn sheep, and burro deer.

Pinto Wash would not be affected directly by the proposed Project, however, desert dry wash woodland within the Project locations would be directly impacted by construction. Exclusion fencing surrounding the Solar Farm site and Red Bluff Substation would also directly impact the movement of wildlife in the region in general. Exclusion fencing would not be installed around the GT-A-1 site, therefore, although disturbance due to construction activities would still occur, movement through the construction zone would not be physically disrupted.

The Chuckwalla DWMA and CHU are also areas that are likely important movement corridors for the desert tortoise. A discussion of impacts on these areas is provided below.

Implementation of Applicant Measures AM-BIO-2, AM-BIO-4, and Mitigation Measure MM-BIO-1, and MM-BIO 2, would reduce impacts to wildlife movement corridors.

Local Policies or Ordinances Protecting Biological Resources

As discussed under SF-B and GT-A-1, the Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

Table 4.4-*3* shows the acres within the Chuckwalla DWMA and Chuckwalla CHU that would be disturbed as a result of construction of Alternative 1 (see Figure 3.4-5 also). Construction activities permanently impact *213* acres *of one or both wildlife management areas, with 185 acres* within the Chuckwalla DWMA and *182 acres within the* CHU. The NECO plan allows for development in one percent of the BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *185* acres within the DWMA under Alternative 1 would represent a small percentage (0.03%) of the allowable development within the DWMA. *However as these areas are essential for the conservation of the desert tortoise that support physical and biological features essential for desert tortoise survival, and that require special management considerations or protection, construction of the Project in these areas would constitute a significant impact. Implementation of Applicant Measure AM-WIL-1, Habitat Compensation Plan required in Applicant Measure AM-BIO-1 as discussed in Section 4.3, Vegetation, and Mitigation Measure MM-BIO-2 would reduce this impact.*

Construction activities have the potential to directly and indirectly impact areas within the Chuckwalla DWMA and Chuckwalla CHU located outside of the construction footprint as a result of noise, night lighting, dust, and the potential to introduce invasive plant species. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. In addition, implementation of the following measures would reduce impacts: dust control mitigation measures discussed in Section 4.2, Air Resources; and the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 and discussed in Section 4.3, Vegetation.

Polarized Light

Construction of Alternative 1 (Solar Farm component only) would produce polarized-light pollution that could confuse insects and likely birds, resulting in a significant impact. Implementation of Mitigation Measure MM-WIL-5, Bird Monitoring and Avoidance Plan, would reduce these impacts.

Operation and Maintenance

Solar Farm Layout B

Wildlife Habitat

During operation and maintenance of SF-B, the presence of exclusion fencing around the site would represent a permanent loss of habitat for wildlife species. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* and discussed in Section 4.3, Vegetation, would reduce these impacts.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure BIO-2 and discussed in Section 4.3, Vegetation, would reduce these impacts.

Finally, lighting for SF-B could disturb wildlife species in adjacent areas. Lighting, however, would be limited to shielded area-specific lighting for security for the O&M facility and the on-site substation.

On the other hand, the solar panels could provide shade in areas adjacent to SF-B which could benefit *some* wildlife species.

Special Status Wildlife Species

During operation and maintenance of SF-B, exclusion fencing and removal of vegetation in the area would represent a permanent loss of habitat for special status wildlife species and would affect wildlife movement in the area as well. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Permanent occupation of the site by employees could introduce trash into the area which could attract common ravens, predators of the desert tortoise. Implementation of the *Raven Management Plan* required in Applicant Measure *AM-*WIL-2 would reduce these impacts.

Lighting for SF-B could disturb special status wildlife species in adjacent areas. Lighting, however, would be limited to shielded area-specific lighting for security for the O&M facility and the on-site substation.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Wildlife Movement or Nursery Sites

During operation and maintenance of SF-B, the presence of exclusion fencing around the site would represent a permanent loss of habitat for wildlife species and would affect wildlife movement in the area as well. *Impacts to wildlife movement would continue over the life of the project, and would be similar to impacts discussed for the construction of SF-B.* Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Lighting for SF-B could disturb wildlife species in adjacent areas. Lighting, however, would be limited to shielded area-specific lighting for security for the O&M facility and the on-site substation.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Local Policies or Ordinances Protecting Biological Resources

As discussed under construction of SF-B, the Proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

SF-B does not lie with the Chuckwalla DWMA or Chuckwalla CHU. As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into the adjacent Chuckwalla DWMA which could result in the degradation of habitat in this area.

Implementation of the *Integrated Weed Management Plan* required in Applicant Measure BIO-2 discussed in Section 4.3, Vegetation, would reduce these impacts.

Polarized Light

The impacts and mitigation required to reduced those impacts to wildlife from the solar array would be the same as those discussed for SF-B.

Gen-Tie Line A-1

Wildlife Habitat

During operation and maintenance of GT-A-1, the locations of new structures and permanent access roads would represent a permanent loss of habitat for wildlife species. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

Because no exclusion fencing would be installed around GT-A-1 maintenance of the facilities would still have the potential to directly impact special status wildlife species as described under construction of GT-A-1. Implementation of a *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4 and discussed in Section 4.3, Vegetation, would reduce these impacts.

Vegetation permanently removed by GT-A-1 facilities would result in a permanent loss of habitat for special status wildlife species. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts. However, after construction, special status wildlife species would be expected to continue to migrate into and out of the GT-A-1 footprint and could utilize areas that were temporarily disturbed during construction but were subsequently revegetated.

Transmission line towers provide artificial perches and nest sites for raptors and ravens. Therefore, the new towers could attract common raven to the area, predators of desert tortoise. Implementation of the *Raven Management Plan* required in Applicant Measure *AM-*WIL-3 would reduce these impacts.

Gen-tie line construction and operation has the potential to cause golden eagle mortality if golden eagles collide in flight with the conductors or make simultaneous contact with conductors and ground or with two conductors. This potential impact would be minimized by implementing avian-safe design requirements in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006), as required by Mitigation Measure MM-WIL-5. These guidelines would also minimize potential impacts of the Gen-Tie line to other avian species.

Finally, as discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Wildlife Movement or Nursery Sites

Impacts on wildlife movement and nursery sites would be similar as those discussed for *Special Status* Impacts *of the operation of Gen-Tie Line A-1* on wildlife movement and nursery sites would be *minimal. Periodic maintenance or inspection would have effects* similar *to* those discussed for *the construction of GT-A-1*. Because there would be no exclusion fencing around GT-A-1, wildlife will continue to be able to move through these areas.

Local Policies or Ordinances Protecting Biological Resources

As discussed under construction of GT-A-1, the Proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

Vegetation permanently removed by GT-A-1 facilities would result in a permanent loss of habitat within the Chuckwalla DWMA and Chuckwalla CHU (as discussed under construction impacts above). Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts. However, after construction, wildlife species would be expected to continue to migrate into and out of the GT-A-1 footprint and could utilize areas that were temporarily disturbed during construction but were subsequently revegetated.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas within the Chuckwalla DWMA and Chuckwalla CHU which could result in the degradation of habitat in this area. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation*, and Mitigation Measure MM-BIO-2* would reduce these indirect impacts.

Polarized Light

There would be no polarized light impacts to wildlife from the operation of the Gen-Tie Line.

Red Bluff Substation A

Wildlife Habitat

Impacts associated with operation and maintenance of Red Bluff Substation A would be similar to those described under SF-B above.

Special Status Wildlife Species

Impacts associated with operation and maintenance of Red Bluff Substation A would be similar to those described under SF-B above. Impacts associated with the new towers installed for Red Bluff Substation A would also be similar to those described under GT-A-1.

Wildlife Movement or Nursery Sites

Impacts associated with operation and maintenance of Red Bluff Substation A would be similar to those described *construction impacts at the substation site,* above, however impacts would *continue over the life of the facility.* Impacts associated with the new towers installed for Red Bluff Substation A would also be similar to those described under GT-A-1.

Local Policies or Ordinances Protecting Biological Resources

As discussed under construction of GT-A-1, the Proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

Vegetation permanently removed by the Red Bluff Substation A facilities would result in a permanent loss of habitat within the Chuckwalla DWMA and Chuckwalla CHU (as discussed under construction impacts above). Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, *and Mitigation Measure MM-BIO-2* would reduce these indirect impacts.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas within the Chuckwalla DWMA and Chuckwalla CHU which could result in the degradation of habitat in this area. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these impacts.

Polarized Light

There would be no polarized light impacts to wildlife from the operation of the Substation.

Summary of Operation and Maintenance Impacts

Wildlife Habitat

During operation and maintenance of Alternative 1, the presence of exclusion fencing around the Solar Farm and Red Bluff Substation A and the presence of permanent structures and access roads for GT-A-1 would represent a permanent loss of habitat for wildlife species. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Lighting for SF-B and Red Bluff Substation A could disturb wildlife species in adjacent areas. Lighting, however, would be limited to shielded area-specific lighting for security for the O&M facility and the on-site substation.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Special Status Wildlife Species

During operation and maintenance, the exclusion fencing and removal of vegetation in the area would represent a permanent loss of habitat for special status wildlife species and would affect wildlife movement in the area as well. Vegetation permanently removed by GT-A-1 facilities would also result in a permanent loss of habitat for special status wildlife species. However, after construction, special status wildlife species would be expected to continue to migrate into and out of the GT-A-1 footprint and could utilize areas that were temporarily disturbed during construction but were subsequently revegetated. Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, would reduce these impacts.

Permanent occupation of the site by employees could introduce trash into the area which could attract common ravens, predators of the desert tortoise. Implementation of the *Raven Management Plan* required in Applicant Measure *AM-*WIL-3 would reduce these impacts.

Transmission line towers provide artificial perches and nest sites for raptors and ravens. Therefore, the new towers could also attract common raven to the area, predators of desert tortoise. Implementation of the *Raven Management Plan* required in Applicant Measure *AM-*WIL-3 would reduce these impacts.

Mitigation Measure MM-WIL-5 requires that all transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006). However, installation of the towers would introduce the potential for bird strikes with the towers.

Lighting for SF-B and Red Bluff Substation A could disturb special status wildlife species in adjacent areas. Lighting, however, would be limited to shielded area-specific lighting for security.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas which could result in the degradation of additional habitat. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce these indirect impacts.

Wildlife Movement or Nursery Sites

Operations and Maintenance impacts on wildlife movement and nursery sites would be similar *to* those discussed for *construction, above, except that they would continue throughout the lives of the project facilities.*

Local Policies or Ordinances Protecting Biological Resources

As discussed under construction of SF-B and GT-A-1, the Proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan.

Wildlife Management Areas and Critical Habitat

Vegetation permanently removed by Alternative 1 would result in a permanent loss of habitat within the Chuckwalla DWMA and Chuckwalla CHU (as discussed under construction impacts above). Implementation of the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 and discussed in Section 4.3, Vegetation*, and Mitigation Measure MM-BIO-2* would reduce these impacts.

As discussed in Section 4.3, Vegetation, maintenance of access roads would have the potential to introduce invasive plant species into adjacent areas within the Chuckwalla DWMA and Chuckwalla CHU which could result in the degradation of habitat in this area. Implementation of the *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 and discussed in Section 4.3, Vegetation, would reduce these impacts.

Polarized Light

Polarized light impacts from operation and maintenance of Alternative 1 would be only attributable to the Solar Farm and would be the same as discussed under construction Solar Farm B. Implementation of Mitigation Measure MM-WIL-5, impacts from polarized light pollution would reduced.

Decommissioning

Decommissioning impacts are expected to have similar impacts on wildlife species as those discussed under construction impacts, with the exception of the fact that no new habitat would be removed *and the potential for polarized light impacts from the Solar Farm would be removed.* Revegetation of the site and removal of exclusion fencing would benefit wildlife in the area.

Summary of Combined Impacts for Alternative 1

In summary, construction*, operation,* and decommissioning of Alternative 1 has the potential to harm several special status wildlife species listed in Table 4.4-4, including the federally and state threatened desert tortoise and the Palm Springs round-tailed ground squirrel. In addition, construction of Alternative 1 has the potential to have direct impacts on birds nesting in the construction footprint, including their nests, eggs, and young, which are protected by the Migratory Bird Treaty Act and California Fish and Game Code.

Removal of vegetation*, including creosote desert scrub and desert dry wash woodland*, in all Alternative 1 areas and installation of exclusion fencing at SF-B and the Red Bluff Substation would result in permanent habitat loss for wildlife, including special status wildlife and breeding and foraging habitat for non-special status species. Exclusion fencing surrounding SF-B and Red Bluff Substation A during construction would also directly impact the movement of wildlife in the region in general.

Construction of Alternative 1 would also result in the permanent disturbance of *213 acres of one or both wildlife management areas, with 185 acres within the Chuckwalla DWMA and 182 acres within the CHU.* The NECO plan allows for development in one percent of the BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *185* acres of the DWMA under Alternative 1 would represent a small percentage (0.04%) of the allowable development within the DWMA.

Trash and debris generated by construction and decommissioning activities could attract predators of desert tortoise, common ravens, to the site. Permanent occupation of the site by employees could also introduce trash into the area which could attract common ravens. Finally, transmission line towers provide artificial perches and nest sites for raptors and ravens. Therefore, the new towers could also attract common raven to the area, predators of desert tortoise.

Mitigation Measure MM-WIL-5 requires that all transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006). However, installation of the towers would introduce the potential for bird strikes with the towers.

Construction and decommissioning activities would increase noise and dust in adjacent areas which could have an adverse effect on the health of the wildlife species. *These activities would impact wildlife movement in a similar manner as was discussed for the construction of Alternative 1 but would differ in that the impacts would be temporary, as permanent barriers to movement would be removed.* In addition, an increase in night lighting associated with construction and operation (SF-B and Red Bluff Substation A) of Alternative 1 could disturb wildlife in adjacent areas. During construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. Permanent lighting for SF-B and Red Bluff Substation A would be limited to shielded area-specific lighting for security.

As discussed in Section 4.3, Vegetation, construction, maintenance of access roads, and decommissioning activities under Alternative 1 would also have the potential to introduce invasive plant species into adjacent areas, including the Chuckwalla DWMA and Chuckwalla CHU, which could result in the degradation of additional habitat.

Because Alternative 1 was sited *in part because of its proximity to existing development, particularly existing transmission and transportation infrastructure* and would not create any access roads that would be accessible to off-road vehicles, Alternative 1 is consistent with open space protection policies DCAP 10.1 and DCAP 10.2 of the County of Riverside's General Plan. Formal Section 7 consultation will be conducted with the U.S. Fish and Wildlife Service regarding potential Project impacts on designated critical habitat for the desert tortoise. Therefore, the Proposed Project is consistent with policy DCAP 10.3 as well.

Applicant Measures and Mitigation Measures

While Applicant Measures AM-WIL-1 through AM-WIL-4 are proposed by the Applicant and would reduce project impacts on wildlife, Mitigation Measures MM-WIL-1 through MM-WIL-9 would also be required to further reduce impacts. In some cases, the Mitigation Measures overlap with the Applicant Measures because BLM determined that additional mitigation or more specific mitigation was required to address a particular issue.

Implementation of Applicant Measures *AM-*BIO-1, *AM-*BIO-2, *AM-*BIO-4, and *AM-*BIO-5 and Mitigation Measure *MM-*BIO-1 and *MM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce impacts on wildlife as well.

AM-WIL-1. A *Desert Tortoise Translocation Plan* (Ironwood Consulting 2010d) has been prepared for the Project and will be implemented by the Applicant to ensure that construction monitoring will be conducted by a BLM-, USFWS-, and CDFG-approved biologists during all construction activities and that any desert tortoise found with the construction zone will be translocated to a suitable location outside of the project footprint. The draft plan is attached as Appendix H of this document and will be reviewed and approved by BLM. *The final plan will conform to the 2010 USFWS desert tortoise relocation guidelines titled Translocation of Desert Tortoises (Mojave Population) from Project Sites: Plan Development Guidance. Unpublished Report dated August 2010.*

The *Desert Tortoise Translocation Plan* contains an analysis of several recipient sites for desert tortoises to be translocated from the Solar Farm site and Red Bluff Substation. The final selected recipient site will be determined by BLM, the USFWS, and CDFG.

Desert tortoises found along the linear components of the Project, including the Gen-Tie Line, Telecommunications site, and access roads will be translocated out of harm's way pursuant to USFWS guidance *(U.S. Fish and Wildlife Service. 2009. Desert Tortoise Field Manual. Ventura Fish and Wildlife Office, Ventura, California)*. Specifically, biological monitors will be present during all construction activities to ensure that active burrows are avoided. If a desert tortoise is found, the tortoise will be allowed to passively traverse the site while construction in the immediate area is halted. If the tortoise does not move out of harm's way after approximately 20 minutes, a biologist authorized to handle desert tortoise, will actively move the animal out of harm's way. Vehicles parked in desert tortoise habitat will be inspected immediately prior to being moved. If a tortoise is found beneath a vehicle, a biologist authorized to handle desert tortoise will be contacted to move the animal out of harm's way, or the vehicle will not be moved until the desert tortoise leaves of its own accord.

For desert tortoises in the Solar Farm site and Red Bluff Substation, they will be relocated using the following three phase translocation process:

- Installation of Perimeter Fencing
    - Prior to clearance surveys (see below), the perimeter of the Solar Farm site and Red Bluff Substation site will be fenced with security fencing and desert tortoise exclusion fencing. All fencing activities will be monitored by a qualified biological monitor. All fencing will be checked and repaired, as necessary, on a daily basis to ensure its integrity.
    - All individual desert tortoises found above ground during construction of the perimeter fence will be given a unique identifier, fitted with a transmitter, and placed inside the Solar Farm site.
- Clearance Surveys and Translocation
    - If construction is scheduled to commence in the non-active season for desert tortoise (approximately June 1 to September 1 and November 1 to April 1), prior to construction activities, the Solar Farm site and Red Bluff Substation site will be fenced into subsections with temporary desert tortoise exclusion fencing. Clearance surveys will then be performed for the desert tortoise within each of the subsections. If a desert tortoise or active burrow is found within a subsection, construction will not begin until the active season of the desert tortoise (approximately April 1 to June 1 and September 1 to November 1), when the species can be translocated. If two complete passes are conducted within a subsection without detecting a desert tortoise or active burrow, construction may commence within the subsection.

      All desert tortoises observed during the clearance surveys performed in the non-active season will be fitted with transmitters and translocated during the next active season.

  - If construction is scheduled to commence in the active season for desert tortoise, prior to construction activities, the Solar Farm site and Red Bluff Substation site will be fenced into subsections with temporary desert tortoise exclusion fencing. Clearance surveys will then be performed for the desert tortoise within each of the subsections. During the active season, a complete health assessment and disease testing will be performed on each individual desert tortoise found to determine if it should be translocated the recipient site or the Desert Tortoise Conservation Center. Individuals will be fitted with a transmitter and translocated to the recipient site or the Desert Tortoise Conservation Center.

- Long-term Monitoring
  - All translocated desert tortoises will be monitored at least once within 24 hours of their release, and a minimum of twice weekly for the first two weeks after translocation. Then, all translocated desert tortoises will be monitored for a period of five years, at a minimum of once a week between March 15 and May 31, twice a month from June 1 to November 15, and once a month between November 15 and March 15. During the 5-year long-term monitoring program, an equal number of resident desert tortoises at the control site will also be monitored along with the desert tortoises at the recipient site.
  - Health assessments will be conducted for all translocated individuals annually prior to overwintering (between October 15 and November 15) and subsequent to overwintering (between March 1 and April 1). A health assessment will also be completed for each translocated individual at the end of the 5-year monitoring period. Any health problems or mortalities observed will be reported to the USFWS and CDFG verbally within 48 hours or via email within 5 business days. Fresh carcasses will undergo a necropsy as directed by USFWS and CDFG and animals showing clinical signs of disease will be transported to the Desert Tortoise Conservation Center.
  - Vegetation transects will also be established in 2010 within the recipient sites and will be surveyed annually between March 15 and April 30 to measure potential changes in habitat characteristics.

- Reporting
  - During translocation, all activities will be recorded on standardized data sheets and/or digital data recorders. The Lead Biologist for the translocation effort will send emails to BLM, USFWS, CDFG, and SCE prior to the 5^{th} day of the month summarizing the translocation activities performed the previous month. Annual project reports will also be sent to BLM, USFWS, and CDFG.
  - During long-term monitoring, all activities will be recorded on standardized data sheets and/or digital data recorders. The Lead Biologist will send brief quarterly status reports via email to BLM, USFWS, and CDFG. An annual report will also be submitted to BLM on or before January 15 so that the February 1 deadline for annual reports to the USFWS can be met. A final report will be submitted to BLM following the fifth year of monitoring, summarizing the overall success of the monitoring program.

During the construction and operations and maintenance phases of the Project, the following Best Management Practices will also be implemented by the Applicant to reduce adverse effects to desert tortoise:

1. Speed limits on all unpaved areas of the Project will be a maximum of 15 miles per hour;
2. No dogs or firearms will be allowed on the Project site during construction or operation and maintenance activities;
3. Construction and operation and maintenance activities will be limited to daylight hours to the extent possible;
4. Trash will always be contained within raptor and raven-proof receptacles and removed from the site frequently, including trash collected in vehicles in the field;
5. Water required for construction purposes will not be stored in open containers or structures and will be transported throughout the site in enclosed water trucks; and
6. Water sources for the Project (such as wells) will be checked periodically by biological monitors to ensure they are not creating open water sources by leaking or consistently overfilling trucks.

All vehicles leaking fuel or other liquids will be immediately removed to the staging area and repaired – all vehicles will carry spill materials and all spills will be cleaned up promptly and disposed of correctly.

AM-WIL-2. Contribute to a USFWS Regional Raven Management Plan. *The Applicant shall contribute to the U.S. Fish and Wildlife Service (USFWS) Regional Raven Management Program by making a one-time payment of $105 per acre of project disturbance to the national Fish and Wildlife Federation Renewable Energy Action Team raven control account.*

A *Raven Management Plan* (Ironwood Consulting 2010e) has been prepared and will be implemented by the Applicant to minimize the potential for the project to attract ravens to the Project site. The draft plan is attached as Appendix H of this document and will be reviewed and approved by BLM.

Specifically, the following measures will be implemented by the Applicant to reduce the potential for the Project to introduce food subsidies and open water sources for the species:

1. Traffic speeds on all Project-related dirt roads will be limited to 15 miles per hour to reduce road killed animals. Biological monitors will be monitoring speeds during construction activities;
2. Refuse management will be an integral part of the construction process. A sufficient number of refuse containers will be supplied and all containers will have sealable and lockable lids with the goal of preventing strong winds from blowing garbage around, wildlife from entering refuse containers, and unauthorized people from tampering with refuse. Biological monitors will periodically check on refuse containers to ensure they are not overflowing and are being closed properly;
3. All work vehicles will have a sufficient supply of strong garbage bags to aid in collection and disposal of refuse at the end of each day into the large containers discussed above;

4. Waste management contractors will supply an adequate number of portable toilets to promote a hygienic environment;
5. *The open ponds needed to store water* required for construction purposes will *be fenced and lined, and will have netting around them, as described in AM-WIL-4, to keep ravens away. Water* will be transported throughout the site in enclosed water trucks; and
6. Water sources for the Project (such as wells) will be checked periodically by biological monitors to ensure they are not creating open water sources by leaking or consistently overfilling trucks.

Throughout the construction and operation and maintenance phases of the Project five years post-construction, all incidental sightings of common ravens within the Project locations will be logged either by a biological monitor (during construction) or by a designated person by Sunlight and SCE (five years post-construction). In addition, for five years following construction, nest surveys for this species will be completed at least twice each spring between March 15 and June 1, and further assessments will be performed on the ground underneath raven nests during spring months to determine the presence of any desert tortoise predation.

If monitoring data shows a potential increase in raven roosting or nesting behavior within the Sunlight Project components, additional measures will be implemented *by the Applicant* to minimize the attractiveness of the Project site to the species, including one or more of the following:

1. Bird spikes installed on top of potential perches designed to prevent birds from gaining a foothold on the perch because of their porcupine design;
2. Repellant coils installed on top of potential perches to deter birds from gaining footholds because of their destabilizing coil design;
3. Bird control wire designed so that a line or grid of variable height posts is interconnected by a wire. This creates a confusing landing area in the same spirit as trip wires used for unsuspecting people;
4. Bird netting; and/or
5. Electric shock deterrents with low voltage pulses.

Inactive nests will be dismantled and passive deterrents will be installed. For active nests, a biological monitor will determine the number of fledglings and their status of development. Once the nest is determined to no longer be active, it will be removed and passive deterrents installed. Non-lethal deterrents will be the first course of action. However, ravens may adapt quickly to avoid passive deterrents. If problem ravens are proven to be an active threat to resident desert tortoises, then they could be subject to lethal removal in coordination with BLM, USFWS, and CDFG in compliance with the Migratory Bird Treaty Act and California Fish and Game Code.

If monitoring data shows a potential increase in raven roosting or nesting behavior within the SCE Project components, SCE will coordinate with BLM, USFWS, and CDFG to determine the appropriate control measures, including continued raven nest monitoring and/or contribution to a region-wide raven control plan.

On or before January 15th of each calendar year of monitoring, an annual report will be submitted to BLM that summarizes all monitoring activities sufficient for the BLM to provide necessary reporting to the USFWS and CDFG during their annual permitting report, due on or before February 1 of each year.

AM-WIL-3. An *Avian and Bat Protection Plan* (Ironwood Consulting 2010f) has been prepared and will be implemented by the Applicant to specify necessary actions to be taken to protect nesting bird and bat species. The draft plan is attached as Appendix H of this document and will be reviewed and approved by BLM. *The final plan will conform to the 2010 USFWS avian and bat guidelines titled Considerations for Avian and Bat Protection Plans U.S. Fish and Wildlife Service White Paper.*

The following measures will be implemented by the Applicant to protect burrowing owls in the Project locations during construction:

- Phase III burrow surveys will be completed within 30 days prior to planned construction in each construction unit and within a 150-meter (500 foot) buffer area.
- All active burrowing owl nests will be avoided with a buffer of *75 meters (250 feet)* during the nesting season (February 1 – August 31st). *Initial avoidance buffers may be modified per the direction of a biological monitor based on the type of construction activity and bird species as approved by CDFG or USFWS.* Outside nesting season or after determining that a nest has failed or young have fledged, owls will be passively relocated after concurrence of specific methods by CDFG. Passive relocation will include:
    - Identifying suitable relocation sites within one mile of the Project area;
    - Creating or enhancing at least two natural or artificial burrows per relocated owl;
    - Passively relocating burrowing owls; and
    - Monitoring and reporting the results of the passive relocation.

The following measures will be implemented by the Applicant to protect nesting bird species in the Project locations during construction which are protected by the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503 and 3513:

- Pre-construction surveys will be completed in the Project locations and in adjacent habitat areas and any nests observed will be identified and clearly marked. For passerines, an exclusion area where construction will not be allowed to commence will be established approximately 100 meters (330 feet) from any active nest. For raptors *(other than golden eagles)*, the exclusion area will be established approximately 170 meters (500 feet) from any active nest (excluding nests of the common raven). *For golden eagles, the exclusion area will be established approximately 1.6 kilometers (one mile) from any active nest. Initial protective buffers may be modified per the direction of a biological monitor based on type of construction activity and bird species and per approval by CDFG or USFWS.* Nests will be checked within *one* week prior to planned construction to determine nest success and whether young have fledged. The exclusion boundary will not be removed until the biological monitor has determined that the nest has failed or young have fledged.

- Vegetation clearing will be conducted outside of the bird breeding season (approximately February 1 to August 31) to the maximum extent practicable, taking into account the necessary timing of conservation measures for other species, including the desert tortoise.
- Biological monitors will be present on-site during all phases of construction and will be tasked with monitoring avian nesting in adjacent habitats. If nests are found, the same procedures would be used as discussed above for pre-construction surveys.

The following measures will be implemented by the Applicant to protect roosting bats in the Project locations during construction:

- Pre-construction surveys will be completed in the Project locations and adjacent habitat areas and any active bat colonies will be identified and clearly marked. An exclusion area will be established approximately 50 meters (165 feet) from any active colony, and whenever possible, these areas will be avoided during construction activities.

For five years post-construction, the Applicant will record incidental sightings of raptors and bats in the Project locations. In addition, the Applicant will conduct nest surveys within the Project locations at least twice each spring between March 1 and June 1, separated by at least 30 days where all project-related infrastructure will be inspected for active and inactive raptor nests. The Applicant will submit quarterly status reports via email to BLM, USFWS, and CDFG. On or before January 15th of each calendar year, an annual report will be submitted to BLM that summarizes all monitoring activities sufficient for BLM to provide necessary reporting to the USFWS and CDFG in their annual permitting report, due on or before February 1st of each year. These reports may include recommendations for future adaptive management actions.

AM-WIL-4, Construction Water Storage Pond Design. The temporary construction water ponds shall be designed, constructed, and operated in compliance with all applicable regulatory requirements with respect to design, operation, and maintenance, protection of migratory waterfowl, and raven management. This includes following provisions in AM-WIL-2 and includes the following specific measures to discourage ravens:

- *Using anti-perching devices around the perimeter of each pond to exclude ravens and other birds from accessing the edge of the ponds to drink.*
- *Lining the ponds and maintaining two feet of freeboard in the ponds at all times*
- *Designing the ponds with interior side slopes at a 33 percent slope (3:1, horizontal:vertical)*
- *Netting will be used to cover ponds when not in use to reduce avian access. Appropriate material will be used to ensure that nocturnal bird species and bats will not become entangled in the netting.*

At least 60 days prior to construction, the Applicant shall submit to BLM, USFWS, and CDFG, the proposed locations and design of the ponds, including how many ponds would be operational at a time, specific design features to discourage ravens, and a plan for immediately addressing problems with pond design. During construction, the ponds shall be monitored daily to ensure that anti-raven measures are successful. All ponds will be dismantled at the end of construction.

MM-WIL-1. American Badger and Desert Kit Fox Protection Plan. To avoid direct impacts to American badgers or desert kit foxes, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys. Surveys shall be conducted as described below:

Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the Project area, including areas within 90 feet of all Project facilities, utility corridors, and access roads. Surveys may be concurrent with desert tortoise surveys. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active.

Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit foxes. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, and especially if high or low ambient temperatures could potentially result in harm to badger or kit fox from burrow exclusion, various passive hazing methods may be used to discourage occupants from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit foxes are trapped in the den. In the event that passive relocation techniques fail, the Applicant will contact the California Department of Fish and Game to explore other relocation options, which may include trapping.

MM-WIL-2. Nelson's Bighorn Sheep Protection Plan. If effects to Nelson's Bighorn Sheep cannot be avoided, the Applicant shall consult with the California Department of Fish and Game (CDFG) to determine the appropriate level of restoration and mitigation for effects to essential habitat and/or travel corridors for Nelson's bighorn sheep by implementing the following measures:

(a) The project owner shall compensate or replace the permanent loss of Nelson's bighorn sheep habitat at a 1:1 ratio as approved by the CDFG. This may include monetary contributions or donations as mitigation which are tied to programs or activities designed to offset potential resource losses or for mitigation banking for habitat restoration, enhancement, and/or acquisition projects provided that an appropriate and cooperatively developed mitigation agreement has been finalized between the Applicant and CDFG.

(b) Compensation or replacement mitigation should be oriented within or adjacent to the project area and designed to rectify the same functions, habitat types and species being impacted wherever possible. Off-site compensation should be considered when mitigation measures cannot be applied to adjacent areas or to benefit the same species that are impacted.

(c) All final actions associated with compensation mitigation will be approved by CDFG to insure that agreements are consistent with the CDFG's Sonoran Desert Mountain Sheep Meta-Population Plan.

(d) Any roads or permanent structures built in Nelson's bighorn sheep habitat or movement corridors must be constructed in such a way as to allow continued bighorn movement, except in the case of the Solar Farm and Substation facilities which will be fenced. Some strategies could include under or over passes, ramps cut into steep side slopes, alternatives to continuous guard rails and/or fence specifications along roads that allow sheep movement. Plans for these structures will be developed in coordination with CDFG.

MM-WIL-3. Palm Springs Round Tailed Ground Squirrel Protection Plan. If effects to Palm Springs round tailed ground squirrel cannot be avoided, the Applicant shall consult with the California Department of Fish and Game (CDFG) to determine the appropriate level of restoration and/or mitigation for effects to essential habitat for Palm Springs round tailed ground squirrel by implementing the following measures:

(a) *For Palm Springs ground squirrel habitat that is temporarily disturbed, the Applicant shall develop a project-specific habitat restoration for submittal to CDFG for review and approval. The plan shall consider and include as appropriate the following methods: replacement of topsoil, seedbed preparation, fertilization, seeding of species native to the project area, noxious weed control, and additional erosion control. Generally, the restoration objective shall be to return the disturbed area to a condition that will benefit Palm Springs ground squirrels. The project proponent shall conduct periodic inspection of the restored area. Restoration shall include eliminating any hazards to Palm Springs ground squirrels created by construction, such as holes and trenches in which animals might become entrapped.*

(b) *If adverse effects remain after the project proponent has taken all reasonable on-site mitigation measures, the Applicant must compensate for on-site effects to Palm Springs ground squirrel habitat. The goal of compensation is to prevent the net loss of Palm Springs ground squirrel habitat and make the net effect of a project neutral or positive to Palm Springs ground squirrels by maintaining a habitat base for the species. Compensation ratios can range from 1:1 to 5:1 depending upon:*

A. Species known to be present on site
B. Habitat condition
C. Proximity of known disturbances
D. Vegetation type

The Applicant shall provide habitat compensation lands as mitigation for the Project's impacts to Palm Springs round-tailed ground squirrel. A minimum of three months before the habitat compensation lands are acquired, the Applicant shall submit a proposal identifying the land to be purchased to CDFG for approval. As part of this process, the Applicant shall do the following (as detailed in MM-BIO-2):

a. *Transfer fee title to CDFG for the habitat compensation lands.*

b. *Provide a preliminary title report, initial hazardous material assessment report and other documents as requested by CDFG.*

c. *Provide CDFG with fees, as determined by CDFG, to provide for the initial protection and enhancement of the habitat compensation lands.*

d. *Conduct a Property Analysis Record (PAR) or PAR-like analysis once the habitat compensation lands have been identified to determine the appropriate endowment amount to fund the in-perpetuity management of the habitat compensation lands.*

MM-WIL-4. Mojave Fringed-toed Lizard Protection Plan. If effects to Mojave Fringed-toed Lizard cannot be avoided, the Applicant shall mitigate for direct and indirect impacts to stabilized and partially stabilized sand dunes and other Mojave fringe-toed lizard habitat by compensating for lost habitat at ratios ranging from 1:1 to 5:1 depending upon (as detailed in MM-BIO-2):

A. Species known to be present on site
B. Habitat condition
C. Proximity of known disturbances
D. Vegetation type

The Applicant shall provide funding for the acquisition, initial habitat improvements and long-term management of the compensation lands. The habitat compensation requirement, and associated funding requirements based on that acreage will be adjusted if there are changes in the final footprint of the Project. In lieu of acquiring lands itself, the Applicant may ensure funding to complete the land acquisition by providing CDFG and/or USWFS, as *appropriate, prior to commencing ground-or vegetation- disturbing activities an irrevocable letter of credit or another form of security as approved by CDFGs Office of General Counsel before ground- or revegetation-disturbing activities begin.*

The requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. *Criteria for Compensation Lands: The compensation lands selected for acquisition shall:*

   a. *Provide suitable habitat for Mojave fringe-toed lizards that is equal to or better than that found in the Project disturbance area, and may include stabilized and partially stabilized desert dunes or sand drifts over playas or Sonoran creosote bush scrub;*

   b. *Be within the Chuckwalla Valley with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;*

   c. *Be connected to lands that are either currently occupied or have high potential to be occupied by Mojave fringe-toed lizard based on patch size and habitat quality;*

   d. *Be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;*

   e. *Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;*

   f. *Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;*

   g. *Not contain hazardous wastes;*

   h. *Not be subject to property constraints (i.e. mineral leases, cultural resources); and*

   i. *Be on land for which long-term management is feasible.*

2. *Security for Implementation of Mitigation: The Applicant shall provide financial assurances to CDFG and/or USFWS that guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to DFG and/or USFWS in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing project activities. The Security shall be approved by the CDFG and USFWS, to ensure sufficient funding.*

3. *Preparation of Management Plan: The Applicant shall submit to the CDFG and USFWS a draft Management Plan that that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.*

MM-WIL-5. Prepare and Implement a Bird Monitoring and Avoidance Plan. Prior to the issuance of a ROW grant, the Applicant shall retain a BLM-approved, qualified biologist to prepare a Bird Monitoring and Avoidance

Plan in consultation with CDFG and USFWS. This plan shall follow the Avian Protection Plan guidelines outlined by USFWS and Avian Power Line Interaction Committee (APLIC).

The plan will require monitoring of (1) the death and injury of birds from collisions with facility features such feeder/distribution lines and solar panels, and (2) impacts to aquatic insects from polarized light from solar panels that may affect insectivorous (insect-eating) birds. The study design shall be approved by BLM in consultation with the CDFG and USFWS.

***Bird mortality study**. The bird mortality component of the Bird Monitoring Study shall include at a minimum: detailed specifications on data, a carcass collection protocol, and a rationale justifying the proposed schedule of carcass searches. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.*

Polarized light and insectivorous birds study. The study of polarized light impacts on insectivorous birds shall include at a minimum: detailed specifications regarding data requirements, including protocols for collection and identification of insect eggs found on solar panels, and a rationale for a data collection schedule.

During construction and for one year following the beginning of the solar farm operation the biologist shall submit annual reports to BLM, CDFG, and USFWS describing the dates, durations, and results of monitoring and data collection. The annual reports shall provide a detailed description of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time and data collected for the study of polarized light impacts on insectivorous birds. The report shall analyze any project-related bird fatalities or injuries detected, and provides recommendations (in consultation with the County) for future monitoring and any adaptive management actions needed.

***Thresholds.** Thresholds will be determined by BLM in consultation with CDFG and USFWS. If BLM determines that either (1) bird mortality caused by solar facilities is substantial and is having potentially adverse impacts on special-status bird populations, or that (2) the attraction of polarized light from solar panels is causing reproductive failure of aquatic insect populations at high enough levels to adversely affect insectivorous special-status birds, the Applicant shall be required to implement some or all of the mitigation measures below.*

***Implementation Measures.** To minimize bird mortality caused by solar facilities, the Applicant may be required to install additional bird flight diverters alterations to project components that have been identified as key mortality features, or implement other appropriate actions approved by BLM and regulatory agencies based on the findings of the Bird Monitoring and Avoidance Plan. To minimize indirect impacts of polarized light on insectivorous birds, the Applicant may be required to install non-polarizing white borders and grids on or around solar panels, which Horvath et al. (2010) found to dramatically reduce the attractiveness of solar panels to aquatic insects, or other measures that are shown to be effective.*

If mitigation actions are required, the annual reporting shall continue until BLM, in consultation with CDFG and USFWS, determines whether more years of monitoring are needed, and whether additional mitigation and adaptive management measures are necessary. After the Bird Monitoring Study is determined by BLM to be complete, the Applicant shall prepare papers that describe the design and monitoring results of the two studies to be submitted to peer-reviewed scientific journals. Proof of submittal shall be provided to BLM, CDFG, and USFWS within one year after the monitoring studies are complete.

MM-WIL-6. Prepare and Implement Golden Eagle Nesting Surveys, Nest Site Monitoring, and Adaptive Management, as described below. Where details of this Mitigation Measure may conflict with Applicant Measure AM-WIL-3, this measure (MM-WIL-6) shall take precedence.

1. *For each year during which construction will occur, an inventory of all golden eagle territories within ten miles of project facilities shall be conducted to determine if whether any territory is active. Survey methods for the inventory shall be as described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS. A nesting territory or shall be considered occupied or unoccupied based on criteria in Pagel (2010) or more current guidance from the USFWS.*

2. *Inventory Data: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.*

3. *Monitoring and Adaptive Management Plan: If an occupied nest (as defined by Pagel et al. 2010) is detected within 10 miles of any project component, the Project owner or SCE shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with BLM, USFWS, CDFG, and CPUC. It shall be implemented by Desert Sunlight or SCE, according to project component; each applicant shall designate a biologist, to be approved by BLM, USFWS, CDFG, and CPUC. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.*

MM-WIL-7: Alternate to long-distance (greater than 500 meters) desert tortoise translocation. The draft Desert Tortoise Translocation Plan defined under Applicant Measure AM-WIL-1 shall be updated to identify and describe, as an alternative to translocation, a strategy to remove desert tortoises on the project site from the wild and place them permanently in facilities approved by USFWS and CDFG, to be fully funded by the applicants. All suitable care or holding facilities for desert tortoises shall be listed and described in the draft plan, and capacity of each facility to accommodate desert tortoises from the project site shall be provided. The updated draft plan and shall be submitted to BLM, CPUC, USFWS and CDFG for review and approval. Upon approval of a final Desert Tortoise Translocation Plan and issuance of state and federal approvals, the applicant (Sunlight and/or SCE), shall either translocate tortoises into the wild or shall permanently place them in approved facilities, consistent with the Final Desert Tortoise Translocation Plan.

MM-WIL-8: Plans required under Applicant Measures AM WIL-1, AM WIL-2, and AM WIL-3 shall be submitted for review and approval by USFWS, CDFG, BLM and CPUC.

MM-WIL-9: This measure applies only to Alternative 2, below. Re-orient Substation Alternative B to reduce movement corridor blockage. The substation shall be either moved to the east, or rotated 90 degrees and moved east (without moving into the Alligator Rock ACEC) so its longer side is parallel to Interstate 10. It shall remain as close as possible to Interstate 10, while avoiding existing utilities, and shall allow a corridor for wildlife movement south of the substation. If this alternative is selected, the design and location of the substation shall be developed with input from BLM's biologists to ensure that the ability of wildlife to move from east to west south of the freeway is retained, and the freeway underpass and stream channel crossings are still accessible to wildlife moving from north to south.

CEQA Significance Determination

Each CEQA determination combines the effects of construction, operations and decommissioning.

Solar Farm Layout B

Impact WIL-1 – Direct and Indirect Impacts to Wildlife Habitat

The permanent loss of vegetation within construction areas and the installation of exclusion fencing would constitute permanent habitat loss and would be considered a significant impact on wildlife habitat. Implementation of the measures in the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* as discussed in Section 4.3, Vegetation, would require that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. *Additionally, implementation of Mitigation Measures MM-BIO-3 and MM-BIO-4 would require transplantation efforts per the Vegetation Salvage Plan and that performance standards were met within 10 years.* Therefore, impacts *to wildlife habitat* would be reduced to less than significant levels.

Construction and decommissioning activities would increase dust in adjacent areas which could have an adverse effect on the health of wildlife species. Impacts would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

An increase in night lighting associated with construction and operation of SF-B could disturb wildlife in adjacent areas. However, during construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. Permanent lighting for SF-B would be limited to shielded area-specific lighting for security. Due to the limited amount of lighting that would be used and the fact that lighting would be shield and focused downward (thus minimizing the lighted area), potential impacts would be less than significant.

Noise associated with construction and decommissioning activities could disrupt wildlife species in adjacent areas. However, the majority of these activities would occur in daylight hours and would be temporary. Therefore, impacts would be less than significant.

The temporary water ponds to be used during construction could attract wildlife and birds, including ravens. Implementation of Applicant Measure AM-WIL-4 would reduce impacts associated with these ponds.

As discussed in Section 4.3, Vegetation, construction, maintenance of access roads, and decommissioning activities under Alternative 1 would also have the potential to introduce invasive plant species into adjacent areas, which could result in the degradation of additional habitat. Impacts would be significant. However, implementation of the measures in the *Integrated Weed Management Plan* included in Appendix H and required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce impacts to less than significant levels.

Impact WIL-2– Direct and Indirect Impacts to Special Status Wildlife Species

Potential harm to special status wildlife species, including the desert tortoise; chuckwalla and rosy boa; *golden eagles,* bird nests, eggs, and young; roosting bats; and fossorial mammals such as the Palm Springs round-tailed ground squirrel, Colorado Valley woodrat, and American badger; during construction and decommissioning activities would be adverse and significant. Construction monitoring and translocation of desert tortoises to a suitable location using proper methods would be implemented as required in the *Desert Tortoise Translocation Plan* required in Applicant Measure *AM-*WIL-1 *and/or Mitigation Measure MM-WIL-7 (as an alternate to long-distance translocation).* Rather than translocating burrowing owls, nesting bird species, or roosting bats, buffers would established around burrows, nests, and roosts to protect these individuals as stipulated in an *Avian and Bat Protection Plan* required in Applicant Measure *AM-*WIL-3; areas occupied by the burrowing owl will also be mitigated at 6.5 acres per occupied burrow as stipulated in the *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* discussed in Section 4.3, Vegetation. *Performing presence/absence surveys and on-site passive relocation or active trapping and relocation of American badgers and desert kit foxes would be implemented as required in the American Badger and Desert Kit Fox Protection Plan required in Mitigation Measure MM-WIL-1. Consultation with CDFG and the acquisition of compensation habitat for Palm Springs round-tailed ground squirrel would be implemented as required in the Palm Springs round-tailed ground squirrel Protection Plan required in Mitigation Measure MM-WIL-3. Mitigation Measure MM-WIL-8 would require the Applicant and SCE to submit all plans identified in Applicant Measures AM WIL-1, AM WIL-2 and AM WIL-3 for review and approval by USFWS, CDFG and CPUC.* Finally, the *Worker Environmental Awareness Program* required in Applicant Measure *AM-*BIO-4 in Section 4.3, Vegetation, would further ensure that construction personnel are properly trained to avoid harming special status wildlife species. Implementation of these measures would ensure that potential direct impacts on desert tortoise, burrowing owls and other nesting bird species, and roosting bats are reduced to less than significant levels.

Potential impacts on the chuckwalla, rosy boa, and Colorado Valley woodrat, however, would remain significant because they are not specifically protected in the applicant measures discussed above. Therefore, construction monitoring will be required in Mitigation Measure *MM-*BIO-1, to ensure that these other special status wildlife species are either actively or passively relocated if found within the construction areas. Implementation of Mitigation Measure *MM-*BIO-1 would ensure that impacts are reduced to less than significant levels.

Project impacts to golden eagle foraging habitat would be mitigated through implementation of Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2. Potential disturbance to golden eagle nesting territories in the project vicinity would be reduced or avoided by implementation of Mitigation Measure MM-WIL-6.

The permanent loss of vegetation within construction areas and the installation of exclusion fencing would constitute permanent habitat loss as discussed above and would be considered a significant impact on all of the special status wildlife species listed in Table 4.4-4. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 as discussed in Section 4.3, Vegetation, would ensure that the loss of this habitat is adequately compensated for and equivalent habitat would be protected offsite. Therefore, impacts would be reduced to less than significant levels.

Trash and debris generated by construction and decommissioning activities could attract predators of desert tortoise, common ravens, to the site. Permanent occupation of the site by employees could also introduce trash into the area which could attract common ravens. Because one reason for the decline of the desert tortoise is predation by common ravens, these impacts would be significant. However, implementation of a *Raven Management Plan* required in Applicant Measure *AM-*WIL-2 would reduce these impacts to less than significant levels.

Construction and decommissioning activities would increase dust in adjacent areas which could have an adverse effect on the health of wildlife species. Impacts would be significant. However, implementation of dust control measures discussed in Section 4.2, Air Resources, would reduce impacts to less than significant levels.

An increase in night lighting associated with construction and operation of SF-B could disturb wildlife in adjacent areas. However, during construction, restricted nighttime task lighting would be used, only as necessary. The light would be shielded and focused downward to minimize glare in surrounding areas. Permanent lighting for SF-B would be limited to shielded area-specific lighting for security. Due to the limited amount of lighting that would be used and the fact that lighting would be shield and focused downward, potential impacts would be less than significant.

Noise associated with construction and decommissioning activities could disrupt wildlife species in adjacent areas. However, the majority of these activities would occur in daylight hours and would be temporary. Therefore, impacts would be less than significant.

As discussed in Section 4.3, Vegetation, construction, maintenance of access roads, and decommissioning activities under Alternative 1 would also have the potential to introduce invasive plant species into adjacent areas, which could result in the degradation of additional habitat. Impacts would be significant. However, implementation of an *Integrated Weed Management Plan* required in Applicant Measure *AM-*BIO-2 discussed in Section 4.3, Vegetation, would reduce impacts to less than significant levels.

Impact WIL-3– Direct and Indirect Impacts to Wildlife Movement or Nursery Sites

Direct and indirect impacts on wildlife *movement* would be adverse *but less than* significant. Implementation of the applicant measures and mitigation measures discussed under *Special Status Wildlife Species* above would *further reduce impacts to wildlife movement and nursery sites.*

Any potential wildlife movement across Solar Farm Layout B would be directly impacted by construction, operations, and decommissioning. The upper Chuckwalla Valley, including the Project area and surrounding lands have been identified as an important area for wildlife movement in a state-wide study (Spencer et al. 2010), but preliminary BLM modeling on a more localized basis does not indicate the Solar Farm site is within a priority habitat connectivity area (see Section 3.4, Wildlife). As discussed in Section 3.4, Wildlife, the valley floor may serve as an important intermountain movement corridor for Nelson's bighorn sheep and other wildlife species. Exclusion fencing surrounding the entire *3,912*-acre *Solar Farm* site would *prevent or obstruct* the movement of *most ground-dwelling wildlife across the site. By design, many animals, including desert tortoise, would be excluded from the site in order to prevent road strikes or other adverse impacts of project operation. Some animals, such as lizards and small rodents, would be able to access the site through the fence, but would be unlikely to successfully travel across the solar farm site and escape at the opposite side due to the broad area of unsuitable habitat. Therefore, the Solar Farm site itself would be unavailable to ground-dwelling wildlife for movement either north-south or east-west through the area. However, extensive open space habitat, especially to the north of Solar Farm B, would continue to provide suitable wildlife movement habitat east and west, between the Eagle Mountains and Coxcomb Mountains. Solar Farm B is not located near potential north-south wildlife crossings beneath the I-10 Freeway, and would not significantly impede wildlife movement north-south between Joshua Tree National Park and the Chuckwalla Mountains. However, implementation of the Habitat Compensation Plan included in Appendix H of this document and required in Applicant Measure AM-BIO-1 and Mitigation Measure MM-BIO-2 as discussed in Section 4.3, Vegetation, and*

Mitigation Measures MM-WIL-2 through MM-WIL-5 would serve to further reduce this impact by providing compensation lands and project-specific protection plans for selected wildlife species.

Construction and operation of the project will produce polarized-light pollution that could confuse insects and likely birds, resulting in a significant impact. Mitigation Measure MM-WIL-5, Bird Monitoring and Avoidance Plan, would require the Applicant to conduct long-term avian mortality studies on the project site, including the solar arrays. The study would document the level of bird mortality and, if the county and regulatory agencies deem the mortality excessive, would require the Applicant to take corrective actions including the installation of non-polarizing white borders or white grids that break up the polarizing black surface of solar panels. With implementation of Mitigation Measure MM-WIL-5, impacts from polarized light pollution would be less than significant.

Impact WIL-4– Local Policies or Ordinances Protecting Biological Resources

The Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan. Thus, there would be no construction, operation and maintenance, or decommissioning impacts under criterion WIL-4.

Impact WIL-5– Wildlife Management Areas and Critical Habitat

SF-B is not within either the Chuckwalla DWMA or Chuckwalla CHU, therefore, no vegetation removal would occur in these areas from installation of SF-B. The western edge of SF-B is adjacent to the Chuckwalla DWMA, and construction activities have the potential to directly and indirectly impact species utilizing this protected area as a result of noise, night lighting, dust, and the potential to introduce invasive plant species. Impacts would be similar to those impacts on *Special Status Wildlife Species* discussed above and would be significant. However, implementation of the applicant measures for these impacts as discussed under *Special Status Wildlife Species*, above, would reduce impacts to less than significant levels.

Gen-Tie Line A-1

Impact WIL-1 – Direct and Indirect Impacts to Wildlife Habitat

Impacts would be similar to those discussed under SF-B with the exception of the fact that no exclusion fencing would be installed along GT-A-1. The loss of habitat in the locations of the permanent structures and access road for GT-A-1 would be much less than under the Solar Farm site, nevertheless, impacts would be significant. As under SF-B, impacts associated with noise, light, dust, and the potential to introduce invasive species would also be significant. Implementation of the applicant measures discussed under SF-B above, however, would reduce impacts to less than significant levels.

Impact WIL-2– Direct and Indirect Impacts to Special Status Wildlife Species

Impacts would be similar to those discussed under SF-B with the exception of the fact that no exclusion fencing would be installed along GT-A-1. As a result, potential harm to individual special status wildlife species could occur during maintenance of access roads for GT-A-1. As discussed under SF-B, impacts would be significant, and would be greater during operations and maintenance than under SF-B. However, the *Worker Environmental Awareness Program* implemented as required in Applicant Measure *AM-*BIO-4 in Section 4.3, Vegetation, would reduce potential impacts associated with maintenance of the access roads to less than significant levels. All other significant impacts would be mitigated to less than significant levels by implementation of the applicant measures and mitigation measure discussed under SF-B.

The proposed generator tie-line has the potential to cause flight collision or electrocution hazards to golden eagles and other special-status bird species. Mitigation Measure MM-WIL-5 would require that all transmission and subtransmission towers and poles *to* be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006), installation of the towers introduces the potential for bird strikes with the towers. However, because the risk of bird strikes is low, impacts would be less than significant.

Transmission line towers provide artificial perches and nest sites for raptors and ravens. Therefore, the new towers could also attract common raven to the area, predators of desert tortoise. Because one reason for the decline of the desert tortoise is predation by ravens, impacts would be significant. However, implementation of a *Raven Management Plan* required in Applicant Measure WIL-3 would reduce these impacts to less than significant levels.

Impact WIL-3– Direct and Indirect Impacts to Wildlife Movement or Nursery Sites

Potential direct and indirect impacts *of Gen-Tie Line A-1 construction, operation, and decommissioning* on *wildlife movement or* nursery sites would be would be *less than* significant.

Exclusion fencing would not be installed around the GT-A-1 site, therefore, although disturbance due to construction activities would occur, movement through the construction zone would not be physically disrupted. *Although* a significant acreage of desert dry wash woodland would be impacted by GT-A-1, *there would be no long-term obstruction to movement and the effects of noise and disturbance, which would discourage wildlife from approaching the site, would be limited to short-term construction, maintenance, and decommissioning periods. Similarly,* impacts on the Chuckwalla DWMA and Chuckwalla CHU discussed below, *would be only short-term and would not significantly* affect the migration of desert tortoise and other wildlife within these important wildlife movement areas. Therefore, impacts would be *less than* significant. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* as discussed in Section 4.3, Vegetation, *and Mitigation Measures MM-WIL-2 through MM-WIL-5* would *serve to further reduce this impact by providing* compensat*ion lands* for and equivalent habitat would be protected offsite *and project-specific protection plans for selected wildlife species.*

Impacts resulting from the production of polarized-light pollution would be similar to those discussed for SF-B and would be significant. Implementation of the mitigation measures discussed under SF-B would reduce impacts to less than significant levels.

Impact WIL-4– Local Policies or Ordinances Protecting Biological Resources

The Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan. Thus, there would be no construction, operation and maintenance, or decommissioning impacts under criterion WIL-4.

Impact WIL-5– Wildlife Management Areas and Critical Habitat

Construction of GT-A-1 would permanently impact *37* acres and *34* acres within the Chuckwalla DWMA and CHU, respectively. The NECO plan allows for development in one percent of the

BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *37* acres in the DWMA under GT-A-1 would represent a negligible percentage (0.0009%) of the allowable development within the DWMA. Nevertheless, impacts on these Wildlife Management Areas would be significant given the sensitivity of these areas for the desert tortoise and wildlife movement. However, implementation of a *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 as discussed in Section 4.3, Vegetation, and *Mitigation Measure MM-BIO-2* would reduce this impact to less than significant levels.

Other direct and indirect impacts would be similar to those discussed for SF-B and would be significant. Implementation of the applicant measures discussed under SF-B would reduce impacts to less than significant levels.

Red Bluff Substation A

Impact WIL-1 – Direct and Indirect Impacts to Wildlife Habitat

Impacts would be similar to those discussed for SF-B and would be significant. Implementation of the applicant measures discussed under SF-B would reduce impacts to less than significant levels.

Impact WIL-2– Direct and Indirect Impacts to Special Status Wildlife Species

Impacts would be similar to those discussed for SF-B and would be significant. Implementation of the applicant measures and mitigation measure discussed under SF-B would reduce impacts to less than significant levels.

In addition, *Mitigation Measure MM-WIL-5 requires that* all transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006), installation of the towers introduces the potential for bird strikes with the towers. However, because the risk of bird strikes is low, impacts would be less than significant.

Transmission line towers provide artificial perches and nest sites for raptors and ravens. Therefore, the new towers could also attract common raven to the area, predators of desert tortoise. Because one reason for the decline of the desert tortoise is predation by ravens, *potential* impacts *of increased common raven activity in the area* would be significant. However, implementation of a *Raven Management Plan* required in Applicant Measure *AM-*WIL-3 would reduce these impacts to less than significant levels.

Impact WIL-3– Direct and Indirect Impacts to Wildlife Movement or Nursery Sites

Potential direct and indirect impacts of Red Bluff Substation A on wildlife movement or nursery sites would be less than significant, similar to those discussed under SF-B above, though overall acreage of obstructed movement area would be smaller. Due to the location of Red Bluff Substation A on the bajada below the Chuckwalla Mountains and the I-10 Freeway, the substation has the potential to interfere with east-west wildlife movement routes parallel to the freeway. However, Red Bluff Substation A would be located in an area where a relatively wide bajada area is available for east-west wildlife movement below the Chuckwalla Mountain slopes. The substation would obstruct a part of the available wildlife movement area, but adequate area for east-west movement on the bajada slopes would remain to the south of Red Bluff Substation A. The location of Red Bluff Substation A is well away from major freeway road and wash underpasses which may serve as north-south wildlife crossings, and the substation would not be *expected to interfere with north-south wildlife movement. Impacts associated with the new towers installed for Red Bluff Substation A would also be similar to those described under GT-A-1.*

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 as discussed in Section 4.3, Vegetation, *and Mitigation Measures MM-WIL-2 through MM-WIL-5* would *further reduce these impacts.*

Impacts resulting from the production of polarized-light pollution would be similar to those discussed for SF-B and would be significant. Implementation of the mitigation measures discussed under SF-B would reduce impacts to less than significant levels.

Impact WIL-4– Local Policies or Ordinances Protecting Biological Resources

The Proposed Project would be consistent with the local open space policies in the County of Riverside's General Plan. Thus, there would be no construction, operation and maintenance, or decommissioning impacts under criterion WIL-4.

Impact WIL-5– Wildlife Management Areas and Critical Habitat

Construction activities would permanently impact *172* acres within *both* the Chuckwalla DWMA and CHU *(the acreage for both areas is common for the Substation and its associated elements).* The NECO plan allows for development in one percent of the BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of *172* acres in the DWMA under Red Bluff Substation A would represent a small percentage (0.03%) of the allowable development within the DWMA. Nevertheless, impacts on these Wildlife Management Areas would be significant given the sensitivity of these areas for the desert tortoise and for wildlife movement. However, implementation of a *Habitat Compensation Plan* required in Applicant Measure *AM-*BIO-1 discussed in Section 4.3, Vegetation, *and Mitigation Measure MM-BIO-2* would reduce this impact to less than significant levels.

Other direct and indirect impacts would be similar to those discussed for SF-B and would be significant. Implementation of the applicant measures discussed under SF-B would reduce impacts to less than significant levels.

Unavoidable Adverse Effects

With implementation of *all* Applicant Measures and Mitigation Measures there would be no unavoidable *adverse effects* with Alternative 1. *Under CEQA, there would be no unavoidable significant impacts with Alternative 1. As previously discussed, implementation of the applicant and mitigation measures would reduce impacts to less than significant levels.*

4.4.4 Alternative 2 – Alternate Action

Construction, operation and maintenance, and decommissioning impacts on wildlife resources for SF-B would be identical to those described under Alternative 1, and construction, operation and maintenance, and decommissioning impacts on wildlife resources for GT-B-2 and Red Bluff Substation B would be similar to those described under Alternative 1, *except that the proposed location of the substation would restrict wildlife movement as addressed below.*

The main difference in impacts associated with the Gen-Tie Lines and Substations between Alternative 1 and Alternative 2 occur with slight differences in the amount of habitat disturbance as summarized in Tables 4.3-1 and 4.3-2, slight differences in the special status species that have been observed in these areas as summarized in Tables 4.4-2 and 4.4-6, *and a different arrangement of the Gen-Tie Line alignment.* However, all of the same special status species have the potential to occur in the Gen-Tie Lines and Substations for both alternatives, with the exception of the rosy boa and chuckwalla which are not expected to occur in the Alternative 2 site. As discussed in Section 3.4, the most active desert tortoise sign was observed within the footprint of Alternative 2 as compared with Alternative 1 and Alternative 3. Therefore, Alternative 2 would have the greatest potential for impacts to this species.

Under Alternative 2, impacts to desert tortoises at Solar Farm Layout B would be the same as described above for Alternative 1. Impacts to desert tortoises along Gen-Tie Line B-2 would be similar to those described for Gen-Tie Line A-1. As described above, actual numbers of desert tortoises expected to be affected by transmission line construction cannot be estimated due to the mobile nature of the animals and the small, spaced locations of the transmission line towers.

Impacts to desert tortoises at Red Bluff Substation B would be substantially greater than described above for Substation location A. Eight living tortoises were seen during field surveys at Red Bluff Substation B, though some of these may have been double-counted (Appendix H). Based on USFWS equations a total population of 26 to 32 tortoises should be expected at the site, comprising approximately 16 adult tortoises and 10-16 juveniles. About 75 eggs should be expected at the substation site between the months of April and August. As described above for Alternative 1, these estimates are extrapolated from limited data and are not intended to represent the actual numbers of tortoises or eggs on the site. In the case of Red Bluff Substation B, these estimates are unrealistically high given the number of acres of the survey area. Nevertheless, the Red Bluff Substation B site appears to have unusually high desert tortoise density and construction at the site could affect more animals than the entire Solar Farm A layout would affect.

In contrast to Alternative 1, potential direct and indirect impacts of Alternative 2, on wildlife movement would be potentially significant, due to the location of Red Bluff Substation B. Red Bluff Substation B is proposed to be located within a narrow area on the bajada below the Chuckwalla Mountains and the I-10 Freeway, and would essentially block movement across the area for those species which tend to avoid steeper terrain, including desert tortoise. In addition, Red Bluff Substation B would be located directly south of the I-10 Eagle Mountain Road undercrossing, and would be likely to discourage animals from using this north-south wildlife crossing. To mitigate this impact on movement, Mitigation Measure BIO-9 is recommended to revise the substation location and orientation and maximize movement corridors.

Impacts associated with the new towers installed for Red Bluff Substation A would also be similar to those described under GT-A-1.

In addition, the acreages of disturbance to Chuckwalla DWMA and Chuckwalla CHU are lower than those acreages affected by Alternative 1, as discussed in Tables 4.4-6 and 4.4-7.

Table 4.4-6
Summary of Construction Impacts on Special Status Wildlife Species under Alternative 2

Species	Solar Farm B	Gen-Tie Line B-2	Red Bluff Substation B
Reptiles			
Desert tortoise	C (*13/4*)	C	C (6/8)
Rosy boa	U	U	U
Chuckwalla	U	U	U
Birds			
Burrowing owl	C (*1*)	P	C
Northern harrier	C	P	P
Loggerhead shrike	C (9)	C	C (2)
LeConte's thrasher	C (2)	P	P
Short-eared or long-eared owl	P	P	P
Golden eagle	P	P	P
Mammals			
Palm Springs round-tailed ground squirrel	P	C	P
Pallid bat	P	P	P
Western mastiff bat	P	P	P
Pocketed free-tailed bat	P	P	P
Townsend's big-eared bat	P	P	P
California leaf-nosed bat	P	P	P
Mountain lion	P	P	P
Colorado Valley woodrat	P	P	P
Nelson's bighorn sheep	P	P	P
Burro deer	P	P	P
American badger	P	P	P

Note: Numbers of individuals observed *within the Project's disturbance footprint are* shown in parentheses, except for the desert tortoise where the number of active burrows is shown first followed by the number of live tortoises observed.
Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed

Table 4.4-7
Summary of Construction Impacts on Wildlife Management Area s under Alternative 2

Species	Solar Farm B	Gen-Tie Line B-2	Red Bluff Substation B
Chuckwalla DWMA			
Permanent disturbance acreage	0	*48*	*4*
Chuckwalla CHU			
Permanent disturbance acreage	0	*26*	*106*
Total *Acres in Wildlife Management Areas*	**0**	***54***	***110***

**Note: The total within wildlife management areas is not the sum of the DWMA and CHU due to places where these areas overlap. Some areas of the Proposed Project are in areas that are DWMA only, some are CHU only, and some are both.*

Applicant Measures and Mitigation Measures

The applicant measures and mitigation measures would be the same as those described under Alternative 1.

CEQA Significance Determination

Most of the CEQA significance determinations for Alternative 2 would be the same as those discussed under Alternative 1. *However, in contrast to Alternative 1, potential direct and indirect impacts of Alternative 2 on wildlife movement would be significant, but mitigated to less than significant with implementation of MM-BIO-9.*

Unavoidable Adverse Effects

With implementation of all Applicant Measures and Mitigation Measures there would be no unavoidable adverse effects with Alternative 2. Under CEQA, there would be no unavoidable significant impacts with Alternative 2. As previously discussed, implementation of the applicant and mitigation measures would reduce impacts to less than significant levels.

4.4.5 Alternative 3 – Reduced Footprint Alternative

Construction, operation and maintenance, and decommissioning impacts on wildlife resources under Alternative 3 would be similar to those described under Alternative 1.

The main difference in impacts between Alternative 1 and Alternative 3 is the fact that SF-C is smaller than SF-B and was designed to avoid the greatest concentration of active desert tortoise sign observed during surveys completed for the Proposed Project. As discussed in Section 3.4, the least *amount of* active desert tortoise sign was observed within the footprint of Alternative 3 as compared with Alternative 1 and Alternative 2. As a result, less wildlife habitat would be disturbed under Alternative 3 as summarized in Tables 4.3-1 and 4.3-2. Another difference occurs with slight differences in the special status species that have been observed in Alternative 1 versus Alternative 3 as summarized in Tables 4.4-2 and 4.4-8. However, all of the same special status species have the potential to occur in areas for both alternatives. *Lastly, impacts to wildlife movement would be slightly reduced as a smaller amount of habitat would be permanently removed. Thus, a greater amount of habitat would be preserved for intermountain and localized, valley floor wildlife movements.*

In addition, the acreages of disturbance to Chuckwalla DWMA and Chuckwalla CHU are lower than those acreages affected by Alternative 1 (but higher than those acreages under Alternative 2), as discussed in Tables 4.4-8 and 4.4-9.

Under Alternative 3, fewer desert tortoises would be affected at Solar Farm Layout C. Impacts to desert tortoises along Gen-Tie Line A-2 would be similar to those described for Gen-Tie Line A-1. Impacts to desert tortoises at Red Bluff Substation A would be as described above for Alternative 1. Two living desert tortoises were located above-ground during field surveys of Solar Farm Layout C (Appendix H). Based on the observed tortoises, and presuming that both were adults or subadults, the USFWS's equation would predict that four adult or subadult tortoises should be expected on the site and the site would be expected to support a total of about six to eight tortoises, including four adults and two to four juveniles. About 19 tortoise eggs would be expected on the site during months when eggs are present (approximately April through August) in a typical year. As above, note that these estimates are extrapolated from field survey data and are not intended to represent the actual numbers of tortoises or eggs on the site.

Table 4.4-8
Summary of Construction Impacts on Special Status Wildlife Species under Alternative 3

Species	Solar Farm C	Gen-Tie Line A-2	Red Bluff Substation A
Reptiles			
Desert tortoise	C (7/2)	C (1/0)	C (1/0)
Rosy boa	U	U	P
Chuckwalla	U	U	C
Birds			
Burrowing owl	C (*1*)	P	C
Northern harrier	C	P	C
Loggerhead shrike	C (5)	C	C
LeConte's thrasher	C (2)	P	P
Short-eared or long-eared owl	P	P	P
Golden eagle	P	P	P
Mammals			
Palm Springs round-tailed ground squirrel	P	P	P
Pallid bat	P	P	P
Western mastiff bat	P	P	P
Pocketed free-tailed bat	P	P	P
Townsend's big-eared bat	P	P	P
California leaf-nosed bat	P	P	P
Mountain lion	P	P	P
Colorado Valley woodrat	P	P	P
Nelson's bighorn sheep	P	P	P
Burro deer	P	P	P
American badger	P	P	P

Note: Numbers of individuals observed shown in parentheses, except for the desert tortoise where the number of active burrows is shown first followed by the number of live tortoises observed.
Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed

Table 4.4-9
Summary of Construction Impacts on Wildlife Management Area s under Alternative 3

Species	Solar Farm C	Gen-Tie Line A-2	Red Bluff Substation A
Chuckwalla DWMA			
Permanent disturbance acreage	0	*11*	*172*
Chuckwalla CHU			
Permanent disturbance acreage	0	*14*	*172*
Total *Acres in Wildlife Management Areas*	**0**	***19***	***172***

**Note: The total within wildlife management areas is not the sum of the DWMA and CHU due to places where these areas overlap. Some areas of the Proposed Project are in areas that are DWMA only, some are CHU only, and some are both.*

Applicant Measures and Mitigation Measures

The applicant measures and mitigation measures would be the same as those described under Alternative 1.

CEQA Significance Determination

The CEQA significance determinations for Alternative 3 would be the same as those discussed under Alternative 1.

Unavoidable Adverse Effects

With implementation of all Applicant Measures and Mitigation Measures there would be no unavoidable adverse effects with Alternative 3. Under CEQA, there would be no unavoidable significant impacts with Alternative 3. As previously discussed, implementation of the applicant and mitigation measures would reduce impacts to less than significant levels.

4.4.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action

Under this alternative, the Proposed Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, none of the impacts on biological resources from construction or operation of the Proposed Project would occur. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on this or in other locations.

4.4.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (*No Project with Plan Amendment*)

Under this alternative, the Proposed Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, the biological resources of the site are not expected to change noticeably from existing conditions and, as such, this No *Project* Alternative would have no adverse impact to biological resources at the site in the long term. However, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on this or in other locations.

4.4.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development *(No Project with Plan Amendment)*

Under this alternative, the proposed Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, biological impacts would result from the construction and operation of the solar technology and resulting ground disturbance and would likely be similar to the biological impacts from the Proposed Project. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No *Project* Alternative could result in biological impacts similar to the impacts under the Proposed Project.

4.4.9 Cumulative Impacts

Geographic Scope

This cumulative impact analysis *evaluates the incremental effects of the analyzed alternatives when added to other past, present, and* reasonably foreseeable future projects that *affect wildlife. This analysis of cumulative impacts to wildlife accounts for other projects affecting* animal communities within the context or geographic scope of the NECO Plan. The NECO planning area was selected as the geographical scope of the cumulative impacts analysis on wildlife because it encompasses the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species.

Regional Overview

This overview of regional impacts is followed by a more detailed discussion of the effects of past, present, and future projects to biological resources of the Project vicinity, with an emphasis on resources found within the Chuckwalla Valley of eastern Riverside County.

The California Desert remained a *sparsely populated* area for the first few decades of the 20^{th} century. Disturbance was more or less restricted to highways, railroad, and utility corridors, scattered mining, and sheep grazing. In the 1940s, several large military reservations were created for military training, testing, and staging areas. The deserts of eastern Riverside County comprise 40% of the County’s land area but less than 1% of its population. Outside of the small urban-agricultural center of Blythe, near the Colorado River and Arizona border, there are only a few scattered, small residential and agricultural areas between Indio (to the west) and Blythe; most of the lands are administered by the BLM.

In the areas identified for renewable energy development in eastern Riverside County, some of the many sensitive biological resources at risk include: desert tortoise, golden eagle, western burrowing owl, and a wide variety of special-status wildlife. Approximately 205 and 209 acres of the Project overlaps the northern boundary of the Chuckwalla Desert Tortoise CHU and Chuckwalla DWMA, respectively.

An increase in predators such as ravens has also contributed to habitat degradation, population declines, and range contractions for many special status wildlife species (Boarman 2002a). Combined with the effects of historical grazing and military training, and fragmentation of habitat and interruption of wildlife movement from highway and aqueduct construction, the proposed wind and solar energy projects have the potential to further reduce and degrade native plant and animal populations. In the context of this large-scale habitat loss, the Desert Solar Project would contribute, at least incrementally, to the cumulative loss and degradation of habitat for wildlife, including desert tortoise and resident and migratory birds, in the Chuckwalla Valley and NECO planning area.

Existing Cumulative Conditions

Details of the biological resources within the cumulative study area are summarized here and provided more fully in Section 3.4, Wildlife. The NECO planning area is located mostly within the Sonoran Desert, which is composed of a diverse range of vegetation communities typical of those found in the Sonoran Desert. These habitat types include desert scrub, desert wash, and sand dunes. The cumulative impacts area also includes several dry lake beds, numerous drainages, and areas relatively devoid of native vegetation including developed areas, paved roads, highways, access roads, and other disturbed areas. Invasive and noxious weed species have been identified throughout the cumulative impacts area.

The area supports habitat for, and populations of, numerous special status wildlife species, as described in Section 3.4, Wildlife. These include species under federal and/or state protection, including desert tortoise, golden eagle, burrowing owl, and other sensitive species in California.

Past, Present, and Reasonably Foreseeable Future Projects

Land use in the cumulative analysis area has been historically altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative impacts area characterize overall development trends in the Chuckwalla Valley. Ongoing development in the area is dominated by renewable energy development. Major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system.

Other projects in the cumulative study area include several transmission lines (including the Devers-Palo Verde 2 Transmission Line and Desert Southwest Transmission Line) and non-renewable energy developments (including the Colorado River Substation Expansion), as well as residential and commercial development (including the Chuckwalla Valley Raceway). Detailed lists of cumulative projects are found in Tables 3.18-2 and 3.18-3.

In addition to one-time construction impacts, the projects would have ongoing operational impacts on biological resources. Therefore, all projects that might contribute impacts over time in the cumulative area are considered for this analysis. This would include non-renewable energy, transmission lines, wind power, and solar power projects.

Cumulative Impact Analysis

There would be no cumulative wildlife impacts under the No Action/No Project Alternatives (Alternatives 4 or 5) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. The No Project Alternative 6 could contribute to cumulative vegetation impacts because the CDCA Plan would be amended to allow solar development of the site. However, any future proposals for use of the site would be subject to separate environmental analysis.

The remainder of this section addresses Alternatives 1, 2 and 3. In summary, impacts to Wildlife Habitat and Wildlife Movement, Nursery Sites, Special Status Wildlife Species and Wildlife Management Areas, and Critical Habitat from the Project would not be cumulatively considerable. Lastly, there would be no impacts to local policies and ordinances protecting biological resources resulting from the Project.

Impact WIL-1 – Direct and Indirect Impacts to Wildlife Habitat

The development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. As discussed in detail in Section 4.3, Vegetation, existing and foreseeable future projects in the NECO planning area would result in the total projected loss of 6.2 percent of the Sonoran creosote bush scrub and 7.5 percent of the desert dry wash woodland habitat in the NECO planning area. This would not only constitute a significant cumulative impact on these vegetation communities, but also on wildlife habitat through direct habitat loss and habitat fragmentation. As shown in Table 4.3-18, implementation of Alternatives 1, 2, *or* 3 would contribute between 1.4 and 1.*8* percent to this cumulative impact on Sonoran creosote bush scrub and between 0.20 to 0.21 percent to the cumulative impact on desert dry wash woodland. Due to the sensitivity of these vegetation communities as wildlife habitat, Alternatives 1, 2, *or* 3 would have a *cumulatively* considerable contribution to cumulative impacts on wildlife habitat.

Implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* would ensure that the loss of both of these vegetation communities is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of these measures, the Project's contribution to the cumulative loss of wildlife habitat and resultant fragmentation would be reduced to a level that is less than *cumulatively* considerable. This impact would be less than significant under CEQA.

Impact WIL-2– Direct and Indirect Impacts to Special Status Wildlife Species

Similar to the cumulative impacts discussion on wildlife habitat above, the Project's contribution to cumulative impacts on habitat for special status wildlife species would be *cumulatively* considerable. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* would ensure that the loss of creosote bush scrub and desert dry wash woodland is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of this measure, the Project's contribution *to the cumulative loss of special-status wildlife habitat and the resultant fragmentation would be reduced to a level that is less than cumulatively considerable. This impact would be less than significant under CEQA.*

The Project would result in harm or harassment of the special status species in the Project locations, thereby contributing to cumulative direct and indirect impacts to special-status species. In addition to the project's potential impacts to special status wildlife, above (Section 4.4.4), potential cumulative impact of disease to desert tortoises is a significant concern, especially at the cumulative level given the magnitude of impacts and number of desert tortoises expected to be affected by the renewable energy development program in the desert southwest. With implementation of Applicant Measures requiring relocation of individuals found in the Project locations or protection in place until they vacate the Project locations (such as nesting birds), the Project's incremental direct and indirect effects to special status wildlife would be reduced to a level that is less than cumulatively considerable. This impact would be less than significant under CEQA.

Impact WIL-3– Direct and Indirect Impacts to Wildlife Movement or Nursery Sites

As discussed above in the cumulative impacts discussion on wildlife habitat, the Project would have a *cumulatively* considerable contribution to the cumulative loss of wildlife habitat in the NECO planning area. Therefore, the Project would have a *cumulatively* considerable contribution to the cumulative loss of breeding habitat for wildlife in the NECO planning area as well. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM*-BIO-1 *and Mitigation Measure MM-BIO-2* would ensure that the loss of creosote bush scrub and desert dry wash woodland, which provide breeding habitat, is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of this measure, the Project's contribution to cumulative impacts on wildlife *nursery sites* would be *less than cumulatively considerable*.

In addition to the intermountain habitats, desert dry wash woodlands are likely important areas for wildlife movement within Project locations and would be directly impacted by construction. Exclusion fencing surrounding the Solar Farm and Red Bluff Substation would also directly impact the movement of wildlife in the region. Finally, impacts of the Project on the Chuckwalla DWMA and Chuckwalla CHU could adversely impact important movement corridors for the desert tortoise and other wildlife species in these areas. *In consideration of the existing and future development within DWMAs, CHUs, desert washes, and other regionally important movement corridors, the Project Alternatives 1, 2, and 3 would contribute to cumulative impacts on wildlife movement in these areas.* However, *due to locations of project facilities under Alternatives 1 and 3, and with the implementation of Mitigation Measure MM-BIO-9 for Alternative 2, the Project would not have a cumulatively considerable contribution to this impact. This impact would be less than significant under CEQA.*

Impact WIL-4– Local Policies or Ordinances Protecting Biological Resources

Because the Proposed Project would be consistent with the local open space policies of the County of Riverside's General Plan, there would be no project-specific *impacts or a contribution to cumulative impacts. No impact would occur under CEQA.*

Impact WIL-5– Wildlife Management Areas and Critical Habitat

As discussed above, the development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. This would result in significant cumulative impacts on wildlife management areas due to habitat loss from ground disturbance as described above. Implementation of Alternatives 1, 2, and 3 would permanently disturb 190, 56, and 162 acres of the Chuckwalla

DWMA and permanently disturb 187, 139, and 166 acres of the Chuckwalla CHU, respectively (see Table 4.4-3). The NECO plan allows for development in one percent of the BLM-administered land within the DWMA, which is approximately 465,287 acres. Therefore, the permanent development of 190, 56, or 162 acres (under Alternatives 1, 2, and 3, respectively), would represent a small percentage of the allowable development within the DWMA (0.04%, 0.01%, and 0.03%). *However, in consideration of the existing and future development within DWMAs and CHUs, the Project would contribute to the cumulative loss (development) within these wildlife management areas.* Nevertheless, the Project would have a *cumulatively* considerable contribution to cumulative impacts on the Chuckwalla DWMA as well as the Chuckwalla CHU given the sensitivity of these areas for the desert tortoise and wildlife movement. However, implementation of the *Habitat Compensation Plan* included in Appendix H of this document and required in Applicant Measure *AM-*BIO-1 *and Mitigation Measure MM-BIO-2* would ensure that the loss of habitat in these areas is adequately compensated for and equivalent habitat would be protected offsite. Therefore, with implementation of this measure, the Project's *incremental direct and indirect effects to the Chuckwalla DWMA as well as the Chuckwalla CHU would be reduced to a level that is less than cumulatively considerable. This impact would be less than significant under CEQA.*

4.5 CLIMATE CHANGE

4.5.1 Methodology for Analysis

The methodology to assess impacts to climate change under NEPA continues to evolve as consensus forms as to how best to evaluate such effects at proposed action-specific and cumulative levels. The CEQ published draft guidance on February 18, 2010, for federal agencies to improve their consideration of the effects of greenhouse gas emissions and climate change in their evaluation of proposals for federal actions under NEPA. For example, the CEQ proposes that agencies should consider the direct and indirect greenhouse gas emissions from the action and to quantify and disclose those emissions in the environmental document (40 CFR 1508.25). The CEQ further proposes that agencies should consider mitigation measures to reduce proposed action-related greenhouse gas emissions from all phases and elements of the proposed action and alternatives over its/their expected life, subject to reasonable limits based on feasibility and practicality.

Climate change issues addressed for the various alternatives were further identified by review of comments received during the EIS scoping process and by independent evaluation of Project-related impacts. The identified issues include:

- Greenhouse gas emissions from on-site construction activity and construction-related vehicle traffic;
- Greenhouse gas emissions from facility operations and operational vehicle traffic;
- Sulfur hexafluoride emissions (a greenhouse gas) from circuit breakers at Project-related substations;
- Avoided greenhouse gas emissions associated with displaced fossil fuel power generation (this analysis is not relevant to the CEQA conclusions below); and
- Altered carbon storage capacity of desert soils.

Evaluation of these issues was performed through quantitative analysis of expected emissions and qualitative analyses for issues that did not lend themselves to quantitative evaluation. Quantitative analyses were prepared to address construction-related greenhouse gas emissions, greenhouse gas emissions (including sulfur hexafluoride) from facility operations, and avoided greenhouse gas emissions associated with displaced fossil fuel power generation. The construction activity and vehicle traffic emissions modeling procedures discussed previously in Section 4.2 (Air Resources) were used to estimate greenhouse gas emissions from those sources. Additional spreadsheet analyses were performed to estimate greenhouse gas emissions associated with facility operations and avoided greenhouse gas emissions associated with displaced fossil fuel power generation. The issue of carbon storage capacity of desert soils was addressed as a background topic in Chapter 3, Section 3.5.

Additionally, agencies under the U.S. Department of the Interior are required to consider potential impact areas associated with climate change, including potential changes in flood risk, water supply, sea level rise, wildlife habitat and migratory patterns, invasion of exotic species, and potential increases in wildfires. These categories of potential impact are discussed below, as relevant to the Project.

Table 4.5-1 compares major features of the action alternatives with an emphasis on features relevant to construction activities.

Table 4.5-1
Comparison of Action Alternative Features Relevant to Climate Change

Project Component	Parameter	Alternative 1	Alternative 2	Alternative 3
Solar Farm	Generating Capacity	550 MW	550 MW	413 MW
	Annual Power Production	1,200,000,000 kW-Hrs	1,200,000,000 kW-Hrs	901,090,909 kW-Hrs
	Site Acres	3,912 acres	3,912 acres	3,045 acres
	Direct Ground Coverage by Solar Panels	1,665 acres	1,665 acres	1,037 acres
	Total Surface Coverage by Project Features	1,675 acres	1,675 acres	1,074 acres
	Open Portion of Developed Site	2,237 acres	2,237 Acres	1,972 acres
	De-compaction Area Between Solar Arrays	0 acres	0 acres	0 acres
Gen-Tie Transmission Line	Corridor Length	12.2 miles	9.5 miles	10 miles
	Corridor Acres	233 acres	185 acres	189 acres
	Number of Transmission Towers	73	55	58
	Construction Disturbance Area	92 acres	68 acres	86 acres
	Permanent Feature Area	92 acres	68 acres	86 acres
Red Bluff Substation	Substation Site Acres	76 acres	65 acres	76 acres
	Adjacent Drainage Facility Areas	14 acres	20 acres	14 acres
	Additional Staging Area	9 acres	10 acres	9 acres
	Telecommunications Site Area	0.22 acres	0.22 acres	0.22 acres
	Transmission Line Acres	33 acres	22 acres	33 acres
	Distribution Line Acres	8.5 acres	0.15 acres	8.5 acres
	Access Road Length	24,000 feet	2,000 feet	24,000 feet
	Total Construction Disturbance Area	172 acres	130 acres	172 acres
	Permanent Feature Area	172 acres	130 acres	172 acres

4.5.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on climate change if it would:

CC-1. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

CC-2. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

While no federal or state agencies have adopted quantitative greenhouse gas emissions significance criteria, the South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD), and San Luis Obispo County Air Pollution Control District have adopted quantitative greenhouse gas emissions significance criteria. The SCAQMD has adopted an interim greenhouse gas emissions significance threshold for industrial projects but has deferred action on adopting greenhouse gas emissions significance thresholds for residential, commercial, or other non-industrial projects. The SCAQMD criteria only apply to industrial projects when the AQMD is the lead agency under CEQA. The SCAQMD greenhouse gas emissions threshold adopted is 11,023 tons per year (10,000 metric tons per year) carbon dioxide equivalent (CO_2e), considering combined construction and operational emissions with total construction emissions averaged over 30 years. The SCAQMD is not the lead agency under CEQA for the Project, and thus the SCAQMD greenhouse gas emission threshold does not apply in a technical sense. Nevertheless, the SCAQMD greenhouse gas threshold *has substantial evidence to support it, and it* provides a point of comparison for Project-related greenhouse gas emission estimates *and a threshold by which to determine CEQA significance*.

4.5.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously in Section 4.2.3. Tables 4.5-2, 4.5-3, and 4.5-4 summarize annual greenhouse gas emissions from on-site construction activity at the solar farm site for 2011, 2012, and 2013, respectively.

Table 4.5-2
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Solar Farm Layout B

	Annual Emissions for 2011, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Tortoise Exclusion Fencing	44.4	0.001	0.001	44.7
Access Roads and Staging Areas	357.4	0.016	0.012	**361.2**
Construction Offices and Water/Sanitation Facilities	74.2	0.002	0.001	**74.6**
Security Fencing and Debris Basins	89.8	0.003	0.002	**90.6**
Site Clearing	401.4	0.013	0.009	**404.5**
Site Grading	1,855.2	0.070	0.050	**1,871.8**
Array Support Posts	393.9	0.010	0.007	**396.4**
Trenching and Underground Cables	264.7	0.008	0.006	**266.8**
Soil Compacting and Dust Palliative	786.6	0.017	0.012	**790.7**
On-Site Power Poles	20.2	0.000	0.000	**20.3**
Switchgear Facilities	99.9	0.003	0.002	**100.6**
On-Site Substation	77.1	0.003	0.003	**78.0**
Solar Array Assemblies	661.4	0.027	0.020	**668.0**
On-Site Overhead Power Lines	99.6	0.003	0.002	**100.2**
2011 Totals	**5,225.8**	**0.18**	**0.13**	**5,268.4**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-3
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Solar Farm Layout B

Construction Phase	Annual Emissions for 2012, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Access Roads and Staging Areas	115.0	0.005	0.004	**116.2**
Site Clearing	442.4	0.014	0.010	**445.6**
Site Grading	2,085.5	0.078	0.056	**2,104.1**
Array Support Posts	601.8	0.016	0.012	**605.7**
Trenching and Underground Cables	356.9	0.011	0.008	**359.5**
Soil Compacting and Dust Palliative	1,232.5	0.027	0.020	**1,239.0**
On-Site Power Poles	28.7	0.001	0.001	**28.8**
Switchgear Facilities	154.4	0.004	0.003	**155.4**
Solar Array Assemblies	1,027.5	0.041	0.031	**1,037.7**
On-Site Overhead Power Lines	156.4	0.004	0.003	**157.4**
Permanent Buildings	33.8	0.001	0.001	**34.1**
Functional Testing	160.7	0.003	0.002	**161.4**
2012 Totals	**6,395.4**	**0.21**	**0.15**	**6,444.9**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-4
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2013, Solar Farm Layout B

Construction Phase	Annual Emissions for 2013, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Functional Testing	15.3	0.000	0.000	**15.4**
De-Compaction and Dust Palliative	68.1	0.002	0.002	**68.6**
Site Cleanup	13.6	0.001	0.000	**13.7**
2013 Totals	**97.0**	**0.00**	**0.00**	**97.7**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Greenhouse gas emissions from traffic related to solar farm construction have been evaluated using a combination of the URBEMIS2007 model to estimate vehicle carbon dioxide emissions and supplemental spreadsheet analyses to estimate methane and nitrous oxide emissions associated with vehicle traffic. Methane and nitrous oxide emissions for light vehicles and heavy trucks were derived from California Climate Action Registry (2007). Vehicle trips associated with construction of Solar Farm Layout B were presented previously in the Air Resources section (see Table 4.2-12).

Table 4.5-5 summarizes annual greenhouse gas emissions from construction-related traffic for Solar Farm Layout B.

Table 4.5-5
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Solar Farm Layout B

Traffic Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
2011 Emissions				
Construction Trucks	2,755	0.100	0.083	**2,782**
Shuttle Buses	543	0.064	0.053	**561**
Personal Vehicle Commute	639	0.071	0.071	**662**
To/From Shuttle Assembly Areas	1,088	0.122	0.122	**1,127**
2011 Total	**5,025**	**0.356**	**0.329**	**5,132**
2012 Emissions				
Construction Trucks	3,892	0.141	0.117	**3,931**
Shuttle Buses	558	0.066	0.055	**576**
Personal Vehicle Commute	774	0.086	0.086	**802**
To/From Shuttle Assembly Areas	1,233	0.138	0.138	**1,277**
2012 Total	**6,457**	**0.430**	**0.396**	**6,586**
2013 Emissions				
Construction Trucks	9	0.000	0.000	**9**
Shuttle Buses	14	0.002	0.001	**14**
Personal Vehicle Commute	19	0.002	0.002	**20**
To/From Shuttle Assembly Areas	28	0.003	0.003	**29**
2013 Total	**70**	**0.007**	**0.007**	**72**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Gen-Tie Line A-1

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-6 and 4.5-7 summarize annual greenhouse gas emissions from construction activity for 2011 and 2012, respectively.

Table 4.5-6
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Gen-Tie Line A-1

Construction Phase	Annual Emissions for 2011, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Site Preparation	30.5	0.001	0.001	**30.8**
Tower Foundations	67.2	0.003	0.002	**67.9**
Tower Assembly and Erection	72.7	0.002	0.002	**73.2**
Power Line Stringing	119.0	0.008	0.006	**120.9**
Testing	8.8	0.001	0.001	**9.0**
2011 Totals	**298.3**	**0.01**	**0.01**	**301.9**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-7
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Gen-Tie Line A-1

Construction Phase	Annual Emissions for 2012, Tons per Year			
	CO_2	CH_4	N_2O	GWP, CO_2e
Site Cleanup	2.1	0.000	0.000	**2.1**
2012 Totals	**2.1**	**0.00**	**0.00**	**2.1**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction Transmission Line A-1 were presented previously in Table 4.2-19. Greenhouse gas emissions from construction-related traffic have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-8 summarizes annual greenhouse gas emissions from construction-related traffic for GT-A-1.

Table 4.5-8
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Gen-Tie Line A-1

Traffic Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO_2	CH_4	N_2O	GWP, CO_2e
2011 Emissions				
Construction Trucks	186	0.007	0.006	**188**
Personal Vehicle Commute	1,124	0.126	0.126	**1,164**
2011 Total	**1,310**	**0.132**	**0.131**	**1,352**
2012 Emissions				
Construction Trucks	0	0.000	0.000	**1**
Personal Vehicle Commute	12	0.001	0.001	**12**
2012 Total	**13**	**0.001**	**0.001**	**13**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Red Bluff Substation A

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-9 through 4.5-11 summarize annual greenhouse gas emissions from construction activity for 2011, 2012, and 2013, respectively.

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction Red Bluff Substation A were presented previously in Table 4.2-28. Greenhouse gas emissions from construction-related traffic have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-9
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Red Bluff Substation A

Construction Phase	Annual Emissions for 2011, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Access Road Construction	36.0	0.001	0.001	**36.3**
Site Fencing	9.1	0.001	0.000	**9.3**
Site Clearing	54.2	0.002	0.001	**54.6**
Grading and Compacting	128.2	0.004	0.003	**129.3**
2011 Totals	**227.6**	**0.01**	**0.01**	**229.5**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-10
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Red Bluff Substation A

Construction Phase	Annual Emissions for 2012, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Trenching and Foundations	24.4	0.001	0.001	**24.6**
Equipment Pads	88.7	0.007	0.005	**90.4**
Equipment Installation	122.5	0.008	0.006	**124.5**
Power Line Connections	45.4	0.002	0.002	**46.2**
Testing	7.0	0.001	0.001	**7.2**
2012 Totals	**288.0**	**0.02**	**0.01**	**292.8**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-11
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2013, Red Bluff Substation A

Construction Phase	Annual Emissions for 2013, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Testing	6.9	0.001	0.001	**7.1**
Driveways, Other Paving, Security Wall	72.0	0.005	0.003	**73.1**
Site Cleanup	1.8	0.000	0.000	**1.8**
2013 Totals	**80.7**	**0.005**	**0.004**	**82.0**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-12 summarizes annual greenhouse gas emissions from construction-related traffic for Red Bluff Substation A.

Table 4.5-12
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Red Bluff Substation A

	Annual Greenhouse Gas Emissions, Tons per Year			
Traffic Component	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Construction Trucks	20	0.001	0.001	**20**
Personal Vehicle Commute	409	0.046	0.046	**424**
2011 Total	**429**	**0.046**	**0.046**	**444**
2012 Emissions				
Construction Trucks	756	0.027	0.023	**764**
Personal Vehicle Commute	646	0.072	0.072	**669**
2012 Total	**1,402**	**0.100**	**0.095**	**1,433**
2013 Emissions				
Construction Trucks	479	0.017	0.014	**483**
Personal Vehicle Commute	139	0.016	0.016	**144**
2013 Total	**618**	**0.033**	**0.030**	**628**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Summary of Construction Impacts

Construction activities and associated vehicle traffic under Alternative 1 would generate emissions of greenhouse gas pollutants over a period of approximately 26 months. The Applicant proposes to implement a construction worker shuttle bus system that would greatly reduce the volume of traffic and resulting greenhouse gas emissions that would otherwise be generated by construction worker commute traffic for the solar farm.

Operation and Maintenance

Solar Farm Layout B

Greenhouse Gas Emissions from Facility Operations. Solar farm operations under Alternative 1 would be limited sources of greenhouse gas emissions. The primary sources of operational greenhouse gas emissions would be operational vehicle traffic and leaks of sulfur hexafluoride from circuit breakers and other equipment at the on-site substation and PVCS units. First Solar has estimated the leak rate for the on-site substation and PVCS facilities at 14.1 pounds per year (Lamb 2010). Table 4.5-13 summarizes annual greenhouse gas emissions from operation of Solar Farm Layout B. These greenhouse gas emissions would be more than off-set by the greenhouse gas emissions that would be avoided by using solar power generation instead of generating power from fossil fuel sources (as discussed below). *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Table 4.5-13
Greenhouse Gas Emissions from Solar Farm Operations, Alternative 1

Emissions Component	Annual Greenhouse Gas Emissions, Tons per Year CO2	CH4	N2O	SF6	GWP, CO2e
Worker Commute Traffic	302.6	0.034	0.034	0	**313.5**
Truck Traffic	233.6	0.009	0.008	0	**236.1**
PVCS Units and On-Site Substation	0	0	0	0.0071	**160.74**
Total	**536.2**	**0.043**	**0.042**	**0.0071**	**710.4**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions Avoided by Displacing Fossil Fuel Power Generation. The electrical power produced by the solar farm under Alternative 1 (1.2 billion kilowatt-hours per year) would be sold to SCE and PG&E, and would effectively displace power generation from other sources. Both SCE and PG&E currently use a mix of fossil fuel, nuclear, hydroelectric, geothermal, wind, solar, and biomass power generation sources. Greenhouse gas emissions avoided by the use of solar power have been estimated using the complete 2009 power mixes for these two utilities. Table 4.5-14 summarizes the results of this analysis. Additional details concerning the analysis of avoided greenhouse gas emissions are provided in Appendix D-5. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Table 4.5-14
Avoided Greenhouse Gas Emissions For SCE and PG&E, Alternative 1

Utility	Annual Power Received From Solar Farm B, kW-Hrs per Year	Avoided Greenhouse Gas Emissions, Tons per Year CO2	CH4	N2O	GWP, CO2e
SCE	545,454,545	79,678.9	4.203	0.574	**79,955.0**
PG&E	654,545,455	74,852.1	4.422	0.575	**75,133.9**
Total	**1,200,000,000**	**154,531.0**	**8.625**	**1.148**	**155,088.9**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Avoided emissions based on 2009 power mix data for SCE and PG&E.
Source: Tetra Tech analyses

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed in the Climate section of Chapter 3 (Section 3.5), desert ecosystems do not have a large capacity to store greenhouse gases. The few literature references claiming otherwise are not based on actual measurements of carbon storage in desert ecosystems *(see Adams et al., 1998)*. Instead, they are based on complex and error-prone mathematical computations using measurements of atmospheric carbon dioxide concentrations and various meteorological parameters. The results from some of those studies are not credible, since they indicate a carbon uptake rate that would require a doubling of desert vegetation biomass every three years. Such rapid increases in vegetation biomass were not observed at the study sites, are not typical of desert ecosystems, and could not be sustained over long periods of time. Alternative suggestions have been made that high carbon storage rates occur through accumulation of mineralized carbon (such as calcium carbonate), but no mechanism for such rapid mineralized carbon accumulation has been identified. The implied carbonate accumulation rates would quickly cement desert soils, with resulting effects on vegetation. Without corroboration by actual measurements of carbon uptake in desert ecosystems, the reports of high carbon storage potential for desert ecosystems cannot be considered credible. Since desert ecosystems have limited carbon storage potential to begin with, operation of Solar Farm B would have little impact on potential ecosystem carbon storage.

Gen-Tie Line A-1

Greenhouse Gas Emissions from Facility Operations. There are few sources of greenhouse gas emissions associated with transmission line operation. Vehicles used for periodic line inspection and necessary maintenance activities would be an intermittent and very small source of greenhouse gas emissions. Assuming two line inspections and one maintenance event per year, operational greenhouse gas emissions would be about 744 pounds (0.46 tons) per year carbon dioxide equivalent. The ozone that can be generated by corona discharge effects along high voltage transmission lines is also a greenhouse gas, but ozone in the lower atmosphere is so chemically reactive that it has a very short atmospheric lifetime and thus has little impact on climate change.

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed above for Solar Farm B, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Gen-Tie Line A-1 would have little impact on potential ecosystem carbon storage.

Red Bluff Substation A

Greenhouse Gas Emissions from Facility Operations. There are few sources of greenhouse gas emissions associated with substation operation. The primary source of operational greenhouse gas emissions would be leaks of sulfur hexafluoride from circuit breakers and other equipment at the substation. Sulfur hexafluoride gas is used as an insulating gas in circuit breakers, switchgear, and similar devices. SCE estimates that equipment at the Red Bluff Substation would contain about 9,000 pounds of sulfur hexafluoride, with an annual leak rate of 0.5 percent, or 45 pounds per year (Lamb 2010). Vehicles used for periodic facility inspection and necessary maintenance activities would be an intermittent and very small source of additional greenhouse gas emissions. The ozone that can be generated by corona discharge effects at high voltage equipment is also a greenhouse gas, but ozone in the lower atmosphere is so chemically reactive that it has a very short atmospheric lifetime and thus has little impact on climate change. The annual greenhouse gas emissions from substation operation are summarized in Table 4.5-15.

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed above for Solar Farm B, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Red Bluff Substation A would have little impact on potential ecosystem carbon storage.

Summary of Operation and Maintenance Impacts

Operation and maintenance activities for the solar farm, Gen-Tie Line, and Red Bluff Substation would be small sources of ongoing greenhouse gas emissions. Only the solar farm facility would have on-site employees. The Gen-Tie Line and Red Bluff Substation would require only infrequent

Table 4.5-15
Greenhouse Gas Emissions from Red Bluff Substation Operations, Alternative 1

Emissions Component	Annual Greenhouse Gas Emissions, Tons per Year				
	CO2	CH4	N2O	SF6	GWP, CO2e
Twice Annual Inspection Traffic	0.17	0.000	0.000	0	**0.17**
Once Annual Maintenance Traffic	0.28	0.000	0.000	0	**0.28**
On-Site Substation Equipment	0	0	0	0.0225	**513.0**
Total	**0.45**	**0.000**	**0.000**	**0.0225**	**513.5**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

inspection and maintenance activities. Electrical equipment at the solar farm site and at the Red Bluff Substation would be a source of sulfur hexafluoride leaks. The *total* annual greenhouse gas emissions generated by operation and maintenance activities *associated with the solar farm, Gen-Tie Line, and Red Bluff Substation, discussed in detail below, would be 1,224 tons per year CO_2e. This would be well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year (10,000 metric tons per year) CO_2e. This would be* more than off-set by the avoided greenhouse gas emissions that result from solar-based electrical power generation that effectively displaces other sources of power generation. Project facilities would have little impact on potential ecosystem carbon storage. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Decommissioning

Solar Farm Layout B

Decommissioning of the solar farm would require disassembly of mechanical equipment components, demolition of on-site buildings, and removal of perimeter fencing. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment greenhouse gas emissions from decommissioning activities.

Gen-Tie Line A-1

Decommissioning of GT-A-1 would require removal of the transmission cables, removal of the transmission towers and footings, filling of tower footing excavations, and perhaps a limited amount of revegetation along the transmission line corridor. Most of the material removed during decommissioning would likely be recycled. Equipment used for decommissioning would generally be similar to that used for construction. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment greenhouse gas emissions from decommissioning activities.

Red Bluff Substation A

Decommissioning of the Red Bluff Substation would require disassembly of mechanical equipment components, demolition of equipment pads and paving, and removal of the perimeter wall. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Because decommissioning would occur at least 30 years in the future, it is likely that equipment engine technology and fuels would be different from current technology and fuels. Consequently, it is not possible to provide reliable estimates of equipment greenhouse gas emissions from decommissioning activities.

Summary of Decommissioning Impacts

Greenhouse gas emissions from facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine greenhouse gas emissions might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Additional Direct and Indirect Impacts of Climate Change

In addition to simple warming, climate change is expected to result in a suite of additional potential changes that could affect the natural environment in a manner that is relevant to the Project. The potential for climate change effects on the Proposed Action is discussed below.

Hydrologic Resources

In California and much of the western US, climate change is expected to result in several potential effects related to water resources. These changes include potential sea level rise, potential changes in the frequency of flooding and droughts, and potential reductions in surface water supply.

Sea Level Rise

Sea level rise is expected to occur as a result of increased global temperatures. Increased global temperatures include increases in ocean temperature as well as air temperature. As water temperature increases, the water contained in the world's oceans would undergo thermal expansion. Increased temperatures could also result in a net melting and reduction in the extent of polar ice sheets. These effects could result in an increase in the level of the world's oceans, and some degree of sea level increase has already been established over the last century. However, these potential effects are not expected to affect the Project, which would be located approximately 130 miles from the ocean, and at an elevation of several hundred feet above mean sea level. The Project would not be affected by sea level rise.

Snowpack and Snowmelt Period

Changes in snowpack and snowmelt period are anticipated in California as a result of climate change. Similar effects are anticipated in the Colorado River system, which includes the Chuckwalla Valley basin and the action area (see Section

3.17, Water Resources, and Section 4.17, Impacts on Water Resources, for additional discussion). Specifically, climate change is expected to result in generally warmer temperatures which, in turn, would result in a greater proportion of total annual precipitation falling as rain. Snowpack in California and the Colorado River watershed serves as a temporary means of water storage, where water is released slowly and into the early summer during snowmelt. If a greater proportion of precipitation falls as rain, the snowpack would be lessened, and the potential for water storage within the snowpack also would be lessened. In addition, warmer temperatures would cause earlier snowmelt events, potentially reducing the ability of water managers to capture snowmelt in reservoirs. However, there is no snowpack in the vicinity of the proposed Project, and the Project does not depend on snowmelt water for water supply. Therefore, the Project would not affect snowpack, and would not be deleteriously affected by potential changes in snowpack characteristics.

Dilution

Dilution refers to the amount of water that is available in a receiving water body into which wastewater is discharged. Under some circumstances, climate change could result in a change in the volume or timing of water flows that are available in stream for dilution of wastewater. However, the Project would not discharge wastewater to surface waters. (A septic system is included for on-site wastewater, and process water would be controlled on site via an evaporation pond system.) Therefore, potential climate-related changes in dilution capacity would not affect the Proposed Action.

Water Temperature

Water temperature can be critical to fisheries resources in parts of California, in particular, along those waterways that support cold water fisheries. However, the site and its vicinity do not contain any perennial surface waterways that could support fisheries. During rain events, surface water from the site drains off site in to dry desert sinks, as discussed in Section 3.17, Water Resources, and does not support any fisheries resources. The Project would rely on groundwater for a water supply, and the temperature of the groundwater would not be critical to Project operation. Furthermore, the Project would not result in any water discharge or other activity that would affect water temperature along nearby waterways, including the Colorado River or other rivers or waterways that support fisheries. No component of the Project would alter reservoir flows or otherwise change water management operations, such that water temperature would be altered. Therefore, potential changes in water temperature would not affect the Project.

Flooding, Drainage, and Erosion

Climate change is anticipated to affect the frequency and intensity of extreme weather events, including large storm events and droughts, in western watersheds including the Colorado River basin and the closed basin that receives runoff from the Project site. Although the degree of change is a subject of substantial debate, most investigations concur that the Colorado River watershed, including the Project and its vicinity, would experience an increase in the frequency and intensity of high rainfall and flood events. These events could result in an increase in potential stormwater runoff and flooding, and an increase in erosion and sedimentation on site and downstream from the site. Increases in the intensity or frequency of droughts are discussed in terms of water resources availability, below.

As discussed in Section 4.17, Water Resources, the Project would include a series of engineered facilities, including rerouted drainage and flood channels, berms, and on-site drainage facilities, that would channel, retain, and otherwise manage stormwater and flood flows on site and in the areas immediately surrounding the site. The Project would be designed to account for stormwater drainage and flood flows, which would be mitigated as discussed in greater detail in Section 4.17. Additionally, the proposed mitigation measures have been updated to include assessment of potential climate change effects on water resources, and incorporation of Project design feature recommendations that would serve to offset potential drainage and flooding effects associated with climate change.

Water Resources Availability

As discussed in Section 3.17, Water Resources, and Section 4.17, Impacts on Water Resources, the site is located within a watershed that contains only ephemeral drainages and washes. Surface waters in the Project area and its immediate vicinity occur only during substantial precipitation events, where surface runoff occurs. There are no perennial streams or other perennial waterways located on site or hydrologically connected to the Project via surface waters. The Project would not rely on surface water for water supply during construction or operation. Instead, the Project would rely on groundwater for water supply during both construction and operation.

Estimates of the potential effects of climate change on the frequency and amount of rainfall in the West vary; however, most studies concur that some degree of reduction of precipitation would occur in the desert Southwest. Seager et al. (2007) and Christensen et al. (2004) completed extensive reviews and modeling of potential climate change effects on the Colorado River watershed and other southwestern watersheds, including several climate change scenarios. The authors conclude that precipitation and runoff within the watershed could generally decrease, while periods of drought could increase, resulting in an overall reduction in the availability of water along the Colorado River. These scenarios could result in moderate to substantial effects on water supply availability, and could affect the ability of water rights holders along the Colorado River to divert their full entitlements.

In the event that climate change results in reduced precipitation within the Project area and its vicinity, some degree of associated reduction in groundwater recharge from rainfall could occur. This situation would not result in increased water requirements by the Proposed Action, and would not result in additional groundwater pumping during Project construction or operations. Therefore, even with potential reductions in total precipitation volume associated with future climate change, no increase in pumping would be required as a result of the effects of climate change.

If climate change does result in reduced recharge to the underlying groundwater basin, the potential cumulative effects on groundwater levels identified in Section 4.17 could be exacerbated. Mitigation measures discussed in Section 4.17, Water Resources, for the mitigation of groundwater pumping would offset these effects in part. However, as discussed in the cumulative effects analysis discussion of Section 4.17, the combined operation of all of the foreseeable projects would have an impact on groundwater levels, and this effect could be exacerbated by anticipated reductions in groundwater recharge due to climate change.

Biological Resources

Biological resources could be affected as a result of climate change in California. Distribution patterns of species are generally expected to shift according to regional changes in temperature and precipitation, while the location of wildlife migration corridors and the extent of invasive species also could be altered.

Fisheries

The Project does not contain any perennial or other surface waters that contain fisheries resources, and it would not affect or be affected by changes in fisheries characteristics. Therefore, there would be no impact related to fisheries resources or characteristics.

Habitat Values, Species, and Mitigation/Restoration Lands

As discussed in Section 4.3, Impacts on Vegetation, and Section 4.4, Impacts on Wildlife, implementation of the Project would require mitigation for biological resource values that would be lost as a result of implementation of the Project. As discussed in these sections, the proposed mitigation lands would be required to be equivalent in terms of habitat value, and at a replacement ratio of at least 1:1 (typically greater than 1:1) for direct impacts. Unfortunately, climate change could result in adverse effects on biological resources located on these mitigation lands, including changes in plant species occurrence and distribution, as well as wildlife distribution and migration/movement. These changes *could result in large-scale alteration of existing migration corridors, changes in the availability of food and water, changes in the availability of suitable habitat for plants and wildlife, and the movement of existing population centers to areas that are more favorable. These changes could result in a loss of biological resources in the vicinity of the Project, including along lands that would be used for mitigation of Project impacts. However, these potential changes would occur whether or not the Project is implemented. The Project would result in a net reduction in greenhouse gas emissions as compared with existing conditions, over the lifetime of the Project, and the magnitude or extent of potential changes to biological resources would not be altered as a result of Project implementation.*

Proposed mitigation lands must be similar in biological resource value compared to lost resources on site. It is anticipated that climate-related effects for these mitigation lands would be similar to those located at the Project site, if the Project were never built. Therefore, potential reductions in the biological resource values of mitigation land resulting from climate change are expected to be similar to on-site conditions in the absence of the Project.

As acknowledged above, climate change could result in changes to the distribution of plant and wildlife species and to the suitability of habitat for such species at and in the immediate vicinity of the Project site. As a result, the suite of plant and wildlife species that inhabit areas surrounding the Project site could also change. Of course, this situation would not represent an impact resulting from implementation of the proposed Project if habitats change to the extent that one or more species can no longer survive on the Project site, where that species is present under existing conditions. To the contrary, this impact would result from the effects of climate change, and the Project, to a small extent, would result in a net reduction in greenhouse gas emissions associated with displaced fossil power generation. Therefore, after the Project is decommissioned, it may not be possible to restore the Project site to conditions that precisely mirror existing on-site conditions. However, the burden for this impact lies not on the Project itself, but instead on the cumulative climate change that could occur during Project operation.

Hazards

Heat related hazards, including potential increases in wildfire and heat waves, could be exacerbated by climate change.

Wildfire Risks

Potential risks associated with fire are discussed in Section 3.11, Public Health and Safety/Hazardous Materials. Section 4.11, Impacts on Public Health and Safety/Hazardous Materials, discusses potential fire-related risks. The Project would ensure that adequate fire control personnel, infrastructure, and associated planning would be completed and/or available to ensure compliance with federal, state, and local regulations, and to ensure worker safety.

Climate change would result in a small but general increase in temperature, and could also result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves, during operation of the Project. In compliance with applicable regulations and mitigation proposed in Section 4.11, implementation of Applicant Measure AM-HAZ-4 would require the Applicant to prepare and adhere to a Fire Management Plan. The plan would minimize the risk of wildfire and, in the event of a wildfire, would provide for immediate suppression and notification. Although the risk of wildfire that could affect the site could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations specified in Section 4.11, as well as AM-HAZ-4. Therefore, no additional mitigation is warranted.

Heat Waves

The frequency of occurrence and the severity of heat waves could increase as a result of climate change. Heat waves could result in increased potential risk to Project employees. However, Applicant Measure AM-HAZ-1e (Section 4.11) would require development of an Environmental Health and Safety Plan for construction and operation of the Project, *including Illness and Injury Prevention Programs, which will require approval by BLM. The Environmental Health and Safety Plan would meet CalOSHA requirements, and would provide measures to protect workers against the effect of heat-related hazards, whether or not those hazards are caused by climate change. Although the frequency and intensity of heat wave events could increase as a result of future climate change, implementation of the Environmental Health and Safety Plan would meet state requirements for worker safety.*

Other Issues

In addition to the issues discussed above, potential climate change-related impacts associated with soil moisture and fugitive dust concentrations also warrant discussion.

Soil Moisture

As discussed in Section 3.8, Geology and Soil Resources, and Section 4.8, Impacts on Geology and Soil Resources, almost all rainfall that occurs in this region of California is lost through evaporation and evapotranspiration, and soil moisture at the Project site is characteristically low. As discussed previously, although precise changes are impossible to predict, climate change could result in increases in extreme weather events, including droughts and heat waves, and an overall reduction in precipitation. These conditions could result in a concurrent reduction in soil moisture content at the site and regionally. However, reductions in soil moisture content would not affect Project-related operations and would not require any change in water use. Additionally, the proposed facilities would in no way support additional drying of soils on site or otherwise exacerbate potential changes in soil moisture associated with climate change. Therefore, no additional change would occur.

Fugitive Dust

As discussed in Section 3.2, Air Resources, and Section 4.2, Impacts on Air Resources, fugitive dust emissions would require mitigation during operation of the Project. As discussed in Section 4.2, Mitigation Measure MM-AIR-3 would provide for annual reapplication of dust palliatives at the solar farm site, to unpaved roads, parking areas, and various other open areas, as specified. This measure would mitigate operation period fugitive dust emissions to ensure compliance with state and local regulations and requirements. Although climate change could result in some degree of reduction of soil moisture, as discussed above, soil moisture is already very low under current conditions. Any further reductions in soil moisture would be minimal in terms of the absolute amount of water contained in on-site soils. Therefore, any potential further reductions in soil moisture associated with climate change are not anticipated to result in a substantial increase in fugitive dust emissions, and the proposed mitigation measure would be sufficient to meet federal, state, and local requirements regarding fugitive dust.

Summary of Combined Impacts for Alternative 1

The preceding analyses have identified impacts associated with individual components of Alternative 1 (Solar Farm Layout B, GT-A-1, and Red Bluff Substation A). The following discussion provides a summary of climate change impacts reflecting the combined effects of all components of Alternative 1.

Greenhouse Gas Emissions from Construction Activities. Overall construction activity for Alternative 1 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout B, GT-A-1, and Red Bluff Substation A. Annual greenhouse gas emissions associated with overall construction activity for Alternative 1 are summarized in Table 4.5-16.

Greenhouse Gas Emissions from Facility Operations. Greenhouse gas emissions from overall facility operations under Alternative 1 would include operational vehicle traffic for Solar Farm B, GT-A-1, and Red Bluff Substation A plus leaks of sulfur hexafluoride from circuit breakers and switchgear

Table 4.5-16
Summary of Greenhouse Gas Emissions from Combined Facility Construction, Alternative 1

Facility Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO2	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Solar Farm B	10,251	0.53	0.457	**10,401**
Transmission Line A-1	1,608	0.15	0.142	**1,654**
Red Bluff Substation A	657	0.05	0.052	**673**
2011 Total	**12,516**	**0.734**	**0.651**	**12,728**
2012 Emissions				
Solar Farm B	12,852	0.64	0.545	**13,030**
Transmission Line A-1	15	0.00	0.001	**15**
Red Bluff Substation A	1,690	0.12	0.110	**1,726**
2012 Total	**14,557**	**0.756**	**0.656**	**14,771**
2013 Emissions				
Solar Farm B	167	0.01	0.009	**170**
Red Bluff Substation A	699	0.04	0.034	**710**
2013 Total	**866**	**0.049**	**0.043**	**880**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Emissions in this table include both on-site construction activities and construction-related traffic emissions.
Source: Tetra Tech analyses

equipment at Solar Farm B and Red Bluff Substation A. Annual greenhouse gas emissions associated with overall operational activity for Alternative 1 are summarized in Table 4.5-17. In addition, Table 4.5-17 shows combined construction and operational greenhouse gas emissions for the Project with construction emissions annualized over a 30-year period. *As shown in Table 4.5-17, the annualized construction emissions combined with operations emissions from the facility would result in 2,170 tons per year CO2e, which would be well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year CO2e.*

Table 4.5-17
Summary of Greenhouse Gas Emissions from Combined Facility Operations, Alternative 1

Facility Component	Annual Greenhouse Gas Emissions, Tons per Year				
	CO2	**CH4**	**N2O**	**SF6**	**GWP, CO2e**
Solar Farm B	536.2	0.0431	0.0416	0.0071	**710.4**
Transmission Line A-1	0.4	0.0000	0.0000	0.0000	**0.5**
Red Bluff Substation A	0.4	0.0000	0.0000	0.0225	**513.5**
Operational Total	**537.1**	**0.0432**	**0.0416**	**0.0296**	**1,224.3**
Annualized Construction Total	931.3	0.0513	0.0450	0.0000	946.0
Combined Construction and Operation	**1,468.3**	**0.0945**	**0.0866**	**0.0296**	**2,170.3**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Total construction-related emissions (on-site plus construction-related traffic) averaged over a 30-year operational period.
Source: Tetra Tech analyses

Greenhouse Gas Emissions Avoided by Displacing Fossil Fuel Power Generation. The electrical power produced by the solar farm under Alternative 1 (1.2 billion kilowatt-hours per year) would be sold to SCE and PG&E. Both SCE and PG&E have signed power purchase agreements with Sunlight, and Red Bluff Substation A plus leaks of sulfur hexafluoride from circuit breakers and switchgear indicating that these utilities see a need for this power. Regardless of whether the power provided by Desert Sunlight is used to meet existing power demands or to meet future growth in power demands, solar power generated by the Project would effectively displace power generation that otherwise would have to come from other sources. Both SCE and PG&E currently use a mix of fossil fuel, nuclear, hydroelectric, geothermal, wind, solar, and biomass power generation sources. The avoided greenhouse gas emissions based on existing (2009) power mixes were previously summarized in Table 4.5-14. Total avoided greenhouse gas emissions would be 155,089 tons per year carbon dioxide equivalent. These avoided greenhouse gas emissions greatly exceed the greenhouse gas emissions generated by construction, operation, and decommissioning of the various Project facilities under Alternative 1. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed above for Solar Farm B, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, combined facility operations for Alternative 1 would have little impact on potential ecosystem carbon storage.

Additional Direct and Indirect Impacts of Climate Change. As discussed above, other potential effects of climate change include indirect and direct effects such as sea level rise, snowpack and snowmelt period, waterborne pollutant dilution capacity, water temperature, flooding, drainage, and erosion, water resources availability, fisheries, habitat values, species, and mitigation lands, wildfire risk, heat waves, soil moisture, and fugitive dust. These would either not be substantially altered or substantially affect the Project, or would otherwise be mitigated to minimal levels, based on the mitigation measures that are referenced in the Additional Direct and Indirect Impacts of Climate Change subsection, above.

Applicant Measures and Mitigation Measures

Applicant Measures. Sunlight has designed the Project to incorporate various measures that would reduce on-site construction-related emissions and emissions from construction-related traffic. The emission analyses included in this EIS account for the Applicant measures because they are considered part of the Project. Three of the five Applicant measures Sunlight adopted would help reduce greenhouse gas emissions in addition to reducing criteria pollutant emissions. The Applicant measures that would help reduce direct greenhouse gas emissions include the following:

- AM-AIR-3: Cut and fill quantities would be balanced across the Solar Farm site to minimize emissions from grading and to avoid the need to import fill materials or to remove excess spoil.
- AM-AIR-4: Sunlight would use power screeners to obtain any required sand and gravel on site, rather than delivering construction sand and gravel to the Solar Farm site by truck. Although this decision would increase the amount of on-site equipment emissions generated during construction, it would eliminate up to 3,500 truck loads of sand and gravel that would otherwise be brought to the site.
- AM-AIR-5: Sunlight would arrange a shuttle bus program for construction workers, with assembly points in the Palm Springs and Blythe areas. Sunlight expects this shuttle bus

system to be heavily used by construction workers, with an average of 89.5 percent of construction workers accessing the Solar Farm site by shuttle bus.

Mitigation Measures. Section 4.2 identified three mitigation measures that, if implemented, would provide additional reductions in criteria pollutant emissions. Two of those three mitigation measures would also be expected to provide some reductions in construction-related greenhouse gas emissions. The mitigation measures that would help reduce direct greenhouse gas emissions include the following:

- MM-AIR-1: Sunlight should give preference to construction contractors who have newer equipment with lower emission rates or who have retrofitted their equipment with supplemental emission control devices (diesel particulate filters and catalytic controls for nitrogen oxide emissions). This measure might have economic consequences in terms of construction costs.
- MM-AIR-2: Sunlight should temporarily stockpile chipped or shredded vegetation debris from the Solar Farm site, then spread it on open areas of the site once construction has been completed on a subarea. This measure would eliminate a modest number of truck trips that would otherwise required to remove vegetation debris from the site.

CEQA Significance Determination

Solar Farm Layout B

Criterion CC-1. Solar Farm Layout B would further the objectives of the CARB AB32 scoping plan, and thus would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. As summarized previously in Table 4.5-17, Alternative 1 would generate an annualized average of 2,170 tons per year of greenhouse gas emissions (in CO_2e). These direct greenhouse gas emissions are well below the SCAQMD interim greenhouse gas emissions significance level of 11,023 tons per year CO_2e. *Therefore, the combined emissions from construction and operation of the facility would result in a less-than-significant greenhouse gas emissions impact on the environment under Criterion CC-2.*

Gen-Tie Line A-1

Criterion CC-1. Gen-Tie Line A-1 would be an essential component of Alternative 1, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Gen-Tie Line A-1 would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Gen-Tie Line A-1 would be an essential component of Alternative 1, which would produce 1.2 billion kilowatt-hours of electricity per year. *As shown in Table 4.5-17, the transmission line (Gen-Tie Line A-1) would produce 0.5 tons per year of the total 2,170 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emissions would be well below the SCAQMD interim greenhouse gas emissions significant level of 11,023 tons per year CO_2e. Therefore, Gen-Tie Line A-1 would have a less-than-significant impact under Criterion CC-2.*

Red Bluff Substation A

Criterion CC-1 Red Bluff Substation A would be an essential component of Alternative 1, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Red Bluff Substation A would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Red Bluff Substation A would be an essential component of Alternative 1, which would produce 1.2 billion kilowatt-hours of electricity per year. *As shown in Table 4.5-17, the Red Bluff Substation A would produce 513.5 tons per year of the total 2,170 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emissions would be well below the SCAQMD interim greenhouse gas emissions significant level of 11,023 tons per year CO_2e. Therefore, Red Bluff Substation A would have a less-than-significant impact under Criterion CC-2.*

Unavoidable Adverse Effects

No unavoidable adverse climate change impacts have been identified under Alternative 1.

4.5.4 Alternative 2 - Alternate Action

Construction

Solar Farm Layout B

Greenhouse gas emissions generated by construction activity for Solar Farm Layout B under Alternative 2 would be identical to those previously presented for Solar Farm Layout B under Alternative 1 (see Tables 4.5-2 through 4.5-5).

Gen-Tie Line B-2

Greenhouse Gas Emissions from Construction Activities. Greenhouse gas emissions from on-site construction activity for Gen-Tie Line B-2 were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-18 and 4.5-19 summarize annual greenhouse gas emissions from construction activity for 2011 and 2012, respectively.

Table 4.5-18
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Gen-Tie Line B-2

	Annual Emissions for 2011, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Site Preparation	30.5	0.001	0.001	**30.8**
Tower Foundations	65.2	0.003	0.002	**65.8**
Tower Assembly and Erection	72.3	0.002	0.002	**72.8**
Power Line Stringing	119.0	0.008	0.006	**120.9**
Testing	8.8	0.001	0.001	**9.0**
2011 Totals	**295.8**	**0.014**	**0.011**	**299.4**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-19
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Gen-Tie Line B-2

	Annual Emissions for 2012, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Site Cleanup	2.1	0.000	0.000	**2.1**
2012 Totals	**2.1**	**0.000**	**0.000**	**2.1**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction of GT-B-2 were presented previously in Table 4.2-40. Greenhouse gas emissions from construction-related traffic for Gen-Tie Line B-2 have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-20 summarizes annual greenhouse gas emissions from construction-related traffic for GT-B-2.

Table 4.5-20
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Gen-Tie Line B-2

	Annual Greenhouse Gas Emissions, Tons per Year			
Traffic Component	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Construction Trucks	166	0.006	0.005	**168**
Personal Vehicle Commute	1,124	0.126	0.126	**1,164**
2011 Total	**1,290**	**0.132**	**0.131**	**1,332**
2012 Emissions				
Construction Trucks	0	0.000	0.000	**1**
Personal Vehicle Commute	12	0.001	0.001	**12**
2012 Total	**13**	**0.001**	**0.001**	**13**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Red Bluff Substation B

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-21 through 4.5-23 summarize annual greenhouse gas emissions from substation construction activity for 2011, 2012, and 2013, respectively.

Table 4.5-21
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Red Bluff Substation B

	Annual Emissions for 2011, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Access Road Construction	13.4	0.000	0.000	**13.5**
Site Fencing	9.1	0.001	0.000	**9.3**
Site Clearing	54.2	0.002	0.001	**54.6**
Grading and Compacting	128.2	0.004	0.003	**129.3**
2011 Totals	**205.0**	**0.007**	**0.005**	**206.7**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-22
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Red Bluff Substation B

	Annual Emissions for 2012, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Trenching and Foundations	24.4	0.001	0.001	**24.6**
Equipment Pads	88.7	0.007	0.005	**90.4**
Equipment Installation	122.5	0.008	0.006	**124.5**
Power Line Connections	45.4	0.002	0.002	**46.2**
Testing	7.0	0.001	0.001	**7.2**
2012 Totals	**288.0**	**0.019**	**0.015**	**292.8**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-23
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2013, Red Bluff Substation B

	Annual Emissions for 2013, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Testing	6.9	0.001	0.001	**7.1**
Driveways, Other Paving, Security Wall	43.6	0.002	0.002	**44.2**
Site Cleanup	1.8	0.000	0.000	**1.8**
2013 Totals	**52.3**	**0.003**	**0.002**	**53.1**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction Red Bluff Substation B were presented previously in Table 4.2-49. Greenhouse gas emissions from construction-related traffic have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-24 summarizes annual greenhouse gas emissions from construction-related traffic for Red Bluff Substation B.

Table 4.5-24
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Red Bluff Substation B

Traffic Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
	2011 Emissions			
Construction Trucks	11	0.000	0.000	**11**
Personal Vehicle Commute	354	0.040	0.040	**367**
2011 Total	**364**	**0.040**	**0.040**	**377**
	2012 Emissions			
Construction Trucks	756	0.027	0.023	**764**
Personal Vehicle Commute	646	0.072	0.072	**669**
2012 Total	**1,402**	**0.100**	**0.095**	**1,433**
	2013 Emissions			
Construction Trucks	208	0.008	0.006	**210**
Personal Vehicle Commute	139	0.016	0.016	**144**
2013 Total	**347**	**0.023**	**0.022**	**354**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Summary of Construction Impacts

Construction activities and associated vehicle traffic under Alternative 2 would generate emissions of greenhouse gas pollutants over a period of approximately 26 months. The Applicant proposes to implement a construction worker shuttle bus system that would greatly reduce the volume of traffic and resulting greenhouse gas emissions that would otherwise be generated by construction worker commute traffic for the solar farm.

Operation and Maintenance

Solar Farm Layout B

Greenhouse gas emissions from operation of SF-B under Alternative 2 would be identical to those previously presented for Solar Farm Layout B under Alternative 1 (see Tables 4.5-13 and 4.5-14).

Gen-Tie Line B-2

Greenhouse Gas Emissions from Facility Operations. There are few sources of greenhouse gas emissions associated with transmission line operation. Vehicles used for periodic line inspection and necessary maintenance activities would be an intermittent and very small source of greenhouse gas emissions.

Assuming two line inspections and one maintenance event per year, operational greenhouse gas emissions would be about 744 pounds (0.46 tons) per year carbon dioxide equivalent. The ozone that can be generated by corona discharge effects along high voltage transmission lines is also a greenhouse gas, but ozone in the lower atmosphere is so chemically reactive that it has a very short atmospheric lifetime and thus has little impact on climate change.

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed above for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Gen-Tie Line B-2 would have little impact on potential ecosystem carbon storage.

Red Bluff Substation B

Greenhouse Gas Emissions from Facility Operations. Operational greenhouse gas emissions for Red Bluff Substation B under Alternative 2 would be the same as those previously presented for Red Bluff Substation A under Alternative 1 (see Table 4.5-15).

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed previously for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Red Bluff Substation B under Alternative 2 would have little impact on potential ecosystem carbon storage.

Summary of Operation and Maintenance Impacts

Operation and maintenance activities for the solar farm, Gen-Tie Line, and Red Bluff Substation under Alternative 2 would be small sources of ongoing greenhouse gas emissions. Only the solar farm facility would have on-site employees. The Gen-Tie Line and Red Bluff Substation would require only infrequent inspection and maintenance activities. Electrical equipment at the solar farm site and at the Red Bluff Substation would be a source of sulfur hexafluoride leaks. *As presented below,* the *total* annual greenhouse gas emissions generated by operation and maintenance activities *under Alternative 2 associated with the solar farm, Gen-Tie Line, and Red Bluff Substation would be approximately the same as those previously presented under Alternative 1 and would result in 1,224 tons per year CO_2e. This would be well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year (10,000 metric tons per year) CO_2e.* Project facilities would have little impact on potential ecosystem carbon storage.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B under Alternative 2 would be identical to those previously discussed for SF-B under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 under Alternative 2 would be essentially the same as those previously discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The impacts resulting from decommissioning RB-B under Alternative 2 would be essentially the same as those previously discussed for RB-A under Alternative 1.

Summary of Decommissioning Impacts

Greenhouse gas emissions from facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine greenhouse gas emissions might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Additional Direct and Indirect Impacts of Climate Change

In addition to simple warming, climate change also is expected to result in the same suite of potential changes that could affect the natural environment, as discussed for Alternative 1. Although implementation of Alternative 2 would result in slight differences in Project layout and design, the potential for Alternative 2 to be affected by or result in effects on direct and indirect climate change impacts would be the same as discussed for Alternative 1.

Summary of Combined Impacts for Alternative 2

The preceding analyses have identified impacts associated with individual components of Alternative 2 (Solar Farm Layout B, GT-B-2, and Red Bluff Substation B). The following discussion provides a summary of air quality impacts reflecting the combined effects of all components of Alternative 2.

Greenhouse Gas Emissions from Construction Activities. Overall construction activity for Alternative 2 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout B, GT-B-2, and Red Bluff Substation B. Annual greenhouse gas emissions associated with overall construction activity for Alternative 2 are summarized in Table 4.5-25.

Table 4.5-25
Summary of Greenhouse Gas Emissions from Combined Facility Construction, Alternative 2

	Annual Greenhouse Gas Emissions, Tons per Year			
Facility Component	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Solar Farm B	10,251	0.53	0.457	**10,401**
Transmission Line B-2	1,586	0.15	0.141	**1,632**
Red Bluff Substation B	569	0.05	0.045	**584**
2011 Total	**12,406**	**0.726**	**0.644**	**12,616**
2012 Emissions				
Solar Farm B	12,852	0.64	0.545	**13,030**
Transmission Line B-2	15	0.00	0.001	**15**
Red Bluff Substation B	1,690	0.12	0.110	**1,726**
2012 Total	**14,557**	**0.756**	**0.656**	**14,771**
2013 Emissions				
Solar Farm B	167	0.01	0.009	**170**
Red Bluff Substation B	399	0.03	0.024	**407**
2013 Total	**566**	**0.037**	**0.033**	**577**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Emissions in this table include both on-site construction activities and construction-related traffic emissions.
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Facility Operations. Greenhouse gas emissions from overall facility operations under Alternative 2 would include operational vehicle traffic for Solar Farm B, GT-B-2, and Red Bluff Substation B plus leaks of sulfur hexafluoride from circuit breakers and switchgear equipment at Solar Farm B and Red Bluff Substation B. Annual greenhouse gas emissions associated with overall operational activity for Alternative 2 are summarized Table 4.5-26. In addition, Table 4.5-26 shows combined construction and operational greenhouse gas emissions for the Project with construction emissions annualized over a 30-year period. *As shown in Table 4.5-26, the annualized construction emissions combined with operations emissions from the facility would result in approximately 2,157 tons per year CO_2e, which would be well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year CO_2e.*

Table 4.5-26
Summary of Greenhouse Gas Emissions from Combined Facility Operations, Alternative 2

Facility Component	Annual Greenhouse Gas Emissions, Tons per Year				
	CO2	**CH4**	**N2O**	**SF6**	**GWP, CO2e**
Solar Farm B	536.2	0.0431	0.0416	0.0071	**710.4**
Transmission Line B-2	0.4	0.0000	0.0000	0.0000	**0.5**
Red Bluff Substation B	0.4	0.0000	0.0000	0.0225	**513.5**
Operational Total	**537.1**	**0.0432**	**0.0416**	**0.0296**	**1,224.3**
Annualized Construction Total	917.7	0.0506	0.0444	0.0000	932.2
Combined Construction and Operation	**1,454.7**	**0.0938**	**0.0860**	**0.0296**	**2,156.5**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Total construction-related emissions (on-site plus construction-related traffic) averaged over a 30-year operational period.
Source: Tetra Tech analyses

Greenhouse Gas Emissions Avoided by Displacing Fossil Fuel Power Generation. The electrical power produced by the solar farm under Alternative 2 (1.2 billion kilowatt-hours per year) would be sold to SCE and PG&E. Both SCE and PG&E have signed power purchase agreements with Sunlight, indicating that these utilities see a need for this power. Regardless of whether the power provided by Desert Sunlight is used to meet existing power demands or to meet future growth in power demands, solar power generated by the Desert Sunlight Project would effectively displace power generation that otherwise would have to come from other sources. Both SCE and PG&E currently use a mix of fossil fuel, nuclear, hydroelectric, geothermal, wind, solar, and biomass power generation sources. The avoided greenhouse gas emissions based on existing (2009) power mixes were previously summarized in Table 4.5-14. Total avoided greenhouse gas emissions would be 155,089 tons per year carbon dioxide equivalent. These avoided greenhouse gas emissions greatly exceed the greenhouse gas emissions generated by construction, operation, and decommissioning of the various Project facilities under Alternative 2. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed previously for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases.

Consequently, operation of combine facilities under Alternative 2 would have little impact on potential ecosystem carbon storage.

Additional Direct and Indirect Impacts of Climate Change. As discussed previously for Alternative 1, other potential effects of climate change include indirect and direct effects such as sea level rise, snowpack and snowmelt period, waterborne pollutant dilution capacity, water temperature, flooding, drainage, and erosion, water resources availability, fisheries, habitat values, species, and mitigation lands, wildfire risk, heat waves, soil moisture, and fugitive dust. These would either not be substantially altered or substantially affect the Project, or would otherwise be mitigated to minimal levels, based on the mitigation measures that are referenced in the previous Additional Direct and Indirect Impacts of Climate Change subsection. Although specific design features of Alternative 2 would differ from Alternative 1, potential direct and indirect effects of climate change on the proposed Project would be similar to those discussed for Alternative 1.

Applicant Measures and Mitigation Measures

The Applicant measures and mitigation measures for greenhouse gas emissions previously identified for Alternative 1 apply equally to Alternative 2.

CEQA Significance Determination

Solar Farm Layout B

Criterion CC-1. Solar Farm Layout B would further the objectives of the CARB AB32 scoping plan, and thus would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. As summarized previously in Table 4.5-26, Alternative 2 would generate an annualized average of 2,157 tons per year of greenhouse gas emissions (in CO_2e). These direct greenhouse gas emissions are well below the SCAQMD interim greenhouse gas emissions significance level of 11,023 tons per year CO_2e. *Therefore, the combined emissions from construction and operation of the facility would result in a less-than-significant greenhouse gas emissions impact on the environment under Criterion CC-2.*

Gen-Tie Line B-2

Criterion CC-1. Gen-Tie Line B-2 would be an essential component of Alternative 2, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Gen-Tie Line B-2 would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Gen-Tie Line B-2 would be an essential component of Alternative 2, which would produce 1.2 billion kilowatt-hours of electricity per year. *As shown in Table 4.5-26, the transmission line (GT-B-2) would produce 0.5 tons per year of the total 2,157 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emission would be well below the SCAQMD interim greenhouse gas emissions significant level of 11,023 tons per year CO_2e. Therefore, GT-B-2 would have a less-than-significant impact under Criterion CC-2.*

Red Bluff Substation B

Criterion CC-1 Red Bluff Substation B would be an essential component of Alternative 2, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Red Bluff Substation B would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Red Bluff Substation B would be an essential component of Alternative 2, which would produce 1.2 billion kilowatt-hours of electricity per year. *As shown in Table 4.5-26, the Red Bluff Substation B would produce 513.5 tons per year of the total 2,157 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emissions would be well below the SCAQMD interim greenhouse gas emissions significant level of 11,023 tons per year CO_2e. Therefore, Red Bluff Substation B would have a less-than-significant impact under Criterion CC-2*.

Unavoidable Adverse Effects

No unavoidable adverse climate change impacts have been identified under Alternative 2.

4.5.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-27 through 4.5-29 summarize annual greenhouse gas emissions from construction activity for 2011, 2012, and 2013, respectively.

Table 4.5-27
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Solar Farm Layout C

	Annual Emissions for 2011, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Tortoise Exclusion Fencing	34.9	0.001	0.001	**35.2**
Access Roads and Staging Areas	333.8	0.015	0.011	**337.3**
Construction Offices and Water/Sanitation Facilities	74.2	0.002	0.001	**74.6**
Security Fencing and Debris Basins	71.5	0.003	0.002	**72.2**
Site Clearing	296.2	0.010	0.007	**298.5**
Site Grading	1,398.9	0.052	0.037	**1,411.3**
Array Support Posts	336.2	0.009	0.007	**338.3**
Trenching and Underground Cables	234.5	0.008	0.006	**236.4**
Soil Compacting and Dust Palliative	627.6	0.014	0.010	**630.9**
On-Site Power Poles	20.2	0.000	0.000	**20.3**
Switchgear Facilities	96.9	0.003	0.002	**97.5**
On-Site Substation	77.1	0.003	0.003	**78.0**
Solar Array Assemblies	520.1	0.021	0.016	**525.3**
On-Site Overhead Power Lines	92.4	0.003	0.002	**93.0**
2011 Totals	**4,214.2**	**0.14**	**0.10**	**4,248.6**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-28
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Solar Farm Layout C

	Annual Emissions for 2012, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Access Roads and Staging Areas	101.0	0.005	0.003	**102.1**
Site Clearing	330.0	0.011	0.008	**332.5**
Site Grading	1,512.2	0.056	0.040	**1,525.6**
Array Support Posts	460.7	0.012	0.009	**463.6**
Trenching and Underground Cables	308.4	0.010	0.007	**310.8**
Soil Compacting and Dust Palliative	985.9	0.022	0.016	**991.1**
On-Site Power Poles	28.7	0.001	0.001	**28.8**
Switchgear Facilities	152.4	0.004	0.003	**153.4**
Solar Array Assemblies	790.7	0.032	0.024	**798.5**
On-Site Overhead Power Lines	145.0	0.004	0.003	**146.0**
Permanent Buildings	33.8	0.001	0.001	**34.1**
Functional Testing	128.3	0.002	0.002	**128.9**
2012 Totals	**4,977.1**	**0.16**	**0.12**	**5,015.5**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-29
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2013, Solar Farm Layout C

	Annual Emissions for 2013, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Functional Testing	12.0	0.000	0.000	**12.0**
De-Compaction and Dust Palliative	60.8	0.002	0.002	**61.3**
Site Cleanup	14.3	0.001	0.000	**14.4**
2013 Totals	**87.0**	**0.00**	**0.00**	**87.7**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction Solar Farm Layout C were presented previously in Table 4.2-62. Greenhouse gas emissions from construction-related traffic have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-30 summarizes annual greenhouse gas emissions from construction-related traffic for Solar Farm Layout C.

Table 4.5-30
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Solar Farm Layout C

Traffic Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
2011 Emissions				
Construction Trucks	2,124	0.077	0.064	**2,145**
Shuttle Buses	466	0.055	0.046	**481**
Personal Vehicle Commute	610	0.068	0.068	**632**
To/From Shuttle Assembly Areas	1,008	0.113	0.113	**1,044**
2011 Total	**4,208**	**0.312**	**0.290**	**4,302**
2012 Emissions				
Construction Trucks	3,057	0.110	0.092	**3,087**
Shuttle Buses	492	0.058	0.048	**508**
Personal Vehicle Commute	688	0.077	0.077	**713**
To/From Shuttle Assembly Areas	1,109	0.124	0.124	**1,149**
2012 Total	**5,346**	**0.369**	**0.341**	**5,457**
2013 Emissions				
Construction Trucks	6	0.000	0.000	**6**
Shuttle Buses	11	0.001	0.001	**12**
Personal Vehicle Commute	17	0.002	0.002	**17**
To/From Shuttle Assembly Areas	24	0.003	0.003	**25**
2013 Total	**58**	**0.006**	**0.006**	**60**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Gen-Tie Line A-2

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity were estimated using the construction emissions spreadsheet model discussed previously. Tables 4.5-31 and 4.5-32 summarize annual greenhouse gas emissions from construction activity for 2011 and 2012, respectively.

Table 4.5-31
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2011, Gen-Tie Line A-2

Construction Phase	Annual Emissions for 2011, Tons per Year			
	CO2	CH4	N2O	GWP, CO2e
Site Preparation	30.5	0.001	0.001	**30.8**
Tower Foundations	65.0	0.003	0.002	**65.6**
Tower Assembly and Erection	72.3	0.002	0.002	**72.8**
Power Line Stringing	119.0	0.008	0.006	**120.9**
Testing	8.8	0.001	0.001	**9.0**
2011 Totals	**295.6**	**0.01**	**0.01**	**299.1**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Table 4.5-32
Summary of Greenhouse Gas Emissions from On-Site Construction Activity for 2012, Gen-Tie Line A-2

	Annual Emissions for 2012, Tons per Year			
Construction Phase	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
Site Cleanup	2.1	0.000	0.000	**2.1**
2012 Totals	**2.1**	**0.000**	**0.000**	**2.1**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Construction-Related Traffic. Vehicle trips associated with construction of GT-A-2 were presented previously in Table 4.2-69. Greenhouse gas emissions from construction-related traffic have been evaluated using a combination of the URBEMIS2007 model and supplemental spreadsheet analyses.

Table 4.5-33 summarizes annual greenhouse gas emissions from construction-related traffic for Gen-Tie Line A-2.

Table 4.5-33
Summary of Greenhouse Gas Emissions from Construction-Related Traffic, Gen-Tie Line A-2

	Annual Greenhouse Gas Emissions, Tons per Year			
Traffic Component	**CO2**	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Construction Trucks	153	0.006	0.005	**155**
Personal Vehicle Commute	1,124	0.126	0.126	**1,164**
2011 Total	**1,277**	**0.131**	**0.130**	**1,319**
2012 Emissions				
Construction Trucks	0	0.000	0.000	**1**
Personal Vehicle Commute	12	0.001	0.001	**12**
2012 Total	**13**	**0.001**	**0.001**	**13**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Red Bluff Substation A

Greenhouse Gas Emissions from On-Site Construction Activities. Greenhouse gas emissions from on-site construction activity for Red Bluff Substation A under Alternative 3 would be identical to those previously described for Red Bluff Substation A under Alternative 1 (see Tables 4.5-9 through 4.5-11).

Greenhouse Gas Emissions from Construction-Related Traffic. Greenhouse gas emissions from construction-related vehicle traffic for Red Bluff Substation A under Alternative 3 would be identical to those previously described for Red Bluff Substation A under Alternative 1 (see Table 4.5-12).

Summary of Construction Impacts

Construction activities and associated vehicle traffic under Alternative 3 would generate emissions of greenhouse gas pollutants over a period of approximately 26 months. The Applicant proposes to implement a construction worker shuttle bus system that would greatly reduce the volume of traffic and resulting greenhouse gas emissions that would otherwise be generated by construction worker commute traffic for the solar farm.

Operation and Maintenance

Solar Farm Layout C

Greenhouse Gas Emissions from Facility Operations. Solar farm operations under Alternative 3 would have limited sources of greenhouse gas emissions. The primary sources of operational greenhouse gas emissions would be operational vehicle traffic and leaks of sulfur hexafluoride from circuit breakers and other equipment at the on-site substation and PVCS units. First Solar has estimated the leak rate for the on-site substation and PVCS facilities at 14.1 pounds per year (Lamb 2010) for the 550 MW generation alternatives. Assuming that sulfur hexafluoride use is proportional to power generation, the leak rate for Solar Farm Layout C under Alternative 3 would be 10.6 pounds (0.005 tons) per year.

Table 4.5-34 summarizes annual greenhouse gas emissions from operation of Solar Farm Layout C. These greenhouse gas emissions would be more than off-set by the greenhouse gas emissions that would be avoided by using solar power generation instead of generating power from fossil fuel sources (as discussed below). *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Table 4.5-34
Greenhouse Gas Emissions from Solar Farm Operations, Alternative 3

	Annual Greenhouse Gas Emissions, Tons per Year				
Emissions Component	**CO2**	**CH4**	**N2O**	**SF6**	**GWP, CO2e**
Worker Commute Traffic	302.6	0.034	0.034	0	**313.5**
Truck Traffic	233.6	0.009	0.008	0	**236.1**
PVCS Units and On-Site Substation	0	0	0	0.005	**120.7**
Total	**536.2**	**0.043**	**0.042**	**0.005**	**670.3**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions Avoided by Displacing Fossil Fuel Power Generation. The electrical power produced by the solar farm under Alternative 3 (901 million kilowatt-hours per year) would be sold to SCE and PG&E, and would effectively displace power generation from other sources. Both SCE and PG&E currently use a mix of fossil fuel, nuclear, hydroelectric, geothermal, wind, solar, and biomass power generation sources. Greenhouse gas emissions avoided by the use of solar power have been estimated using the complete 2009 power mixes for these two utilities. Table 4.5-35 summarizes the results of this analysis. Additional details concerning the analysis of avoided greenhouse gas emissions are provided in Appendix D-5. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Table 4.5-35
Avoided Greenhouse Gas Emissions For SCE and PG&E, Alternative 1

Utility	Annual Power Received From Solar Farm B, kW-Hrs per Year	Avoided Greenhouse Gas Emissions, Tons per Year			
		CO_2	CH_4	N_2O	GWP, CO_2e
SCE	409,586,777	60,130.8	3.172	0.433	**60,339.1**
PG&E	491,504,132	57,050.2	3.370	0.438	**57,265.0**
Total	**901,090,909**	**117,181.0**	**6.542**	**0.871**	**117,604.1**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Avoided emissions based on 2009 power mix data for SCE and PG&E.
Source: Tetra Tech analyses

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed previously for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Solar Farm Layout C under Alternative 3 would have little impact on potential ecosystem carbon storage.

Gen-Tie Line A-2

Greenhouse Gas Emissions from Facility Operations. There are few sources of greenhouse gas emissions associated with transmission line operation. Vehicles used for periodic line inspection and necessary maintenance activities would be an intermittent and very small source of greenhouse gas emissions. Assuming two line inspections and one maintenance event per year, operational greenhouse gas emissions would be about 744 pounds (0.46 tons) per year carbon dioxide equivalent. The ozone that can be generated by corona discharge effects along high voltage transmission lines is also a greenhouse gas, but ozone in the lower atmosphere is so chemically reactive that it has a very short atmospheric lifetime and thus has little impact on climate change.

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed previously for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of Gen-Tie Line A-2 under Alternative 3 would have little impact on potential ecosystem carbon storage.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A under Alternative 3 would be identical to those previously presented for Red Bluff Substation A under Alternative 1 (see Tables 4.5-9 through 4.5-12).

Summary of Operation and Maintenance Impacts

Operation and maintenance activities for the solar farm, Gen-Tie Line, and Red Bluff Substation under Alternative 3 would be small sources of ongoing greenhouse gas emissions. Only the solar farm facility would have on-site employees. The Gen-Tie Line and Red Bluff Substation would require only infrequent inspection and maintenance activities. Electrical equipment at the solar farm site and at the Red Bluff Substation would be a source of sulfur hexafluoride leaks. *As presented in Table 4.5-17,* the annual greenhouse gas emissions generated by operation and maintenance activities at Project facilities would *be the same as those previously presented for Red Bluff Substation A under Alternatives 1 and 2 and would result in 513.5 tons per year CO_2e. This is well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year (10,000 metric tons per year) CO_2e.* Project facilities would have little impact on potential ecosystem carbon storage.

Decommissioning

Solar Farm Layout C

The impacts resulting from decommissioning SF-C under Alternative 3 would be similar to but somewhat less than those previously discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

The impacts resulting from decommissioning GT-A-2 under Alternative 3 would be similar to those previously discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting decommissioning Red Bluff Substation A under Alternative 3 would be identical to those previously discussed for Red Bluff Substation A under Alternative 1.

Summary of Decommissioning Impacts

Greenhouse gas emissions from facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities. Equipment engine greenhouse gas emissions might be considerably less than those from construction activity due to future changes in engine and fuel technology. Decommissioning activities would not require the extent of vegetation clearing and site grading associated with facility construction.

Additional Direct and Indirect Impacts of Climate Change

In addition to simple warming, climate change also is expected to result in the same suite of potential changes that could affect the natural environment, as discussed for Alternative 1. Although implementation of Alternative 3 would result in implementation of a scaled-down power generation facility, the potential for Alternative 3 to be affected by or result in effects on additional direct and indirect climate change impacts would be similar to those discussed for Alternative 1, although somewhat reduced in intensity.

Summary of Combined Impacts for Alternative 3

The preceding analyses have identified impacts associated with individual components of Alternative 3 (Solar Farm Layout C, GT-A-2, and Red Bluff Substation A). The following discussion provides a summary of air quality impacts reflecting the combined effects of all components of Alternative 3.

Greenhouse Gas Emissions from Construction Activities. Overall construction activity for Alternative 3 would include on-site construction activities and construction-related vehicle traffic for Solar Farm Layout C, Transmission Line A-2, and Red Bluff Substation A. Annual greenhouse gas emissions associated with overall construction activity for Alternative 3 are summarized in Table 4.5-36.

Table 4.5-36
Summary of Greenhouse Gas Emissions from Combined Facility Construction, Alternative 3

Facility Component	Annual Greenhouse Gas Emissions, Tons per Year			
	CO2	**CH4**	**N2O**	**GWP, CO2e**
2011 Emissions				
Solar Farm C	8,422	0.46	0.394	**8,551**
Transmission Line A-2	1,573	0.15	0.141	**1,618**
Red Bluff Substation A	657	0.05	0.052	**673**
2011 Total	**10,651**	**0.655**	**0.587**	**10,842**
2012 Emissions				
Solar Farm C	10,323	0.53	0.456	**10,472**
Transmission Line A-2	15	0.00	0.001	**15**
Red Bluff Substation A	1,690	0.12	0.110	**1,726**
2012 Total	**12,028**	**0.648**	**0.567**	**12,213**
2013 Emissions				
Solar Farm C	145	0.01	0.008	**148**
Red Bluff Substation A	699	0.04	0.034	**710**
2013 Total	**844**	**0.047**	**0.042**	**857**

CO_2 = carbon dioxide, GWP multiplier = 1
CH_4 = methane, GWP multiplier = 25
N_2O = nitrous oxide, GWP multiplier = 298
CO_2e = carbon dioxide equivalents
GWP = global warming potential as CO_2e, based on multipliers from IPCC 2007
Source: Tetra Tech analyses

Greenhouse Gas Emissions from Facility Operations. Greenhouse gas emissions from overall facility operations under Alternative 3 would include operational vehicle traffic for Solar Farm C, GT-A-2, and Red Bluff Substation A plus leaks of sulfur hexafluoride from circuit breakers and switchgear equipment at Solar Farm C and Red Bluff Substation A. Annual greenhouse gas emissions associated with overall operational activity for Alternative 3 are summarized in Table 4.5-37. In addition, Table 4.5-37 shows combined construction and operational greenhouse gas emissions for the Project with construction emissions annualized over a 30-year period. *As shown in Table 4.5-37, the annualized construction emissions combined with operations emissions from the facility would result in 1,981 tons per year CO_2e. This would be well below the SCAQMD interim greenhouse gas emissions level threshold of 11,023 tons per year CO_2e.*

Greenhouse Gas Emissions Avoided by Displacing Fossil Fuel Power Generation. The electrical power produced by the solar farm under Alternative 3 (901 million kilowatt-hours per year) would be sold to SCE and PG&E. Both SCE and PG&E have signed power purchase agreements with Sunlight, indicating that these utilities see a need for this power. Regardless of whether the power provided by Desert Sunlight is used to meet existing power demands or to meet future growth in power demands, solar power generated by the Desert Sunlight Project would effectively displace power generation that otherwise would have to come from other sources. Both SCE and PG&E currently use a mix of fossil fuel, nuclear, hydroelectric, geothermal, wind, solar, and biomass power generation sources. The avoided greenhouse gas emissions were previously summarized in generation sources. The avoided greenhouse gas emissions were previously summarized in Table 4.5-35. Total avoided greenhouse gas emissions would be 117,604 tons per year (carbon dioxide equivalent). These avoided greenhouse gas emissions greatly exceed the greenhouse gas emissions generated by construction, operation, and decommissioning of the various Project facilities under Alternative 3. *This off-set rationale, however, is not relevant to the CEQA conclusion below.*

Table 4.5-37
Summary of Greenhouse Gas Emissions from Combined Facility Operations, Alternative 3

	Annual Greenhouse Gas Emissions, Tons per Year				
Facility Component	**CO2**	**CH4**	**N2O**	**SF6**	**GWP, CO2e**
Solar Farm C	536.2	0.0431	0.0416	0.005	**670.3**
Transmission Line A-2	0.4	0.0000	0.0000	0.0000	**0.5**
Red Bluff Substation A	0.4	0.0000	0.0000	0.0225	**513.5**
Operational Total	**537.1**	**0.0432**	**0.0416**	**0.0278**	**1,184.3**
Annualized Construction Total	784.1	0.0450	0.0399	0.0000	797.1
Combined Construction and Operation	**1,321.1**	**0.0882**	**0.0815**	**0.0278**	**1,981.3**

CO2 = carbon dioxide, GWP multiplier = 1
CH4 = methane, GWP multiplier = 25
N2O = nitrous oxide, GWP multiplier = 298
SF6 = sulfur hexafluoride, GWP multiplier = 22,800
CO2e = carbon dioxide equivalents
GWP = global warming potential as CO2e, based on multipliers from IPCC 2007
Total construction-related emissions (on-site plus construction-related traffic) averaged over a 30-year operational period.
Source: Tetra Tech analyses

Changes in Greenhouse Gas Storage Potential of Desert Soils. As discussed previously for Solar Farm B under Alternative 1, desert ecosystems do not have a large capacity to store greenhouse gases. Consequently, operation of combine facilities under Alternative 3 would have little impact on potential ecosystem carbon storage.

Additional Direct and Indirect Impacts of Climate Change. As discussed previously for Alternative 1, other potential effects of climate change include indirect and direct effects such as sea level rise, snowpack and snowmelt period, waterborne pollutant dilution capacity, water temperature, flooding, drainage, and erosion, water resources availability, fisheries, habitat values, species, and mitigation lands, wildfire risk, heat waves, soil moisture, and fugitive dust. These would either not be substantially altered or substantially affect the Project, or would otherwise be mitigated to minimal levels, based on the mitigation measures that are referenced in the previous Additional Direct and Indirect Impacts of Climate Change subsection. Although Alternative 3 would be reduced in intensity as compared to Alternative 1, potential additional direct and indirect effects of climate change on the proposed Project would be similar to those discussed for Alternative 1.

Applicant Measures and Mitigation Measures

The Applicant measures and mitigation measures for greenhouse gas emissions previously identified for Alternative 1 apply equally to Alternative 3.

CEQA Significance Determination

Solar Farm Layout C

Criterion CC-1. Solar Farm Layout C would further the objectives of the CARB AB32 scoping plan, and thus would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. As summarized previously in Table 4.5-37, Alternative 3 would generate an annualized average of 1,981 tons per year of greenhouse gas emissions (in CO_2e). These direct greenhouse gas emissions *would be* well below the SCAQMD interim greenhouse gas emissions significance level of 11,023 tons per year CO_2e. *Therefore, the annualized construction emissions combined with emissions from operation of the facilities would result in a less-than-significant greenhouse gas emissions impact on the environment under Criterion CC-2.*

Gen-Tie Line A-2

Criterion CC-1. Gen-Tie Line A-2 would be an essential component of Alternative 3, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Gen-Tie Line A-2 would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Gen-Tie Line A-2 would be an essential component of Alternative 3, which would produce 1.2 billion kilowatt-hours of electricity per year. *As shown in Table 4.5-37, the transmission line (Gen-Tie Line A-2) would produce 0.5 tons per year of the total 1,981 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emissions would be well below the SCAQMD interim greenhouse gas emissions significance level of 11,023 tons per year CO_2e. Therefore, Gen-Tie Line A-2 would have a less-than-significant impact under Criterion CC-2.*

Red Bluff Substation A

Criterion CC-1 Red Bluff Substation A would be an essential component of Alternative 3, and as such would further the objectives of the CARB AB32 scoping plan. Consequently, Red Bluff Substation A would have a net beneficial impact under Criterion CC-1.

Criterion CC-2. Red Bluff Substation A would be an essential component of Alternative 3, which would produce 901 million kilowatt-hours of electricity per year. *As shown in Table 4.5-37, the Red Bluff Substation A would produce 513.5 tons per year of the total 1,981 tons per year of greenhouse gas emissions (in CO_2e). Greenhouse gas emissions would be well below the SCAQMD interim greenhouse gas emissions significance level of 11,023 tons per year CO_2e. Therefore, Red Bluff Substation A would have a less-than-significant impact under Criterion CC-2.*

Unavoidable Adverse Effects

No unavoidable adverse climate change impacts have been identified under Alternative 3.

4.5.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action

Under Alternative 4, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the construction or operation air emissions from the Project would occur and none of the benefits of the Project in displacing fossil fuel fired generation and reducing associated pollutant emissions would occur. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations. *In regard to additional direct and indirect effects of climate change on Alternative 4, the Project would still be subject to the effects of climate change, as discussed for Alternative 1. However, no project would be implemented, and therefore no project would be affected on site. Other renewable energy projects would endure direct and indirect effects related to climate change, but in other locations.*

4.5.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under Alternative 5, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the air quality of the site is not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in the climate change impacts expected under the Project nor would it result in the climate change benefits from the Project. However, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations. *In regard to additional direct and indirect effects of climate change on Alternative 5, the Project area would still be subject to the effects of climate change, as discussed for Alternative 1. However, no project would be implemented, and therefore no project would be affected on site. Other renewable energy projects would endure direct and indirect effects related to climate change, but in other locations.*

4.5.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under Alternative 6, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. If that were to happen, greenhouse gas emissions would result from the construction and operation of the solar technology and would likely be similar to the climate change impacts from the Project. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. The benefits of the Project in displacing fossil fuel fired generation and reducing associated pollutant emissions could occur with a different solar technology at this site and therefore with this alternative. *In regard to additional direct and indirect effects of climate change on Alternative 6, a different project would likely be subject to the same effects of climate change, as discussed for Alternative 1.* As such, this No Action Alternative could result in climate change impacts and benefits generally similar to the impacts under the Project.

4.5.9 Cumulative Impacts

Cumulative climate change impacts occur over such large geographic areas and over such long time frames that there are few practical limits on potential cumulative effects in terms of geographic extent or time frame.

Geographic Extent

Climate change effects from greenhouse gases occur at regional, continental, and global geographic scales. Local emissions of greenhouse gases become a smaller fraction of cumulative greenhouse gas emissions as geographic scale increases from regional to continental and global scales.

Time Frame

Greenhouse gas pollutants typically have long atmospheric residence times, ranging from several years to centuries. The conventional assessment of global warming potentials uses a 100-year time frame. In contrast to ambient air quality conditions, climate change conditions at any point in time are driven primarily by cumulative historical greenhouse gas emissions rather than recent greenhouse gas emissions.

Existing Cumulative Conditions: Climate Change

Recent climate trends represent the cumulative effect of regional, continental, and global climate change conditions. Evaluations of climate change conditions in California tend to focus on southern California urban areas, coastal areas, the Central Valley, and the Sierra rather than on desert areas, in part because there are fewer long-term meteorological stations in desert areas. Reviews of historical climate data for California (California Energy Commission 2009) indicate that:

- There has been a greater increase in average temperature in the western US than in the US as a whole.
- Average nighttime minimum temperatures in California have increased more than average daytime maximum temperatures. Since 1920, the average nighttime minimum temperature in California has increased 0.33 degrees Fahrenheit per decade while the average daytime maximum temperature has increased 0.1 degrees Fahrenheit per decade.
- Desert areas of California are showing temperature change patterns consistent with average California patterns.
- Irrigated agriculture in the Central Valley has produced a slight decline in average maximum daytime temperatures in that region since the 1920s.
- The average number of winter chill hours (hours with temperatures below 45 degrees Fahrenheit) in the Central Valley has decreased since 1950.
- There has been an increase in the number of heat stress events over the last 50 years.
- A larger fraction of annual precipitation in the Sierra is falling as rain rather than as snow.
- Average April 1st snowpack conditions in the Cascades and northern Sierra have decreased since 1950, while average April 1st snowpack conditions in the southern Sierra have increased.
- Sierra snowmelt is beginning earlier in the spring.

- The fraction of annual Sierra runoff that occurs from April through July has decreased in both the Sacramento Valley and the San Joaquin Valley.
- Changes in Sierra precipitation patterns and snowpack conditions are producing higher spring runoff volumes and lower summer runoff volumes in rivers and creeks.
- Spring climate conditions are starting earlier and autumn climate conditions are starting later in the year. These changes are affecting the life cycles of some plants and animals, as well as the migratory patterns of some wildlife.
- The ranges of Sierra vegetation and wildlife are shifting to the north and to higher elevations.
- Wildfire events have increased in frequency, duration, and size, partly due to the consequences of increased fuel accumulations from historic fire suppression activities and partly due to changing climate conditions.
- Average water temperatures are increasing in high elevation lakes.
- Sea levels have been rising globally since the end of last glaciation (about 10,000 years ago), but the rate of sea level rise has increased in recent decades. During the past century, sea levels along the California coast have risen about seven inches.

A recent report (California Climate Action Team 2009) summarizes some of the implications of ongoing climate change trends:

- Per-household electricity consumption is expected to increase for most of California as energy increases for summer cooling demands exceed energy reductions from reduced winter heating requirements.
- Temperature increases may offset some of the benefits of emission reduction programs, especially in terms of ozone levels. One analysis for southern California predicts climate-related increases in ozone levels for Orange County and Los Angeles County, little effect in the Riverside area, and decreased ozone levels for the Palm Springs area.
- A general decrease in annual precipitation levels for most of California, with a possible increase in precipitation amounts for the northern-most portion of the state.
- A shift in seasonal runoff conditions for the central and northern Sierra, with greater winter runoff volumes and lower spring and summer runoff volumes.
- Increased frequency, duration, and size of wildfires for forested areas, with less change from current conditions for many desert areas.
- Increased heat-related mortality in most areas of California.
- Variable effects on agricultural crop yields, but with many crop types experiencing reduced yields and greater vulnerability to extreme weather conditions.

Past, Present, and Reasonably Foreseeable Future Projects

Because the geographic extent and time frames associated with climate change are so large, all projects listed in Table 3.18-2 have the potential for some cumulative effect in combination with the various project alternatives. Additional considerations regarding cumulative climate change impacts for the various project alternatives in combination with existing conditions are presented below.

Cumulative Impact Analysis

Alternatives 1, 2, and 3 would have short-term greenhouse gas emissions associated with construction activities, and small levels of ongoing greenhouse gas emissions associated with facility operations. These greenhouse gas emissions would be more than offset by avoided greenhouse gas emissions associated with alternative power generation sources. *This offset rationale is not relevant for the CEQA cumulative analysis below.* Alternatives 1, 2, and 3 would displace alternative power generation for SCE and PG&E, resulting in an indirect climate change benefit by avoiding future greenhouse gas emissions from alternative power generation facilities.

The operation of the proposed Project and Alternatives 2 and 3 would result in minimal direct operational and maintenance emissions, and would result in an indirect reduction in power production forecast for power plants within California. Indirect climate change benefits would occur in terms of greenhouse gas emissions avoided by displacing alternative power generation sources (which include fossil fuel combustion sources) with solar energy sources. Cumulative climate change benefits would occur from combined solar and wind energy projects, each of which would provide indirect reductions in greenhouse gas emissions by avoiding equivalent power generation from alternative sources that include fossil fuel combustion. Because Alternative 1, 2, or 3 would each have a net beneficial impact in terms of climate change, there would be no adverse cumulative climate change impacts from Alternative 1, 2, or 3 in combination with foreseeable projects in the Project area and in the California Desert. This offset rationale, however, is not relevant to the CEQA conclusion below.

The Project alternatives would have short-term direct greenhouse gas emissions during facility construction and long-term small levels of direct greenhouse gas emission during Project operations. These small quantities of direct greenhouse gas emissions would be greatly offset by avoided greenhouse gas emissions associated with *emission producing and non-renewable* power generation sources displaced by the power generation of Alternatives 1, 2, or 3. *In addition, other solar energy projects listed in Table 3.18-1 would also have net climate change benefits by avoiding future greenhouse gas emissions from alternative power generation facilities.* Alternatives 1, 2, and 3 also would further the objectives of CARB's AB32 scoping plan. Because Alternatives 1, 2, or 3 would each have a net beneficial impact in terms of climate change, there would be no adverse cumulative climate change impacts from Alternatives 1, 2, or 3 in combination with past, present, or foreseeable future projects in the Project area or elsewhere in the California Desert. *This offset rationale, however, is not relevant to the CEQA conclusion below*.

There would be no cumulative greenhouse gas emission impacts under Alternatives 4, 5 or 6 because there would be no right-of-way grant for development of the solar farm area and associated facilities. Any future proposals for use of the site would be subject to separate environmental analysis.

CEQA Significance Determination

The CEQA analysis for greenhouse gas emissions is a cumulative impact assessment because greenhouse gas emissions contribute, by their nature, on a cumulative basis to the adverse environmental impacts of global climate change. The proposed Project (Alternative 1) would cause greenhouse gas emissions, as described above. Numerous previously approved projects have also caused increased greenhouse gas emissions, including most development within Riverside County. All of the present and reasonably foreseeable projects identified in the cumulative scenario set forth in Section 3.18 would require construction activities that would also result in increased greenhouse gas emissions.

The CEQA threshold of significance of 11,023 tons CO2e per year, set forth above, is from SCAQMD's greenhouse gas threshold. Based on the ways in which other air quality districts[1] *have used project-level thresholds to assess cumulative impacts, the cumulative CEQA analysis presented here uses the 11,023 tons CO2e per year as a threshold for determining whether the Project would result in a cumulatively considerable contribution of greenhouse gas emissions. Sections 4.4.3 through 4.5.6 above describe that greenhouse gas emissions from the Project, the associated Gen-Tie Line, and the Red Bluff Substation would remain below that threshold. Therefore, the Project would not result in a cumulatively considerable contribution of greenhouse gas emissions or a cumulatively significant impact to global climate change.*

Construction and operation of the proposed Project would be consistent with the CARB Climate Change Scoping Plan, which was approved by the CARB on December 12, 2008. Because of the Red Bluff Substation's role in interconnecting renewable energy resources and the fact that the Project would generate renewable energy, construction and operation of these projects would facilitate implementation of the Scoping Plan, which is based in part on expanding access to renewable energy and continuing the reliable delivery of electricity to customers in California. Therefore, the proposed Project would result in no conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Because there would be no impact, there would be no potential to combine with similar effects of other projects and, therefore, the Project would not be cumulatively considerable.

[1] *For example, the Bay Area Air Quality Management District (BAAQMD) sets out "project level" GHG thresholds for development projects and stationary-source projects, and states: "[i]f annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change" (BAAQMD, CEQA Air Quality Guidelines, Sec. 2.2 [June 2010]).*

4.6 CULTURAL RESOURCES

4.6.1 Methodology for Analysis

Impacts on cultural resources occur when there is damage or loss of cultural resources or their settings. For the purposes of this analysis, the primary indicator for determining if an impact would occur is the effects on cultural resources that are listed on, eligible for listing on, or unevaluated for listing on the National Register of Historic Places (NRHP) or areas of importance to Native American or other traditional communities. Specific indicators include the following:

- Acres and relative depth of ground-disturbing activities permitted, and their potential for affecting known or unknown cultural resources, or areas of importance to Native American or other traditional communities;
- Increased access to, or activity in, areas where resources are present or anticipated. Vandalism or unauthorized collecting can destroy a cultural resource in a single incident. Exposure of cultural resources or access to areas where cultural resources are present can increase the risk of vandalism or unauthorized collection of materials;
- The extent to which an action changes the potential for erosion or other natural processes that could affect cultural resources. Natural processes, such as erosion or weathering, can degrade the integrity of many types of cultural resources over time. Human visitation, vehicle use, vegetation treatments, and other activities can increase the rate of deterioration through natural processes. While the effect of a few incidents may be negligible, the effect of repeated uses or visits over time could increase the intensity of impacts due to natural processes;
- The extent to which an action alters the setting (such as visual and audible factors) of cultural resources; and
- The extent to which an action alters the availability of cultural resources for appropriate uses.

The analysis of impacts on cultural resources has been informed by the criteria of adverse effect in Title 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA). According to 36 CFR §800.5a: "An adverse effect is found when an action may alter the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance, or be cumulative." Assessment of effects involving Native American or other traditional community, cultural, or religious practices or resources also requires consultation with the affected group.

Unanticipated impacts from discovery of unknown resources would be minimized or avoided by compliance with laws and executive orders designed to preserve and protect cultural resources. BLM and the Applicant are presently developing a *Memorandum of Agreement* to address cultural resource management as part of the Project's compliance with applicable laws and requirements. These laws and requirements include, but are not limited to, the Antiquities Act of 1906, the NHPA Sections 106 and 110(a), the Archaeological Resources Protection Act (ARPA) Section 4(a), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), and Executive Orders 13175 and 13007. The BLM also has its own cultural resource policies, directives, and standards outlined in the BLM 8100 Manual Series, the National Programmatic Agreement for responsibilities under NHPA, and the State Protocol Agreement among California BLM, California State Historic Preservation Officer (SHPO), and Nevada SHPO.

The Applicant has incorporated a cultural resources monitoring and mitigation plan into the Project description. Under all action alternatives, this monitoring program would reduce unanticipated significant impacts on unidentified cultural resources. This includes impacts on subsurface cultural resources, especially within Solar Farm areas identified by the geoarchaeological survey as having the potential to contain buried archaeological deposits, as well as surface resources that may not have been recognized by the Class III survey. Some unanticipated impacts, although mitigated under Section 106 of the NHPA, may not be able to be reduced to less than significant under NEPA or CEQA.

For the purposes of this analysis, effects to cultural resources under CEQA are also considered. The criteria for significant effects under CEQA are similar to those discussed above (see CEQA Significance Criteria below).

Some impacts are direct, while others are indirect and affect cultural resources through a change in another resource. Direct impacts are those resulting from a project and include ground disturbances within archaeological sites or demolition of historic buildings and structures. Direct impacts can also occur through new construction of buildings and/or structures within the setting of a cultural resource that are out of character with the historic significance or traditional values of that resource. Indirect impacts are caused by a project, but can occur later in time or farther removed in distance. Potential indirect impacts include new construction within the viewshed or audible area around a sacred site, traditional cultural property (TCP) or traditional use area, or removal of traditional resources used by affected communities.

Impacts on cultural resources are typically considered permanent as these resources are finite and disturbance of them, particularly archaeological sites, cannot be reversed. However, impacts on historic landscapes or the viewsheds of historic or other significant areas can be temporary if projects do not permanently impact associated resources and are removed at a future date.

Each action alternative would directly impact cultural resources that are potentially eligible for listing on the California Register of Historical Resources (CRHR) and assumed eligible for the NRHP. *Table 4.6-1* summarizes the resources affected by each action alternative. It is important to note that in addition to the defined resources below, each action alternative would also affect the potential Desert Training Center California-Arizona Maneuver Area (DTC-C-AMA) historic district as well as the less tangible historic landscapes of nearby NRHP-eligible and listed resources. These include:

- The Colorado River Aqueduct;
- The NRHP-listed North Chuckwalla Mountains Petroglyph District (CA-RIV-1383);
- The NRHP-listed North Chuckwalla Mountains Quarry Archaeological District (CA-RIV-1814); and
- The NRHP-eligible prehistoric site CA-RIV-330.

Table 4.6-1
Comparison of Cultural Resource Sites and Isolates Within Action Alternatives*

Alternative	Total Sites
Alternative 1: Proposed Action (SF-B, GT-A-1, and Red Bluff Substation A [including Access Road 2 and other features])	58 (49 Historic, 6 Prehistoric, 1 Multicomponent, 2 Unknown) 1 NRHP- and CRHR-listed 21 Potentially CRHR-Eligible and Assumed NRHP-Eligible
Alternative 2: Alternate Action (SF-B, GT-B-2, Red Bluff Substation B)	42 (36 Historic, 4 Prehistoric, 2 Unknown) 23 Potentially CRHR-Eligible and Assumed NRHP-Eligible
Alternative 3: Reduced Solar Farm Footprint (SF-C, GT-A-2, and Red Bluff Substation A [including Access Road 1 and other features])	42 (36 Historic, 4 Prehistoric, 1 Multicomponent, 1 Unknown) 1 NRHP- and CRHR-listed 16 Potentially CRHR-Eligible and Assumed NRHP Eligible

Source: ECORP (2009, IP)
*These resources are in addition to the potential DTC-C-AMA historic district and historic landscapes listed above. Resources that are within multiple Project components in an alternative are counted only once.

4.6.2 CEQA Significance Criteria

Under CEQA, the Project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource or an archeological resource as defined under CCR, Title 14, Chapter 3, Section 15064.5. Under CEQA, the proposed Project would have a significant impact on cultural resources if it would:

CR-1. Cause a substantial adverse change in the significance of a historical resource;

CR-2. Cause a substantial adverse change in the significance of an archaeological resource;

CR-3. Disturb any human remains, including those interred outside of formal cemeteries.

Under all of these criteria, adverse changes and impacts are the following:

- Physical, visual, or audible disturbances resulting from construction and development that would affect the integrity of a resource or the qualities that make it eligible for the CRHR or NRHP;
- Exposure of cultural resources to vandalism or unauthorized collecting;
- A substantial increase in the potential for erosion or other natural processes that could affect cultural resources;
- Neglect of a cultural resource that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to a Native American tribe; or
- Transfer, lease, or sale of a cultural resource out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance.

4.6.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Construction of SF-B would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degrading the preservation value of these resources. Specifically, resources that would be directly impacted by construction of SF-B include *21* sites (*16* historic, 3 prehistoric, and 2 unknown-era) and the potential DTC-C-AMA historic district. Nine of the historic sites within SF-B are believed to be associated with the DTC. Indirect visual and audible impacts would occur on the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible).

NRHP eligibility determinations of sites recorded by ECORP (2010b) have not yet been made by the BLM but will be *identified in the Memorandum of Agreement* governing Section 106 compliance for this Project. For the purposes of this analysis, all resources within SF-B without existing NRHP eligibility determinations are assumed to be NRHP eligible. *Sixteen* of the sites have been recommended as potentially CRHR-eligible. Physical disturbance of NRHP-eligible sites would constitute a significant impact under NEPA. The *Memorandum of Agreement* that is currently being developed to comply with Section 106 will also prescribe mitigation measures that would be implemented by the Applicant in coordination with applicable responsible agencies to resolve adverse effects to NRHP-eligible sites. However, given that the *Memorandum of Agreement* and associated consultations are still in progress, unmitigable impacts on cultural resources under NEPA may still occur.

Native American consultations were initiated in mid-April 2010 and are ongoing. No sacred sites, TCPs, or traditional use areas have been identified, but such areas may be identified as the consultation process moves forward. If such areas are identified, the Project may have direct and indirect impacts on them as a result of construction, which may be incompatible with traditional use of SF-B or the surrounding area, or by excluding Native American access to such areas.

Gen-Tie Line A-1

Construction of GT-A-1 would require clearing and grading of the entire line corridor that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degradation of preservation value. Specifically, resources that would be directly impacted by construction of GT-A-1 include *14* sites (*12* historic and 2 prehistoric), *one of which would also be impacted by SF-B*. Indirect visual and audible impacts would occur on the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the potential DTC-C-AMA historic district (potentially NRHP and CRHR eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible).

Direct impacts on archaeological, built environment, and historic landscape resources from construction of GT-A-1 would be qualitatively the same as those described for SF-B. However, GT-A-1 would impact significantly fewer sites than SF-B. Further, only *five* sites within the GT-A-1 corridor have been recommended as CRHR-eligible. Impacts on the potential DTC-C-AMA historic district would also be less than SF-B since none of the sites within the GT-A-1 corridor are associated with the DTC.

Impacts *on places of traditional importance to* Native Americans from GT-A-1 construction would be the same as described for SF-B.

Red Bluff Substation A

Construction of Red Bluff Substation A and its associated components would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degradation of preservation value. Specifically, resources that would be directly impacted by construction of Substation A and its associated components (Access Road 2, transmission loop-in line, distribution line corridor, and the telecom site) include *25* sites (*23* historic, 1 multicomponent, and 1 prehistoric), *one of which would also be impacted by GT-A-1*. The one prehistoric site recorded within the Substation A (distribution line) is an NRHP-listed site that contributes to the North Chuckwalla Petroglyph District (CA-RIV-1383). As such, direct impacts would also occur on the landscape of the district. Indirect visual and audible impacts would occur on the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), potential DTC-C-AMA historic district (potentially CRHR and NRHP eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible).

Direct impacts on archaeological, built environment, and historic landscape resources from construction of Substation A and its components would be qualitatively the same as those described for SF-B. Substation A *and its components* would impact *more* sites than SF-B, *and* one of those sites is NRHP-listed CA-RIV-1383. *Two* other sites are potentially eligible for the CRHR, and CA-RIV-1383 is automatically CRHR-*listed*, based on its NRHP listing. Impacts on the potential DTC-C-AMA historic district would be less than SF-B since none of the sites within the Substation A area are associated with the DTC.

Impacts *on places of traditional importance to* Native Americans from Substation A construction would be the same as described for SF-B.

Summary of Construction Impacts

Development of Alternative 1 would directly and permanently impact 58 sites directly within the construction footprint of alternative components, including one archaeological site, CA-RIV-1383, as well its associated petroglyph district that are listed on the NRHP. *Twenty-one* of the sites are potentially CRHR-eligible, and CA-RIV-1383's NRHP listing makes it CRHR *listed.* Clearing and grading would disturb all of these resources. In addition, Alternative 1 would directly impact the potential DTC-C-AMA historic district as well as the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed). Alternative 1 would indirectly impact the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District

(CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would alter the historic setting of these resources.

Quantitatively, Alternative 1 would have the most impact on cultural resources among the action alternatives. Based on the types of sites that would be impacted, Alternative 1 would have the most qualitative impact on cultural resources, NRHP-listed and eligible resources, and sites associated with the DTC.

Native American consultation is ongoing at this time and may find that sacred sites, TCPs, or traditional use areas are present within or near the Alternative 1 construction area. Construction may directly disturb *places of traditional importance to Native Americans*, impede access to these areas, or otherwise disrupt traditional practices.

Operation and Maintenance

Solar Farm Layout B

Operation and maintenance of SF-B would indirectly impact the setting and historic landscapes of the potential DTC-C-AMA historic district, Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by altering the historic settings of these resources.

Native American consultations are continuing at this time. Although no sacred sites, TCPs or traditional use areas have been identified, such areas may be identified as the consultation process moves forward. If such areas are identified, the operation and maintenance of SF-B may have direct and indirect impacts on them, including incompatible land use (such as disruption of a viewshed from a traditional use area) or by excluding Native American access to *places of traditional importance* within the Solar Farm area.

Gen-Tie Line A-1

Operation and maintenance of GT-A-1 would have the same impact on cultural resources as described for the operation and maintenance of SF-B.

Red Bluff Substation A

Operation and maintenance of Red Bluff Substation A and its components would have the same impact on cultural resources as described for the operation and maintenance of SF-B.

Summary of Operation and Maintenance Impacts

Operation and maintenance of Alternative 1 would primarily have indirect impacts on the historic landscapes of five resources and possibly an unknown number of *places of traditional importance to Native Americans*. These impacts would stem from new construction within these landscapes that would not be in keeping with the historic nature and setting of the resources. Further, the presence of Alternative 1 components may exclude Native American access to *places of traditional importance* or detract from the viewshed of a sacred site, traditional use area, or TCP.

Decommissioning

Solar Farm Layout B

Decommission and removing SF-B components would eliminate the indirect impacts on cultural resources described above for construction of SF-B. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be restored by restoring the natural and historic settings of these resources. The same effect would occur for the viewsheds of sacred sites, traditional use areas, or TCPs that may exist. Further, access to *places of traditional importance to Native Americans* within the boundaries of SF-B would be restored. However, impacts on the potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) would remain since archaeological sites that contribute to these districts would be permanently affected by construction of Alternative 1.

Gen-Tie Line A-1

Decommissioning of GT-A-1 would have the same impact on cultural resources as described for the decommissioning of SF-B.

Red Bluff Substation A

Decommissioning of Red Bluff Substation A and its components would have the same impact on cultural resources as described for the decommissioning of SF-B.

Summary of Decommissioning Impacts

Decommissioning of Alternative 1 would restore the historic landscapes of three NRHP-eligible or -listed cultural resources. Additionally, the viewshed of possible sacred sites, TCPs, and traditional use areas would be restored, as would access by Native Americans to use such areas within the Alternative 1 Project area. However, direct impacts on one potential historic district and another NRHP- and CRHR-listed district would remain since construction of Alternative 1 would permanently affect sites that contribute to these districts.

Summary of Combined Impacts for Alternative 1

A total of *58* sites, one NRHP-listed and all others assumed NRHP-eligible, are within the footprint of Alternative 1 and would be impacted by construction. *Twenty-one* of the sites are potentially CRHR-eligible, while the NRHP-listed site is CRHR-eligible. In addition, the potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) would be directly and permanently impacted by affecting contributing sites. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly impacted by Alternative 1. Impacts on these historic landscapes would be eliminated in the decommissioning phase of Alternative 1.

Applicant Measures and Mitigation Measures

Adverse effects that the proposed or alternative actions would have on *historic properties* shall be resolved through compliance with the terms of a *Memorandum of Agreement* under Section 106 of the NHPA. The BLM shall prepare a *Memorandum of Agreement* in consultation with the SHPO, Indian tribes, and other interested parties. The *Memorandum of Agreement* will govern the resolution of any adverse effects *on historic properties (listed on or eligible for the NRHP)* that may result from the proposed or alternative actions. When the *Memorandum of Agreement* is executed and fully implemented, the Project will have fulfilled the requirements of Section 106. The *Memorandum of Agreement* shall be executed prior to BLM's approval of the Record of Decision.

To the extent they are consistent with the *Memorandum of Agreement* being developed for this Project, the following measures shall be applied to mitigate impacts under NEPA. Additional mitigation measures, developed pursuant to the *Memorandum of Agreement* process, may also be implemented.

AM-CUL-1: A cultural resources monitoring and mitigation plan has been included as a Project design feature and best management practice to minimize impacts on cultural resources. The content of this plan, described in Section 2.5 of Chapter 2 of this EIS, includes a description of areas to be monitored during construction, a discovery plan that will address unanticipated cultural resources, and provisions for the education of construction workers. Further, responsible parties for mitigation measures would be identified.

MM-CUL-1. The *Memorandum of Agreement* shall detail the process for activities to proceed in areas where historic properties are now known not to exist; the process for phased completion of field investigations for the evaluation of cultural resources and assessment of effects; a historic property treatment plan (HPTP); procedures to resolve adverse effects under Section 106; coordination between the CEQA process and Section 106 compliance; procedures for *treatment of inadvertent discoveries; procedures for determining treatment and disposition of human remains*; compliance monitoring; dispute resolution; and tribal participation. Resolution of effects to cultural resources eligible for or listed on the NRHP may include research and documentation, data recovery excavations, curation, public interpretation, use or creation of historic contexts (especially for historic landscapes and the potential DTC-C-AMA historic district), and/or report distribution.

MM-CUL-2. On the basis of preliminary CRHR eligibility assessments, NRHP eligibility assessments made under the *Memorandum of Agreement,* or existing NRHP eligibility determinations, the BLM and CPUC may require the relocation of Project components to avoid or reduce damage to cultural resource values. Where operationally feasible, potentially NRHP-eligible resources shall be protected from direct Project impacts by Project redesign within previously surveyed and analyzed areas.

MM-CUL-3. Where the BLM and CPUC decide that CRHR or NRHP-eligible or –listed cultural resources cannot be protected from direct impacts by Project redesign, the Applicant shall comply with appropriate mitigative treatment(s) that will be detailed in the *Memorandum of Agreement* and cultural resources mitigation and monitoring plan.

MM-CUL-4. All CRHR-listed or eligible cultural resources (as determined by the CPUC) and all NRHP-listed or eligible cultural resources (as determined by the BLM) that will not be affected by direct impacts, but are within 50 feet of Project locations, will be monitored by a qualified archaeologist. Protective fencing or other markers, at the BLM's discretion, shall be erected and maintained to protect these resources from inadvertent trespass for the duration of construction in the vicinity.

MM-CUL-5. The historic property treatment plan that will be included in the *Memorandum of Agreement* will, at a minimum, employ avoidance, mitigation, and data recovery as mitigation alternatives. As part of the historic property treatment plan, the Applicant shall prepare a research design and a scope of work for evaluation of cultural resources and for data recovery or additional treatment of NRHP-*listed or* eligible sites that cannot be avoided. Data recovery of most resources would consist of sample excavation and/or surface artifact collection, and site documentation. A possible exception would be a site where burials, cremations, or sacred features are discovered that cannot be avoided. Additional content of the treatment plan will be dictated by the consultations associated with the *Memorandum of Agreement.*

MM-CUL-6. Construction work within 100 feet of cultural resources that require data-recovery fieldwork shall not begin until authorized by the BLM.

MM-CUL-7. Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of historical and prehistoric resources that could be encountered within the Project area, and under direct supervision of a principal archaeologist. All cultural resources personnel will be approved by the BLM through the agency's Cultural Resource Use Permitting process. A Native American monitor may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with *Indian* tribes. The monitoring plan shall indicate the locations where Native American monitors will be required and shall specify the tribal affiliation of the required Native American monitor for each location. The Applicant shall retain and schedule any required Native American monitors.

MM-CUL-8. In the event of inadvertent discoveries during construction, operation and maintenance, or decommissioning, procedures outlined in the *Memorandum of Agreement* and the monitoring and mitigation plan will be adhered to. At a minimum, this will include stop work orders in the vicinity of the find, recordation and evaluation of the find by a qualified archaeologist, notification of the find to BLM, and appropriate treatment measures, possibly including data recovery or avoidance.

MM-CUL-9. The BLM will continue to consult with Indian tribes to identify sacred sites, TCPs and traditional use areas that might be affected by the Project. If such places are identified, the BLM will consult further with tribes to resolve access impediments or other identified impacts.

CEQA Significance Determination

Solar Farm Layout B

Construction and operation of SF-B would have significant impacts under CEQA criteria CR-1 (substantial adverse change in significance of a historical resource) and CR-2 (substantial adverse change in the significance of an archaeological resource). SF-B would directly impact *16* potentially CRHR-eligible resources as well as the potential DTC-C-AMA historic district. The historic landscapes of the Colorado River Aqueduct (CRHR-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, CRHR-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, CRHR-eligible), and prehistoric site CA-RIV-330 (CRHR-eligible) would be indirectly visually and audibly impacted. All are considered historical resources under CEQA. Construction of SF-B would also directly impact *5* other archaeological resources. Operation of SF-B would significantly impact the potential DTC-C-AMA historic district and the historic landscapes listed. Further, there is a potential for subsurface cultural resources within SF-B to be disturbed by construction and operation. Implementation of MM-CUL-1 and MM-CUL-2 would reduce the significance of these impacts. However, until the *Memorandum of Agreement* and consultations are completed, CRHR-eligibility recommendations concurred with by CPUC, and treatments determined, it is unknown if these impacts can be reduced to less than significant.

Construction, operation and maintenance, and decommissioning of SF-B all have the potential to have significant impacts under CEQA criterion CR-3 (disturbance of human remains). Although no cultural resources have been identified as including human remains, the possibility still exists. Compliance with MM-CUL-7 and MM-CUL-8 would reduce the significance of this impact; however, until the *Memorandum of Agreement* and consultations are completed and the inadvertent discovery plan completed, it is unknown if these impacts could be reduced to less than significant.

Gen-Tie Line A-1

The CEQA significance determination for GT-A-1 would be the same as that described for SF-B. GT-A-1 would directly impact *five* potentially CRHR-eligible resources and *nine* additional archaeological resources that are likely CRHR-ineligible. The historic landscapes described under SF-B would be impacted in the same manner; however, the potential DTC-C-AMA historic district would be indirectly, and not directly, impacted.

Red Bluff Substation A

The CEQA significance determination for Substation A and its associated components would be the same as that described for SF-B. Under Alternative 1, Substation A *and its components* would directly impact *2* potentially CRHR-eligible resources, 1 CRHR-listed resource (based on NRHP-listing), and *22* other archaeological resources that are likely CRHR-ineligible. The historic landscapes described under SF-B would be impacted in the same manner; however, the North Chuckwalla Petroglyph District would be directly, and not indirectly, impacted as a result of direct impacts on a contributing archaeological site.

Unavoidable Adverse Effects

Impacts on cultural resources would exist after Applicant Measures and mitigation measures are implemented. Cultural resources damaged or destroyed by Project construction, even if subjected to mitigation, would be permanently lost from the archaeological record. The cultural resources would therefore be unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available. Unavoidable adverse effects on cultural resources would result from construction, operation, and decommissioning of all of the Project components under Alternative 1. At this time, it is unknown if impacts on cultural resources can be satisfactorily mitigated to less than significant, primarily because the *Memorandum of Agreement* and *Native American* consultations are still in progress, as are NRHP-eligibility evaluations, treatment protocols, and CRHR-eligibility recommendation concurrence. Consultations may raise issues that cannot be resolved through mitigation measures. Prescribed treatments may resolve adverse effects under Section 106. However, given the scale and impact to several of the resources identified, impacts under NEPA and CEQA may remain despite implementation of the *Memorandum of Agreement*, *Applicant Measures and* other mitigation measures. As such, the identified impacts of construction, operation, and decommissioning of Alternative 1 are considered unavoidable significant impacts.

4.6.4 Alternative 2 – Alternate Action

Construction

<u>Solar Farm Layout B</u>

The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

<u>Gen-Tie Line B-2</u>

Construction of GT-B-2 would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degradation of preservation value. Specifically, resources that would be directly impacted by construction of GT-B-2 include 17 *<u>historic</u>* sites (*<u>one of which would also be impacted by SF-B</u>*) and the landscape and area of the potential DTC-C-AMA historic district. *<u>Three</u>* of the archaeological sites are believed to be associated with historic DTC activities. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly visually and audibly impacted.

Direct impacts on archaeological, built environment, and historic landscape resources from construction of GT-B-2 would be qualitatively the same as those described for SF-B. However, GT-B-2 would impact significantly fewer sites than SF-B. Further, only *<u>six</u>* sites within the GT-B-2 corridor have been recommended as CRHR-eligible. Impacts on the potential DTC-C-AMA historic district would be slightly less than SF-B as fewer potentially DTC-related sites are within the GT-B-2 corridor.

Impacts *<u>on places of traditional importance to</u>* Native Americans from GT-B-2 construction would be the same as described for SF-B.

<u>Red Bluff Substation B</u>

Construction of Red Bluff Substation B and its associated components would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degradation of preservation value. Specifically, resources that would be directly impacted by construction of Substation B *<u>and its components</u>* include *<u>seven</u>* sites (*<u>five</u>* historic, two prehistoric), *<u>two of which would also be impacted by GT-B-2</u>*. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the potential DTC-C-AMA historic district (potentially CRHR- and NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly audibly and visually impacted.

Direct impacts on cultural resources from construction of Substation B *<u>and its components</u>* would be qualitatively the same as those described for Substation A under Alternative 1. Substation B would impact fewer sites however and, other than the historic landscapes listed above, would not include any resources on the NRHP. Three of the sites *that would be impacted* are potentially eligible for the CRHR. None of the sites are believed to be associated with the DTC.

Impacts *on places of traditional importance to* Native Americans from Substation A construction would be the same as described for SF-B.

Summary of Construction Impacts

Construction of Alternative 2 would directly and permanently impact *42* sites within the construction footprint of alternative components as well as the potential DTC-C-AMA historic district and associated landscape. *Twenty-three* of the sites are potentially CRHR-eligible and are assumed to be NRHP-eligible. *Twelve* of these are believed to be associated with the DTC. Clearing and grading would disturb all of these resources. In addition, all of the Project components of Alternative 2 would have indirect audible and visual impacts on the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would alter the historic settings of these resources.

Quantitatively, Alternative 2 would have the second highest degree of impact on cultural resources among the action alternatives. Based on the types of sites that would be impacted, Alternative 2 would have the second most qualitative impact on cultural resources, potentially CRHR-eligible resources, and NRHP-listed and eligible resources. It would have the most impact on the potential DTC-C-AMA historic district as it includes the most sites believed to be associated with the DTC.

Impacts on *places of traditional importance to* Native Americans from construction of Alternative 2 would be the same as described for construction of Alternative 1.

Even after compliance with the *Memorandum of Agreement* and completion of identified mitigation measures, impacts under NEPA as a result of construction of Alternative 2 may remain significant.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Operation and maintenance of GT-B-2 would have the same impact on cultural resources as described for the operation and maintenance of SF-B under Alternative 1.

Red Bluff Substation B

Operation and maintenance of Red Bluff Substation B would have the same impact on cultural resources as described for the operation and maintenance of SF-B under Alternative 1.

Summary of Operation and Maintenance Impacts

Impacts on cultural resources as a result of operation and maintenance under Alternative 2 would be the same as those discussed under Alternative 1.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Decommissioning of GT-B-2 would have the same impact on cultural resources as described for the decommissioning of SF-B under Alternative 1.

Red Bluff Substation B

Decommissioning of Red Bluff Substation B would have the same impact on cultural resources as described for the decommissioning of SF-B under Alternative 1.

Summary of Decommissioning Impacts

Impacts on cultural resources as a result of decommissioning Alternative 2 would be the same as those discussed under Alternative 1.

Summary of Combined Impacts for Alternative 2

A total of *42* sites and the potential DTC-C-AMA historic district, all assumed NRHP-eligible, would be directly impacted by construction. *Twenty-three* of the sites are potentially CRHR-eligible. In addition, the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly impacted by Alternative 2. Impacts on historic landscapes would be eliminated in the decommissioning phase of Alternative 2. However, impacts on the potential DTC-C-AMA historic district would remain since *12* archaeological sites believed to be associated with the potential district would be permanently impacted by construction of Alternative 2. *This number of sites is the largest potentially related to the DTC that would be impacted under the action alternatives. It is unknown whether implementation of the Memorandum of Agreement to reduce adverse effects under Section 106 would be sufficient to eliminate impacts on cultural resources under NEPA because NRHP-eligibility evaluations and treatment of NRHP-eligible resources would be governed by the Memorandum of Agreement which is still under development, and Native American consultations are ongoing.*

Applicant Measures and Mitigation Measures

Under Alternative 2, Applicant Measures and mitigation measures would be the same as those discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B would be the same as that discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determination for GT-B-2 would be the same as that described for SF-B under Alternative 1. GT-B-2 would directly impact *six* potentially CRHR-eligible resources, including the potential DTC-C-AMA historic district, and *11* other sites that are likely CRHR-ineligible. Additionally, the historic landscapes described under SF-B would be indirectly impacted.

Red Bluff Substation B

The CEQA significance determination for Substation B *and its components* would be the same as that described for SF-B under Alternative 1. Substation B would directly impact three potentially CRHR-eligible resources and four other sites that are likely CRHR-ineligible. Additionally, the potential DTC-C-AMA historic district and the historic landscapes described under SF-B would be indirectly impacted.

Unavoidable Adverse Effects

Unavoidable adverse effects under Alternative 2 would be the same as those described under Alternative 1.

4.6.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Construction of SF-C would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degrading the preservation value of these resources. Specifically, resources that would be directly impacted by construction of SF-C include *15* sites (*11* historic, 3 prehistoric, and 1 unknown era) and the potential DTC-C-AMA historic district. Seven of the historic sites within SF-C are believed to be associated with the DTC. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly audibly and visually impacted.

NRHP eligibility determinations for sites recorded by ECORP (2010b) have not yet been made by the BLM but will be *identified in the Memorandum of Agreement* governing Section 106 compliance for this Project. For the purposes of this analysis, all resources within SF-C are assumed to be NRHP-eligible. Thirteen of the sites have been recommended as potentially CRHR-eligible. Impacts on these cultural resources from construction of SF-C would qualitatively be the same as described for SF-B under Alternative 1. However, SF-C represents a smaller area, and fewer resources would be impacted.

Impacts on places of traditional importance to Native Americans from construction of SF-C would be the same as those described for SF-B under Alternative 1. However, SF-C would impact a smaller area, and therefore the impact would likely be to a lesser degree.

Gen-Tie Line A-2

Construction of GT-A-2 would require clearing and grading that would directly impact archaeological sites, built environment resources, and historic landscapes by damaging and displacing artifacts and features, resulting in loss of information about history and prehistory, construction of modern elements out of character with a historic setting, and degradation of preservation value. Specifically, resources that would be directly impacted by construction of GT-A-2 include four *historic* sites (*one of which would also be impacted by SF-C*) and the potential DTC-C-AMA historic district as two of the archaeological sites are believed to be associated with historic DTC activities. The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly impacted by audible and visual effects. Direct impacts on archaeological, built environment, and historic landscape resources from construction of GT-A-2 would be qualitatively the same as those described for SF-B. However, GT-A-2 would impact fewer sites than SF-B. Further, only three sites within the GT-A-2 corridor have been recommended as CRHR-eligible. Impacts on the potential DTC-C-AMA historic district would also be less than described for SF-B since only *one* potentially DTC-related site *is* within the GT-A-2 corridor.

Impacts on *places of traditional importance to* Native Americans from GT-A-2 construction would be the same as described for SF-B under Alternative 1.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A *and its components* under Alternative 3 would be similar to those discussed under Alternative 1 for Substation A; however instead of Access Road 2, Alternative 3 would use Access Road 1.

Construction of Substation A *and its components* under Alternative 3 would directly impact *25* sites (*23* historic, 1 multicomponent, 1 prehistoric), *one of which would also be impacted by GT-A-2.* The one prehistoric site recorded within Substation A (distribution line and access road) is an NRHP-listed site that contributes to the North Chuckwalla Petroglyph District (CA-RIV-1383). The historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the potential DTC-C-AMA historic district (potentially CRHR- and NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly impacted by visual and audible effects.

Direct impacts on archaeological, built environment, and historic landscape resources from construction of Substation A under Alternative 3 and its components would be qualitatively the same as those described for Substation A under Alternative 1. *Construction of Substation A with Access Road 1 and other components under Alternative 3 would impact the same archaeological sites as construction of Substation A with Access Road 2 and other components under Alternative 1.* Both alternatives would impact NRHP-listed and therefore CRHR-listed resource CA-RIV-1383.

Impacts *on places of traditional importance to* Native Americans from Substation A construction would be the same as described for SF-B under Alternative 1.

Summary of Construction Impacts

Development of Alternative 3 would directly and permanently impact *42* sites within the construction footprint of alternative components as well as the potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed). *Sixteen* of the sites are potentially CRHR-eligible, *8* of these are believed to be associated with the DTC, and one *additional site* is a contributing, NRHP-listed site in the North Chuckwalla Petroglyph District. Clearing and grading would disturb all of these resources. In addition, all of the Project components of Alternative 3 would indirectly impact the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would alter the historic setting of these resources.

Quantitatively, Alternative 3 would have the *same* impact on cultural resources *as Alternative 2.* Based on the types of sites that would be impacted, Alternative 3 would have the least qualitative impact on cultural resources, potentially CRHR-eligible resources, and NRHP-listed and eligible resources. It would have *less* impact on the potential DTC-C-AMA historic district *than* Alternative 1 since it includes *fewer* sites believed to be associated with the DTC.

Impacts on *places of traditional importance to* Native Americans from construction of Alternative 3 would be the same as described for construction of Alternative 1.

Even after compliance with the *Memorandum of Agreement* and completion of identified mitigation measures, impacts under NEPA as a result of construction of Alternative 3 may remain significant.

Operation and Maintenance

Solar Farm Layout C

Operation and maintenance of SF-C would have the same impact on cultural resources as described for the operation and maintenance of SF-B under Alternative 1.

Gen-Tie Line A-2

Operation and maintenance of GT-A-2 would have the same impact on cultural resources as described for the operation and maintenance of SF-B under Alternative 1.

Red Bluff Substation A

Operation and maintenance of Red Bluff Substation A and its components under Alternative 3 would have the same impact on cultural resources as described for the operation and maintenance of SF-B under Alternative 1.

Summary of Operation and Maintenance Impacts

Impacts on cultural resources as a result of operation and maintenance under Alternative 3 would be the same as those discussed under Alternative 1.

Decommissioning

<u>Solar Farm Layout C</u>

Decommissioning of SF-C would have the same impact on cultural resources as described for the decommissioning of SF-B under Alternative 1.

<u>Gen-Tie Line A-2</u>

Decommissioning of GT-A-2 would have the same impact on cultural resources as described for the decommissioning of SF-B under Alternative 1.

<u>Red Bluff Substation A</u>

Decommissioning of Red Bluff Substation A and its components under Alternative 3 would have the same impact on cultural resources as described for the decommissioning of SF-B under Alternative 1.

<u>Summary of Decommissioning Impacts</u>

Impacts on cultural resources as a result of decommissioning Alternative 3 would be the same as those discussed under Alternative 1.

Summary of Combined Impacts for Alternative 3

A total of *<u>42</u>* sites, one NRHP-listed and the rest assumed NRHP-eligible, are within the footprint of Alternative 3 and would be impacted by construction. *<u>Sixteen</u>* of the sites are potentially CRHR-eligible, and the NRHP-listed site is CRHR-listed. The potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed) would also be directly impacted as several of the sites directly impacted are contributors to these districts. Additionally, the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) would be indirectly impacted by Alternative 3. Impacts on historic landscapes would be eliminated in the decommissioning phase of Alternative 3. However, impacts on the potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District would remain. *<u>Because treatment of NRHP-eligible resources will be governed by the Memorandum of Agreement, which is still under development</u>*, and Native American consultations are ongoing, it is unknown if implementation of the *<u>Memorandum of Agreement</u>* to reduce adverse effects under Section 106 would be sufficient to eliminate impacts on cultural resources under NEPA.

Applicant Measures and Mitigation Measures

Under Alternative 3, Applicant Measures and mitigation measures would be the same as those discussed under Alternative 1.

CEQA Significance Determination

<u>Solar Farm Layout C</u>

The CEQA significance determination for SF-C would be the same as that described for SF-B under Alternative 1. SF-C would directly impact 13 potentially CRHR-eligible resources and two likely CRHR-ineligible sites in addition to the potential DTC-C-AMA historic district. The other historic landscapes described under SF-B would be indirectly impacted as described above.

Gen-Tie Line A-2

The CEQA significance determination for GT-A-2 would be the same as that described for SF-B under Alternative 1. GT-A-2 would directly impact three potentially CRHR-eligible resources and one likely CRHR-ineligible site in addition to the potential DTC-C-AMA historic district. The other historic landscapes described under SF-B would be indirectly impacted, as described above.

Red Bluff Substation A

The CEQA significance determination for the Alternative 3 version of Substation A and its associated components would be the same as that described for SF-B under Alternative 1. Under Alternative 3, Substation A *and its components* would directly impact *two* potentially CRHR-eligible resources, one CRHR-listed resource, and *22* likely CRHR-ineligible sites in addition to the potential DTC-C-AMA historic district and the North Chuckwalla Petroglyph District. The other historic landscapes described under SF-B would be indirectly impacted, as described above.

Unavoidable Adverse Effects

Unavoidable adverse effects under Alternative 3 would be the same as those described under Alternative 1.

4.6.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Project would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no Solar Farm, Gen-Tie Line, or Substation would be constructed in the Project locations, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would not be amended and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, no loss or degradation to cultural resources from construction or operation of the Proposed *Action* would occur. However, the land on which the Project is proposed would be*come* available to *other uses consistent with the* CDCA Plan, *including another solar project requiring a land use plan amendment.* In addition, in the absence of this Project, other renewable energy projects may be constructed *elsewhere* to meet state and federal mandates, and those projects would have similar impacts in other locations. Project impacts from another renewable energy project would likely be similar to those that would result from the proposed Project.

4.6.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, *no solar energy project would be constructed on the site*, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Even though the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is possible that the site could be developed for use by a different, non-solar renewable energy technology or allowable other use (e.g., mining). As a result, the land would remain available for other uses, which could affect cultural resources in the Project area. In addition, in the absence of the proposed Project, other renewable energy projects may be constructed *elsewhere* to meet state and federal mandates, and those projects would have similar impacts in other locations. Project impacts from another non-solar renewable energy project would likely be similar to those that would result from the proposed Project.

4.6.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Project would not be approved by the BLM. The BLM would amend the CDCA *Land Use Plan of 1980, as amended*, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the *site*.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all solar technologies require grading and ground disturbance, and this would likely result in a loss or degradation of cultural resources. As such, Alternative 6 would result in impacts on cultural resources similar to the impacts under the Proposed *Action*.

4.6.9 Cumulative Impacts

Cumulative impacts on cultural resources take into account the proposed Project's impacts as well as those likely to occur as a result of other *past, present* and reasonably foreseeable *future actions*. When analyzing cumulative impacts on cultural resources, an assessment is made of the impacts on individual resources as well as the inventory of cultural resources within the cumulative impact analysis area.

Geographic Extent

The regulations implementing Section 106 of the NHPA contemplate close coordination between the NEPA and NHPA processes (36 CFR §800.8) and expressly integrate consideration of cumulative concerns within the analysis of a proposed action's potential direct and indirect effects by defining "adverse effect" to include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" (36 CFR §800.5(a)(1)).

For the cultural resources cumulative analysis, the relevant geographic scope was defined at two levels: local and regional. At the local level, the geographic area considered for cumulative impacts on cultural resources is an area on either side of I-10 referred to here as the I-10 Corridor between Blythe and Desert Center. Although the total number of cultural resources present in this area is unknown, an estimate can be derived based on recent surveys related to the proposed Project and three other proposed solar power projects (Genesis Solar Energy Project, Palen Solar Power Project and Blythe Solar Power Project), indicating that the I-10 Corridor has an average site density of 0.017 cultural resources per acre.

At the regional level, the geographic area considered for cumulative impacts on cultural resources is the Southern California Desert Region which includes the 25-million-acre California Desert Conservation Area (CDCA). Approximately 20 percent of Riverside and San Bernardino counties has been surveyed for cultural resources. These surveys have identified and documented more than 20,000 cultural resources. These results suggest that there is a high potential to discover previously unknown resources within the cumulative study region.

Existing Cumulative Conditions

A discussion of the prehistoric, ethnographic, and historic setting of the Chuckwalla Valley is included in Section 3.6, as are the results of the Class III survey that identified hundreds of cultural resources within the alternative Project and surrounding areas. There are also portions of the Solar Farm area that *have higher potential than others* for unidentified subsurface resources. The overall Project area can be characterized as highly sensitive for prehistoric and historic-era resources.

Past, Present, and Reasonably Foreseeable Future Projects

The cumulative analysis area has been historically altered by human activities that have both deposited and degraded cultural resources. ROW applications have been submitted for projects encompassing thousands of acres within the cumulative analysis area for cultural resources. The past, present, and reasonably foreseeable projects considered cumulative projects for this EIS are described in Section 3.18.4, and their locations are shown in Figures 3.18-1 and 3.18-2. These are primarily large-scale renewable energy projects that require extensive grading and development. Other projects in the cumulative study area include several transmission lines and non-renewable energy projects, as well as residential and commercial developments. Ground disturbances and modern construction associated with these types of projects would be on a smaller scale than the Proposed *Action* and alternatives, given the smaller acreage generally involved with these cumulative projects. In addition to permanent construction impacts, such as direct disturbance and degradation of archaeological sites, these cumulative projects would have ongoing operational impacts on historic landscapes and districts, specifically the potential DTC-C-AMA historic district.

Therefore, past, present, and reasonably foreseeable projects that include ground disturbing and large-scale construction are considered for this analysis as they are likely to impact cultural resources under impact criteria CR-1, CR-2, and CR-3 described above. This would include non-energy-related, non-renewable energy, transmission lines, wind power, and solar power projects. However, the projects themselves likely affect considerably less acreage. Almost all of these projects are on BLM or other federal land and, for this reason, either are or would be subject to NEPA and the NHPA, which contain cultural resource-protective requirements related to investigations, impact assessment, avoidance and mitigation. Projects in the analysis area not located on federal land would be subject to CEQA; therefore, any related impacts on cultural resources would be subject to cultural-resource-protective requirements based on state law to avoid or minimize these impacts.

Cumulative Impact Analysis

Unknown, unrecorded cultural resources may be found during construction at nearly any of the development sites of the projects listed in Section 3.18.4. The actual number and type of resources that might be adversely affected by the cumulative scenario projects is unknowable without a comprehensive inventory of the area within the geographic scope of the cumulative analysis. Development of such an inventory is beyond the reasonable scope of this analysis. Typically, cultural resources are identified as part of the permitting process for individual undertakings, and often are discovered only during ground disturbing activities. The following analysis is based on available information.

Impacts of Existing Projects

I-10 Corridor

The construction of Chuckwalla Valley and Ironwood State Prisons has disturbed approximately 1,720 acres, suggesting that 29 sites were destroyed during this project.

The construction of I-10, a four-lane divided highway, with associated bridges, off-ramps, and berm system, also resulted in significant ground disturbance in the I-10 Corridor. Assuming a width of a minimum of 200 feet and a length of 48 miles, this project disturbed approximately 2,328 acres within the I-10 Corridor, suggesting that 40 sites were destroyed during this construction.

Another linear project within the I-10 Corridor was the Devers-Palo Verde Transmission Line, a 500-kV transmission line paralleling I-10. Based on the construction of the access road and excluding the transmission tower pads, a width of 20 feet and a length of 48 miles were assumed for this analysis. A similar calculation was made for the Blythe-Eagle Mountain Transmission Line and a natural gas line, both of which were constructed parallel to I-10. This analysis estimates that during the construction of these three linear projects, approximately 350 acres were disturbed, and 6 cultural resources were destroyed.

Finally, the mining activities at the Kaiser Eagle Mountain Mine may have disturbed more than 3,500 acres, destroying 59 cultural resources.

Taken together, the larger ground-disturbing projects within the I-10 Corridor disturbed at least 7,898 acres, or 6.4 percent of the I-10 Corridor. One hundred and thirty-three of the estimated 2,081 cultural resources were likely destroyed by these projects.

Southern California Desert Region

Within the larger Southern California Desert Region, the most intensive use of the desert and concomitant disturbance of cultural resources has been on designated military installations (e.g., Edwards Air Force Base, Fort Irwin, Twentynine Palms Marine Corps Base, Chocolate Mountain Naval Aerial Gunnery Range) during Gen. Patton's military training from 1942 to 1944, and during later training maneuvers in May 1964, throughout the I-10 Corridor.

Cultural resources in the Southern California Desert Region have been primarily impacted by past and currently approved projects through the ground disturbance that is required for construction of buildings, facilities, roads, and other infrastructure. Military training operations have been the most destructive, particularly at bombing ranges.

In the case of military installations and maneuvers, however, avoidance of substantial adverse changes to NRHP-eligible cultural resources has been accomplished through deliberate project planning. Likewise, the severity of impacts to previously unknown cultural resources has been reduced by implementing mitigation measures requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for significant resources.

Impacts of Reasonably Foreseeable Future Projects

Cultural resources are expected to be affected by reasonably foreseeable future projects. Some of these projects may not be built, but this analysis estimates the maximum number of cultural resources that may be destroyed.

I-10 Corridor

Numerous projects are proposed and under consideration along the I-10 Corridor. For the purposes of this analysis, it is assumed that the 13 proposed solar projects and Chuckwalla Raceway Project would destroy all of the cultural resources within the proposed project limits. Together these reasonably foreseeable future projects would disturb 48,056 acres, or 39 percent of the total I-10 Corridor. This cumulative analysis suggests that these projects would destroy 816 cultural resources.

Southern California Desert Region

The projects proposed for construction within the BLM California Desert District make a reasonable proxy for patterns across the larger area. Solar projects occupying 567,882 acres and wind projects occupying 433,721 acres have been proposed for this region, consisting of nearly 4 percent of the CDCA.

Although the cultural resources density per acre is unknown for this entire region, the density proposed for the I-10 Corridor serves as a reasonable proxy. The disturbance of 1 million acres would likely result in the destruction of about 17,000 cultural resources.

Construction of the solar and wind projects proposed throughout this region would result in substantial changes in the setting, feeling, and association of the areas in which they are constructed. These kinds of impacts may be especially severe for traditional use areas and traditional cultural properties. Potential impacts would include direct impacts in the form of physical disturbance or alteration as a result of construction activity or indirect impacts in the form of diminished visual character of traditional use areas due to the presence of industrial structures.

Contribution of the Project to Cumulative Impacts

The Proposed Action could result in significant, unmitigable impacts on cultural resources during the proposed construction period, as 58 archaeological sites are within the Project footprint. Impacted resources would be permanently affected or destroyed, effectively removing them from the cultural resource base and cultural, historical, and archaeological landscape of the cumulative analysis area. *In particular, it is expected that sites related to the DTC-C-AMA would be greatly affected by the cumulative projects.* Destruction or disturbance of DTC-C-AMA-related resources is of particular concern as a complete recordation of the area has not yet been completed, but such resources are likely present throughout the Chuckwalla Valley. *The three other large future projects in the Chuckwalla Valley, the Desert Harvest Solar Project, the Eagle Mountain Pumped Storage Project, and the Palen Solar Power Project, would also create extensive ground disturbance.* *While implementation of Applicant Measures and mitigation measures would reduce the cumulative effects on cultural resources*, the permanent removal of these resources as a result of the Project would impact the feeling and human and traditional experience of the area's prehistory and history *and would not satisfactorily reduce impacts to less than significant. Given that the same laws and regulations apply to all development in the geographic area where cumulative projects are found, and that impacts resulting from these projects would be similar in nature, the cumulative impacts of construction on cultural resources from past, present and reasonably foreseeable projects would be significant and unmitigable.*

Similarly, operation and maintenance of the proposed Project would indirectly impact cultural resources, as Project components would be land uses incompatible with existing cultural resources. In the case of both operation and maintenance and decommissioning, impacted resources would still be permanently affected or destroyed. As described above for construction impacts, while implementation of Applicant Measures and mitigation measures would reduce the cumulative effects, the permanent removal of cultural resources would remain a significant impact and would contribute *to significant, unmitigable cumulative cultural resource impacts.* Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

Although the cumulative projects *detailed in Section 3.18* are in various stages of approval and environmental documentation, they are expected to have impacts on cultural resources similar in nature to the proposed Project. The proposed Project's action alternatives would also contribute to the permanent loss of DTC-C-AMA-related resources and Chuckwalla Valley's cultural resources in general and would degrade the cultural, historical, and archaeological landscape of the area. Given that at this time, the action alternatives would have impacts as described above, the action alternatives *would considerably contribute* to the cumulative impacts on cultural resources under NEPA and CEQA.

Due to similarities in their components and construction requirements, the cultural resource cumulative impacts for Alternatives 2 and 3 would be the same as described for the proposed Project and would be cumulatively considerable. As no construction would occur under the No Action and No Project Alternatives (Alternatives 4, 5, and 6), these alternatives would not contribute to any considerable cumulative impacts.

4.7 PALEONTOLOGICAL RESOURCES

4.7.1 Methodology for Analysis

Most impacts on paleontological resources are direct and result from ground disturbance activities. Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity (i.e., personnel involved in construction and operation of Project facilities). Areas with high potential for paleontological resources are evaluated for the amount and type of disturbance and activities that would result in impacts on paleontological resources.

4.7.2 CEQA Significance Criteria

The principal measure of effect on paleontological resources is the presence or potential presence of these resources in areas where ground disturbance would occur. It is the policy of the BLM, that potential impacts on scientifically significant paleontological resources be identified and proper mitigation implemented (BLM 2008).

A project would have a significant paleontological resources impact if it would:

PR-1. Damage or destroy fossils or other unique paleontological resources;

PR-2. Directly or indirectly destroy a unique geologic feature associated with paleontological resources; or

PR-3. Cause the loss of valuable scientific information by disturbing the geology in which fossils are found.

Significant impacts would result from actions where these impacts could not be mitigated by collection prior to and during construction or by avoidance.

4.7.3 Alternative 1 – Proposed Action

Construction

<u>Solar Farm Layout B</u>

The physical disturbance of the geologic units present at the site during construction of the Solar Farm facilities could directly impact (i.e., damage or destroy) any fossils that might be present. Once the solar array plus supporting facilities were built, no additional direct impacts would be likely. No fossils have been cited as being found in the immediate vicinity of the SF-B site.

Only the Quaternary older alluvium has any potential to yield paleontological resources. The Quaternary older alluvium underlies the other Quaternary units at varying depths in the Project area. Excavation could disturb this unit. In the Project area, the Quaternary older alluvium has a low potential to contain significant fossil resources due to its lithology and depositional characteristics.

The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct impacts on paleontological resources is low.

Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The potential for indirect impacts on paleontological resources is low.

Gen-Tie Line A-1

No fossils have been cited as being found in the immediate vicinity of the GT-A-1. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during construction of the Gen-Tie Line has a low potential for direct impacts (i.e., to damage or destroy any fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line was built and disturbance due to laydown and pulling activities was over, no additional direct impacts would be likely.

Red Bluff Substation A

The potential for direct or indirect impacts on paleontological resources as a result of constructing the Red Bluff Substation A would be low, as discussed for SF-B.

Summary of Construction Impacts

The construction of the Proposed Action, with SF-B, GT-A-1, and Substation A, would have low potential for direct impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of the identified mitigation measures discussed below would further reduce the already low potential for impacts on paleontological resources.

Operation and Maintenance

Solar Farm Layout B

Indirect impacts that may occur during operation and maintenance of SF-B include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The potential for indirect impacts on paleontological resources is low.

Gen-Tie Line A-1

No fossils have been cited as being found in the immediate vicinity of the GT-A-1. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. There is low potential for indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be present along the route.

Red Bluff Substation A

The potential for indirect impacts on paleontological resources as a result of operations and maintenance of the Red Bluff Substation A would be low as discussed for SF-B.

Summary of Operation and Maintenance Impacts

The operation and maintenance associated with the Proposed Action, with SF-B, GT-A-1, and Substation A, would have low potential for indirect impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of identified mitigation measures discussed below would further reduce the already low potential for impacts on paleontological resources.

Decommissioning

Solar Farm Layout B

The physical disturbance of the geologic units present at the site during decommissioning of the Solar Farm facilities could directly impact (i.e., damage or destroy) any fossils that might be present. Once the solar array plus supporting facilities were removed, no additional direct impacts would be likely. No fossils have been cited as being found in the immediate vicinity of the SF-B site. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low.

Gen-Tie Line A-1

No fossils have been cited as being found in the immediate vicinity of GT-A-1. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during decommissioning of the transmission line would have low potential for direct impacts (i.e., to damage or destroy any fossils) or indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line was decommissioned, no additional direct impacts would be likely.

Red Bluff Substation A

The potential for direct or indirect impacts on paleontological resources as a result of decommissioning the Red Bluff Substation A would be low as discussed for SF-B.

Summary of Decommissioning Impacts

The decommissioning of the facilities associated with the Proposed Action, with SF-B, GT-A-1, and Substation A, would have low potential for direct or indirect impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of identified mitigation measures discussed below would further reduce the already low potential for impacts on paleontological resources.

Summary of Combined Impacts for Alternative 1

No fossils have been cited as being found in the immediate vicinity of the SF-B, GT-A-1, or Red Bluff Substation A. The geologic units present in the vicinity of these facilities have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low. Completion of identified mitigation measures discussed below would further reduce the already low potential for impacts on paleontological resources.

Applicant Measures and Mitigation Measures

The geologic units exposed in the Project area have low potential for paleontological resources. However, if there are any cohesive beds of fine-grained sediments with characteristics of lake or low-energy fluvial deposition lying unexposed beneath the surface, these beds could have a higher potential for paleontological resources. The following Applicant Measures have been developed to further reduce the already low potential to damage any paleontological resources that might be present.

AM-PR-1. The Applicant shall be responsible for the following measures.

- A qualified paleontologist will conduct a study to further characterize the paleontological sensitivity of the Project Study Area. The study will result in a map of the Project sites that would identify areas of high paleontological sensitivity and areas of lesser sensitivity. The study may also include a paleontology reconnaissance of the sites by professional paleontologists, if deemed necessary by the BLM after review of the initial site characterization. Should the site characterization or the site reconnaissance identify areas of high potential for paleontological resources, additional measures could be implemented, as determined by the BLM.
- A qualified paleontologist will develop a monitoring and mitigation plan prior to construction to mitigate adverse impacts on paleontological resources if excavation is to occur in an area of high paleontological sensitivity or expose new sediments with an unknown potential for paleontological sensitivity. The plan will include measures to be followed in the event that fossil materials are encountered during construction.
    - The monitoring and mitigation plan shall include a schedule and plan for monitoring earth-moving activities, and a provision that monitoring personnel have the authority to temporarily halt or divert excavation activities to allow removal of fossil specimens and recording of information on the location, orientation, etc. associated with the collected specimen.
    - Worker awareness training will be implemented to ensure that the construction personnel understand the potential for fossil remains being uncovered and/or disturbed by earth-moving activities; where such remains are most likely to be encountered during earth moving; and requirements and procedures to be followed in the event of suspected fossil discoveries. The awareness training may be given along with other sensitivity trainings (e.g., for biological resources) or incorporated into tailgate safety meetings.
    - The Applicant will have a paleontology monitor on site during construction when there are ground-disturbing activities in areas of identified high paleontological sensitivity.
    - Recovered fossils will be curated with a museum or other curation facility approved by the BLM.

CEQA Significance Determination

Solar Farm Layout B

No fossils have been cited as being found in the immediate vicinity of the SF-B site. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources.

The potential for damaging or destroying fossils or other unique paleontological resources is low (significance criterion PR-1). With the identified mitigation, no significant impacts would occur.

The potential for directly or indirectly destroying a unique geologic feature associated with paleontological resources is low (significance criterion PR-2). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

The potential for causing the loss of valuable scientific information by disturbing the geology in which fossils are found is low (significance criterion PR-3). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

Gen-Tie Line A-1

No fossils have been cited as being found in the immediate vicinity of GT-A-1. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources.

The potential for damaging or destroying fossils or other unique paleontological resources is low (significance criterion PR-1). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

The potential for directly or indirectly destroying a unique geologic feature associated with paleontological resources is low (significance criterion PR-2). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

The potential for causing the loss of valuable scientific information by disturbing the geology in which fossils are found is low (significance criterion PR-3). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

Red Bluff Substation A

No fossils have been cited as being found in the immediate vicinity of the Red Bluff Substation A or related elements. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources.

The potential for damaging or destroying fossils or other unique paleontological resources is low (significance criterion PR-1). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

The potential for directly or indirectly destroying a unique geologic feature associated with paleontological resources is low (significance criterion PR-2). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

The potential for causing the loss of valuable scientific information by disturbing the geology in which fossils are found is low (significance criterion PR-3). With the identified mitigation, impacts on paleontological resources would be reduced to a less-than-significant level.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on paleontological resources under Alternative 1.

4.7.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No fossils have been cited as being found in the immediate vicinity of GT-B-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during construction of the Gen-Tie Line have low potential for direct impacts (i.e., to damage or destroy any fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line was built and disturbance due to laydown and pulling activities was over, no additional direct impacts would be likely.

Red Bluff Substation B

The potential for direct or indirect impacts on paleontological resources as a result of constructing the Red Bluff Substation B would be low as discussed for SF-B.

Summary of Construction Impacts

The construction of Alternative 2, with SF-B, GT-B-2 and Red Bluff Substation B, would have low potential for direct impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of the identified mitigation measures discussed under Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No fossils have been cited as being found in the immediate vicinity of the GT-B-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. There is low potential for indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be present along the route.

Red Bluff Substation B

The potential for indirect impacts on paleontological resources as a result of operation and maintenance of the Red Bluff Substation B would be low as discussed for SF-B.

Summary of Operation and Maintenance Impacts

The operation and maintenance associated with Alternative 2, with Solar Farm Layout B, Gen-Tie Line B-2 and Red Bluff Substation B, would have low potential for indirect impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of identified mitigation measures discussed under Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No fossils have been cited as being found in the immediate vicinity of the GT-B-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during decommissioning of the transmission line would have low potential for direct impacts (i.e., to damage or destroy any fossils) or indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line is decommissioned, no additional direct impacts would be likely.

Red Bluff Substation B

The potential for direct or indirect impacts on paleontological resources as a result of decommissioning the Red Bluff Substation B would be low as discussed for SF-B.

Summary of Decommissioning Impacts

No fossils have been cited as being found in the immediate vicinity of the SF-B, GT-B-2, or Red Bluff Substation B. The geologic units present in the vicinity of these facilities have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low. Mitigation measures to further reduce the already low potential for direct and indirect impacts are identified under Alternative 1 above.

Summary of Combined Impacts for Alternative 2

No fossils have been cited as being found in the immediate vicinity of the Solar Farm B, Gen-Tie Line B-2, or Red Bluff Substation B. The geologic units present in the vicinity of these facilities have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low. Completion of identified mitigation measures for Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Applicant Measures and Mitigation Measures

The Applicant Measures that have been developed to further reduce the already low potential to damage any paleontological resources that might be present are the same as those discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B would be the same as that discussed under Alternative 1.

Gen-Tie Line B-2

No fossils have been cited as being found in the immediate vicinity of the GT-B-2 route. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The CEQA significance determination for GT-B-2 is the same as that discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

No fossils have been cited as being found in the immediate vicinity of the Red Bluff Substation B or related elements. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The CEQA significance determination for Red Bluff Substation B is the same as that discussed for Red Bluff Substation A under Alternative 1.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on paleontological resources under Alternative 2.

4.7.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

The physical disturbance of the geologic units present at the site during construction of the Solar Farm facilities could directly impact (i.e., damage or destroy) any fossils that might be present. Once the solar array plus supporting facilities were built, no additional direct impacts would be likely. No fossils have been cited as being found in the immediate vicinity of the SF-C site. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct impacts on paleontological resources is low.

Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The potential for indirect impacts on paleontological resources is low.

Gen-Tie Line A-2

No fossils have been cited as being found in the immediate vicinity of GT-A-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during construction of the Gen-Tie Line have low potential for direct impacts (i.e., to damage or destroy any fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line was built and disturbance due to laydown and pulling activities was over, no additional direct impacts would be likely. Mitigation measures to further reduce the already low potential for direct impacts are discussed under Alternative 1 above.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed under Alternative 1. The potential for direct impacts from the alternate Access Road 1 would also be low.

Summary of Construction Impacts

The construction of Alternative 3, with SF-C, GT-A-2, and Red Bluff Substation A, would have low potential for direct impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of the identified mitigation measures discussed under Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Operation and Maintenance

Solar Farm Layout C

Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The potential for indirect impacts on paleontological resources is low.

Gen-Tie Line A-2

No fossils have been cited as being found in the immediate vicinity of GT-A-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. There is low potential for indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be along the route.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A would be the same as those discussed under Alternative 1. The potential for indirect impacts from the use of the alternate Access Road 2 would be low.

Summary of Operation and Maintenance Impacts

The operation and maintenance associated with Alternative 3, with SF-C, GT-A-2, and Red Bluff Substation A, would have low potential for indirect impacts on vertebrate fossils and other scientifically valuable paleontological resources. Completion of identified mitigation measures discussed under Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Decommissioning

Solar Farm Layout C

The physical disturbance of the geologic units present at the site during decommissioning of the solar farm facilities could directly impact (i.e., damage or destroy) any fossils that might be present. Once the solar array plus supporting facilities were removed, no additional direct impacts would be likely. No fossils have been cited as being found in the immediate vicinity of the SF-C site. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low.

Gen-Tie Line A-2

No fossils have been cited as being found in the immediate vicinity of GT-A-2. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The physical disturbance of these units during decommissioning of the transmission line would have low potential for direct impacts (i.e., to damage or destroy any fossils) or indirect impacts (unauthorized collection of fossils) for any paleontological resources that might be present along the route. Once the Gen-Tie Line was decommissioned, no additional direct impacts would be likely.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those discussed under Alternative 1. The potential for direct and indirect impacts associated with the decommissioning of the alternate Access Road 2 would be low.

Summary of Decommissioning Impacts

No fossils have been cited as being found in the immediate vicinity of SF-C, GT-A-2, or Red Bluff Substation A. The geologic units present in the vicinity of these facilities have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low. Mitigation measures to further reduce the already low potential for direct and indirect impacts are identified under Alternative 1 above.

Summary of Combined Impacts for Alternative 3

No fossils have been cited as being found in the immediate vicinity of the Solar Farm Layout C, Gen-Tie Line A-2, or Red Bluff Substation A. The geologic units present in the vicinity of these facilities have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. Therefore, the potential for direct and indirect impacts on paleontological resources is low. Completion of identified mitigation measures for Alternative 1 above would further reduce the already low potential for impacts on paleontological resources.

Applicant Measures and Mitigation Measures

The Applicant Measures that have been developed to further reduce the already low potential to damage any paleontological resources that might be present are the same as those discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

No fossils have been cited as being found in the immediate vicinity of SF-C. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The CEQA significance determination for SF-C is the same as that discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

No fossils have been cited as being found in the immediate vicinity of the Gen-Tie Line A-2 route. The geologic units present at the site have low potential to contain vertebrate fossils and other scientifically valuable paleontological resources. The CEQA significance determination for GT-A-2 is the same as that discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The CEQA significance determination for Red Bluff Substation A would be the same as that discussed under Alternative 1.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on paleontological resources under Alternative 3.

4.7.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Project would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no Solar Farm, Gen-Tie Line, or Substation would be constructed on the Project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. Because no ground disturbance would occur, direct impacts on potential paleontological resources from the construction, operation, and closure of the proposed Project would not occur.

The No Action Alternative would not necessarily avoid potential direct impacts on paleontological resources from future renewable energy development. The land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.7.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed Project site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

This alternative would not impact potential paleontological resources from the construction, operation, and closure of the proposed Project. Even though the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is possible that the site could be developed with a different renewable energy technology or allowable other uses. As a result, the land could become available for other uses, which could result in direct impacts (i.e., surface disturbance) and indirect impacts (unauthorized collection of fossils) to potential paleontological resources in the area. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.7.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Project would not be approved by the BLM. The BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Construction and operation requirements for solar technologies vary; however, it is expected that all solar technologies require some grading and some infrastructure. Because it is expected that all solar technologies would require ground disturbance, the impacts on potential paleontological resources from the construction, operation, and closure of the alternative would likely be similar to the impacts under the proposed Project.

4.7.9 Cumulative Impacts

Geographic Extent

Impacts on paleontological resources result from physical disturbance or unauthorized collection. The geographic extent for cumulative impacts analysis is limited to the immediate region of the physical disturbance and change in pedestrian traffic associated with the DSSF and other projects.

Existing Cumulative Conditions

As discussed in Section 3.7, no fossils have been found within the immediate Project area. The geologic units present have low potential for paleontological resources. There are likely areas within the larger region of the California Desert that do contain paleontological resources.

Past, Present, and Reasonably Foreseeable Future Projects

Tables 3.18-2 and 3.18-3 list existing and reasonably foreseeable projects in the Project area. Projects in the cumulative scenario that are within the immediate area of the proposed Project include Desert Harvest Solar Project, Palen Solar Project, and Eagle Mountain Pumped Storage Project.

Other projects within the California Desert do have to potential to impact paleontological resources, where those resources are present. Completion of project footprint specific surveys and assessment is necessary to design mitigation measures to reduce the potential for impacts.

Cumulative Impact Analysis

Unknown, unrecorded paleontological resources may be found during construction at nearly any development site. As they are discovered, sites are recorded and information retrieved. If the nature of the resource requires it, the resource is protected. When discovered, paleontological resources are treated in accordance with applicable federal and state laws and regulations, as well as the mitigation measures and permit requirements applicable to a project. Should resources be discovered, they would be subject to legal requirements designed to protect them; therefore no cumulative impact to paleontological resources would occur in this geographic area of the proposed Project.

Implementation of Applicant Measures and mitigation measures would serve to reduce the cumulative effects on paleontological resources to a less-than-significant level. Given that the same laws and regulations apply to all development in the geographic area where cumulative projects are found, the impact to paleontological resources from past, present, and reasonably foreseeable projects and proposed Projects would be less than cumulatively considerable.

While there is a low potential for the disturbance of paleontological resources during construction, operations and maintenance and decommissioning of the alternatives would have an even lower potential for disturbance. Consequently, with the implementation of the Applicant Measures and mitigation measures, the cumulative impact, when combined with the projects in the immediate area of the DSSF, would not be cumulatively considerable.

Due to similarities in their components, the paleontological cumulative impacts for Alternatives 2 and 3 would be the same as described for the proposed Project and would not be cumulatively considerable. Under the No Action and No Project Alternatives (Alternatives 4, 5, and 6), no construction is anticipated to occur, and these alternatives would not contribute to any considerable cumulative impacts.

4.8 Geology and Soil Resources

4.8.1 Methodology for Analysis

This section describes the geologic hazards and soil resources impacts that would occur with the implementation of the proposed *action* or alternatives, *and associated plan amendments* with respect to the impact criteria identified in Section 4.8.2. The analysis evaluates the impacts of construction, operation and maintenance, and decommissioning.

The potential impact by geologic hazards was evaluated by assessing if there would be life/safety concerns or impacts to proper function of the Project as a result of a seismic event. The potential impact of loss of soils due to erosion by either water or wind was also evaluated. Available published resources including journal articles and maps available through the internet were reviewed. Also reviewed were technical reports prepared by the Applicant relevant to this resource and soils information provided by the National Resources Conservation Service (NRCS). This information was reviewed within the context of applicable federal, state and local regulations. Other important sources were government websites including databases the provided information on seismic hazards and faulting.

Table 4.8-1 provides an overview of total acreage of temporary and disturbed acreage to evaluate the amount of soils disturbed by the Project. The potential for seismic hazards remains unchanged by any of the alternatives proposed.

Table 4.8-1
Comparison of Action Alternative Features Relevant to Soil Resources

Project Feature	Alternative 1	Alternative 2	Alternative 3
Solar Farm Acreage	*3,912*	*3,912*	*3,045*
Gen-Tie Line Corridor	12.1 miles by 160 feet	10 miles by 160 feet	10.5miles by 160 feet
• Gen-Tie Line Permanent Disturbance Acreage	*92*	*68*	*86*
Red Bluff Substation Permanent	*172*	*130*	*130*
Total Disturbance Acreage	***4,176***	***4,110***	***3,303***

4.8.2 CEQA Significance Criteria

The proposed Project would have a significant impact on geology and soil resources if it would:

GS-1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving geologic hazards;

GS-2. Allow people or structures to be subject to strong seismic shaking;

GS-3. Be subject to seismic-related ground failure including liquefaction;

GS-4. Be located where landslides could cause substantial soil erosion or the loss of topsoil or disturb any human remains including those interred outside of formal cemeteries;

GS-5. Be located on expansive soils as defined in Table 18-1B of the Uniform Building Code (1987) that is based in part on the International Building Code that would create substantial risks to life or property;

GS-6. Be located on a geologic unit or soil that is unstable, or would become unstable as a result of the Project and potentially result in on-site or off-site landside, lateral spreading, subsidence, liquefaction or collapse;

GS-7. Result in the physical alteration of or damage to geologic features; or

GS-8. Result in substantial soil erosion or loss of topsoil.

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact under all alternatives. The determination regarding these significance criteria is discussed below and then these significance criteria are not discussed further in this section.

- Be located on a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map

No component associated with the Project has been identified within an Alquist-Priolo Earthquake Fault Zone. There would be no impacts under this criterion from any component of the Project.

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water

The Project would require installation of a septic system for the Visitor's Center and the O&M Building. No soils within the Project Area have been identified as unsuitable for septic systems.

4.8.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Construction of SF-B would require clearance (land clearing) of approximately *3,912* acres. Development of the Solar Farm site is described in Section 2.2.4 (Alternative 1). In addition to the solar array and internal roads, other permanent land uses include the O&M Facilities, On-Site Substation, and Visitor's Center. The SF-B site would be graded to clear and grub plants, followed by minimal cut and fill depths, averaging about 5 inches. No import material would be used. The site would then be compacted to allow vehicle access and equipment installation. SF-B would be constructed approximately 7.2 miles from the Blue Cut Fault Zone, which is the closest active fault to the Project Area. Three unnamed faults, as identified in Section 3.8, are within the Project Study Area. These faults are buried, are poorly defined, and are not considered active or significant sources of seismic activity (Earth Systems Southwest 2010b).

Seismic and Geologic Hazards

The proposed construction of SF-B would expose people and/or structures to potential adverse effects, including the risk of loss, injury or death involving (i) rupture of a known earthquake fault; (ii) strong seismic ground shaking and (iii) seismic-related ground failure. The Project Area that includes SF-B is approximately 7.2 miles from the Blue Cut fault system and 35.9 miles from the Pinto Mountain fault zone. During construction, regional seismic hazards could expose site workers to seismic hazards. Implementing Mitigation GEO-1 would reduce these impacts. Implementation of design characteristics that comply with the 2007 California Building Code would reduce seismic impacts. Other geologic hazards, including liquefaction, seismically induced subsidence, tsunamis, seiches and slope instability are considered generally not applicable to the construction of SF-B. Liquefaction occurs when loosely packed sandy or silty soils that are saturated with water are shaken during an earthquake hard enough to lose strength and stiffness. The liquefied soil then can behave like a liquid. Groundwater levels at the site may fluctuate with precipitation, irrigation, drainage, and regional pumping from wells. Groundwater is estimated to be greater than 50 feet below ground surface based on levels recorded in wells found in the area. As a result, soil susceptibility to liquefaction during a seismic event is not considered likely. Groundwater would not be a factor in design or construction at this site. Section 4.17, Water Resources, has a comprehensive analysis of groundwater impacts associated with the Project. As stated in Section 3.8, the Project Study Area is within a Riverside County-designated "susceptible" subsidence zone (Riverside County 2003). Compaction of site soils during construction would prevent subsidence of site soils during a seismic event. The Project Area is neither within a coastal area nor near any large body of water and would therefore not be subject to tsunami or seiche.

Water and Wind Erosion of Soils

As stated in Section 3.8, relict or old or inactive dune deposits exist scattered throughout the Project Study Area. Due to the paucity of sand sources, the potential for wind-driven sand erosion of the SF-B is low (Kenney 2010). During construction, the potential soil erosion impacts from water are considered slight as water used as a dust suppressant would be managed such that all would remain within the construction area. No alterations of stormwater would occur that would increase soil erosion from water downgradient of SF-B. Best management practices identified in the Stormwater Pollution Prevention Plan, as identified under Mitigation GEO-2, should be implemented to ensure water used for dust suppression remains within the construction area.

Site grading would remove desert pavement or cryptobiotic soil crusts found within the construction area and would increase the chances for windblown soils. Although there is a low potential for wind-driven erosion of soils associated with the site due to a lack of unconsolidated sand at the site (Kenney 2010), the potential is considered severe for construction-related surface disturbance of soils that would result in potential wind erosion. It is estimated that approximately 20 percent of the site has been determined to have various stages of desert pavement (weak, moderate, and strong). Moderate to strong pavement is indicative of complete to nearly complete rock clasts coverage on the surface, with minimal soil exposed. Weak desert pavement is where there is predominately more soil exposed than rock clasts (Earth Systems Southwest 2010). Implementing Mitigation GEO-2, which includes use of dust control palliatives, would reduce the impacts from wind erosion during construction.

Cryptobiotic soils can be expected to overlie older alluvial fan surfaces, indicated by all units other than Qw (modern washes) and Qa3 (late Holocene Alluvium). The likelihood that cryptobiotic soils are present generally increases with the age of the alluvial fan. Disturbance to existing cryptobiotic soil crusts on site could also result in a substantial increase in on-site wind- and waterborne erosion, as disturbance to these features could expose underlying sediments to increased erosion. Implementation of Mitigation GEO-2 would also ensure that erosion potential associated with loss of soil crusts is minimized. While a portion of the Project Study Area is in an area of active sand dune formation, the area proposed for SF-B is not. Inorganic elements are naturally found in soils at the site. No information was identified during the data collection for the analysis of soils within the Project Area that suggests inorganic elements are present in hazardous levels.

Sand Transport

There are no sand dunes within the Project site, although there are dunes in the vicinity of the Project site. Still, some degree of sand transport is anticipated to occur across the existing Project site under current conditions. It is therefore assumed that all areas within the Project boundary are directly impacted and are lost as sand transport areas. Therefore, the assessment presented here focuses primarily on off-site indirect impacts. The Project has the potential to disrupt sand transport because it includes perimeter fencing and berms that would impede sand migration across the solar array. Most sand transport (as opposed to dust transport) occurs close to the ground through the processes of rolling and saltation (bouncing of sand particles). It is assumed that the Project would act as an effective barrier to sand transport and create a sand shadow downwind. A sand shadow is an area downwind of a sand barrier where the wind is able to remove fine sand but there is no replacement by sand from upwind. Over time, sand located downwind will be become deflated—it will become thinner and coarser as the fine sand is blown away by the wind. At a certain point downwind, the sand shadow disappears because diffusion is able to replace sediment into the area downwind of the obstruction. However, the Project is not directly situated within the Chuckwalla Valley sand transport corridor. Therefore, although sand transport across the site would be blocked, overall reductions in sand transport within the Chuckwalla Valley would be minor because primary sand transportation corridors would be avoided.

Gen-Tie Line A-1

Construction of GT-A-1 within the 12.1-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in the permanent disturbance of *92* acres along the route, as described in Section 2.2.4 (Alternative 1).

Seismic and Geologic Hazards

Construction of GT-A-1 would have impacts similar to those identified for SF-B, as it has the potential to expose people and structures to seismic hazards. Implementation of Mitigation GEO-1 would reduce these impacts.

Wind and Water Erosion of Soils

Construction of GT-A-1 would have impacts similar to those identified for SF-B, as it has the potential for wind erosion impacts. Implementation of Mitigation GEO-2 would reduce impacts from wind erosion.

Red Bluff Substation A

Construction of Red Bluff Substation A includes the Substation itself and related elements. It would result in approximately *172* acres of permanent disturbance, including *76* acres for the Substation itself, as described in Section 2.2.4 (Alternative 1). Construction also includes the Desert Center Communication Center (not collocated with the Substation and requiring less than an acre of disturbance); an access road to the east of the substation from Chuckwalla Valley Road/Corn Springs Road (Access Road 2, requiring *31* acres of disturbance); an electrical distribution line (8 acres of disturbance); various tie-ins from the Substation to the Gen-Tie Line and to the regional transmission line (DPV1) adjacent to the Substation site (*33* acres of disturbance); and *14* acres of associated drainage features. As Red Bluff Substation A is downslope of the Chuckwalla Mountains, surface runoff in the form of eroded channels traverses the site. Three of these channels would be needed to be altered to protect the Substation's southern exposure from flooding. Preliminary engineering suggests that a trapezoidal channel would be required to convey stormwater runoff around both sides of the Substation, discharging the flow through two existing culverts under I-10.

Other surface flow at the south end of the Substation would be directed into the new trapezoidal channels by earthen berms placed along the southern edge of the Substation wall. Proposed drainage features would be properly engineered to prevent erosion of soils next to and downslope of the Substation.

Seismic and Geologic Hazards

The proposed construction of Red Bluff Substation A would expose people and/or structures to potential substantial adverse effects, including the risk of loss, injury or death involving (i) rupture of a known earthquake fault; (ii) strong seismic ground shaking and (iii) seismic-related ground failure. Implementing Mitigation GEO-3 would reduce these impacts. Other geologic hazards, including liquefaction, seismically induced subsidence, tsunamis, seiches and slope instability are considered generally low to nil to the construction of Red Bluff Substation A. Groundwater levels at the site may fluctuate with precipitation, irrigation, drainage, regional pumping from wells, and site grading. Groundwater levels would be determined in the geotechnical study completed prior to construction of Red Bluff Substation A.

Water and Wind Erosion of Soils

Similar to construction for SF-B and GT-A-1, construction of the Red Bluff Substation A has the potential to increase the probability of water and wind erosion. Implementing Mitigation GEO-4 would reduce these impacts.

Summary of Construction Impacts

The construction of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A, would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. Implementation of identified Mitigations AM-GEO-1 through AM-GEO-4 would reduce these impacts.

Operation and Maintenance

Solar Farm Layout B

Seismic and Geologic Hazards

The proposed operation and maintenance of SF-B would expose people and/or structures to the same seismic hazards as described for SF-B during construction. Implementation of Mitigation AM-GEO-1 would reduce impacts from seismic and geologic hazards.

Water and Wind Erosion of Soils

During operation and maintenance, the potential soil erosion impacts from water and wind are considered slight. Implementing Mitigation AM-GEO-2 at a frequency detailed in an operations and maintenance plan as approved by the BLM would reduce any potential impacts from water and wind erosion.

Gen-Tie Line A-1

Seismic and Geologic Hazards

Operating and maintaining this transmission corridor would have impacts similar to those identified for SF-B, as it has the potential to expose people and/or structures to seismic hazards. Implementation of Mitigation AM-GEO-1 would reduce these impacts.

Wind and Water Erosion of Soils

During operation and maintenance, the potential soil erosion impacts from water and wind are considered slight. Implementing Mitigation Measure AM-GEO-2 at a frequency detailed in an operations and maintenance plan as approved by the BLM would reduce any potential impacts from water and wind erosion.

Red Bluff Substation A

Seismic and Geologic Hazards

The proposed operation and maintenance of Red Bluff Substation A would expose people and/or structures to the same seismic and geologic hazards as described for construction. Implementation of Mitigation AM-GEO-3 would reduce these impacts.

Water and Wind Erosion of Soils

The operation and maintenance of the Red Bluff Substation A does not have the potential to increase the probability of water and wind erosion. Implementing Mitigation Measure AM-GEO-4 would reduce these impacts.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A, would increase the exposure of people and/or property to seismic and geologic hazards and increase the erosion of soils from wind and water. Implementation of Mitigations AM-GEO-1 through AM-GEO-4 would reduce these impacts.

Decommissioning

Solar Farm Layout B

Seismic and Geologic Hazards

The decommissioning of SF-B would have similar types of impacts as construction. Facilities would be removed and land reclaimed. Decommissioning of SF-B would expose people and/or structures to the same impacts as during construction. Implementing Mitigation AM-GEO-1 would reduce these impacts.

Water and Wind Erosion of Soils

During decommissioning of SF-B, the potential soil erosion impacts from water and wind are considered slight. Implementing Mitigation AM-GEO-2 at a frequency detailed in an operations and maintenance plan as approved by the BLM would reduce any potential impacts from water and wind erosion.

Gen-Tie Line A-1

Seismic and Geologic Hazards

The decommissioning of GT-A-1 would have similar types of impacts as construction. Facilities would be removed and land reclaimed. Decommissioning of GT-A-1 would expose people and/or structures to the same impacts as during construction. Implementing Mitigation AM-GEO-1 would reduce these impacts

Water and Wind Erosion of Soils

During decommissioning of GT-A-1, the potential soil erosion impacts from water and wind are considered slight. Implementing Mitigation AM-GEO-2 at a frequency detailed in an operations and maintenance plan as approved by the BLM would reduce any potential impacts from water and wind erosion.

Red Bluff Substation A

Decommissioning of Red Bluff Substation A includes the Substation itself and related elements. Prior to decommissioning of the SCE facilities or within a reasonable timeframe following termination of the BLM ROW grant, SCE would prepare a Decommissioning Plan for BLM review and approval. The Decommissioning Plan would address the decommissioning of SCE facilities from the permitted area, any requirements for habitat restoration and revegetation, if removal of SCE's facilities is required, activities and procedures for proper disposal of materials associated with the removal effort (if required), and compliance with applicable laws, regulations, and policies.

Seismic and Geologic Hazards

The decommissioning of the Red Bluff Substation A would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. Implementation of identified Mitigation AM-GEO-3 would reduce these impacts.

Water and Wind Erosion of Soils

During decommissioning of Red Bluff Substation A, the potential soil erosion impacts from water and wind are considered slight. Implementing Mitigation Measure AM-GEO-4 would reduce any potential impacts from water and wind erosion.

Summary of Decommissioning Impacts

The decommissioning of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. Implementation of Mitigations AM-GEO-1 through AM-GEO-4 would reduce these impacts. Once all facilities have been removed and soils have been sufficiently stabilized via reclamation, people and property would no longer be exposed to these hazards.

Summary of Combined Impacts for Alternative 1

The construction and decommissioning of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A, would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. The proposed construction and decommissioning of SF-B, GT-A-1, and Red Bluff Substation A would cause direct impacts by exposing people and structures to potential adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, and seismic-related ground failure. Completion of identified mitigation measures would reduce these impacts. *Please see Section 4.17, Water Resources, for a discussion of erosion by water, along with associated mitigation measures and impact conclusions.*

The proposed construction and decommissioning of SF-B, GT-A-1, and Red Bluff Substation A would cause direct impacts by increasing the potential for erosion of soils due to wind. Completion of identified mitigation measures would reduce these impacts.

The operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A, would increase the exposure of people and/or property to seismic hazards. The proposed operation and maintenance of SF-B, GT-A-1, and Red Bluff Substation A would cause direct impacts by exposing people and structures to potential adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, and seismic-related ground failure. Completion of identified mitigation measures would reduce these impacts.

Applicant Measures and Mitigation Measures

AM-GEO-1. The Applicant shall include, as part of the construction design plans for the Solar Farm and Gen-Tie Line, the mitigation measures provided in the Earth Systems Southwest (2010) geotechnical survey (Appendix F). These mitigations are summarized as follows and are subject to BLM approval. The Applicant shall be responsible for implementing these mitigations.

- A qualified professional as licensed by the State of California shall design permanent structures constructed on the site. The minimum seismic design shall comply with the 2007 California Building Code as specified in the geotechnical survey prepared for the Project (Appendix F);
- The site soils have been evaluated as having a very low expansion potential. Conventional foundations for shallow foundation used for the support of equipment shall be designed to meet at least County of Riverside building code minimums or as specified by the Project structural engineer, whichever is more stringent; and
- Areas to receive permanent structures will require over-excavation and re-compaction to support proposed structures. Areas to receive piles used to support the arrays will include surficial compaction to enhance lateral stability.

AM-GEO-2. The Applicant shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils:

- *Implement Mitigation Measures MM-WAT-6 and MM-WAT-7, discussed in Chapter 4.17, Water Resources.*
- Use nonhazardous dust suppressants approved by the BLM and water on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust palliatives also would be applied between rows of solar panels for dust suppression during operation. More details for dust suppression is provided in Section 4.2, Air Resources. Dust suppressants are materials that work by either agglomerating the fine particles, adhering/binding the surface particles together, or increasing the density of the surface material;

- Implement erosion control measures during construction, including stabilization of the heavily used construction entrance area, employing a concrete wash out area, as needed, and tire washes near the entrance to existing roadways; and
- Use silt fences for erosion control in the event of a storm event along neighboring properties, Power Line Road and along the main drainage to the east of the Solar Farm Site.

AM-GEO-3. SCE shall undertake the following mitigation measures as part of the Substation Project:

- Prior to final design of the Substation, a combined geotechnical engineering and engineering geology study shall be conducted by SCE to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering. Appropriate mitigations for identified geological hazards will be identified in the geotechnical study.
- For new substation construction, specific requirements for seismic design will be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations".
- New access roads, where required, will be designed to minimize ground disturbance during grading.
- Cut and fill slopes will be minimized by a combination of benching and following natural topography where feasible.
- Any disturbed areas associated with temporary construction will be returned to preconstruction conditions (to the extent feasible) after the completion of Project construction.

AM-GEO-4. SCE shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils:

- Obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) 2009-0009 Division of Water Quality (DWQ). As part of expected obligations under the General Permit, the Project proponent will prepare and implement a construction Storm Water Pollution Prevention Plan (SWPPP) prior to the commencement of soil disturbance activities associated with Project construction.
- Use nonhazardous dust suppressants approved by the BLM to suppress wind-blown dust generated at the site during construction. Dust suppressants are materials that work by either agglomerating the fine particles, adhering/binding the surface particles together, or increasing the density of the surface material.
- Implement erosion control measures during construction, such as stabilization of the heavily used construction entrance areas, employing a concrete wash out area, as needed, and tire washes near the entrance to existing roadways.

CEQA Significance Determination

<u>Solar Farm Layout B</u>

The construction, operation and maintenance, and decommission of SF-B in a region prone to seismic events could result in impacts on on-site workers and facilities (CEQA significance criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7). These adverse impacts can be localized to extensive, depending on the proximity and magnitude of the seismic event. Adverse impacts, including loss of property or injury or death, involving rupture of known earthquake faults, strong seismic ground shaking, and seismic-related ground failure have the potential for significant impacts on SF-B. Due to the Project location, the potential for liquefaction, tsunamis, seiches, and slope instability resulting from a seismic event is not applicable. Soils in the Project Area have been identified as susceptible to subsidence during a seismic event. Implementation of AM-GEO-1 by the Applicant would reduce impacts from a seismic event to a less than significant level. Potential impacts from seismic events would be less than significant with mitigation. Groundwater is found at sufficient depths that soils within the region are not likely to be subject to liquefaction during a seismic event (CEQA significance criterion GS-3). No impact would occur.

Soils in the SF-B area are susceptible to significant wind erosion once soils crusts are disturbed. The soils in the Project Area are also susceptible to significant water erosion (CEQA significance criteria GS-4 and GS-8). The construction, operation and maintenance, and decommission of SF-B has the potential for causing soil erosion from wind. Use of a dust suppressant, such as water, during construction, operation and maintenance, and decommissioning would reduce impacts due to wind erosion. Implementation of a SWPPP on-site during construction, operation and maintenance, and decommissioning of SF-B would reduce the potential impact of overland flow of stormwater to erode soils both on- and off-site. Implementation of AM-GEO-2 by the Applicant would reduce impacts from wind and water erosion on soils to a less than significant level. Potential impacts from wind and water erosion on soils would be less than significant with mitigation.

<u>Gen-Tie Line A-1</u>

The construction, operation and maintenance, and decommission of GT-A-1 in a region prone to seismic events could result in impacts on on-site workers and facilities (CEQA significance criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7). These adverse impacts can be localized to extensive, depending on the proximity and magnitude of the seismic event. Adverse impacts, including loss or property or injury or death involving rupture of known earthquake faults, strong seismic ground shaking, and seismic-related ground failure have the potential for significant impacts on GT-A-1. Due to the Project location, the potential for liquefaction, tsunamis, seiches, and slope instability resulting from a seismic event is not applicable to GT-A-1. Soils in the Project Area have been identified as susceptible to subsidence during a seismic event. Implementation of AM-GEO-1 by the Applicant would reduce impacts from a seismic event to a less than significant level. Potential impacts from seismic events would be less than significant with mitigation.

Soils in the GT-A-1 area are susceptible to wind erosion once soil crusts are disturbed. The soils in the Project Area are also susceptible to water erosion (CEQA significance criteria GS-4 and GS-8). The construction, operation and maintenance, and decommission of GT-A-1 has the potential for causing soil erosion from wind. Use of a dust suppressant, such as water, during construction, operation and maintenance, and decommissioning would reduce impacts from wind erosion.

Implementation of a SWPPP on-site during construction, operation and maintenance, and decommissioning of GT-A-1 would reduce the potential impact of overland flow of stormwater to cause erosion of soils both on- and off-site. Implementation of AM-GEO-2 by the Applicant would reduce impacts from wind and water erosion on soils to a less than significant level. Potential impacts from wind and water erosion on soils would be less than significant with mitigation.

<u>Red Bluff Substation A</u>

The construction, operation and maintenance, and decommission of Red Bluff Substation A in a region prone to seismic events could result in impacts on on-site workers and facilities (CEQA significance criteria GS-1, GS-2, GS-4, GS-5, GS-6, and GS-7). These adverse impacts can be localized to extensive, depending on the proximity and magnitude of the seismic event. Adverse impacts, including loss of property or injury or death involving rupture of known earthquake faults, strong seismic ground shaking, and seismic-related ground failure have the potential for significant impacts on Red Bluff Substation A. Due to the Project location, the potential for liquefaction, tsunamis, seiches, and slope instability resulting from a seismic event is not applicable to Red Bluff Substation A. Soils in the Project Area have been identified as susceptible to subsidence during a seismic event. Implementation of AM-GEO-3 by SCE would reduce impacts from a seismic event to a less than significant level. Potential impacts from seismic events would be less than significant with mitigation.

Soils in the Red Bluff Substation A area are susceptible to wind erosion once soil crusts are disturbed. The soils in the Project Area are also susceptible to water erosion (CEQA significance criteria GS-4 and GS-8). The construction, operation and maintenance, and decommissioning of Red Bluff Substation A has the potential for causing soil erosion from wind. Use of a dust suppressant, such as water, during construction, operation and maintenance, and decommissioning would reduce impacts from wind erosion. Implementation of a SWPPP on-site during construction, operation and maintenance, and decommissioning of Red Bluff Substation A would reduce the potential impact of overland flow of stormwater to cause erosion of soils both on-site and off-site. Implementation of AM-GEO-4 by the SCE would reduce impacts from wind and water erosion on soils to a less than significant level. Potential impacts from wind and water erosion on soils would be less than significant with mitigation.

Unavoidable Adverse Effects

Implementation of Alternative 1 would not result in any unavoidable adverse effects. Geologic hazards would be mitigated as specified earlier in this section. Adverse impacts from erosion of soils due to wind and water would also be mitigated.

4.8.4 Alternative 2 – Alternate Action

Construction

<u>Solar Farm Layout B</u>

The seismic and geologic hazard potential impacts and the impacts on soils from water and wind erosion resulting from constructing SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Construction of GT-B-2 within the 10-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in a permanent disturbance of *68* acres along the route as described in Section 2.2.4 (Alternative 2).

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from constructing GT-B-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation B

Construction of Red Bluff Substation B includes the Substation itself and related elements. It would result in approximately *130* acres of permanent disturbance, including *76* acres for the Substation itself, as described in Section 2.2.4 (Alternative 2). Construction of the Substation also includes construction of the Desert Center Communications Center (not co-located with the Substation and less than an acre of disturbance), an access road from Eagle Mountain Road that would result in an acre of disturbance, an electrical distribution line (*less than* an acre of disturbance), various tie-ins from the Substation to the Gen-Tie Line and to the regional transmission line (DPV1) next to the Substation site (*22* acres of disturbance), and *20* acres of associated drainage features. The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from constructing Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Construction Impacts

The construction impacts of Alternative 2 with SF-B, GT-B-2, and Red Bluff Substation B would be the same as those identified for Alternative 1.

Operation and Maintenance

Solar Farm Layout B

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance of SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance GT-B-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance of Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Operation and Maintenance Impacts

The operation and maintenance impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be the same as those identified for Alternative 1.

Decommissioning

Solar Farm Layout B

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of SF-B would be the same as those discussed for GT-A-1 under Alternative 1.

Gen-Tie Line B-2

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of GT-B-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Decommission Impacts

The decommissioning impacts of Alternative 2 with SF-B, GT-B-2, and Red Bluff Substation B would be the same as those identified for Alternative 1.

Summary of Combined Impacts for Alternative 2

The construction and decommissioning of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. The operation and maintenance of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B, would increase the exposure of people and/or property to seismic hazards. Completion of identified mitigation measures would reduce these impacts.

Applicant Measures and Mitigation Measures

Significance criteria and mitigations for Alternative 2 components (SF-B, GT-B-2 and Red Bluff Substation B) are the same as detailed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance criteria determination for SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance criteria determination for GT-B-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation B

The CEQA significance criteria determination for Red Bluff Substation B would be the same as those discussed under Alternative 1.

Unavoidable Adverse Effects

Implementation of Alternative 2 would not result in any unavoidable adverse effects. Geologic hazards would be mitigated as specified earlier in this section. Adverse impacts from erosion of soils due to wind and water would also be mitigated.

4.8.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Construction of SF-C would require clearance (land clearing) of approximately 3,045 acres. Development of the Solar Farm site is described in Section 2.2.4 (Alternative 3). In addition to the solar array, other permanent land uses that would be constructed as part of this alternative include the O&M Facilities, On-Site Substation, Visitor's Center, and internal roads.

Even though the footprint of the Solar Farm would be smaller under this alternative, the facilities needed would be the same for SF-B. Therefore, the seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from construction of SF-C would be the same as those discussed under Alternative 1.

Gen-Tie Line A-2

Construction of GT-A-2 within the 10.5-mile by 160-foot-wide transmission corridor, plus additional fan-shaped areas at corners, would result in permanent disturbance of *86* acres along the route, as described in Section 2.2.4 (Alternative 3).

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from construction of GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

Construction of Red Bluff Substation A would be the same as described under Alternative 1 except that a different access road for the Substation would be used. Access to the Substation for this alternative would be from Kaiser Road via Aztec Road to the west (Access Road 1). Similar to the Access Road 2 under Alternative 1, improvements to this access road would require approximately *31* acres of disturbance.

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from construction of Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Construction Impacts

The construction impacts of Alternative 3 for the increased exposure of people and/or property to seismic hazards and increased erosion of soils from wind and water would be the same as those identified for Alternative 1.

Operation and Maintenance

Solar Farm Layout C

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance of SF-C would be the same as those discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance of GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from operation and maintenance of Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

The operation and maintenance impacts of Alternative 3 for SF-C, GT-A-2 and Red Bluff Substation A would be the same as those identified for Alternative 1.

Decommissioning

Solar Farm Layout C

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of SF-C would be the same as those discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The seismic and geologic hazard potential impacts and impacts on soils from water and wind erosion resulting from decommissioning of Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Decommission Impacts

The decommissioning impacts of Alternative 3 for the increased exposure of people and/or property to seismic hazards and increased erosion of soils from wind and water would be the same as those identified for Alternative 1.

Summary of Combined Impacts for Alternative 3

The construction and decommissioning of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would increase the exposure of people and/or property to seismic hazards and increase the erosion of soils from wind and water. The operation and maintenance of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A, would increase the exposure of people and/or property to seismic hazards. Completion of identified mitigation measures would reduce these impacts.

Applicant Measures and Mitigation Measures

Significance criteria and mitigations for Alternative 3 components (SF-C, GT-A-2 and Red Bluff Substation A) are the same as detailed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

The CEQA significance criteria determination for SF-C would be the same as those discussed under Alternative 1.

Gen-Tie Line A-2

The CEQA significance criteria determination for GT-A-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation A

The CEQA significance criteria determination for Red Bluff Substation A would be the same as those discussed under Alternative 1.

Unavoidable Adverse Effects

Implementation of Alternative 3 would not result in any unavoidable adverse effects. Geologic hazards would be mitigated as specified earlier in this section. Adverse impacts from erosion of soils due to wind and water would also be mitigated.

4.8.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts caused by the effects of earthquake-related ground shaking would not occur. Because no ground disturbance would occur, impacts on potential geologic, and soils resources from the construction, operation, and closure of the proposed Project would not occur. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.8.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar energy projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. Therefore, this No Action Alternative would not impact potential geologic or soils resources from the construction, operation, and closure of the proposed Project. However, in the absence of this Project, other solar energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.8.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Construction and operation requirements for solar technologies vary; however, it is expected that all solar technologies require some grading and some infrastructure. The effects of strong ground shaking on the Project structures would need to be mitigated, to the extent practical, through structural designs required by appropriate building codes and standards as with the proposed Project. Because it is expected that all solar technologies would require ground disturbance, the impacts on potential geologic resources from the construction, operation, and closure of the alternative would likely be similar to under the proposed Project.

4.8.9 Cumulative Impacts

Geographic Scope

The geographic area considered for cumulative impacts to all three alternatives for geology consists of the seismically active Mojave Desert geomorphic province. Soils with the potential for Prime Farmland designation could occur within areas within the region with the potential for arable land, or lands that have qualities such as irrigation water and richness in nutrients.

The geographic area considered for cumulative impacts to all three alternatives for erosion of soils by wind consists of the Mojave Desert Air Basin. The geographic area for erosion of soils by water consists of the Chuckwalla hydrologic unit watershed as overland stormwater flow could erode soils from the proposed action and impact off-site areas.

Past, Present and Reasonably Foreseeable Projects

Tables 3.18-2 and 3.18-3 list existing and reasonably foreseeable projects in the Project area. Only the electric transmission corridor project (DPV2) is in the same immediate area of the proposed Project. Other projects within the California Desert have the potential to impact geological and soil resources through construction, operation, and maintenance activities that would be subject to seismic risks and disturb soils potentially causing erosion or loss of topsoils. Completion of surveys and assessments specific to the project footprint is necessary to design mitigation measures to reduce the potential for impacts.

Cumulative Impact Analysis

Past, present and future alternative energy projects in the Mojave Desert geomorphic province would all be susceptible to the same risk from seismic events. As such, appropriate state- and local-required engineering would *be required to* reduce the risks for those projects to be less than significant level. *Consequently, no considerably cumulative impacts due to seismic events would occur.*

It is possible that other projects and other energy projects proposed in the region may seek to be sited on former agricultural lands that have been classified as prime farm lands. This could cause a cumulative impact to this resource. The proposed Project would not add to this potential cumulative impact.

The *construction of the* proposed Project and other *past, present, and reasonably foreseeable* projects and other alternative energy proposed in the region have the potential for cumulative impacts on soil erosion from wind and water during construction and decommissioning. *Any disturbance to surface soils through grading or other earthwork activities can expose soils to the effects of wind and water. The potential hazards of erosion and loss of topsoil would be generally correlated to the volume of materials disturbed at any one project site. Construction or maintenance activities, including grading, compaction, drilling, back-filling, driving on unpaved roadways, etc., could disturb soils at any work site, regardless of the type of project and regardless of the phase of its development. However, the proposed Project would be expected to contribute only a small amount to any possible short-term cumulative impacts related to soil erosion, because the Applicant would be required to adhere to regulatory requirements and implement the mitigation measures identified above, which address erosion and loss of topsoil. Similarly, other present and reasonably foreseeable projects would be required to implement comparable erosion control measures. When considered together however, the proposed Project combined with other past, present and reasonably foreseeable projects would not result in a significant environmental effect related to soil erosion because the effects are not cumulatively additive. The incremental potential of soil erosion at the project site combined with the potential of other projects nearby would not "compound" to result in increased or significant cumulative erosion risk.* Wind and water erosion of soils impacts are less likely during operation and maintenance of any project found within the region *due to coverage by asphalt, concrete, structures, or vegetation*. With mitigation *and adherence to regulatory requirements*, the proposed Project has a less than significant impact to soil erosion from wind and water *and would not* contribute to cumulative impacts on soil erosion from incremental losses.

Based on the similarities in their components, the geological and soil cumulative impacts for Alternatives 2 and 3 would be the same as described for the proposed Project and would not be cumulatively considerable. Under the No Action and No Project Alternatives (Alternatives 4, 5, and 6), as no construction is anticipated to occur, these alternatives would not contribute to any considerable cumulative impacts.

4.9 LANDS AND REALTY

4.9.1 Methodology for Analysis

The BLM Master Title Plats (MTPs) and Land and Mineral Legacy Rehost 2000 System of automated records (LR2000) were reviewed to obtain information related to pending and authorized uses on the lands potentially affected by the proposed Project and its ancillary facilities. Impact assessment with respect to NEPA was based on known impacts relative to construction, operation, maintenance and decommissioning of ROW and land use permits of all types on BLM-administered land.

This section *also* discusses the impacts that would occur with implementation of the Proposed Action or alternatives with respect to the *CEQA* impact criteria. Effects may occur from conflicts with existing or authorized land uses; conflicts with applicable land use plans, policies, or regulations; or conversion of farmland, forest land, or timberland. The effects of the Project were compared to established CEQA significance criteria *identified in Section 4.9.2.*

4.9.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on lands and realty if it would:

LU-1. Conflict with existing or planned land uses on or around the site;

LU-2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

LU-3. Conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan;

LU-4. Conflict with existing zoning for agricultural use, and/or a Williamson Act contract; or

LU-5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

For the proposed Project, the following *CEQA* criteria were determined to be inapplicable or to result in no impact under all alternatives. The determination regarding these significance criteria is discussed below, and these criteria are not discussed further in this section.

- Physically divide an established community:

  The proposed Project would not physically divide an established community; therefore, there would be no impact. Although there is some residential development in the Project area, the proposed Project would not divide this development, although the Solar Farm alternatives would be adjacent to it.

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency and the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, to non-agricultural uses:

There is no Prime or Unique Farmland or Farmland of Statewide Importance in the Project area; therefore, there would be no impact.

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]):

  The proposed Project would not be located on any forest or timberland; therefore, there would be no impact.

- Result in the loss of forest land or conversion of forest land to non-forest use:

  The proposed Project would not be located on any forest land; therefore, there would be no impact.

4.9.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Existing and Planned Land Uses

Construction of SF-B would develop *3,912* acres of generally undeveloped multiple use BLM-administered land as a restricted access Solar Farm. SF-B would overlap the following existing authorized uses described in Table 3.9-2:

- 230-kV transmission line owned by MWD;
- 33-kV transmission line owned by MWD;
- Power Line Road;
- Kaiser Steel Road, owned by Kaiser Steel;
- Transmission line owned by Kaiser Steel; and
- *Federal Energy Regulatory Commission (*FERC*)* easement for Eagle Mountain Pumped Storage Project.

SF-B has been designed to avoid impacts to the transmission lines that parallel Power Line Road and Kaiser Steel Road. Portions of Kaiser Steel Road would be closed. The transmission line that parallels Kaiser Steel Road and the FERC easement could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Applicable Land Use Plans, Policies, or Regulations

Construction of SF-B would be entirely on BLM-administered land designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. Solar energy generation facilities may be allowed on Class M land after NEPA requirements are met and a plan amendment is approved.

Habitat Conservation Areas

The NECO Plan serves as the HCP for the Project area. It designates the Chuckwalla Desert Wildlife Management Area (DWMA) and Critical Habitat Unit (CHU) and the Alligator Rock Area of Critical Environmental Concern (ACEC) as habitat conservation areas. SF-B would not overlap and therefore would not impact these habitat conservation areas.

Agriculture

SF-B would not impact any agricultural lands. The nearest agricultural lands are approximately two miles south of SF-B.

Gen-Tie Line A-1

Existing and Planned Land Uses

Construction of GT-A-1 would develop *92* acres of generally undeveloped multiple use BLM-administered land as a transmission line corridor. GT-A-1 would overlap the following existing authorized uses described in Table 3.9-3:

- MWD ROW for canals and ditches;
- Two SCE transmission lines;
- I-10, which is under the jurisdiction of Caltrans;
- Underground telephone cable owned by Sprint;
- SR-177, which is under the jurisdiction of Caltrans;
- Kaiser Road, which is under the jurisdiction of Riverside County;
- Southern California Gas Company water pipeline and well; and
- A privately-owned access road.

Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid impacts to the MWD ROW, the telephone cable, and the water pipeline and well. The transmission lines could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Applicable Land Use Plans, Policies, or Regulations

The majority of GT-A-1 would be on BLM-administered land, approximately half of which is designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. The other half of GT-A-1 would run along the west side of Kaiser Road, where it would be on land designated BLM Multiple Use Class L (Limited Use) by the CDCA Plan. Electrical generation, transmission, and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved.

The portion of GT-A-1 southeast of SR-177 (approximately five miles) would be within designated utility corridor K.

A large portion of GT-A-1 would be located within or adjacent to the existing Riverside County ROW for Kaiser Road where the underlying management is BLM, except for one parcel of land owned by MWD and one private parcel. According to Riverside County Code Section 17.284.020 excavation in, construction in, and installation of improvements or structures in the Riverside County ROW is permitted only upon the issuance of an encroachment permit. If necessary, the

Applicant will apply to the County of Riverside Transportation Department for an encroachment permit for GT-A-1 in accordance with Chapter 17.284 of the Riverside County Code.

A 0.6-mile portion of GT-A-1 would traverse one private parcel designated by the County's General Plan as Open-Space Rural (OS-RUR) and zoned Natural Assets (N-A). The OS-RUR designation allows limited development. GT-A-1 would comport with the development policies of the OS-RUR designation because it would be constructed with building materials such as steel poles that rust to blend into the natural landscape, and would generally track existing power lines and power line ROW. Utility substations are permitted in the N-A zone subject to the issuance of a plot plan. The County's Code also permits public utility uses within any zoning classification subject to the issuance of a public use permit.

Habitat Conservation Areas

A large portion of GT-A-1 would traverse the Chuckwalla DWMA and CHU, which would result in temporary and permanent land disturbance. The NECO Plan allows for development in one percent of the DWMA. The *BLM-administered portion of the* DWMA is approximately *465,287* acres in size; therefore, the development of GT-A-1 would represent a negligible percentage (*0.008 percent*) of the allowable development within the DWMA. The exact acreage disturbed and a discussion of impacts to habitat and wildlife are described in Section 4.4.

Agriculture

GT-A-1 would not impact any agricultural lands. The nearest agricultural lands are approximately one mile north of GT-A-1.

Red Bluff Substation A

Existing and Planned Land Uses

Construction of Red Bluff Substation A would convert *76* acres of multiple use BLM-administered land to an electrical substation and an additional *96* acres for associated facilities (e.g., distribution system, drainage improvements, Telecom Site and tower, and Access Road 2). When Red Bluff Substation is referred to in this section, the term refers to the substation itself and all associated facilities, unless otherwise specified.

Applicable Land Use Plans, Policies, or Regulations

Construction of Red Bluff Substation A would be primarily on BLM-administered land designated as Multiple Use Class L (Limited Use) by the CDCA Plan. The exception would be the less than one-acre Telecom Site, which would be on land designated Class M (Moderate Use). Electrical generation, transmission, and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved. Red Bluff Substation A would be within utility corridor K.

Habitat Conservation Areas

Red Bluff Substation A would be located within the Chuckwalla DWMA and CHU. Access Road 2 also crosses the Chuckwalla DWMA and CHU. Access Road 2 would utilize existing roads and an existing pipeline patrol road that would be improved as part of the Project. Temporary and permanent land disturbance would result in these areas. The NECO Plan allows for development in one percent of the DWMA. The *BLM-administered portion of the* DWMA is approximately *465,287* acres in size; therefore, the development *Red Bluff Substation A* would represent a negligible percentage *(0.004 percent)* of the allowable development within the DWMA. The exact acreage disturbed and a discussion of impacts to habitat and wildlife are described in Section 4.4.

Agriculture

Red Bluff Substation A would not impact any agricultural lands. The nearest agricultural lands to the substation are approximately 3.5 miles northwest. The nearest agricultural lands to the Telecom Site are approximately one mile west.

Summary of Construction Impacts

The construction of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A and Access Road 2 would develop *4,176* acres, primarily consisting of generally undeveloped BLM-administered land, including *0.004 percent* of the Chuckwalla DWMA, and including a small amount of MWD and private land, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.

SF-B would overlap three transmission lines, two roads, and a FERC easement. SF-B has been designed to avoid impacts to the transmission lines that parallel Power Line Road and Kaiser Steel Road. Portions of Kaiser Steel Road would be closed. The transmission line that parallels Kaiser Steel Road and the FERC easement could require modification.

GT-A-1 would disturb 0.00006 percent of the Chuckwalla DWMA and CHU, and overlap an MWD ROW, three major roads, a private access road, two SCE transmission lines, an underground telephone cable, and a water pipeline and well. Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid impacts to the MWD ROW, the telephone cable, and the water pipeline and well. The transmission lines could require modification.

Red Bluff Substation A would disturb 0.0002 percent of the Chuckwalla DWMA and CHU.

Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be reduced compared to those discussed under construction of SF-B because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Gen-Tie Line A-1

The impacts resulting from operating and maintaining GT-A-1 would be reduced compared to those discussed under construction of GT-A-1 because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A would be reduced compared to those discussed under construction of Red Bluff Substation A because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would use *4,176* acres, primarily consisting of BLM-administered land, including *0.04 percent* of the Chuckwalla DWMA and CHU, and a small amount of MWD and private land, precluding other uses of these lands. This footprint would be somewhat reduced compared to construction because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan. The Project components would continue to overlap the existing uses (including roads and transmission lines) described under construction impacts.

Decommissioning

Solar Farm Layout B

Existing and Planned Land Uses

Decommissioning of SF-B would temporarily impact a footprint similar to that of construction. When decommissioning was complete, it would result in restoration of 4,176 acres of multiple use BLM-administered land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where SF-B overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, SF-B would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations

Land use plans, policies, or regulations may have changed by the time SF-B would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas

Decommissioning SF-B would not impact any habitat conservation areas as the site does not currently overlap habitat conservation areas, nor would any be designated at the site while it would be in use as a solar farm.

Agriculture

Decommissioning SF-B would not impact any agricultural lands as the site does not currently overlap agricultural lands, nor would any agricultural lands be designated at the site while it would be in use as a solar farm.

Gen-Tie Line A-1

Existing and Planned Land Uses

Decommissioning of GT-A-1 would impact a footprint similar to that of construction. When decommissioning was complete, it would result in restoration of *92* acres of land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where GT-A-1 overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, GT-A-1 would no longer overlap these uses.

Habitat Conservation Areas

Decommissioning GT-A-1 would initially result in additional disturbance to the Chuckwalla DWMA and CHU where GT-A-1 overlaps these habitat conservation areas. However, the amount of land disturbed would be much less than the one percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning is complete, these lands would be restored and could once again be used as a habitat conservation area.

The other impacts resulting from decommissioning GT-A-1 (i.e., impacts to land use plans, policies or regulations, and agricultural lands) would be the same as those described under decommissioning of SF-B.

Red Bluff Substation A

Existing and Planned Land Uses

Decommissioning of Red Bluff Substation A would temporarily impact a footprint similar to that of construction. When decommissioning was complete, it would result in restoration of *172* acres of multiple use BLM-administered land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where Red Bluff Substation A overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, Red Bluff Substation A would no longer overlap these uses.

Habitat Conservation Areas

Decommissioning Red Bluff Substation A would initially result in additional disturbance to the Chuckwalla DWMA and CHU. However, the amount of land disturbed would be much less than the one percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning was complete, this land would be restored and could once again be used as a habitat conservation area.

The other impacts resulting from decommissioning Red Bluff Substation A (i.e., impacts to land use plans, policies or regulations, and agricultural lands) would be the same as those described under decommissioning of SF-B.

Summary of Decommissioning Impacts

The decommissioning of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would make *4,176* acres, primarily consisting of BLM-administered land, including approximately *0.04 percent* of the Chuckwalla DWMA and CHU, and including a small amount of MWD and private land, available for other uses. Additional acreage would temporarily be disturbed during decommissioning for access roads, staging areas, and similar purposes necessary for decommissioning to take place. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Summary of Combined Impacts for Alternative 1

The operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would convert *4,176* acres of BLM-administered land, including *0.04 percent* of the Chuckwalla DWMA and CHU, as well as a small amount of MWD and private land, to use for electric power generation and distribution, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.

Alternative 1 would overlap the following components and might require temporary disturbance or permanent modification (Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses):

- SF-B: Portions of Kaiser Steel Road would be closed. The transmission line that parallels Kaiser Steel Road and the FERC easement could require modification.
- GT-A-1: Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid impacts to the MWD ROW, the telephone cable, and the water pipeline and well; however, temporary disturbance could occur. The transmission lines could require modification. Approximately 0.00006 percent of the Chuckwalla DWMA and CHU would be temporarily or permanently disturbed.
- Red Bluff Substation A: Approximately 0.0002 percent of the Chuckwalla DWMA and CHU would be disturbed.

The decommissioning of Alternative 1 would temporarily impact a footprint similar to that of construction. When decommissioning was complete, it would make *4,176* acres, primarily consisting of BLM-administered land, including *0.04 percent* of the Chuckwalla DWMA and CHU, as well as a small amount of private and MWD land, available for other uses. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Applicant Measures and Mitigation Measures

The following Applicant Measures (AMs) shall be implemented to reduce adverse impacts. No mitigation measures would be required to reduce impacts to less than significant.

AM-LAND-1. Property owners within 300 feet of the Project shall be notified of all major Project construction milestones, such as start of Project construction. Said property owners shall be provided with a detailed construction schedule at least 30 days before construction so that they are informed as to the time and location of disturbance. Updates shall be provided as necessary.

AM-LAND-2. The Project shall be designed to minimize disturbance or modification of existing uses such as transmission lines, pipelines, and underground cables. If disturbance or modification of existing uses were necessary, Sunlight shall coordinate with the owners to determine an acceptable solution. Sunlight shall fund any necessary avoidance measures or modifications.

CEQA Significance Determination

Solar Farm Layout B

Construction impacts would be less than significant for criterion LU-1. SF-B would develop 3,912 acres of BLM-administered multiple use land for solar energy production, precluding other uses of this land for the duration of the Project. However, because the land is generally undeveloped, no specific planned land uses have been identified, *and only a small percentage of the existing undeveloped land would be affected*, impacts would be less than significant. SF-B would overlap several existing uses including roads and transmission lines; however, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. There would be no impact for criterion LU-3 because SF-B would not overlap any habitat conservation areas. There would be no impact under criteria LU-2, LU-4 and LU-5. With regard to LU-2, there would be no impact because SF-B would be compatible with the relevant land use classifications. With regard to LU-4 and LU-5, there would be no impact because SF-B would not overlap any agricultural lands.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4 and LU-5. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use as SF-B. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the Project area. Decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. LU-4 and LU-5 are not applicable, as there is no existing agricultural land in the area, nor would any be designated while the site was in use as SF-B. There would be no impact under LU-2 because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. There would be no impact under LU-3 because SF-B would not overlap any habitat conservation areas.

Gen-Tie Line A-1

Construction impacts would be less than significant for criterion LU-1. There would be no impact under criteria LU-2, LU-4, and LU-5. With regard to LU-1, although development of GT-A-1 would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. In addition, GT-A-1 would overlap several existing uses including roads and transmission lines; however, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. With regard to LU-2, there would be no impact because GT-A-1 would be compatible with the relevant land use classifications. With regard to LU-4 and LU-5, there would be no impact because GT-A-1 would not overlap any agricultural lands. Construction impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of GT-A-1, the lands disturbed would be much less than the one percent allowed by the NECO Plan.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4, and LU-5. There would be no impact under LU-2. The reasons for these determinations are the same as those described under decommissioning of SF-B. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored and could again be used as a habitat conservation area.

Red Bluff Substation A

Construction impacts would be less than significant for criterion LU-1. There would be no impact under criteria LU-2, LU-4, and LU-5. With regard to LU-1, although development of Red Bluff Substation A would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. With regard to LU-2, there would be no impact because Red Bluff Substation A would be compatible with the relevant land use classification. With regard to LU-4 and LU-5, there would be no impact because Red Bluff Substation A would not overlap any agricultural lands. Construction impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of Red Bluff Substation A, the lands disturbed would be much less than the one percent allowed by the NECO Plan.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4, and LU-5. There would be no impact under LU-2. The reasons for these determinations are the same as those described under decommissioning of SF-B. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored and could again be used as a habitat conservation area.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 1.

4.9.4 Alternative 2 – Alternate Action

Construction

<u>Solar Farm Layout B</u>

The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

<u>Gen-Tie Line B-2</u>

Existing and Planned Land Uses

Construction of GT-B-2 would develop <u>*68*</u> acres of generally undeveloped multiple use BLM-administered land as a transmission line corridor. GT-B-2 would overlap the following existing authorized uses described in Table 3.9-3, as would GT-A-1:

- MWD ROW for canals and ditches;
- Two SCE transmission lines;
- I-10, which is under the jurisdiction of Caltrans;
- Underground telephone cable owned by Sprint; and
- Kaiser Road, which is under the jurisdiction of Riverside County.

In addition, GT-B-2 would overlap the following existing authorized uses described in Table 3.9-3:

- Caltrans drainage easements;
- Three Southern California Gas Company underground oil and gas pipelines; and
- Eagle Mountain Road, which is under the jurisdiction of Riverside County.

Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the MWD ROW, the drainage easements, the underground telephone cable, and the oil and gas pipelines; however, temporary disturbance could occur. The transmission lines could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Applicable Land Use Plans, Policies, or Regulations

Construction of GT-B-2 would be on BLM-administered land designated as Multiple Use Class M (Moderate Use) and Class L (Limited Use) by the CDCA Plan. Electrical transmission and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved.

Approximately 1.5 miles of GT-B-2 would be within designated utility corridor E, and approximately one mile would be within designated utility corridor K.

Like GT-A-1, much of GT-B-2 would be located within or adjacent to an existing Riverside County ROW where the underlying management is BLM, except for one parcel of land owned by MWD and one private parcel. No development is currently evident on either of these parcels (Google Earth 2010). According to Riverside County Code Section 17.284.020, excavation in, construction in, and installation of improvements or structures in the Riverside County ROW is permitted only upon the issuance of an encroachment permit. If necessary, the Applicant will apply to the County of Riverside Transportation Department for an encroachment permit for GT-B-2 in accordance with Chapter 17.284 of the Riverside County Code.

A 0.6-mile portion of GT-B-2 would traverse one private parcel designated by the County's General Plan as Open-Space Rural (OS-RUR) and zoned Natural Assets (N-A). The OS-RUR designation allows limited development. GT-B-2 would comport with the development policies of the OS-RUR designation because it would be constructed with building materials such as steel poles that rust to blend into the natural landscape, and would generally track existing power lines and power line ROW. Utility substations are permitted in the N-A zone subject to the issuance of a plot plan. The County's Code also permits public utility uses within any zoning classification subject to the issuance of a public use permit.

Habitat Conservation Areas

The majority of GT-B-2 would traverse the Chuckwalla DWMA and CHU; however, the total acreage disturbed represents much less than the one percent that may be developed according to the NECO Plan. Temporary and permanent impacts to habitat and desert wildlife would occur as described in Section 4.4.

Agriculture

GT-B-2 would not impact any agricultural lands. The nearest agricultural lands are approximately three miles east of GT-B-2.

Red Bluff Substation B

The Telecom Site that is a component of both Red Bluff Substation A and B would be located in the same place regardless of which alternative is chosen. Impacts associated with the Telecom Site would be the same as described under Alternative 1. Impacts from the remainder of Red Bluff Substation B are described below.

Existing and Planned Land Uses

Construction of Red Bluff Substation B would convert 75 acres of private land zoned W-2-10 to an electrical substation and associated facilities (e.g., distribution system, drainage improvements, and access road). There are no existing or known planned uses of this land. SCE would acquire the private land prior to development. SCE is able to exercise eminent domain to acquire property. Red Bluff Substation B would not overlap any existing authorized uses.

Applicable Land Use Plans, Policies, or Regulations

Construction of Red Bluff Substation B and associated elements would be entirely on private land (with the exception of the Telecom Site). The Riverside County General Plan is the applicable land use plan for this land. The Riverside County General Plan classifies this land as OS-RUR (Open Space, Rural) and has zoned it as W-2-10 (Controlled Development Zone). According to the *County Zoning Code*, "structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas such as hydroelectric power plants, booster or conversion plants, transmission lines, pipe lines and the like" are allowed on land zoned W-2-10 by approval or by permit (Riverside County 2009). *The County has indicated that a Public Use Permit would be required for those portions of the Project located on private land and within the County*. SCE would acquire the private land prior to development.

Habitat Conservation Areas

Although the Red Bluff Substation B site is adjacent to or near the Chuckwalla DWMA and CHU and Alligator Rock ACEC on all sides, it would be on private land that is not part of these habitat conservation areas.

Agriculture

Red Bluff Substation B would not impact any agricultural lands. The nearest agricultural lands are approximately 4.5 miles northeast of Red Bluff Substation B.

Summary of Construction Impacts

The construction of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would develop *4,110* acres of generally undeveloped BLM-administered land, including less than one percent of the Chuckwalla DWMA and CHU, as well as a small amount of MWD and private land, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.

SF-B would overlap three transmission lines, two roads, and a FERC easement. Impacts would be the same as those described under Alternative 1.

GT-B-2 would overlap less than one percent of the Chuckwalla DWMA and CHU, an MWD ROW, three roads, two SCE transmission lines, an underground telephone cable, three underground oil and gas pipelines, and drainage easements. Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the MWD ROW, the drainage easements, the underground telephone cable, and the oil and gas pipelines; however, temporary disturbance could occur. The transmission lines could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses. The majority of GT-B-2 would not be within a designated utility corridor.

The construction of Alternative 2 would also develop *130* acres of undeveloped privately-owned land as Red Bluff Substation B. The proposed development would be consistent with Riverside County's W-2-10 zoning. SCE would acquire this land prior to development. Red Bluff Substation B would not overlap any existing authorized uses.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from operating and maintaining GT-B-2 would be reduced compared to those discussed under construction of GT-B-2 because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Red Bluff Substation B

The impacts resulting from operating and maintaining Red Bluff Substation B would be reduced compared to those discussed under construction of Red Bluff Substation B because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would continue use of *4,110* acres of BLM-administered land, including less than one percent of the Chuckwalla DWMA and CHU, and a small amount of MWD and private land, precluding other uses of these lands. This footprint would be somewhat reduced compared to construction because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance. The Project components would continue to overlap the existing uses (including roads and transmission lines) described under construction impacts.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Existing and Planned Land Uses

Decommissioning would *impact a footprint similar to that of construction*. When complete, decommissioning of GT-B-2 would result in restoration of *68* acres of multiple use BLM-administered land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where GT-B-2 overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, GT-B-2 would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations

Land use plans, policies, or regulations may have changed by the time GT-B-2 would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas

Decommissioning GT-B-2 would initially result in additional disturbance to the Chuckwalla DWMA and CHU where GT-B-2 overlaps these habitat conservation areas. However, the amount of land disturbed would be much less than the one percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning was complete, these lands would be restored and could once again be used as a habitat conservation area.

Agriculture

Decommissioning GT-B-2 would not impact any agricultural lands as the site does not currently overlap agricultural lands, nor would any agricultural lands be designated at the site while it would be in use as a transmission line.

Red Bluff Substation B

Existing and Planned Land Uses

Decommissioning of Red Bluff Substation B would impact a footprint similar to that of construction. When decommissioning was complete, it would result in restoration of *130* acres of land. This land (with the exception of the Telecom Site) was privately-owned prior to implementation of the Project and could be sold or retained by SCE.

The other impacts resulting from decommissioning Red Bluff Substation B (i.e., impacts to land use plans, policies or regulations; habitat conservation areas; and agricultural lands) would be the same as those described under decommissioning of GT-B-2.

Summary of Decommissioning Impacts

The decommissioning of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would make *4,110* acres of BLM-administered land, including less than one percent of the Chuckwalla DWMA and CHU, and a small amount of MWD and private land, available for other uses. Additional acreage would temporarily be disturbed during decommissioning for access roads, staging areas, and similar purposes necessary for decommissioning to take place. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Summary of Combined Impacts for Alternative 2

The operation and maintenance of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would convert *4,110* acres of BLM-administered land and private land, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.

Alternative 2 would overlap the following components (Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses):

- SF-B: Portions of Kaiser Steel Road would be closed. The transmission line that parallels Kaiser Steel Road and the FERC easement could require modification.

- GT-B-2: Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the

MWD ROW, the drainage easements, the underground telephone cable, and the oil and gas pipelines; however, temporary disturbance could occur. The transmission lines could require modification. Less than one percent of the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed.

Use of the privately-owned land as Red Bluff Substation B would be compatible with the W-2-10 zoning. The majority of GT-B-2 would not be within a designated utility corridor.

The decommissioning of Alternative 2 would make *4,110* acres of BLM-administered land, less than one percent of the Chuckwalla DWMA and CHU, and *76* acres of private land, available for other uses. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Applicant Measures and Mitigation Measures

The measures identified for Alternative 1 would also be implemented for this alternative.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B would be the same as that discussed under Alternative 1.

Gen-Tie Line B-2

Construction impacts would be less than significant for criterion LU-1. There would be no impact under criteria LU-2, LU-4, and LU-5. With regard to LU-1, although development of GT-B-2 would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. In addition, GT-B-2 would overlap several existing uses including roads and transmission lines; however, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. With regard to LU-2, there would be no impact because GT-B-2 would be compatible with the relevant land use classifications. With regards to LU-4 and LU-5, there would be no impact because GT-B-2 would not overlap any agricultural lands. Construction impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of GT-B-2, the lands disturbed would be much less than the one percent allowed by the NECO Plan.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4 and LU-5. There would be no impact under LU-2. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use as GT-B-2. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the Project area. Decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. LU-4 and LU-5 are not applicable, as there is no existing agricultural land in the area, nor would any be designated while the site was in use as GT-B-2. With regard to LU-2, there would be no impact because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored and could again be used as a habitat conservation area.

Red Bluff Substation B

Construction impacts would be less than significant for criterion LU-1. There would be no impact under criteria LU-2, LU-4, and LU-5. With regards to LU-1, although development of Red Bluff Substation B would preclude other uses of the land, because the land is currently undeveloped and no specific planned land uses have been identified, impacts would be less than significant. In addition, Red Bluff Substation B would overlap several existing uses including roads and transmission lines; however, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. With regard to LU-2, there would be no impact because Red Bluff Substation B would be compatible with the relevant land use classification. With regard to LU-4 and LU-5, there would be no impact because Red Bluff Substation B would not overlap any agricultural lands. There would be no impact for criterion LU-3 because Red Bluff Substation B would not overlap any habitat conservation areas.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4, and LU-5. There would be no impact under LU-2. The reasons for these determinations are the same as those described under decommissioning of GT-B-2. There would be no impact for criterion LU-3 because Red Bluff Substation B would not overlap any habitat conservation areas.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 2.

4.9.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Existing and Planned Land Uses

Construction of SF-C would develop 3,045 acres of generally undeveloped multiple use BLM-administered land as a restricted-access solar farm, *867* acres less than SF-B. SF-C would overlap fewer existing authorized uses than SF-B. It would only overlap a FERC easement along Kaiser Road, which could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

The other impacts resulting from constructing SF-C (with regard to land use plans, policies and regulations, habitat conservation areas, and agricultural lands) would be similar to those described for SF-B in Alternative 1.

Gen-Tie Line A-2

Existing and Planned Land Uses

Construction of GT-A-2 would develop *86* acres of generally undeveloped multiple use BLM-administered land as a transmission line ROW. GT-A-2 would overlap the following existing authorized uses described in Table 3.9-3, as would GT-A-1 and GT-B-2:

- MWD ROW for canals and ditches;
- Two SCE transmission lines;
- I-10, which is under the jurisdiction of Caltrans; and
- Underground telephone cable owned by Sprint.

In addition, GT-A-2 would overlap the following existing authorized uses described in Table 3.9-3, as would GT-A-1:

- SR-177, which is under the jurisdiction of Caltrans.

Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the MWD ROW and the underground telephone cable; however, temporary disturbance could occur. The transmission lines could require modification. Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Applicable Land Use Plans, Policies, or Regulations

Construction of GT-A-2 would also cross 5.1 miles of private land. Approximately 1.5 miles of the private land is zoned A-1-20, Agricultural. *Public utility facilities are permitted in the A-1 zone subject to the approval of a permit and plot plan by Riverside County (Riverside County 2009).* The remainder is zoned W-2-10, Controlled Development Zone. Transmission lines are allowed in W-2-10 zones when approved by Riverside County. *Structure heights within the A-1 and W-2-10 zones may exceed 50 feet subject to the issuance of a variance by Riverside County (Riverside County 2009).*

The remainder of GT-A-2 would be on BLM-administered land. The majority of the land is designated as Multiple Use Class M (Moderate Use) by the CDCA Plan. A short section south of I-10 and north of the Red Bluff Substation A would be on land designated Multiple Use Class L (Limited Use). Electrical transmission and distribution facilities may be allowed on both Moderate and Limited Use land within designated utility corridors after NEPA requirements are met and a plan amendment is approved.

The majority of GT-A-2 would not be within a designated utility corridor. Approximately one mile of GT-A-2 north of Red Bluff Substation A would be within designated utility corridor K.

The northern, approximately 0.8-mile portion of GT-A-2 would be located within or adjacent to existing Riverside County ROW where the underlying management is BLM, except for one parcel of land owned by MWD. No development is currently evident on the MWD parcel (Google Earth 2010). According to Riverside County Code Section 17.284.020, excavation, construction, and installation of improvements or structures in the Riverside County ROW is permitted only upon the issuance of an encroachment permit. If necessary, the Applicant will apply to the County of Riverside Transportation Department for an encroachment permit for GT-A-2 in accordance with Chapter 17.284 of the Riverside County Code.

Habitat Conservation Areas

The southern tip of GT-A-2 would traverse the Chuckwalla DWMA and CHU, which would result in temporary and permanent land disturbance. The total acreage disturbed represents much less than the one percent that may be developed according to the NECO Plan. Temporary and permanent impacts to habitat and desert wildlife would occur as described in Section 4.4.

Agriculture

GT-A-2 would cross approximately 1.5 miles of private agricultural land located within Riverside County. The County of Riverside General Plan (2003) has not identified any area within the Desert Center Planning Area, which includes the Project, as Prime Farmland soils. However, Riverside County has identified soils in one component of the Project, GT-A-2 where it crosses Rice Road, as Williamson Act Non-Prime Agricultural Land (California Department of Conservation, Division of Land Resources Protection 2007). These lands are enrolled in a California Land Conservation Act contract and do not meet the criteria as Prime Agricultural Land. Non-Prime Farmlands are defined as open space land of statewide significance under the California Open Space Subvention Act. Most non-prime lands are in agricultural uses, such as grazing or non-irrigated crops. Non-prime lands may also include other open space uses that are compatible with agriculture and consistent with local general plans (California Department of Conservation, Division of Land Resources Protection 2007). Although soils associated with the Project have not been surveyed by the NRCS, the geotechnical survey of the site suggests that the soils found on the Project area were essentially uniform in nature and primarily sandy in texture, similar to the soils found in the agriculture lands adjacent to Rice Road.

The construction of GT-A-2 would not result in a significant impact because transmission lines are generally consistent with agricultural uses. While the preserves have been identified as Non-Prime Farmland, open space uses consistent with local plans and regulations, such as transmission lines, would not result in a significant impact. The preserves are zoned A-1-20, which allows public utilities subject to permit and approval by the County. Soils associated with the preserves have not been identified as associated with Prime Farmland. No significant impact to Prime Farmland soils would occur from the construction of GT-A-2.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts would not change with the alternate access road, which would traverse a similar amount of the Chuckwalla DWMA and CHU, also on an existing pipeline patrol road that would be improved as part of the Project.

Summary of Construction Impacts

The construction of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would develop *3,303* acres of land, primarily consisting of BLM-administered land, and including a small amount of MWD and private land, and less than one percent of the Chuckwalla DWMA and CHU, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All of SF-C and Red Bluff Substation A and portions of GT-A-2 would be on BLM-administered land. The portions of the Project that would be on BLM-administered land would be compatible with the CDCA Plan.

SF-C would overlap a FERC easement along Kaiser Road, which could require modification.

GT-A-2 would overlap less than one percent of the Chuckwalla DWMA and CHU, an MWD ROW, two roads (I-10 and SR-177), two SCE transmission lines, and an underground telephone cable. Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the MWD ROW and the underground telephone cable; however, temporary disturbance could occur. The transmission lines could require modification. GT-A-2 would also cross 5.1 miles of private land, approximately 1.5 miles of which is zoned A-1-20, Agricultural-Light. The remainder of the private land is zoned W-2-10, Controlled Development Zone. Approximately one mile of GT-A-2 north of Red Bluff Substation A would be within designated utility corridor K.

Red Bluff Substation A would overlap less than one percent of the Chuckwalla DWMA and CHU.

Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses.

Operation and Maintenance

Solar Farm Layout C

The impacts resulting from operating and maintaining SF-C would be reduced compared to those discussed under construction of SF-C because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Gen-Tie Line A-2

The impacts resulting from operating and maintaining GT-A-2 would be reduced compared to those discussed under construction of GT-A-2 because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A would be the same as those discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would continue to use *3,303* acres, primarily consisting of BLM-administered land, and including a small amount of MWD land, 5.1 miles of private land, and less than one percent of the Chuckwalla DWMA and CHU, precluding other uses of these lands. This footprint would be somewhat reduced compared to construction because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan. The Project components would continue to overlap the existing uses (including roads and transmission lines) described under construction impacts.

Decommissioning

Solar Farm Layout C

Existing and Planned Land Uses

Decommissioning of SF-C would temporarily impact a footprint similar to that of construction. When decommissioning was complete, it would result in restoration of *3,303* acres of multiple use BLM-administered land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where SF-C overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, SF-C would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations

Land use plans, policies, or regulations may have changed by the time SF-C would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas

Decommissioning SF-C would not impact any habitat conservation areas as the site does not currently overlap habitat conservation areas, nor would any be designated at the site while it would be in use as a solar farm.

Agriculture

Decommissioning SF-C would not impact any agricultural lands as the site does not currently overlap agricultural lands, nor would any agricultural lands be designated at the site while it would be in use as a solar farm.

Gen-Tie Line A-2

Existing and Planned Land Uses

Decommissioning would *impact a footprint similar to that during construction*. When complete, decommissioning of GT-A-2 would result in restoration of *86* acres of land, making the land available for other uses. Decommissioning would require coordination similar to that performed during construction where GT-A-2 overlapped existing uses (including agricultural land, roads, and transmission lines); however, once decommissioning was completed, GT-A-2 would no longer overlap these uses.

Applicable Land Use Plans, Policies, or Regulations

Land use plans, policies, or regulations may have changed by the time GT-A-2 would be decommissioned. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Habitat Conservation Areas

Decommissioning GT-A-2 would initially result in additional disturbance to the Chuckwalla DWMA and CHU where GT-A-2 overlaps these habitat conservation areas. However, the amount of land disturbed would be much less than the one percent allowed by the NECO Plan, and the disturbance would be limited to the duration of decommissioning activities. When decommissioning was complete, these lands would be restored and could once again be used as a habitat conservation area.

Agriculture

Decommissioning GT-A-2 would result in impacts similar to construction on GT-A-2; however, once decommissioning was completed, GT-A-2 would no longer overlap agricultural land.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts would not change with the alternate access road.

Summary of Decommissioning Impacts

The decommissioning of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A, would make *3,303* acres, primarily consisting of BLM-administered land, and including a small amount of MWD land, 5.1 miles of private land, and less than one percent of the Chuckwalla DWMA and CHU, available for other uses. Additional acreage would temporarily be disturbed during decommissioning for access roads, staging areas, and similar purposes necessary for decommissioning to take place. A decommissioning plan would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Summary of Combined Impacts for Alternative 3

The operation and maintenance of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would convert *3,303* acres of land to use for electric power generation and distribution, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.

Alternative 3 would overlap the following components and could require temporary disturbance or permanent modification as described (Sunlight shall implement AM-LAND-2 to minimize potential impacts to existing uses):

- SF-C: A FERC easement could require modification.
- GT-A-2: Impacts from road crossings would be temporary and limited to short-term traffic disturbance during wire stringing. Towers would be sited to avoid permanent impacts to the MWD ROW and the underground telephone cable; however, temporary disturbance could occur. The transmission lines could require modification. Less than one percent of the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed.

- Red Bluff Substation A: Less than one percent of the Chuckwalla DWMA and CHU would be disturbed.

The decommissioning of Alternative 3 would temporarily impact a footprint similar to that of construction. When decommissioning was complete, it would make *3,303* acres, primarily consisting of BLM-administered land, and including a small amount of MWD and private land, and less than one percent acres of the Chuckwalla DWMA and CHU, available for other uses. Decommissioning would require coordination similar to that performed during construction where the Project components overlapped existing uses (including roads and transmission lines); however, once decommissioning was completed, the Project would no longer overlap these uses.

Applicant Measures and Mitigation Measures

The measures identified for Alternative 1 would also be implemented for this alternative.

CEQA Significance Determination

Solar Farm Layout C

Construction impacts would be less than significant for criterion LU-1. SF-C would develop thousands of acres of BLM-administered multiple use land for solar energy production, precluding other uses of this land for the duration of the Project. However, because the land is generally undeveloped and no specific planned land uses have been identified, impacts would be less than significant. SF-C would only overlap a FERC easement along Kaiser Road. However, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. There would be no impact for criterion LU-3 because SF-B does not overlap any habitat conservation areas. There would be no impact under criteria LU-2, LU-4 and LU-5. With regard to LU-2, there would be no impact because SF-C would be compatible with the relevant land use classifications. With regard to LU-4 and LU-5, there would be no impact because SF-C would not overlap any agricultural lands.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criteria LU-1, LU-4, and LU-5. There would be no impact under LU-2. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use as SF-C. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the Project area. Decommissioning would present an opportunity for the land to be used for other purposes and remove overlaps with existing uses such as roads and transmission lines. LU-4 and LU-5 are not applicable, as there is no existing agricultural land in the area, nor would any be designated while the site was in use as SF-C. With regard to LU-2, there would be no impact because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. There would be no impact under LU-3 because SF-B would not overlap any habitat conservation areas.

Gen-Tie Line A-2

Construction impacts would be less than significant for criterion LU-1. With regard to LU-1, GT-A-2 would overlap several existing uses including roads and transmission lines; however, by implementing AM-LAND-1 and AM-LAND-2, impacts would be further reduced. Construction impacts would be less than significant for criteria LU-2, LU-4, and LU-5, all due to impacts to agricultural land. *GT-A-2 would not conflict with existing zoning on agricultural land, as current A-1-20 zoning allows for public utilities subject to permit approval by the County. In addition, the amount of land affected would be limited to the footprint of the transmission structures, with additional acreage temporarily affected during construction, resulting in impacts that would be less than significant.* Construction impacts would be less than significant for criterion LU-3. Although lands in the Chuckwalla DWMA and CHU would be temporarily and permanently disturbed by construction of GT-A-2, the lands disturbed would be much less than the one percent allowed by the NECO Plan.

Operation and maintenance impacts would be reduced compared to those described under construction impacts because land that was only impacted during construction such as staging areas would not be impacted during operation and maintenance, resulting in a reduced impact footprint.

Decommissioning impacts are not applicable to criterion LU-1. There would be no impact under LU-2. Beneficial impacts could occur for criteria LU-4 and LU-5. LU-1 is not applicable because conflicting uses would not be allowed while the site was in use as GT-A-2. BLM's NEPA process would ensure compatibility of future uses with existing land uses in the area. Decommissioning would present an opportunity for the land to be used for other purposes (including returning previously agricultural use to agricultural use) and remove overlaps with existing uses such as roads and transmission lines. With regard to LU-2, there would be no impact because the land would be restored to a state compatible with the CDCA Plan or future applicable land use plans, policies, or regulations. Beneficial impacts could occur for LU-4 and LU-5, as agricultural land impacted by construction could be returned to agricultural use. For LU-3, initial impacts would be less than significant as decommissioning activities would temporarily disturb additional land in the Chuckwalla DWMA and CHU similar to what occurred during construction. However, when decommissioning was complete, beneficial impacts would result because this land would be restored and could again be used as a habitat conservation area.

Red Bluff Substation A

The CEQA significance determination for Red Bluff Substation A would be the same as that discussed under Alternative 1. The impacts would not change due to *the alternative access*.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 3.

4.9.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Project (Solar Farm, Gen-Tie Line, and Substation) would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, none of the components of the Desert Sunlight Solar Farm Project would be constructed at this time. BLM would continue to manage the area consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the land use impacts of the Project would not occur at the proposed site, including any resulting impacts to existing uses. Existing uses such as roads, transmission facilities, and pipelines would continue; however, these uses have a minimal impact on the Project Study Area. Additionally, a project-specific land use plan amendment would not be required. However, the land on which the Project is proposed would be available to those facilities identified in the existing CDCA Plan, as well as those that may be considered through the plan amendment process, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in this and other locations.

No impacts would occur from this alternative as it pertains to the approval of the Applicant's proposed Project; however, this alternative does not prohibit nor preclude future solar or other development in the area that would likely have impacts similar to those described in the action alternatives (Alternatives 1 through 3) within the Project area.

4.9.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Project would not be approved by the BLM. The BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, none of the components of the Project would be constructed. BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the land use impacts of the Project would not occur at the proposed site, including any resulting impacts to existing uses. Existing uses such as roads, transmission facilities, and pipelines would continue; however, these uses have a minimal impact on the Project Study Area. As a result, the use of the site is not expected to change noticeably from existing conditions. However, in the absence of the proposed Project, the site could be developed for other uses at a future date (e.g., mining, grazing, recreation, utilities, and other non-solar energy development), and those projects could have impacts in this and other locations. Current pending applications within the Solar Farm Study Area include a geothermal project (CACA 050946) and a wind energy project (CACA 051664).

No impacts would occur from this alternative as it pertains to the approval of the Applicant's proposed Project. However, this alternative does not prohibit nor preclude other types of future development, other than solar energy development, within the Project Study Area.

4.9.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment

Under this alternative, the proposed Project would not be approved by the BLM. The BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, none of the components of the Desert Sunlight Solar Farm Project would be constructed; however, it is possible that another solar energy project could be constructed within the Project Study Area. Because the CDCA Plan would be amended to specifically allow solar energy development in the Project area, the likelihood that the site would be developed with the same or a different solar technology would increase. Different solar technologies require the use of different amounts of land; however, it is expected that all solar technologies would require the use of a large amount of the site. Conversion of a large amount of land for renewable energy development would not be a significant impact in and of itself. The significance of the impact would depend on the proposed development's compatibility with existing and planned land use at the site and compatibility with applicable land use plans, policies, and regulations.

No impacts would occur from this alternative as it pertains to the approval of the Applicant's proposed Project. However, this alternative does not prohibit nor preclude future solar or other development in the area that would likely have impacts similar to those described in the action alternatives (Alternatives 1 through 3) within the Project area.

4.9.9 Cumulative Impacts

Geographic Extent

The geographic extent for the consideration of cumulative impacts to lands and *realty and agricultural resources is eastern Riverside County. The Project Study Area, as shown in Figure 1-2, is generally described as being approximately six miles north of I-10 and the rural community of Desert Center and four miles north of Lake Tamarisk between Coachella (to the west) and Blythe (to the east), including the land south of the proposed solar farm site, to and including, an approximate eight-mile-long section along the I-10 corridor. Joshua Tree National Park is north, east and west of the Project Area; at its closest point, the solar farm site would be approximately 1.6 miles southwest of the park boundary.*

In addition, an analysis of cumulative impacts to land use *and agricultural resources* should take into account a wide area because of the current plethora of applications for development of renewable energy facilities and other developments that would require the conversion of hundreds of thousands of acres of public and undeveloped land. Section 3.18 lists proposed energy projects in the California Desert District on BLM-administered land, including 125 projects that *could* cover over 1,000,000 acres (BLM 2009) *if the pending applications were to be approved by BLM as filed. Although a large number of renewable projects have been proposed on BLM-administered land, state land, and private land in California, not all projects listed will complete the environmental review process, and not all projects will be funded and constructed. Therefore, it is unlikely that all of the projects would be constructed for the following reasons:*

1. *Not all developers will develop the detailed information necessary to meet BLM standards. Most of the solar projects with pending applications are proposing generation technologies that have not been implemented at large scales. As a result, preparing complete and detailed plans of development (PODs) is difficult, and completing the required NEPA and CEQA documents is especially time-consuming and costly.*

2. *As part of approval under NEPA and/or CEQA, all regulatory permits must be obtained by the applicant and the prescriptions required by the regulatory authorities must be incorporated into the license, permit or ROW grant. The large size of these projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues.*

3. *After project approval, construction financing must be obtained (if it has not been obtained earlier in the process). The availability of financing will be influenced by the status of competing projects, the laws and regulations related to renewable project investment, and the time required for obtaining permits.*

The *CEQA* criteria by which land and realty *and agriculture* impacts would be cumulatively considered significant are the same as those identified in Section 4.9.2, Impact Criteria.

Existing Cumulative Conditions

As previously discussed in Section 3.18.2, this EIS uses the "list approach" as the methodology for establishing the cumulative impact baseline setting, putting forth a list of past, present, and reasonably foreseeable future projects producing related or cumulative impacts. Past development near the Project area includes those projects listed in Table 3.18-2. *The Devers-Palo Verde 1 Transmission Line, Blythe Energy Project and West-wide Section 368 Energy Corridors are energy-related projects.* The remaining projects are an extension to an interstate highway (I-10), two prisons, an iron ore mine, MWD water pumping station, and various recreational opportunities, the majority of which have an industrial character. Other large tracts of land designated for specific and limited development purposes in the Project area include Joshua Tree National Park, the Chuckwalla DWMA and CHU, and the Alligator Rock ACEC.

Past, Present, and Reasonably Foreseeable Future Projects

Table 3.18-3 lists foreseeable projects in the Project area, which is the I-10 corridor in eastern Riverside County. As shown in the table *and Figure 3.18-2*, over 25 projects are proposed in the Project area, nearly half of which have been approved or are under construction and over 20 of which are renewable energy projects. At least 15 of the proposed projects, including the proposed Desert Sunlight Project, would permanently disturb over 1,000 acres of land each.

Only one of the projects is a land conservation project. The proposed Mojave Trails National Monument, which would protect and provide recreational opportunities on approximately 941,000 acres of federal land, would protect approximately nine times the acreage that would be developed by implementation of all of the remaining projects.

Cumulative Impact Analysis

Past development has increased human use of land in the Project area. However, because of the limited availability of water, human development has been limited to small scattered towns and cities and various isolated projects such as the mine and water pumping station, among large tracts of undeveloped land. Therefore, construction of multiple projects within the same area could create a significant cumulative construction impact to surrounding land and realty uses.

Potentially significant cumulative impacts resulting from construction of the proposed Project in conjunction with other projects would be mitigated to a less-than-significant level through implementation of AM-LAND-1, which requires property owners within 300 feet of the Project to be notified of all major Project construction milestones, and AM-LAND-2, which requires the Project to be designed to minimize disturbance or modification of existing uses such as transmission lines, pipelines, and underground cables.

It is not likely that cumulative construction and operation impacts would conflict with habitat conservation or natural community conservation plans because there are no such plans in effect for the Project area. Similarly, it is not likely that cumulative construction impacts would affect agricultural land or zoning, as agriculture in the Project area is restricted by limited water supplies. Therefore, the construction impacts are not cumulatively considerable.

Operation of the foreseeable projects in the Project area would significantly increase developed human use of land in the area. These projects are typical of an area where human presence and use is growing and include industrial, commercial, and residential developments as well as energy and infrastructure projects. Operation impacts from these projects could be cumulatively considerable and significantly adverse depending on the amount of land that would be developed. Given the size and diversity of these projects and the substantial amount of undeveloped BLM-administered land currently in the Project area, it is likely that several of these projects could conflict with existing or planned land uses or with applicable state or local land use plans and zoning designed to minimize environmental impacts. Table 3.18-1 lists foreseeable renewable energy projects on BLM-administered land in the California Desert District. Operation of these projects could collectively impact more than one million acres of land if they were all approved as is; however, as discussed previously, it is not possible at this time to analyze the potential impacts since not all of the pending applications are likely to be approved, and those that would be approved would be for fewer acres than requested. Although impacts from these additional projects could be cumulatively considerable and significantly adverse as a result of the amount of land that would be developed, it is not possible at this time to accurately formulate potential impacts since it is unknown which projects might or might not be approved.

Therefore, operation impacts could be cumulatively considerable and significant depending on the amount of land that would be permanently developed.

In light of the similarities in their components and construction requirements, the lands and realty cumulative impacts for Alternatives 2 and 3 would be essentially the same as described for the proposed Project and would be cumulatively considerable. There would be no cumulative lands and realty impacts under the No Action Alternative 4 because there would be no ROW grant for development of the Project and associated facilities. Impacts potentially similar to or potentially greater than those associated with the Project could occur with selection of Alternative 5since that alternative would close the land to solar generation facilities but leave the land open to other potential uses such as wind energy. Impacts similar to those associated with the Project would likely only be delayed by selecting Alternative 6 since this region of the United States has extremely positive characteristics for solar generation. If the Project were not approved, another application for a different solar PV generating facility or a different type of energy generation facility would likely be filed at some time in the near future. Any future proposals for uses of the site would be subject to separate environmental analysis.

4.10 NOISE AND VIBRATION

4.10.1 Methodology for Analysis

Noise and vibration issues addressed for the various alternatives were identified by review of comments received during the EIS scoping process and by independent evaluation of Project-related impacts. The identified issues include:

- Noise from on-site construction activity at the solar farm site, along the transmission line corridor, and at the Red Bluff Substation site;
- Noise from construction-related vehicle traffic;
- Noise from facility operations;
- Noise impacts to wildlife; and
- Vibration impacts from on-site construction activity.

Analysis of these issues was performed through quantitative analysis of expected noise levels, review of agency policies and regulatory requirements, and qualitative analyses for issues that did not lend themselves to quantitative evaluation. Quantitative analyses were prepared to address noise and vibration from construction equipment operations, noise from construction-related traffic, and noise from facility operations. Qualitative evaluations were prepared to address issues related noise impacts to wildlife. Additional details regarding impact assessment methodologies are discussed under relevant impact topics.

The region of interest for noise and vibration issues is typically very localized. Airborne noise dissipates fairly rapidly with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Sound is detectable somewhat further downwind than upwind of a noise source. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than 0.25 mile from the noise source.

Ground-borne vibrations typically dissipate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 feet from the vibration source.

Table 4.10-1 compares *the distances of the closest existing residences to* the action alternative *features*.

Table 4.10-1
Comparison of Distances of the Closest Residences to the Action Alternative Features

Project Component	*Parameter*	*Alternative 1*	*Alternative 2*	*Alternative 3*
Solar Farm	*Distance to Closest Existing Residence*	*1,175 feet*	*1,175 feet*	*1,175 feet*
Gen-Tie Transmission Line	*Distance to Closest Existing Residence*	*500 feet*	*500 feet*	*No nearby residences*
Red Bluff Substation	*Distance to Closest Existing Residence*	*No nearby residences*	*No nearby residences*	*No nearby residences*

4.10.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant noise and vibration impacts if it would:

NZ-1. Generate noise levels that pose a risk of hearing damage for persons living or working at off-site locations (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).

NZ-2. Expose on-site residents or visitors to noise levels that exceed land use compatibility standards or criteria established in the noise element of the Riverside County General Plan (see Table 3.10-2 in the Noise and Vibration section of Chapter 3).

NZ-3. Cause off-site noise levels to exceed land use compatibility standards or criteria established in the local general plan (see Table 3.10-2 in the Noise and Vibration section of Chapter 3).

NZ-4. Create a long-term impact on noise-sensitive land uses by increasing long-term ambient CNEL levels by 10 dBA or more, even if the resulting noise level is below applicable land use compatibility standards.

NZ-5. Generate noise levels that exceed standards established by local ordinances or by state or federal agency regulations (see Table 3.10-4 and associated text discussions in the Noise and Vibration section of Chapter 3).

NZ-6. Expose people to excessive ground-borne vibration or ground-borne noise levels (see Table 3.10-5 in the Noise and Vibration section of Chapter 3).

NZ-7. Generate ground-borne vibration levels that pose a risk of cosmetic damage to on-site or off-site buildings (see Table 3.10-5 in the Noise and Vibration section of Chapter 3).

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Expose on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Expose residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Divisions of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (California Code of Regulations, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. Sunlight and SCE would be expected to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two private airstrips in the general Project vicinity. Eagle Mountain Airstrip is about 1.7 miles west of the northern portion of the proposed solar farm site and Desert Center Airport is about 4 miles southeast of the Project site. Both airstrips have very low use levels. Desert Center Airport used to be a public airfield, but has been sold to the developer of the Chuckwalla Valley Raceway. The Desert Center Airport is now operated as a private airstrip. The Riverside County Airport Land Use Compatibility Plan (Riverside County 2005) shows that the 55 dBA CNEL contour for the Desert Center Airport is confined to the immediate runway area. No airfield noise contours have been developed for the Eagle Mountain Airstrip, but the comparable low use values for that facility suggest that the 55 dBA CNEL noise contour would similarly be limited to the immediate runway area. None of the Project alternatives would create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further under any of the alternatives.

4.10.3 Alternative 1 – Proposed Action

Construction

After the DEIS was released, the Project has been modified in ways that would result in a reduction in construction noise compared with the Project as originally proposed (see Project Modifications Since Publication of DEIS discussion in Section 2.1 for details of the modifications). The noise level reductions would be primarily through the reduced number of bulldozers and scrapers that would be required for cut and fill activities and an overall smaller project footprint. In place of cut and fill, a disc and roll technique would be employed for site compaction on more than 50 percent of the Solar Farm site.

First Solar estimates that the disc and roll technique would replace five motor graders and 14 scrapers with two discers for the first two months of Project construction, and it would eliminate the need for those five motor graders and 14 scrapers during the 13th through 22nd month of the construction phase. The two discers would result in an overall reduction in noise levels because of the fewer pieces of equipment that would be required and the associated reduced combined noise levels. In addition, a smaller project footprint is proposed, which would lead to less site preparation and associated equipment use compared to the Project analyzed in the DEIS.

Based on these Project modifications, it is estimated that construction noise levels for site grading would be reduced by approximately 3 to 5 dBA compared with the level presented in Table 4.10-2. Even without these reductions, Project-related construction noise levels would not exceed the Riverside County land use compatibility standards at existing residences. Therefore, for this review and to maintain a reasonably conservative analysis, BLM has determined that the construction noise level estimates provided below remain valid for the modified Project as it would be for the Project as proposed in the DEIS because the outcome of environmental effects would not change.

Solar Farm Layout B

Noise from On-Site Construction Activity. Noise impacts from on-site construction activity have been evaluated using a detailed spreadsheet model. The spreadsheet model calculates noise levels at a range of receptor distances for individual phases of construction activity. The spreadsheet model has an expandable database of 140 equipment entries including heavy equipment, power tools, and other noise sources such as equipment backup beepers and hammering. Some equipment types have multiple entries to reflect a range of typical engine sizes. The database provides a default reference noise level at 50 feet, default atmospheric absorption coefficients, and default operating time factors for hours when the equipment is active. The operating time fractions allow for more realistic modeling of noise from intermittent equipment operations. Users can modify the default data to provide a project-specific analysis. The model requires users to specify the number and type of equipment items active in the same general work area for each hour of a 24-hour cycle. The spreadsheet model uses the hourly construction activity profile to calculate maximum hourly noise levels; average daytime, evening, and nighttime noise levels; 24-hour average noise levels (24-hour Leq); and 24-hour CNEL or Ldn noise levels.

Solar farm development would occur over a 26-month period, with construction activity undertaken as a rolling sequence of activity on different subareas of the site. Construction would generally progress as incremental work areas from the south end to the north end of the Project site. Tortoise exclusion fencing of the entire site would be the initial phase of activity, followed by threatened species removals and relocations. Temporary construction offices, sanitary facilities, and water supply facilities would be established prior to initiating subarea construction activities. Incremental construction of access roads and staging areas would generally lead the main construction activity sequence, followed by site clearing and grading, which would be followed by various facility construction activity stages. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). For safety reasons, some electrical connection activity would typically occur at night when the solar panels are not energized, but this activity would not require any significant heavy equipment operations.

The construction noise analysis for the solar farm used the construction emissions spreadsheet modeling analyses described in Section 4.2.2 to identify construction activity phases and associated equipment use. Five of the 18 construction phases were selected for noise modeling analysis:

- Vegetation clearing;
- Site grading;
- Installation of array support posts;
- Trenching and underground power cable installation; and
- Soil compacting and dust palliative application.

Other construction activity phases would be expected to generate lower noise levels than these phases. In most cases, equipment used during a construction phase would be distributed in groups of items in different portions of the active construction area. Not all equipment items would operate concurrently, but several items of equipment would typically be active over a construction day. Equipment items that would typically be operating in proximity were identified and used in the construction noise analyses. Table 4.10-2 summarizes the construction noise analysis results for the five construction phases with the greatest noise generation for Solar Farm Layout B. Appendix E-1 provides additional information from the construction noise modeling analysis.

Table 4.10-2
Summary of Solar Farm Site Construction Noise

Construction Phase	Typical Equipment	Distance From Construction, feet	Maximum 1-Hour Leq, dBA	Average Daytime Leq, dBA	CNEL, dBA
Vegetation Clearing	Brush Cutters, Tracked Dozer, Wheeled Tractor, Wheeled Loader, Wood Chipper, ATVs, Water Truck, Dump Truck	100	80.6	77.1	74.1
		400	67.9	64.5	61.5
		700	62.4	59.0	55.9
		1,000	58.7	55.2	52.2
		1,500	54.1	50.6	47.6
		2,500	47.5	44.0	41.0
Site Grading	Scraper, Tracked Dozer, Grader, Roller-Compactor, ATVs, Water Truck	100	81.3	78.9	75.9
		400	68.6	66.2	63.2
		700	63.1	60.7	57.7
		1,000	59.3	57.0	54.0
		1,500	54.7	52.4	49.3
		2,500	48.0	45.7	42.7
Array Post Installation	Auger Rig, Vibratory Pile Driver, Forklift, ATVs, Water Truck, Flatbed Truck	100	83.2	81.3	78.3
		400	70.7	68.8	65.8
		700	65.3	63.5	60.5
		1,000	61.7	59.9	56.9
		1,500	57.4	55.5	52.5
		2,500	51.3	49.4	46.4
Trenching and Underground Cable Installation	Trencher, Backhoe-Loader, Cable Plow, Forklift, ATVs, Flatbed Truck, Dump Truck, Water Truck	100	75.7	72.6	69.6
		400	63.2	60.1	57.1
		700	57.8	54.7	51.7
		1,000	54.2	51.1	48.1
		1,500	49.9	46.7	43.7
		2,500	43.9	40.6	37.6
Soil Compaction and Dust Palliative Application	Roller-Compactors, ATVs, Water Truck	100	74.8	72.2	69.1
		400	62.3	59.7	56.7
		700	57.1	54.5	51.4
		1,000	53.5	50.9	47.9
		1,500	49.3	46.7	43.7
		2,500	43.5	40.9	37.9

Leq = equivalent continuous noise level
CNEL = community noise equivalent level (a 24-hour weighted average)
Source: Tetra Tech analyses

There are only a few scattered rural residences within one mile of the proposed solar farm site (refer to Figure 3.10-1 in the Noise section of Chapter 3). The closest residence is *assumed to be occupied and is* about 1,175 feet *(0.22 mile)* from the proposed solar farm property line. All other nearby homes are 0.5 mile or further from the proposed solar farm property line. Homes along Kaiser Road to the west of the proposed solar farm are between 0.5 and one mile from the site. The closest home southeast of the proposed solar farm is more than one mile from the site. Homes near the MWD Eagle Mountain Pumping Plant are about 1.75 miles from the proposed solar farm site. The Eagle Mountain Elementary School and the Eagle Mountain Village residential area are about 2.5 miles west-northwest of the proposed solar farm site. The Lake Tamarisk development is about four miles south of the proposed solar farm site. The community of Desert Center is about six miles south of the proposed solar farm site.

Along the western side of the proposed solar farm site, there would be approximately 100 feet between the property line and the closest solar modules. The area between the western property line and the solar arrays would include a tortoise exclusion fence, a drainage and debris control channel, and an interior security fence. For almost all of the 26-month construction period, construction activity at the proposed solar farm site would be well over 2,000 feet from the nearest residence west of the site and over two miles from the nearest residence southwest of the site. Only a small portion of the overall construction activity would occur within half a mile of the nearest residence west of the proposed solar farm site.

Construction of the solar farm would involve a few periods when construction activity would occur about 1,200 to 1,300 feet from the closest residence west of the solar farm site (installation of perimeter fencing, construction of drainage and debris basins, construction of the closest solar array modules, and de-compaction of soils between solar array module at the end of construction). For most of the 26-month construction period, however, construction activity at the proposed solar farm site would be well over 2,000 feet from the nearest residence west of the site and over two miles from the nearest residence southeast of the site. Only a small portion of the overall construction activity would occur within half a mile of the nearest residence west of the proposed solar farm site.

Existing background noise levels near the solar farm site are expected to be low, with typical daytime noise levels of 35 to 50 dBA. Background noise levels would be higher during periods of strong winds. Based on construction noise estimates presented above in Table 4.10-2, noise from construction activity generally would be audible at locations less than a half mile from the solar farm. When construction activity is at the eastern side of the solar farm site, it probably would not be audible for any nearby residences. For the residence closest to the solar farm site, maximum CNEL *noise levels* from construction activity would be less than 57 dBA, which is within Riverside County's normally acceptable range for rural residential land uses. Maximum 1-hour Leq noise levels at this location would be about 59 dBA. While this would be higher than expected average background noise conditions, it is comparable to noise levels that would occur naturally during periods with strong winds.

Noise from Construction-Related Traffic. Noise impacts from construction-related traffic have been evaluated using a spreadsheet model originally designed as a batch mode implementation of the 1978 Federal Highway Administration (FHWA) traffic noise prediction model (Barry and Reagan 1978). The original FHWA model was designed to analyze noise levels from highway traffic for a single hour, using highway geometrics and traffic condition data input on a lane-by-lane basis. In contrast, the spreadsheet model used for this analysis is designed to model traffic noise on an hourly basis over a 24-hour period, providing a direct calculation of hourly noise levels plus 24-hour CNEL or Ldn noise levels. In addition, the spreadsheet model is designed to accommodate highway segments defined on either a single lane or a multi-lane basis. The spreadsheet model has been modified to correlate more closely with the more recent FHWA TNM traffic noise model (FHWA 1998, 2004a). The FHWA TNM model has different noise generation equations than the 1978 traffic noise prediction model, and also uses a different procedure to predict noise reductions as a function of distance and terrain conditions. These differences have been accounted for in the spreadsheet model by developing tables of adjustment factors as a function of vehicle type, vehicle speed, and receptor distance.

The spreadsheet model analyzes hourly traffic volumes over a 24-hour period for a road network of up to 30 highway segments (single or multi-lane, one-way or bi-directional) and up to 40 receptor locations. Users input the receptor coordinates, highway segment centerline coordinates, highway width, average daily traffic volume, nominal free-flow speed, and hourly vehicle capacity for each highway segment. In addition, users input an hourly distribution pattern for the daily traffic, the hourly percentage of medium duty trucks, and the hourly percentage of heavy trucks. The hourly traffic distribution patterns can be developed on a project-specific basis or selected from a library of default patterns based on a combination of 24-hour traffic counts from various locations and generalized literature data. Appendix E-2 provides additional details concerning the spreadsheet model.

For the Desert Sunlight Project, existing traffic patterns for Kaiser Road were based on the 24-hour traffic counts provided in the traffic study (Hernandez, Kroone & Associates 2010). These traffic counts show that medium trucks (two axles and six tires) account for 20 percent of existing daily traffic, and that heavy trucks (three or more axles) account for 6.5 percent of existing daily traffic. Kaiser Road was modeled in two segments, one between SR-177 and the Lake Tamarisk development, and the other between the Lake Tamarisk development and the solar farm site. Traffic counts taken north of the Lake Tamarisk development were increased by 39 percent to account for expected higher traffic volumes south of the Lake Tamarisk development.

Baseline traffic conditions for SR-177 and I-10 were developed from 2008 traffic count data and 2007 truck count data downloaded from the Caltrans website (Caltrans 2007, 2008). I-10 was split into two segments, one east of SR-177 and the other west of SR-177. No 24-hour count data was available for SR-177 or I-10. Caltrans annual average daily traffic (AADT) and peak hour data indicated a peak hour factor of 12.9 percent for SR-177 and 13 percent for I-10. These high peak hour factors are assumed to reflect a mid-day peak traffic period rather than peak periods during normal morning and afternoon commute times. A default mid-day peak traffic pattern from the spreadsheet model database was modified to reflect the peak hour factors for SR-177 and I-10.

Caltrans truck count data showed that medium trucks accounted for 4.4 percent of AADT on SR-177, 5.2 percent of AADT on I-10 west of SR-177, and 5.6 percent of AADT on I-10 east of SR-177. Caltrans data also showed that heavy trucks accounted for 9.6 percent of AADT on SR-177, 34.3 percent of AADT on I-10 west of SR-177, and 37.8 percent of AADT on I-10 east of SR-177. Default truck traffic distribution patterns from the spreadsheet model database were modified to reflect the overall truck percentages for SR-177 and I-10.

Construction periods for the solar farm and the Gen-Tie Line would overlap. Kaiser Road would be used by construction-related traffic for both the solar farm and the Gen-Tie Line. Consequently, construction-related traffic volumes used for this analysis were the combined volumes attributable to solar farm construction and Gen-Tie Line construction. Overall construction period traffic patterns were developed by adding construction-related truck trips and construction-related worker commute trips to the baseline hourly traffic patterns for each roadway segment. Construction truck traffic was assumed to be all heavy trucks, and to occur between 7:00 AM and 3:00 PM. Construction-related worker commute traffic was assumed to be a mix of light duty vehicles and medium trucks (shuttle buses). All arriving worker commute traffic was assumed to occur between 6:00 AM and 7:00 AM, and to depart between 3:00 PM and 4:00 PM. Separate analyses were performed for 2011 and 2012 construction traffic. Construction traffic during 2013 was considered too low to warrant additional traffic noise modeling. The traffic noise modeling assumed free-flow vehicle speeds of 45 mph on Kaiser Road, 50 mph on SR-177, and 65 mph on I-10.

Three sets of receptor transects were established perpendicular to SR-177 and Kaiser Road. One receptor transect was located in Desert Center south of Ragsdale Road. Two receptor transects were located along Kaiser Road, one at the Lake Tamarisk development (about 600 feet north of Oasis Road) and one midway between the Lake Tamarisk development and the solar farm site. Modeled receptor locations were established on the east and west sides SR-177 or Kaiser Road at distances of 50 feet, 100 feet, 250 feet, 500 feet, 750 feet, and 1,000 feet from the SR-177 or Kaiser Road centerline.

Table 4.10-3 summarizes modeled CNEL levels from 2011 and 2012 construction traffic, and Table 4.10-4 summarizes modeled maximum 1-hour Leq noise levels from 2011 and 2012 construction traffic. Both tables also include modeling results for existing traffic conditions. Additional information on the traffic noise modeling analysis is provided in Appendix E-2.

Table 4.10-3
Modeled CNEL Noise Levels from Construction Traffic, Solar Farm Layout B and Gen-Tie Line A-1

Location	Distance from Road Centerline, feet	Existing CNEL, dBA	2011 CNEL, dBA	2012 CNEL, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Desert Center, West Side of SR-177	50	66.9	67.5	67.3	0.6	0.4
	100	66.1	66.4	66.3	0.3	0.2
	250	65.8	65.9	65.9	0.1	0.1
	500	65.6	65.8	65.7	0.2	0.1
	750	65.6	65.7	65.7	0.1	0.1
	1,000	65.6	65.7	65.7	0.1	0.1
Desert Center, East Side of SR-177	50	66.9	67.5	67.3	0.6	0.4
	100	66.2	66.5	66.4	0.3	0.2
	250	65.9	66.1	66.0	0.2	0.1
	500	66.0	66.1	66.0	0.1	0.0
	750	66.0	66.1	66.0	0.1	0.0
	1,000	66.0	66.1	66.1	0.1	0.1
Lake Tamarisk, West Side of Kaiser Road	50	51.9	58.7	57.6	6.8	5.7
	100	48.0	53.8	52.7	5.8	4.7
	250	44.7	47.6	46.9	2.9	2.2
	500	43.9	45.2	44.8	1.3	0.9
	750	43.7	44.5	44.2	0.8	0.5
	1,000	43.6	44.1	43.9	0.5	0.3
Lake Tamarisk, East Side of Kaiser Road	50	51.9	58.7	57.6	6.8	5.7
	100	48.0	53.8	52.7	5.8	4.7
	250	44.7	47.6	46.9	2.9	2.2
	500	43.9	45.2	44.8	1.3	0.9
	750	43.7	44.5	44.3	0.8	0.6
	1,000	43.6	44.1	44.0	0.5	0.4
Between Lake Tamarisk and Solar Farm Site, West Side of Kaiser Road	50	49.9	58.2	56.9	8.3	7.0
	100	45.1	53.1	51.7	8.0	6.6
	250	39.0	45.4	44.2	6.4	5.2
	500	36.6	40.9	39.8	4.3	3.2
	750	35.9	38.9	38.1	3.0	2.2
	1,000	35.4	37.6	37.0	2.2	1.6

Table 4.10-3 (continued)
Modeled CNEL Noise Levels from Construction Traffic, Solar Farm Layout B and Gen-Tie Line A-1

Location	Distance from Road Centerline, feet	Existing CNEL, dBA	2011 CNEL, dBA	2012 CNEL, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Between Lake Tamarisk and Solar Farm Site, East Side of Kaiser Road	50	49.9	58.2	56.9	8.3	7.0
	100	45.1	53.1	51.7	8.0	6.6
	250	39.0	45.4	44.2	6.4	5.2
	500	36.6	40.9	39.8	4.3	3.2
	750	35.9	38.9	38.1	3.0	2.2
	1,000	35.5	37.6	37.0	2.1	1.5

CNEL = community noise equivalent level (a 24-hour weighted average)
Source: Tetra Tech analyses

Table 4.10-4
Modeled Maximum 1-Hour Leq Noise Levels from Construction Traffic, Solar Farm Layout B and Gen-Tie Line A-1

Location	Distance from Road Centerline, feet	Existing Maximum 1-Hour Leq, dBA	2011 Maximum 1-Hour Leq, dBA	2012 Maximum 1-Hour Leq, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Desert Center, West Side of SR-177	50	71.0	71.2	71.1	0.2	0.1
	100	70.3	70.4	70.4	0.1	0.1
	250	70.0	70.0	70.0	0.0	0.0
	500	69.9	69.9	69.9	0.0	0.0
	750	69.8	69.9	69.8	0.1	0.0
	1,000	69.8	69.8	69.8	0.0	0.0
Desert Center, East Side of SR-177	50	71.0	71.2	71.1	0.2	0.1
	100	70.4	70.5	70.5	0.1	0.1
	250	70.2	70.3	70.2	0.1	0.0
	500	70.3	70.3	70.3	0.0	0.0
	750	70.3	70.3	70.3	0.0	0.0
	1,000	70.3	70.3	70.3	0.0	0.0
Lake Tamarisk, West Side of Kaiser Road	50	53.4	60.4	59.4	7.0	6.0
	100	50.3	55.6	54.7	5.3	4.4
	250	48.4	50.4	49.7	2.0	1.3
	500	48.0	48.8	48.5	0.8	0.5
	750	47.9	48.4	48.2	0.5	0.3
	1,000	47.8	48.1	48.0	0.3	0.2
Lake Tamarisk, East Side of Kaiser Road	50	53.4	60.4	59.4	7.0	6.0
	100	50.3	55.6	54.8	5.3	4.5
	250	48.4	50.4	49.7	2.0	1.3
	500	48.0	48.9	48.5	0.9	0.5
	750	47.9	48.4	48.2	0.5	0.3
	1,000	47.9	48.1	48.0	0.2	0.1
Between Lake Tamarisk and Solar Farm Site, West Side of Kaiser Road	50	50.8	59.8	58.6	9.0	7.8
	100	46.2	54.6	53.4	8.4	7.2
	250	41.4	47.2	45.6	5.8	4.2
	500	40.0	43.6	42.4	3.6	2.4
	750	39.6	41.9	41.1	2.3	1.5
	1,000	39.4	40.7	40.2	1.3	0.8

Table 4.10-4 (continued)
Modeled Maximum 1-Hour Leq Noise Levels from Construction Traffic, Solar Farm Layout B and Gen-Tie Line A-1

Location	Distance from Road Centerline, feet	Existing Maximum 1-Hour Leq, dBA	2011 Maximum 1-Hour Leq, dBA	2012 Maximum 1-Hour Leq, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Between Lake Tamarisk and Solar Farm Site, East Side of Kaiser Road	50	50.8	59.8	58.6	9.0	7.8
	100	46.2	54.6	53.4	8.4	7.2
	250	41.4	47.2	45.6	5.8	4.2
	500	40.0	43.6	42.4	3.6	2.4
	750	39.6	42.0	41.1	2.4	1.5
	1,000	39.4	40.7	40.3	1.3	0.9

Leq = equivalent continuous noise level
Source: Tetra Tech analyses

As shown in Tables 4.10-3 and 4.10-4, construction-related traffic noise would be somewhat higher during 2011 than during 2012. Because there would be little construction-related traffic after 2012, traffic noise conditions would return to existing levels in 2013. Construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find noise level changes of 3 to 5 dBA to be noticeable, and noise level changes of 5 dBA or more to be obvious. A 10-dBA noise level increase represents a doubling of perceived noise levels. Thus, changes in CNEL or 1-hour Leq noise levels of less than 1 dBA in the Desert Center area would not be noticeable. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. In the Lake Tamarisk area, there would be an obvious increase in traffic noise levels within about 100 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 250 feet from Kaiser Road. Locations more than 250 feet from Kaiser Road would not experience a noticeable change in traffic noise conditions. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within Riverside County's normally acceptable range for rural residential land uses.

Background noise levels for the area between the Lake Tamarisk development and the solar farm site are lower than background noise levels along the southern part of Kaiser Road. Although overall traffic noise levels during the 2011 and 2012 construction period would be slightly less in this area than in the Lake Tamarisk area, the change in noise levels due to construction-related traffic would be more noticeable. For this area, there would be an obvious increase in traffic noise levels within about 300 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 800 feet from Kaiser Road. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within Riverside County's normally acceptable range for rural residential land uses.

Noise Impacts to Wildlife. Noise effects on wildlife and livestock are similar in most respects to noise effects on people, with potential physiological, behavioral, and activity interference effects (EPA 1971, 1980). Potential physiological effects include a generalized increase in stress conditions, loss of hearing sensitivity, and effects of sleep disturbance. In general, loss of hearing sensitivity from prolonged exposure to loud noises or from short term exposure to intense impulse noise is likely to be the most important physiological effect. Potential behavioral effects of noise are best categorized as general disturbance and potential disruption or important behavioral patterns (such as reproductive and brood rearing behaviors). Potential activity interference effects include changes in habitat use patterns and interference with vocal or non-vocal communication and signaling.

Although the acoustic frequency range for hearing and relative sensitivity to different acoustic frequencies vary among species, the hearing range for most terrestrial vertebrates broadly overlaps that of people. The hearing range for some species extends beyond the frequency range for people at either high or low frequencies. Many mammals have a hearing range that extends to much higher frequencies than those audible to people. Most birds have a range of hearing that is narrower than that of people. Most terrestrial species also show a relative sensitivity pattern of peak sensitivity to mid range frequencies, with reduced sensitivity to low and high frequencies.

While there are many anatomical and physiological differences among different groups of vertebrates, there are also many broad similarities among terrestrial vertebrates. Auditory system similarities among terrestrial vertebrates lead to some general similarities in physiological and behavioral responses to noise levels. For both people and many terrestrial vertebrates, sound levels above 110 to 120 dBA have the potential for causing physiological effects on the auditory system (EPA 1971, 1980). Similarly, behavioral effects are noted over a broad range of sound levels, and are influenced greatly by the context of noise exposure and the novelty of the noise source. Except in unusual situations, sound levels below 70 dBA produce only limited behavioral responses in most wildlife species (EPA 1980).

Many reports of apparent noise disturbance to terrestrial wildlife fail to distinguish between disturbance from noise per se and disturbance from visible activity (EPA 1971, 1980). In general, most terrestrial wildlife species are more easily disturbed by visible activity than by noise alone. Behavioral accommodation to noise conditions is common among vertebrates, especially when noise occurs in isolation from visible activity (EPA 1980, US Fish and Wildlife Service 1988, Wyle Labs no date). It should be noted, however, that behavioral accommodation to noise conditions does not preclude physiological effects from noise exposure. When animals learn to associate particular noises with active disturbance conditions (such as snowmobile, off-road vehicle, helicopters, low-flying aircraft, or boat activity), noise per se can become an important disturbance factor. But when animals do not associate a noise source with active disturbance, habituation and accommodation to the noise source is common. This is a common occurrence with highway traffic, and explains the persistent problem of wildlife road kills, even though highway traffic is clearly an audible noise source.

Clearing, grading, and soil compacting activities during construction of the solar farm would eliminate most on-site wildlife habitat values, and would eliminate or force most vertebrate wildlife from the site. The elimination of wildlife habitat values and the elimination or forced movement of wildlife populations would be a consequence of physical construction activity, not a consequence of noise impacts. Because noise levels decline rapidly with increasing distance, construction-related noise levels would not be high enough at off-site locations to cause purely noise-related impacts to wildlife. Thus, noise impacts to wildlife from on-site construction activity would be limited to wildlife remaining in portions of the overall construction area that have not yet experienced active disturbance by construction equipment.

Ground Vibrations from Construction Activity. Heavy equipment and trucks used for solar farm construction are potential sources of ground vibration. Ground vibration conditions expected from solar farm construction have been evaluated using procedures developed by Caltrans (2004). The Caltrans procedure provides equations for predicting ground vibration levels by distance from selected types of construction equipment according to local ground conditions. Four categories of ground conditions are used to select equation parameters in the Caltrans procedure:

- Category 1: Weak or soft soils, loose soils, loose sand, mud, saturated soils, plowed ground, etc.;
- Category 2: Competent soils, most sands, sandy clays, silty clays, gravel, silts, weathered rock, etc.;
- Category 3: Hard soils, dense compacted sands, dry consolidated clay, consolidated glacial till, etc.;
- Category 4: Hard, competent rock, bedrock, exposed hard rock, etc.

Caltrans category 2 conditions were considered representative of the solar farm area for the early phases of construction when most heavy equipment would be in use. Although category 3 might be representative of the on-site conditions at the solar farm following the soil compaction phase of construction activity, there would be much less heavy equipment use following that phase. In addition, category 2 soil conditions would continue to prevail at off-site locations. Table 4.10-5 summarizes the results of the vibration analysis.

Table 4.10-5
Ground Vibration Levels for Typical Equipment Used for Solar Farm Construction

Equipment Type	Vibration Type	Parameter	Distance From Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Vibratory Pile Driver, typical	Frequent or Continuous	PPV, in/sec	0.170	0.028	0.011	0.007
		Human Response	mildly annoying	barely perceptible	barely perceptible	not perceptible
		Building Damage Potential	very low	none	none	None
Self-Loading Scraper	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	None
Static Roller-Compactor	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	None
Large Bulldozer	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	Not perceptible
		Building Damage Potential	extremely low	none	none	None
Drill Rig or Auger	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	Not perceptible
		Building Damage Potential	extremely low	none	none	None

Table 4.10-5 (continued)
Ground Vibration Levels for Typical Equipment Used for Solar Farm Construction

Equipment Type	Vibration Type	Parameter	Distance From Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Loaded Truck	Single Event	PPV, in/sec	0.076	0.013	0.005	0.003
		Human Response	barely perceptible	not perceptible	not perceptible	Not perceptible
		Building Damage Potential	None	none	none	None
Small Bulldozer	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	Not perceptible
		Building Damage Potential	None	none	none	None
Excavator or Backhoe	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	Not perceptible
		Building Damage Potential	None	none	none	None
Wheeled Loader	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	Not perceptible
		Building Damage Potential	None	none	none	None

PPV = peak particle velocity, inches per second
Human reactions and building damage potential have different thresholds depending on whether the vibration events are isolated discrete events or frequent/continuous events.
Building damage potential is based on cosmetic (not structural) damage to buildings or structures of various types and ages. Building damage categories are:
Extremely Low = exceeds cosmetic damage threshold for extremely fragile historic buildings, ruins, or monuments
Very Low = exceeds cosmetic damage threshold for fragile buildings
Low = exceeds cosmetic damage threshold for historic buildings
Moderate = exceeds cosmetic damage threshold for older residential buildings
High = exceeds cosmetic damage threshold for newer residential buildings
Very High = exceeds cosmetic damage thresholds for modern commercial and industrial buildings.
Source: Tetra Tech analyses based on Caltrans 2004.

As demonstrated by the data in Table 4.10-5, ground vibration from most types of equipment used for solar farm construction would not be perceptible at distances of 200 feet or more from operating equipment items. For vibratory pile drivers, ground vibrations would not be perceptible at distances of 300 feet or more from the operating equipment. Construction activity would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings in the solar farm vicinity.

Gen-Tie Line A-1

Noise from On-Site Construction Activity. Procedures used to evaluate construction noise impacts for GT-A-1 were the same as described for SF-B, above. The construction noise analysis for the transmission line used the construction emissions spreadsheet modeling analyses described in Section 4.2.2 to identify construction activity phases and associated equipment use. Four of the six construction phases were selected for noise modeling analysis:

- Site preparation;
- Tower foundations
- Tower assembly and erection; and
- Power line stringing.

The remaining two construction phases (testing and site cleanup) would have limited heavy equipment use, and would generate lower noise levels than these phases. Not all equipment items would operate concurrently, but several items of equipment would typically be active over a construction day. Equipment items that would typically be operating in proximity were identified and used in the construction noise analyses. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Table 4.10-6 summarizes the construction noise analysis results for the five construction phases with the greatest noise generation for GT-A-1.

GT-A-1 would be located on the west side of Kaiser Road from the solar farm site to a location south of the Tamarisk Lake development. There are some rural residences in addition to the Tamarisk Lake development along that part of the transmission line corridor (refer to Figure 3.10-1 in the Noise section of Chapter 3). Based on aerial photographs, the closest homes appear to be about 500 feet from the transmission line corridor. The four construction phases evaluated above would last about nine months. During that time, construction activity would advance in a linear fashion along the 12.2-mile transmission line corridor. Consequently, construction activity would be near any given location for only a few weeks of the overall construction period.

As indicated in Table 4.10-6, daytime construction activity along the transmission line corridor would be a temporary but noticeable noise source for locations within about 1,000 feet of the active construction area. CNEL increments at the homes closest to the transmission line corridor would temporarily reach about 62 dBA, with maximum 1-hour Leq noise levels of about 69 dBA. CNEL increments would temporarily exceed Riverside County's normally acceptable limit for rural residential land uses, but would remain within the conditionally acceptable range.

Noise from Construction-Related Traffic. Noise from construction-related traffic for the solar farm site plus GT-A-1 was presented previously in Tables 4.10-3 and 4.10-4. Construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find a noise level change of 5 dBA or more to be obvious. The changes in CNEL and 1-hour Leq noise levels in the Desert Center area would not be noticeable. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. In the Lake Tamarisk area, there would be an obvious increase in traffic noise levels within about 100 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 250 feet from Kaiser Road. Locations more than 250 feet from Kaiser Road would not experience a noticeable change in traffic noise conditions. For the area between the solar farm site and the Lake Tamarisk development, there would be an obvious increase in traffic noise levels within about 300 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 800 feet from Kaiser Road. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within Riverside County's normally acceptable range for rural residential land uses.

Table 4.10-6
Summary of Construction Noise for Gen-Tie Line A-1

Construction Phase	Typical Equipment	Distance From Construction, feet	Maximum 1-Hour Leq Increment, dBA	Average Daytime Leq Increment, dBA	CNEL Increment, dBA
Site Preparation	Tracked Dozer, Grader, Roller-Compactor, Wheeled Loader, Dump Truck, Water Truck	100	80.3	78.1	75.0
		200	74.1	71.8	68.8
		300	70.3	68.1	65.1
		500	65.5	63.2	60.2
		700	62.1	59.9	56.9
		1,000	58.4	56.1	53.1
Tower Foundations	Tracked Dozer, Wheeled Loader, Backhoe, Auger Rig, Drill Rig, Compressor, Pump, Jackhammer, Portable Mixer, Forklift, Mobile Crane, Dump Trick, Cement Mixer Truck, Specialty Trucks, Water Truck	100	84.3	79.8	76.8
		200	78.0	73.6	70.6
		300	74.2	69.9	66.9
		500	69.3	65.0	62.0
		700	65.9	61.7	58.7
		1,000	62.1	58.0	55.0
Tower Assembly and Erection	Portable Compressor, Forklift, Mobile Crane, Water Truck, Flatbed Truck	100	81.9	78.0	75.0
		200	75.7	71.9	68.8
		300	72.0	68.2	65.2
		500	67.3	63.4	60.4
		700	64.0	60.2	57.2
		1,000	60.4	56.6	53.6
Power Line Stringing	Tracked Dozer, Backhoe, Portable Compressor, Line Puller, Specialty Trucks, Truck Tractor, Water Truck	100	78.9	75.6	72.6
		200	72.7	69.4	66.4
		300	69.0	65.7	62.7
		500	64.3	61.0	57.9
		700	61.0	57.7	54.7
		1,000	57.4	54.1	51.1

Leq = equivalent continuous noise level
CNEL = community noise equivalent level (a 24-hour weighted average)
Source: Tetra Tech analyses

Noise Impacts to Wildlife. General considerations regarding noise impacts on wildlife were presented previously in connection with the solar farm site. The same general considerations would apply to GT-A-1. About 33 percent of the transmission line corridor would be subject to temporary disturbance during the construction period. About 8 percent of the corridor area would be converted to permanent facility use. Construction noise would be temporary, and would occur only during the few weeks of active construction activities at any given location. Noise from construction of GT-A-1 would have only a temporary impact on wildlife in areas adjacent to the active construction work areas.

Ground Vibrations From Construction Activity. Ground vibration impacts from construction of GT-A-1 were assessed using the same procedures as discussed previously for SF-B. Table 4.10-7 summarizes the ground vibration analysis for construction of GT-A-1.

Table 4.10-7
Ground Vibration Levels for Typical Equipment Used for Construction of Gen-Tie Line A-1

Equipment Type	Vibration Type	Parameter	Distance From Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Static Roller-Compactor	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	Extremely low	none	none	none
Large Bulldozer	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Drill Rig or Auger	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Loaded Truck	Single Event	PPV, in/sec	0.076	0.013	0.005	0.003
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Jackhammer	Frequent or Continuous	PPV, in/sec	0.035	0.006	0.002	0.001
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Small Bulldozer	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Excavator or Backhoe	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Wheeled Loader	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none

PPV = peak particle velocity, inches per second
Human reactions and building damage potential have different thresholds depending on whether the vibration events are isolated discrete events or frequent/continuous events.
Building damage potential is based on cosmetic (not structural) damage to buildings or structures of various types and ages. Building damage categories are:

- Extremely Low = exceeds cosmetic damage threshold for extremely fragile historic buildings, ruins, or monuments
- Very Low = exceeds cosmetic damage threshold for fragile buildings
- Low = exceeds cosmetic damage threshold for historic buildings
- Moderate = exceeds cosmetic damage threshold for older residential buildings
- High = exceeds cosmetic damage threshold for newer residential buildings
- Very High = exceeds cosmetic damage thresholds for modern commercial and industrial buildings.

Source: Tetra Tech analyses based on Caltrans 2004.

As demonstrated by the data in Table 4.10-7, ground vibration from most types of equipment used for Gen-Tie Line construction would not be perceptible at distances of 200 feet or more from operating equipment items. Construction activity would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings along the transmission line corridor.

Red Bluff Substation A

Noise from On-Site Construction Activity. Procedures used to evaluate construction noise impacts for Red Bluff Substation A were the same as described for SF-B, above. The construction noise analysis for the substation used the construction emissions spreadsheet modeling analyses described in Section 4.2.2 to identify construction activity phases and associated equipment use. Five of the 11 construction phases were selected for noise modeling analysis:

- Site clearing;
- Site grading and compacting;
- Trenching and foundations
- Equipment pads; and
- Equipment installation.

The other construction phases would have limited heavy equipment use, and would generate lower noise levels than these phases. Not all equipment items would operate concurrently, but several items of equipment would typically be active over a construction day. Equipment items that would typically be operating in proximity were identified and used in the construction noise analyses. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Table 4.10-8 summarizes the construction noise analysis results for the five construction phases with the greatest noise generation for Red Bluff Substation A.

There are no noise-sensitive land uses close to the location proposed for Red Bluff Substation A. As shown in Table 4.10-8, locations 400 feet or more from the construction site would have CNEL increments of less than 60 dBA during the construction period. Maximum 1-hour Leq noise levels would be less than 60 dBA at distances of 800 feet or more from the construction site.

Noise from Construction-Related Traffic. Construction-related traffic for Red Bluff Substation A generally would be limited to I-10 and an unpaved access road. There are no noise-sensitive land uses along either of the alternative access road alignments for Red Bluff Substation A. Construction-related traffic for Red Bluff Substation A would have little effect on noise levels from I-10, since it takes a doubling of traffic volumes to increase traffic noise levels by 3 dBA. There would be limited construction activity and few construction-related vehicle trips at the telecommunication site on SR-177. Consequently, no traffic noise modeling was conducted for these roadways.

Noise Impacts to Wildlife. General considerations regarding noise impacts to wildlife were presented previously in connection with the solar farm site. The same general considerations would apply to Red Bluff Substation A. Construction of Red Bluff Substation A would eliminate wildlife habitat

Table 4.10-8
Summary of Construction Noise for the Red Bluff Substation

Construction Phase	Typical Equipment	Distance From Construction, feet	Maximum 1-Hour Leq Increment, dBA	Average Daytime Leq Increment, dBA	CNEL Increment, dBA
Site Clearing	Brush Cutters, Tracked Dozer, Wheeled Tractor, Wheeled Loader, Wood Chipper, Water Truck	100	83.3	80.3	77.3
		400	70.6	67.6	64.6
		700	65.1	62.1	59.1
		1,000	61.3	58.4	55.3
		1,500	56.7	53.7	50.7
		2,500	50.0	47.1	44.1
Site Grading and Compacting	Scraper, Tracked Dozer, Grader, Roller-Compactor, Wheeled Loader, Backhoe, Water Truck	100	84.3	80.5	77.5
		400	71.7	67.9	64.8
		700	66.2	62.4	59.4
		1,000	62.4	58.7	55.6
		1,500	57.9	54.1	51.1
		2,500	51.3	47.6	44.6
Trenching and Foundations	Excavator, Backhoe, Wheeled Loader, Skid-Steer Loader, Auger Rig, Tracked Dozer, Cement Mixer Truck, Water Truck	100	81.8	77.6	74.6
		400	69.2	65.1	62.1
		700	63.8	59.7	56.6
		1,000	60.1	56.0	53.0
		1,500	55.6	51.6	48.6
		2,500	49.2	45.3	42.3
Installation of Equipment Pads	Wheeled Loader, Mobile Crane, Forklift, Flatbed Truck, Cement Mixer Truck, Dump Truck, Water Truck	100	79.0	75.3	72.3
		400	66.6	62.9	59.9
		700	61.3	57.6	54.6
		1,000	57.8	54.1	51.1
		1,500	53.6	49.9	46.9
		2,500	47.7	44.1	41.1
Installation of Substation Equipment	Mobile Crane, Forklift, Wheeled Loader, Portable Compressor, Dump Truck, Specialty Trucks, Water Truck	100	78.5	75.5	72.5
		400	66.0	63.0	60.0
		700	60.7	57.7	54.7
		1,000	57.2	54.2	51.2
		1,500	52.9	49.9	46.9
		2,500	46.9	43.9	40.9

Leq = equivalent continuous noise level
CNEL = community noise equivalent level (a 24-hour weighted average)
Source: Tetra Tech analyses

from the site. Construction noise and visible construction activity would have a temporary effect on wildlife in adjacent undisturbed areas, but noise levels (see Table 4.10-8 above) would not exceed the general range of existing ambient noise levels at distances beyond 200 to 300 feet from the construction site.

Ground Vibrations from Construction Activity. Ground vibration impacts from construction of Red Bluff Substation A were assessed using the same procedures as discussed previously for SF-B. Table 4.10-9 summarizes the ground vibration analysis for construction of Red Bluff Substation A.

Table 4.10-9
Ground Vibration Levels for Typical Equipment Used for Construction of the Red Bluff Substation

Equipment Type	Vibration Type	Parameter	Distance From Operating Equipment Item			
			25 feet	100 feet	200 feet	300 feet
Self-Loading Scraper	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Static Roller-Compactor	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Large Bulldozer	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Drill Rig or Auger	Frequent or Continuous	PPV, in/sec	0.089	0.015	0.006	0.004
		Human Response	distinctly perceptible	barely perceptible	not perceptible	not perceptible
		Building Damage Potential	extremely low	none	none	none
Loaded Truck	Single Event	PPV, in/sec	0.076	0.013	0.005	0.003
		Human Response	barely perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	none	none
Small Bulldozer	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	not perceptible	not perceptible
		Building Damage Potential	None	none	None	none
Excavator or Backhoe	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	Not perceptible	not perceptible
		Building Damage Potential	None	none	None	none
Wheeled Loader	Frequent or Continuous	PPV, in/sec	0.003	0.000	0.000	0.000
		Human Response	not perceptible	not perceptible	Not perceptible	not perceptible
		Building Damage Potential	None	none	None	none

PPV = peak particle velocity, inches per second
Human reactions and building damage potential have different thresholds depending on whether the vibration events are isolated discrete events or frequent/continuous events.
Building damage potential is based on cosmetic (not structural) damage to buildings or structures of various types and ages. Building damage categories are:

Extremely Low = exceeds cosmetic damage threshold for extremely fragile historic buildings, ruins, or monuments
Very Low = exceeds cosmetic damage threshold for fragile buildings
Low = exceeds cosmetic damage threshold for historic buildings
Moderate = exceeds cosmetic damage threshold for older residential buildings
High = exceeds cosmetic damage threshold for newer residential buildings
Very High = exceeds cosmetic damage thresholds for modern commercial and industrial buildings.

Source: Tetra Tech analyses based on Caltrans 2004.

As demonstrated by the data in Table 4.10-9, ground vibration from most types of equipment used for substation construction would not be perceptible at distances of 200 feet or more from operating equipment items. Construction activity at Red Bluff Substation A would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings.

Summary of Construction Impacts

Construction activities at the solar farm site, along the Gen-Tie Line corridor, and at the Red Bluff substation site would generate temporary increases in local noise levels over a period of about 26 months. Construction activities would be limited to daytime hours on weekdays consistent with the Riverside County noise ordinance. On-site noise levels would diminish rapidly with increasing distance from the active construction operations, and would drop to background noise levels over a distance of about 0.5 mile or less. Construction-related traffic would have almost no impact on noise levels along I-10, limited effects on traffic noise levels along SR-177 between I-10 and Kaiser Road, and localized effects on traffic noise levels along Kaiser Road. Construction-related traffic would generally occur between 6:00 AM and 4:00 PM during most months, and perhaps between 5:00 AM and 3:00 PM during summer months. Noise levels from on-site construction activity and construction-related traffic would not exceed Riverside County land use compatibility standards at existing residences. Temporary noise impacts to wildlife would be limited to the construction sites and immediately adjacent locations. Ground vibrations from construction equipment would not be perceptible at existing residences near the construction sites.

Operation and Maintenance

Solar Farm Layout B

Noise from Facility Operations. Operational activities at the solar farm site would not generate much noise. Identifiable sources of noise would include on-site vehicle and ATV use, power conversion station (PCS) equipment, and the on-site substation. The solar farm would have 10 to 15 on-site employees on any given day. There would be limited amounts of vehicle and ATV traffic on the site, but this vehicle activity would be intermittent, and would not be expected to generate off-site noise impacts.

Inverters and transformers at the PCS would produce low levels of noise during facility operations, but this noise would be limited to daytime hours when the solar arrays are generating electricity. Each PCS would have two inverters housed inside an air-conditioned, pre-fabricated enclosure and one transformer mounted on a concrete pad. Each PCS inverter would generate a noise level of about 75 dBA at a distance of 10 feet (Beck 2010a), or about 78 dBA at 10 feet for two inverters. The PCS enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 63 dBA at a distance of 10 feet from the enclosure. The PCS transformers generate a noise level of about 58 dBA at a distance of six feet (Beck 2010b). For analysis purposes, the overall noise generation from the PCS (inverter housing, air conditioner, and transformer) has been estimated at 65 dBA at a distance of 10 feet. This noise level would be reduced to 50 dBA at a distance of 56 feet, to 40 dBA at a distance of 178 feet, and to 35 dBA at a distance of 312 feet. The PCS would be centrally located within each 1 MW array of solar panels, about 240 to 300 feet from the sides of the array. No solar arrays would be within 100 feet of the western property line. Thus, the PCS would generate little audible noise beyond the solar farm property line during daytime hour. The PCS would not be a source of noise during nighttime hours.

Transformers and related equipment at the on-site substation would be the most important source of operational noise. Transformers at the on-site substation would have cooling fans that operate during daytime hours, but which would not be needed at night when the solar arrays are not generating power. The transformers at the on-site substation are expected to generate noise levels of 89 dBA at a distance of six feet during the daytime, and 86 dBA at a distance of one foot during nighttime hours (Beck 2010c). Daytime noise generation from the on-site substation is expected to be 70.6 dBA at a distance of 50 feet from the substation, 60 dBA at 168 feet, 50 dBA at 521 feet, 45 dBA at 907 feet, and 40 dBA at 1,535 feet. Nighttime noise generation from the on-site substation is expected to be 52.1 dBA at a distance of 50 feet, 50 dBA at a distance of 64 feet, 40 dBA at a distance of 200 feet, and 35 dBA at a distance of 353 feet. The on-site substation would be about 1,100 feet from the closest property line and slightly less than one mile from the closest existing residence. Daytime noise from the on-site substation would generally be close to background noise levels at the closest property line. Nighttime noise from the on-site substation would not be audible beyond the property line.

Noise Impacts to Wildlife. Some birds and other small wildlife species would re-occupy the solar farm site once construction activities are completed, but other wildlife species would be excluded from the site by the perimeter fences. Wildlife population levels for many of those species able to re-occupy the site would be limited by the reduced vegetation cover. Operations at the solar farm site would not generate noise levels high enough to impact on-site or off-site wildlife.

Gen-Tie Line A-1

Noise from Facility Operations. GT-A-1 would have no persistent operational noise generation. Routine transmission line inspection and maintenance activities would occur only a few times a year. Corona discharge during rainstorms normally is associated with higher voltage transmission lines than the proposed 220 kV line (PG&E 2002). SCE has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line right-of-way (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds.

Noise Impacts to Wildlife. There would be no persistent operational noise associated with GT-A-1, and consequently no noise impacts to wildlife.

Red Bluff Substation A

Noise from Facility Operations. Transformers and related electrical equipment at Red Bluff Substation A would be a localized source of operational noise. A 500/220 kV substation proposed by SCE as an optional feature for the Devers-Palo Verde Number 2 transmission line was estimated to produce relatively steady operational noise levels of about 60 dBA at a chain link fence surrounding the substation property (CPUC 2006). A continuous 60 dBA noise source would result in a CNEL level of about 67 dBA. The Red Bluff Substation A site is not located near any noise-sensitive land uses, and would be surrounded by a masonry security wall rather than by a chain link fence. The security wall would reduce off-site operational noise from the substation by an estimated 6 to 8 dBA. Thus, operational noise from Red Bluff Substation A would produce a CNEL level of about 60 dBA outside the substation property. Existing traffic volumes along I-10 are estimated to produce background CNEL levels of about 64 dBA at the north side of the substation location and about 55 dBA at the south side of the substation location.

The Red Bluff Substation would include a generator to provide emergency power for substation lighting, battery chargers, and circuit breakers in the event of an electrical outage at the substation. First Solar estimates that typical operational tests for the emergency generator would be performed monthly for a maximum of approximately one hour per test. Noise levels adjacent to the substation would be periodically elevated during emergency generator testing; however, it is not anticipated that the associated noise levels would be audible at the closest sensitive receptor locations.

Noise Impacts to Wildlife. Given the existing influence of I-10 on ambient noise levels in the substation vicinity, operational noise levels from Red Bluff Substation A would not be expected to affect off-site wildlife.

Summary of Operation and Maintenance Impacts

Operational noise levels at the solar farm would be limited to occasional vehicle and ATV use within the site, minor maintenance activities, and low equipment noise from PCS and the on-site substation. Noise levels from the on-site PCS and on-site substation would be reduced during nighttime hours when the solar farm is not generating electricity. Daytime and nighttime operational noise levels from the solar farm would be comparable to existing background noise levels at the substation property line. Gen-Tie Line A-1 would have no operational noise levels other than the possibility of temporary low corona discharge noise levels during rainstorms. Red Bluff Substation A would generate an operational CNEL level of about 60 dBA outside the substation property line, but there are no noise-sensitive land uses near the substation site.

Decommissioning

Solar Farm Layout B

Noise from Decommissioning Activities. Decommissioning of the solar farm would require disassembly of mechanical equipment components, demolition of on-site buildings, and removal of perimeter fencing. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Noise impacts from decommissioning activities at the solar farm site would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.10-2, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise impacts from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Tables 4.10-3 and 4.10-4, above).

Noise Impacts to Wildlife. Noise impacts to wildlife during solar farm decommissioning would be similar to those discussed previously with respect to construction activities.

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during solar farm decommissioning would be similar to those previously discussed with respect to construction activities (see Table 4.10-5, above).

Gen-Tie Line A-1

Noise from Decommissioning Activities. Decommissioning of GT-A-1 would require removal of the transmission cables, removal of the transmission towers and footings, filling of tower footing excavations, and perhaps a limited amount of revegetation along the transmission line corridor. Most of the material removed during decommissioning would likely be recycled. Equipment used for decommissioning would generally be similar to that used for construction. Noise impacts from decommissioning activities of Gen-Tie Line A-1 would be similar to, but probably somewhat less than, those previously estimated for construction activities (see Table 4.10-6, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise impacts from traffic associated with decommissioning activities would likely be somewhat less than the noise levels previously estimated for construction-related traffic (see Tables 4.10-3 and 4.10-4, above).

Noise Impacts to Wildlife. Noise impacts to wildlife during decommissioning of Gen-Tie Line A-1 would be similar to those discussed previously with respect to construction activities.

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of Gen-Tie Line A-1 would be similar to those previously discussed with respect to construction activities (see Table 4.10-6, above).

Red Bluff Substation A

Noise from Decommissioning Activities. Decommissioning of the Red Bluff Substation would require disassembly of mechanical equipment components, demolition of equipment pads and paving, and removal of perimeter wall. Many equipment components would include materials that could be recycled, although some materials would probably require disposal in appropriate landfills or other waste disposal areas. It is likely that some type of revegetation program also would be required. Equipment used for decommissioning would generally be similar to that used for construction. Decommissioning activities would likely require less heavy equipment than facility construction, since no vegetation clearing or site grading would be required. Noise impacts from decommissioning activities at the Red Bluff substation would be similar to those previously estimated for construction activities (see Table 4.10-6, above).

Noise from Traffic Associated with Decommissioning. Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. Because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Because traffic volumes associated with decommissioning activities for Red Bluff Substation A would be only a very small fraction of prevailing traffic volumes on I-10, there would be little change in noise levels along I-10 due to decommissioning of the substation.

Noise Impacts to Wildlife. Noise impacts to wildlife during decommissioning of Red Bluff Substation A would be similar to those discussed previously with respect to construction activities.

Ground Vibrations from Decommissioning Activity. Ground vibrations generated during decommissioning of Red Bluff Substation A would be similar to those previously discussed with respect to construction activities (see Table 4.10-7, above).

Summary of Decommissioning Impacts

Noise and vibration impacts of facility decommissioning would be generally similar in nature to those of facility construction, but noise and vibration levels would likely be less than those generated by construction activities. Future changes in vehicle and equipment engine technology would likely result in somewhat lower noise levels than those estimated for construction activity.

Summary of Combined Impacts for Alternative 1

Noise from On-Site Construction Activity. As discussed previously, noise has a very localized region of influence. The analyses presented above for the solar farm, transmission line, and Red Bluff Substation components of Alternative 1 demonstrate the very localized nature of noise impacts. The physical separation between these components of Alternative 1 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility construction would be identical to the individual noise impacts of facility construction as discussed above for the individual Project components.

Noise from Construction-Related Traffic. Construction-related traffic for Solar Farm Layout B and for GT-A-1 would use the same roadways and would have construction periods that overlap. While the construction period for Red Bluff Substation A would overlap with the construction periods for the solar farm and transmission line, construction traffic for the Red Bluff Substation would not use SR-177 or Kaiser Road. The combined noise effects of construction-related traffic for Solar Farm Layout B and GT-A-1 have been presented previously in Tables 4.10-3 and 4.10-4. The combined construction-related traffic volumes for the solar farm, transmission line, and Red Bluff Substation would add about one percent to the existing daily traffic volume on I-10. This increment of traffic would add only 0.04 dBA to the existing noise levels generated by traffic on I-10, an increment that is clearly not meaningful.

Ground Vibrations from Construction Activity. The physical separation of the facility components for Alternative 1 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 1 would be identical to those discussed under individual Project components.

Noise from Facility Operations. The physical separation between the components of Alternative 1 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility operation would be identical to the individual noise impacts of facility operation as discussed above for the individual Project components.

Noise from Facility Decommissioning. The physical separation between the components of Alternative 1 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility decommissioning would be identical to the individual noise impacts of facility decommissioning as discussed above for the individual Project components.

Ground Vibrations from Decommissioning Activity. The physical separation of the facility components for Alternative 1 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 1 would be identical to those discussed under individual Project components.

Noise Impacts to Wildlife. The physical separation of the facility components for Alternative 1 precludes any meaningful combined noise impacts. Consequently, the noise impacts to wildlife from construction, operation, and decommissioning of the combined components would be identical to those discussed under individual Project components.

Applicant Measures and Mitigation Measures

Applicant Measures. The following measures have been adopted by Sunlight and SCE to minimize noise impacts associated with the Project:

- AM-NZ-1: Sunlight and SCE would limit most construction activity to daytime hours consistent with Riverside County noise ordinance limitations (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Certain electrical connection activities at the solar farm site would occur at night for safety reasons, but would not require any heavy equipment operations.
- AM-NZ-2: SCE would construct a masonry security wall around the perimeter of the Red Bluff Substation. This wall would also provide localized noise shielding for adjacent areas.

Mitigation Measures. The following mitigation measure would ensure that Project-related construction activities would be consistent with the Riverside County Noise Ordinance:

- *MM-NOI-1: Sunlight and SCE shall limit construction activity within a quarter mile of an inhabited dwelling to 6:00 AM to 6:00 PM during June through September and 7:00 AM to 6:00 PM during October through May. Certain electrical connection activities at the solar farm site would occur at night for safety reasons, but would not require any heavy equipment operations.*

CEQA Significance Determination

Solar Farm Layout B

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at the solar farm site. Maximum 1-hour Leq noise levels associated with construction activities would be about 83 dBA at the solar farm property line and less than 60 dBA at the nearest existing residence. Maximum average noise levels over a construction day would be about 81 dBA at the solar farm property line and less than 60 dBA at the nearest residence. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Solar Farm B would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Solar Farm site would not contain any noise-sensitive land uses. Maximum on-site CNEL increments from construction activity would be about 76 dBA at a distance of 100 feet from active construction operations, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. On-site operational noise levels at SF-B would be well within Riverside County's normally acceptable range for industrial and utility land uses, and would be within Riverside County's normally acceptable range for rural residential land uses at the property line Consequently construction, operation, and decommissioning of Solar Farm B would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residence closest to the solar farm site, maximum CNEL increments from construction activity would be less than 57 dBA, which is within Riverside County's normally acceptable range for rural residential land uses. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. Solar farm operational noise levels would be within Riverside County' normally acceptable range for rural residential land uses at the property line. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Solar Farm B would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about two years, on-site construction activities at the solar farm site would be within 0.25 mile of the closest residence for only a small portion of that time. Consequently, on-site construction activities for the solar farm would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.3 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4.3 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4. Operational noise levels from the solar farm would not increase existing CNEL levels at any noise-sensitive land uses. Consequently, operational noise levels from the solar farm would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from solar farm decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction and decommissioning activity for the solar farm site would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction and decommissioning activity would be exempt from the Riverside County noise ordinance and noise from construction activity at the solar farm site would be a less-than-significant impact under criterion NZ-5. Operational noise levels at the solar farm site would be less than 45 dBA at the property line during daytime hours, and less than 35 dBA at the property line during nighttime hours. Consequently, operational noise from the solar farm would comply with the noise limits set by the Riverside County noise ordinance for facilities adjacent to rural residential land uses, and would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Gen-Tie Line A-1

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities for Gen-Tie Line A-1. Maximum 1-hour Leq noise levels associated with construction activities would be 84 dBA at a distance of 100 feet from active construction work areas and about 69 dBA at the nearest existing residences. Maximum average noise levels over a construction day would be 80 dBA at a distance of 100 feet from active construction work areas and about 65 dBA at the nearest residences. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Gen-Tie Line A-1 would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Gen-Tie Line corridor would not contain any noise sensitive land uses. Maximum CNEL increments from construction activity would be about 77 dBA at the edge of the Gen-Tie Line corridor, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. There would be no persistent operational noise from Gen-Tie Line A-1. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line A-1 would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residences closest to the Gen-Tie Line corridor, maximum CNEL increments from construction activity would be about 62 dBA, which is within Riverside County's conditionally acceptable range for rural residential land uses. While overall construction activity along Gen-Tie Line A-1 would last about eight months, construction activity at any one location would only last a few weeks. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. There would be no persistent operational noise from Gen-Tie Line A-1. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line A-1 would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about eight months, construction activities along the Gen-Tie corridor would be within 0.25 mile of any existing residence for only a small portion of that time. Consequently, on-site construction activities for the Gen-Tie Line A-1 would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.3 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4.3 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4. Gen-Tie Line A-1 would not generate any persistent operational noise levels. Consequently, operational noise levels from Gen-Tie Line A-1 would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from Gen-Tie Line decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction activity for Gen-Tie Line A-1 would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity along Gen-Tie Line A-1 would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-6 and NZ-7.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Red Bluff Substation A

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at Red Bluff Substation A. There are no noise-sensitive land uses near Red Bluff Substation A. Maximum 1-hour Leq noise levels associated with construction activities would be about 68 dBA at a distance of 500 feet from active construction activity. Maximum average noise levels over a construction day would be about 66 dBA at a distance of 500 feet from active construction activity. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Red Bluff Substation A would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

<u>Criterion NZ-2.</u> Maximum CNEL increments from construction activity would be about 78 dBA at a distance of 100 feet from active construction activity. This is within Riverside County's conditionally acceptable range for industrial and utility land uses. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation A would result in an on-site CNEL level of about 67 dBA. This is within Riverside County's normally acceptable range for industrial and utility land uses. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation A would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

<u>Criterion NZ-3.</u> Red Bluff Substation A is located on and surrounded by BLM land. The Riverside County General plan designation for the substation area is open space – rural. The table of land use compatibility standards in the noise element of the Riverside County General Plan does not include an open space land use designation, but sets a normally acceptable CNEL limit of 75 dBA for agricultural land uses, golf courses, riding stables, and cemeteries. There are no noise-sensitive land uses close to Red Bluff Substation site. Maximum CNEL increments from construction activity would be less than 63 dBA at a distance of 500 feet from active construction activity. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation A would result in an on-site CNEL level of about 67 dBA. The masonry security wall around the substation site would reduce off-site operational noise CNEL levels to about 60 dBA at locations adjacent to the substation site. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation A would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

<u>Criterion NZ 4</u>. There are no noise-sensitive land uses close enough to Red Bluff Substation A to be affected by construction, operation, or decommissioning noise. Consequently, Red Bluff Substation A would have a less-than-significant noise impact under criterion NZ-4.

<u>Criterion NZ 5</u>. Construction activity for the Red Bluff Substation A site would be limited to daytime hours *<u>pursuant to MM-NOI-1 and</u>* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity at Red Bluff Substation A would be a less-than-significant impact under criterion NZ-5.

<u>Criterion NZ-6.</u> Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation A would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation A would be less than significant under criterion NZ-7.

Unavoidable Adverse Effects

No unavoidable adverse noise or vibration impacts would result from the implementation of Alternative 1.

4.10.4 Alternative 2 – Alternative Action

Construction

Solar Farm Layout B

Noise and vibration impacts from construction activities for Solar Farm Layout B have been presented previously in connection with Alternative 1. Construction noise impacts from Solar Farm Layout B under Alternative 2 would be identical to those presented for Alternative 1.

Gen-Tie Line B-2

The construction activity noise and vibration estimates presented previously for GT-A-1 under Alternative 1 would apply equally to construction activity for GT-B-2 under Alternative 2. GT-A-1 and GT-B-2 would have identical corridors along Kaiser Road from the solar farm site to a location south of the Lake Tamarisk development. The remainder of the GT-B-2 corridor between Kaiser Road and Red Bluff Substation B does not pass close to any existing residences. Therefore, noise and vibration impacts resulting from the construction of GT-B-2 would be essentially the same as those described under Alternative 1 for GT-A-1.

Red Bluff Substation B

The construction-related noise and vibration estimates presented previously for Red Bluff Substation A under Alternative 1 would apply equally to construction activity for Red Bluff Substation B under Alternative 2. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Construction-related traffic for Red Bluff Substation B generally would be limited to I-10 and a short unpaved access road. Construction-related traffic for Red Bluff Substation B would have little effect on noise levels from I-10, since it takes a doubling of traffic volumes to increase traffic noise levels by 3 dBA. There would be limited construction activity and few construction-related vehicle trips at the telecommunication site on SR-177. Consequently, no traffic noise modeling was conducted for these roadways. There are no noise-sensitive land uses close to the location proposed for Red Bluff Substation B.

Summary of Construction Impacts

Construction activities at the solar farm site, along the Gen-Tie Line corridor, and at the Red Bluff substation site would generate temporary increases in local noise levels over a period of about 26 months. Construction activities would be limited to daytime hours on weekdays consistent with the Riverside County noise ordinance. On-site noise levels would diminish rapidly with increasing distance from the active construction operations, and would drop to background noise levels over a distance of about 0.5 mile or less. Construction-related traffic would have almost no impact on noise levels along I-10, limited effects on traffic noise levels along SR-177 between I-10 and Kaiser Road, and localized effects on traffic noise levels along Kaiser Road. Construction-related traffic would generally occur between 6:00 AM and 4:00 PM during most months, and perhaps between 5:00 AM and 3:00 PM during summer months. Noise levels from on-site construction activity and construction-related traffic would not exceed Riverside County land use compatibility standards at existing residences. Temporary noise impacts to wildlife would be limited to the construction sites and immediately adjacent locations. Ground vibrations from construction equipment would not be perceptible at existing residences near the construction sites.

Operation and Maintenance

Solar Farm Layout B

Noise impacts from operational activities for Solar Farm Layout B have been presented previously in connection with Alternative 1. Operational noise impacts from Solar Farm Layout B under Alternative 2 would be identical to those presented for Alternative 1.

Gen-Tie Line B-2

Noise from Facility Operations. GT-B-2 would have no persistent operational noise generation. Routine transmission line inspection and maintenance activities would occur only a few times a year. Corona discharge during rainstorms normally is associated with higher voltage transmission lines than the proposed 220 kV line (PG&E 2002). SCE has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line right-of-way (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds.

Noise Impacts to Wildlife. There would be no persistent operational noise associated with GT-B-2. Consequently, operation of GT-B-2 would have no noise impacts on wildlife.

Red Bluff Substation B

Noise from Facility Operations. Transformers and related electrical equipment at Red Bluff Substation B would be a localized source of operational noise. A 500/220 kV substation proposed by SCE as an optional feature for the Devers-Palo Verde Number 2 transmission line was estimated to produce relatively steady operational noise levels of about 60 dBA at a chain link fence surrounding the substation property (CPUC 2006). A continuous 60 dBA noise source would result in a CNEL level of about 67 dBA. The Red Bluff Substation B site is not located near any noise-sensitive land uses, and would be surrounded by a masonry security wall rather than by a chain link fence. The security wall would reduce off-site operational noise from the substation by an estimated 6 to 8 dBA. Thus, operational noise from Red Bluff Substation B would produce a CNEL level of about 60 dBA outside the substation property. Existing traffic volumes along I-10 are estimated to produce background CNEL levels of about 64 dBA at the north side of the substation location and 55 dBA at the south side of the substation location.

Noise Impacts to Wildlife. Given the existing influence of I-10 on ambient noise levels in the substation vicinity, operational noise levels from Red Bluff Substation B would not be expected to affect off-site wildlife.

Summary of Operation and Maintenance Impacts

Operational noise levels at the solar farm would be limited to occasional vehicle and ATV use within the site, minor maintenance activities, and low equipment noise from PCS and the on-site substation. Noise levels from the on-site PCS and on-site substation would be reduced during nighttime hours when the solar farm is not generating electricity. Daytime and nighttime operational noise levels from the solar farm would be comparable to existing background noise levels at the substation property line. Gen-Tie Line B-2 would have no operational noise levels other than infrequent line inspection and maintenance activity and the possibility of temporary low corona discharge noise levels during rainstorms. Red Bluff Substation B would generate an operational CNEL level of about 60 dBA outside the substation property line, but there are no noise-sensitive land uses near the substation site.

Decommissioning

Solar Farm Layout B

The noise and vibration impacts resulting from decommissioning SF-B under Alternative 2 would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The noise and vibration impacts resulting from decommissioning GT-B-2 under Alternative 2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The noise and vibration impacts resulting from decommissioning RB-B under Alternative 2 would be the same as those discussed for RB-A under Alternative 1.

Summary of Decommissioning Impacts

Noise and vibration impacts of facility decommissioning would be generally similar in nature to those of facility construction, but noise and vibration levels would likely be less than those generated by construction activities. Future changes in vehicle and equipment engine technology would likely result in somewhat lower noise levels than those estimated for construction activity.

Summary of Combined Impacts for Alternative 2

Noise from On-Site Construction Activity. As discussed previously, noise has a very localized region of influence. The physical separation between these components of Alternative 2 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility construction would be identical to the individual noise impacts of facility construction as discussed above for the individual Project components.

Noise from Construction-Related Traffic. Construction-related traffic for Solar Farm Layout B and for GT-B-2 would use the same roadways and would have construction periods that overlap. While the construction period for Red Bluff Substation B would overlap with the construction periods for the solar farm and transmission line, construction traffic for the Red Bluff Substation would not use SR-177 or Kaiser Road. The combined noise effects of construction-related traffic for the solar farm and Gen-Tie Line have been presented previously in Tables 4.10-3 and 4.10-4. The combined construction-related traffic volumes for the solar farm, transmission line, and Red Bluff Substation would add about one percent to the existing daily traffic volume on I-10. This increment of traffic would add only 0.04 dBA to the existing noise levels generated by traffic on I-10, an increment that is clearly not meaningful.

Ground Vibrations from Construction Activity. The physical separation of the facility components for Alternative 2 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 2 would be identical to those discussed under individual Project components.

Noise from Facility Operations. The physical separation between the components of Alternative 2 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility operation would be identical to the individual noise impacts of facility operation as discussed above for the individual Project components.

Noise from Facility Decommissioning. The physical separation between the components of Alternative 2 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility decommissioning would be identical to the individual noise impacts of facility decommissioning as discussed above for the individual Project components.

Ground Vibrations from Decommissioning Activity. The physical separation of the facility components for Alternative 2 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 2 would be identical to those discussed under individual Project components.

Noise Impacts to Wildlife. The physical separation of the facility components for Alternative 2 precludes any meaningful combined noise impacts. Consequently, the noise impacts to wildlife from construction, operation, and decommissioning of the combined components would be identical to those discussed under individual Project components.

Applicant Measures and Mitigation Measures

Applicant measures and mitigation measures for Alternative 2 would be the same as those discussed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at the solar farm site. Maximum 1-hour Leq noise levels associated with construction activities would be about 83 dBA at the solar farm property line and less than 60 dBA at the nearest existing residence. Maximum average noise levels over a construction day would be about 81 dBA at the solar farm property line and less than 60 dBA at the nearest residence. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Solar Farm B would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Solar Farm site would not contain any noise-sensitive land uses. Maximum on-site CNEL increments from construction activity would be about 76 dBA at a distance of 100 feet from active construction operations, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. On-site operational noise levels at SF-B would be well within Riverside County's normally acceptable range for industrial and utility land uses, and would be within Riverside County's normally acceptable range for rural residential land uses at the property line Consequently construction, operation, and decommissioning of Solar Farm B would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residence closest to the solar farm site, maximum CNEL increments from construction activity would be less than 57 dBA, which is within Riverside County's normally acceptable range for rural residential land uses. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. Solar Farm operational noise levels would be within Riverside County' normally acceptable range for rural residential land uses at the property line. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Solar Farm B would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about two years, on-site construction activities at the solar farm site would be within 0.25 mile of the closest residence for only a small portion of that time. Consequently, on-site construction activities for the solar farm would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.3 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4.3 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4. Operational noise levels from the solar farm would not increase existing CNEL levels at any noise-sensitive land uses. Consequently, operational noise levels from the solar farm would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from solar farm decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction and decommissioning activity for the solar farm site would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction and decommissioning activity would be exempt from the Riverside County noise ordinance and noise from construction activity at the solar farm site would be a less-than-significant impact under criterion NZ-5. Operational noise levels at the solar farm site would be less than 45 dBA at the property line during daytime hours, and less than 35 dBA at the property line during nighttime hours. Consequently, operational noise from the solar farm would comply with the noise limits set by the Riverside County noise ordinance for facilities adjacent to rural residential land uses, and would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Gen-Tie Line B-2

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities for Gen-Tie Line B-2. Maximum 1-hour Leq noise levels associated with construction activities would be 84 dBA at a distance of 100 feet from active construction work areas and about 69 dBA at the nearest existing residences. Maximum average noise levels over a construction day would be 80 dBA at a distance of 100 feet from active construction work areas and about 65 dBA at the nearest residences. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Gen-Tie Line B-2 would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Gen-Tie Line corridor would not contain any noise sensitive land uses. Maximum CNEL increments from construction activity would be about 77 dBA at the edge of the Gen-Tie Line corridor, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. There would be no persistent operational noise from Gen-Tie Line B-2. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line B-2 would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residences closest to the Gen-Tie Line corridor, maximum CNEL increments from construction activity would be about 62 dBA, which is within Riverside County's conditionally acceptable range for rural residential land uses. While overall construction activity along Gen-Tie Line B-2 would last about eight months, construction activity at any one location would only last a few weeks. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. There would be no persistent operational noise from Gen-Tie Line B-2. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line B-2 would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about eight months, construction activities along the Gen-Tie corridor would be within 0.25 mile of any existing residence for only a small portion of that time. Consequently, on-site construction activities for the Gen-Tie Line B-2 would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.3 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4.3 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4. Gen-Tie Line B-2 would not generate any persistent operational noise levels. Consequently, operational noise levels from Gen-Tie Line B-2 would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from Gen-Tie Line decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction activity for Gen-Tie Line B-2 would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity along Gen-Tie Line B-2 would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-6 and NZ-7.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Red Bluff Substation B

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at Red Bluff Substation B. There are no noise-sensitive land uses near Red Bluff Substation B. Maximum 1-hour Leq noise levels associated with construction activities would be about 68 dBA at a distance of 500 feet from active construction activity. Maximum average noise levels over a construction day would be about 66 dBA at a distance of 500 feet from active construction activity. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Red Bluff Substation B would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. Maximum CNEL increments from construction activity would be about 78 dBA at a distance of 100 feet from active construction activity. This is within Riverside County's conditionally acceptable range for industrial and utility land uses. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation B would result in an on-site CNEL level of about 67 dBA. This is within Riverside County's normally acceptable range for industrial and utility land uses. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation B would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. Red Bluff Substation B is located on and surrounded by BLM land. The Riverside County General plan designation for the substation area is open space – rural. The table of land use compatibility standards in the noise element of the Riverside County General Plan does not include an open space land use designation, but sets a normally acceptable CNEL limit of 75 dBA for agricultural land uses, golf courses, riding stables, and cemeteries. There are no noise-sensitive land uses close to Red Bluff Substation site. Maximum CNEL increments from construction activity would be less than 63 dBA at a distance of 500 feet from active construction activity. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation B would result in an on-site CNEL level of about 67 dBA. The masonry security wall around the substation site would reduce off-site operational noise CNEL levels to about 60 dBA at locations adjacent to the substation site. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation B would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. There are no noise-sensitive land uses close enough to Red Bluff Substation B to be affected by construction, operation, or decommissioning noise. Consequently, Red Bluff Substation B would have a less-than-significant noise impact under criterion NZ-4.

Criterion NZ 5. Construction activity for the Red Bluff Substation B site would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity at the Red Bluff Substation site would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation B would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation B would be less than significant under criterion NZ-7.

Unavoidable Adverse Effects

No unavoidable adverse noise or vibration impacts would result from the implementation of Alternative 2.

4.10.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Noise from On-Site Construction Activity. Solar Farm Layout C would be smaller than Solar Farm Layout B discussed under Alternatives 1 and 2, but construction activities would occur on the same schedule as for Solar Farm Layout B and would require the same types of equipment. The size of the area disturbed on a given day would be smaller under Alternative 3 than under Alternatives 1 and 2. While total numbers of some equipment items would be less under Alternative 3 than under Alternatives 1 or 2, similar types and numbers of equipment items would typically be operating in proximity under Alternatives 1, 2, and 3. For noise analysis purposes, it has been assumed that the number and types of equipment operating in proximity for Solar Farm Layout C would be the same as analyzed for Solar Farm Layout B.

As indicated previously in Table 4.10-2, daytime construction activity at the solar farm site would not generate significant noise impacts at any nearby residence. For the residence closest to the solar farm site, maximum CNEL increments from construction activity would be less than 57 dBA, which is within the normally acceptable range for rural residential land uses. Maximum 1-hour Leq noise levels at this location would be about 59 dBA. While this would be higher than expected average background noise conditions, it is comparable to noise levels that would occur naturally during periods with strong winds. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months).

Noise from Construction-Related Traffic. Solar Farm Layout C under Alternative 3 would require less construction material, fewer construction-related truck trips, and slightly fewer construction workers than Solar Farm Layout B under Alternatives 1 and 2. Construction-related traffic noise for the solar farm and transmission line under Alternative 3 were modeled using the same procedures discussed for Alternative 1.

Table 4.10-10 summarizes CNEL levels from 2011 and 2012 construction traffic, and Table 4.10-11 summarizes maximum 1-hour Leq noise levels from 2011 and 2012 construction traffic.

As shown in Tables 4.10-10 and 4.10-11, construction-related traffic noise would be somewhat higher during 2011 than during 2012. Because there would be little construction-related traffic after 2012, traffic noise conditions would return to existing levels in 2013. Construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by

Table 4.10-10
Modeled CNEL Noise Levels from Construction Traffic, Solar Farm Layout C and Gen-Tie Line A-2

Location	Distance from Road Centerline, feet	Existing CNEL, dBA	2011 CNEL, dBA	2012 CNEL, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Desert Center, West Side of SR-177	50	66.9	67.4	67.2	0.5	0.3
	100	66.1	66.4	66.3	0.3	0.2
	250	65.8	65.9	65.8	0.1	0.0
	500	65.6	65.8	65.7	0.2	0.1
	750	65.6	65.7	65.7	0.1	0.1
	1,000	65.6	65.7	65.6	0.1	0.0
Desert Center, East Side of SR-177	50	66.9	67.5	67.3	0.6	0.4
	100	66.2	66.5	66.4	0.3	0.2
	250	65.9	66.1	66.0	0.2	0.1
	500	66.0	66.1	66.0	0.1	0.0
	750	66.0	66.1	66.0	0.1	0.0
	1,000	66.0	66.1	66.0	0.1	0.0
Lake Tamarisk, West Side of Kaiser Road	50	51.9	58.5	57.3	6.6	5.4
	100	48.0	53.6	52.5	5.6	4.5
	250	44.7	47.4	46.8	2.7	2.1
	500	43.9	45.1	44.7	1.2	0.8
	750	43.7	44.4	44.2	0.7	0.5
	1,000	43.6	44.1	43.9	0.5	0.3
Lake Tamarisk, East Side of Kaiser Road	50	51.9	58.5	57.3	6.6	5.4
	100	48.0	53.6	52.5	5.6	4.5
	250	44.7	47.5	46.8	2.8	2.1
	500	43.9	45.1	44.7	1.2	0.8
	750	43.7	44.4	44.2	0.7	0.5
	1,000	43.6	44.1	43.9	0.5	0.3
Between Lake Tamarisk and Solar Farm Site, West Side of Kaiser Road	50	49.9	58.0	56.6	8.1	6.7
	100	45.1	52.8	51.5	7.7	6.4
	250	39.0	45.2	44.0	6.2	5.0
	500	36.6	40.6	39.7	4.0	3.1
	750	35.9	38.7	38.0	2.8	2.1
	1,000	35.4	37.4	36.9	2.0	1.5
Between Lake Tamarisk and Solar Farm Site, East Side of Kaiser Road	50	49.9	58.0	56.6	8.1	6.7
	100	45.1	52.8	51.5	7.7	6.4
	250	39.0	45.2	44.0	6.2	5.0
	500	36.6	40.6	39.7	4.0	3.1
	750	35.9	38.7	38.0	2.8	2.1
	1,000	35.5	37.4	36.9	1.9	1.4

CNEL = community noise equivalent level (a 24-hour weighted average)

Source: Tetra Tech analyses

Table 4.10-11
Modeled Maximum 1-Hour Leq Noise Levels from Construction Traffic, Solar Farm Layout C and Gen-Tie Line A-2

Location	Distance from Road Centerline, feet	Existing Maximum 1-Hour Leq, dBA	2011 Maximum 1-Hour Leq, dBA	2012 Maximum 1-Hour Leq, dBA	2011 Change from Existing, dBA	2012 Change from Existing, dBA
Desert Center, West Side of SR-177	50	71.0	71.2	71.1	0.2	0.1
	100	70.3	70.4	70.4	0.1	0.1
	250	70.0	70.0	70.0	0.0	0.0
	500	69.9	69.9	69.9	0.0	0.0
	750	69.8	69.8	69.9	0.0	0.1
	1,000	69.8	69.8	69.8	0.0	0.0
Desert Center, East Side of SR-177	50	71.0	71.2	71.1	0.2	0.1
	100	70.4	70.5	70.5	0.1	0.1
	250	70.2	70.2	70.3	0.0	0.1
	500	70.3	70.3	70.3	0.0	0.0
	750	70.3	70.3	70.3	0.0	0.0
	1,000	70.3	70.3	70.3	0.0	0.0
Lake Tamarisk, West Side of Kaiser Road	50	53.4	60.3	59.0	6.9	5.6
	100	50.3	55.5	54.5	5.2	4.2
	250	48.4	50.2	49.7	1.8	1.3
	500	48.0	48.7	48.5	0.7	0.5
	750	47.9	48.3	48.2	0.4	0.3
	1,000	47.8	48.1	48.0	0.3	0.2
Lake Tamarisk, East Side of Kaiser Road	50	53.4	60.3	59.0	6.9	5.6
	100	50.3	55.5	54.5	5.2	4.2
	250	48.4	50.2	49.7	1.8	1.3
	500	48.0	48.8	48.5	0.8	0.5
	750	47.9	48.3	48.2	0.4	0.3
	1,000	47.9	48.1	48.0	0.2	0.1
Between Lake Tamarisk and Solar Farm Site, West Side of Kaiser Road	50	50.8	59.7	58.2	8.9	7.4
	100	46.2	54.5	53.0	8.3	6.8
	250	41.4	46.8	45.6	5.4	4.2
	500	40.0	43.3	42.4	3.3	2.4
	750	39.6	41.7	41.1	2.1	1.5
	1,000	39.4	40.6	40.2	1.2	0.8
Between Lake Tamarisk and Solar Farm Site, East Side of Kaiser Road	50	50.8	59.7	58.2	8.9	7.4
	100	46.2	54.5	53.0	8.3	6.8
	250	41.4	46.8	45.6	5.4	4.2
	500	40.0	43.3	42.4	3.3	2.4
	750	39.6	41.7	41.1	2.1	1.5
	1,000	39.4	40.6	40.2	1.2	0.8

Leq = equivalent continuous noise level

Source: Tetra Tech analyses

existing traffic on I-10. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find changes of 3 to 5 dBA to be noticeable, and changes of 5 dBA or more to be obvious. In the Lake Tamarisk area, there would be an obvious increase in traffic noise levels within about 100 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 250 feet from Kaiser Road. Locations more than 250 feet from Kaiser Road would not experience a noticeable change in traffic noise conditions. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within the normally acceptable range for rural residential land uses.

For the area between the Lake Tamarisk development and the solar farm site, there would be an obvious increase in traffic noise levels within about 300 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 800 feet from Kaiser Road. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within the normally acceptable range for rural residential land uses.

Noise Impacts to Wildlife. Noise impacts to wildlife from Solar Farm Layout C under Alternative 3 would be essentially the same as those discussed for Solar Farm Layout B under Alternatives 1 and 2, although a smaller acreage of wildlife habitat would be converted to solar farm use. Clearing, grading, and soil compacting activities during construction of the solar farm would eliminate most on-site wildlife habitat values, and would eliminate or force most vertebrate wildlife from the site. Construction-related noise levels would not be high enough at off-site locations to cause purely noise-related impacts to wildlife. Thus, noise impacts to wildlife from on-site construction activity would be limited to wildlife remaining in portions of the overall construction area that have not yet experienced active disturbance by construction equipment.

Ground Vibrations from Construction Activity. Ground vibration impacts from construction activities for Solar Farm Layout C would be the same as presented previously in connection with Solar Farm Layout B under Alternative 1.

Gen-Tie Line A-2

Noise from On-Site Construction Activity. The construction activity noise estimates presented previously for GT-A-1 under Alternative 1 would apply equally to construction activity for GT-A-2 under Alternative 3. GT-A-2, however, does not appear to pass within 1,000 feet of any exiting residence. As indicated previously in Table 4.10-5, daytime construction activity along the transmission line corridor would be a temporary but noticeable noise source for locations within about 1,000 feet of the active construction area. Locations at greater distances generally would not notice noise from the transmission line construction activity. Construction activity for the transmission line would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months).

Noise from Construction-Related Traffic. The construction-related traffic noise estimates for the combination of Solar Farm C and GT-A-2 were presented previously in Tables 4.10-9 and 4.10-10. Construction-related traffic would have little noise impact in Desert Center due to the relatively high noise levels generated by existing traffic on I-10. Most people cannot detect noise level changes of less than 1.5 to 2 dBA, but find changes of 3 to 5 dBA to be noticeable, and changes of 5 dBA or more to be obvious. The changes in CNEL and 1-hour Leq noise levels in the Desert Center area would not be noticeable. At greater distances from I-10, noise from construction-related traffic would have a greater influence on overall traffic noise conditions. In the Lake Tamarisk area, there would be an obvious increase in traffic noise levels within about 100 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 250 feet from Kaiser Road. Locations more than 250 feet from Kaiser Road would not experience a noticeable change in traffic noise conditions. For the area between the solar farm site and the Lake Tamarisk development, there would be an obvious increase in traffic noise levels within about 300 feet of Kaiser Road, with noticeable changes in traffic noise extending to about 800 feet from Kaiser Road. But even at 50 feet from the centerline of Kaiser Road, CNEL levels would still be within the normally acceptable range for rural residential land uses.

Noise Impacts to Wildlife. General considerations regarding noise impacts on wildlife were presented previously in connection with the solar farm site under Alternative 1. The same general considerations would apply to GT-A-2. About 34 percent of the transmission line corridor would be subject to temporary disturbance during the construction period, and about 12 percent of the corridor would be converted to permanent facility use. Construction noise would be temporary, and would occur only during the few weeks of active construction activities at any given location. Noise from construction of GT-A-2 would have only a temporary impact on wildlife in areas adjacent to the active construction work areas.

Ground Vibrations from Construction Activity. The construction-related ground vibration estimates presented previously for GT-A-1 under Alternative 1 would apply equally to construction-related ground vibration for GT-A-2 under Alternative 3. As demonstrated previously by the data in Table 4.10-7, ground vibration from most types of equipment used for Gen-Tie Line construction would not be perceptible at distances of 200 feet or more from operating equipment items. Construction activity would not cause perceptible ground vibrations and would pose no risk of cosmetic damage to any existing buildings along the transmission line corridor.

Red Bluff Substation A

Construction site noise and vibration estimates for Red Bluff Substation A under Alternative 3 would be the same as discussed previously under Alternative 1. Construction activity would generally occur over a standard five-day workweek with activity limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Construction-related traffic for Red Bluff Substation A under Alternative 3 also would be the same as discussed previously under Alternative 1. There are no noise-sensitive land uses near the substation site or along either of the alternative access road corridors to Red Bluff Substation A.

Summary of Construction Impacts

Construction activities at the solar farm site, along the Gen-Tie Line corridor, and at the Red Bluff substation site would generate temporary increases in local noise levels over a period of about 26 months. Construction activities would be limited to daytime hours on weekdays consistent with the Riverside County noise ordinance. On-site noise levels would diminish rapidly with increasing distance from the active construction operations, and would drop to background noise levels over a distance of about 0.5 mile or less. Construction-related traffic would have almost no impact on noise levels along I-10, limited effects on traffic noise levels along SR-177 between I-10 and Kaiser Road, and localized effects on traffic noise levels along Kaiser Road. Construction-related traffic would generally occur between 6:00 AM and 4:00 PM during most months, and perhaps between 5:00 AM and 3:00 PM during summer months. Noise levels from on-site construction activity and construction-related traffic would not exceed Riverside County land use compatibility standards at existing residences. Temporary noise impacts to wildlife would be limited to the construction sites and immediately adjacent locations. Ground vibrations from construction equipment would not be perceptible at existing residences near the construction sites.

Operation and Maintenance

Solar Farm Layout C

Noise from Facility Operations. Operational noise from Solar Farm Layout C under Alternative 3 would be essentially the same as that discussed for Solar Farm Layout B under Alternatives 1 and 2. Noise levels from solar farm operations would be within limits set by the Riverside County noise ordinance, would seldom be audible beyond the property line, and would not be audible at any existing residence.

Noise Impacts to Wildlife. Some birds and other small wildlife species would re-occupy the solar farm site once construction activities are completed, but other wildlife species would be excluded from the site by the perimeter fences. Wildlife population levels for many of those species able to re-occupy the site would be limited by the reduced vegetation cover. Operations at the solar farm site would not generate noise levels high enough to impact on-site or off-site wildlife.

Gen-Tie Line A-2

Noise from Facility Operations. GT-A-2 would have no persistent operational noise generation. Routine transmission line inspection and maintenance activities would occur only a few times a year. Corona discharge during rainstorms normally is associated with higher voltage transmission lines than the proposed 220 kV line (PG&E 2002). SCE has estimated corona discharge noise from 230 kV transmission lines at 50 dBA at the edge of the transmission line right-of-way (CPUC 2006). Ambient noise levels during rainstorms often exceed this noise level, especially if the rain is accompanied by high winds.

Noise Impacts to Wildlife. There would be no persistent operational noise associated with GT-A-2. Consequently, no impacts to wildlife would result from the operational noise associated with GT-A-2.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A under Alternative 3 would be the same as those discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

Operational noise levels at the solar farm would be limited to occasional vehicle and ATV use within the site, minor maintenance activities, and low equipment noise from PCS and the on-site substation. Noise levels from the on-site PCS and on-site substation would be reduced during nighttime hours when the solar farm is not generating electricity. Daytime and nighttime operational noise levels from the solar farm would be comparable to existing background noise levels at the substation property line. Gen-Tie Line A-2 would have no operational noise levels other than infrequent line inspection and maintenance activity and the possibility of temporary low corona discharge noise levels during rainstorms. Red Bluff Substation A would generate an operational CNEL level of about 60 dBA outside the substation property line, but there are no noise-sensitive land uses near the substation site.

Decommissioning

Solar Farm Layout B

The noise and vibration impacts resulting from decommissioning SF-C under Alternative 3 would be the same as those discussed under Alternative 1.

Gen-Tie Line A-2

The noise and vibration impacts resulting from decommissioning GT-A-2 under Alternative 3 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The noise and vibration impacts resulting from decommissioning RB-A under Alternative 3 would be the same as those discussed for RB-A under Alternative 1.

Summary of Decommissioning Impacts

Noise and vibration impacts of facility decommissioning would be generally similar in nature to those of facility construction, but noise and vibration levels would likely be less than those generated by construction activities. Future changes in vehicle and equipment engine technology would likely result in somewhat lower noise levels than those estimated for construction activity.

Summary of Combined Impacts for Alternative 3

Noise from On-Site Construction Activity. As discussed previously, noise has a very localized region of influence. The physical separation between these components of Alternative 3 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility construction would be identical to the individual noise impacts of facility construction as discussed above for the individual Project components.

Noise from Construction-Related Traffic. Construction-related traffic for Solar Farm Layout C and for GT-A-2 would use the same roadways and would have construction periods that overlap. While the construction period for Red Bluff Substation A would overlap with the construction periods for the solar farm and transmission line, construction traffic for the Red Bluff Substation would not use SR-177 or Kaiser Road. The combined noise effects of construction-related traffic for the solar farm and Gen-Tie Line were presented previously in Tables 4.10-9 and 4.10-10. The combined construction-related traffic volumes for the solar farm, transmission line, and Red Bluff Substation would add about one percent to the existing daily traffic volume on I-10. This increment of traffic would add only 0.04 dBA to the existing noise levels generated by traffic on I-10, an increment that is clearly not meaningful.

Ground Vibrations from Construction Activity. The physical separation of the facility components for Alternative 3 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 3 would be identical to those discussed under individual Project components.

Noise from Facility Operations. The physical separation between the components of Alternative 3 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility operation would be identical to the individual noise impacts of facility operation as discussed above for the individual Project components.

Noise from Facility Decommissioning. The physical separation between the components of Alternative 3 generally precludes combined noise effects that exceed the effects of the individual Project components. The combined noise impacts of facility decommissioning would be identical to the individual noise impacts of facility decommissioning as discussed above for the individual Project components.

Ground Vibrations from Decommissioning Activity. The physical separation of the facility components for Alternative 3 precludes any meaningful combined ground vibration impacts. Consequently, the ground vibration impacts from the combined components of Alternative 3 would be identical to those discussed under individual Project components.

Noise Impacts to Wildlife. The physical separation of the facility components for Alternative 3 precludes any meaningful combined noise impacts. Consequently, the noise impacts to wildlife from construction, operation, and decommissioning of the combined components would be identical to those discussed under individual Project components.

Applicant Measures and Mitigation Measures

Applicant measures and mitigation measures for Alternative 3 would be the same as those discussed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at the solar farm site. Maximum 1-hour Leq noise levels associated with construction activities would be about 83 dBA at the solar farm property line and less than 60 dBA at the nearest existing residence. Maximum average noise levels over a construction day would be about 81 dBA at the solar farm property line and less than 60 dBA at the nearest residence. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Solar Farm C would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Solar Farm site would not contain any noise-sensitive land uses. Maximum on-site CNEL increments from construction activity would be about 76 dBA at a distance of 100 feet from active construction operations, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. On-site operational noise levels at SF-B would be well within Riverside County's normally acceptable range for industrial and utility land uses, and would be within Riverside County's normally acceptable range for rural residential land uses at the property line Consequently construction, operation, and decommissioning of Solar Farm C would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residence closest to the solar farm site, maximum CNEL increments from construction activity would be less than 57 dBA, which is within Riverside County's normally acceptable range for rural residential land uses. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. Solar farm operational noise levels would be within Riverside County' normally acceptable range for rural residential land uses at the property line. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Solar Farm C would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about two years, on-site construction activities at the solar farm site would be within 0.25 mile of the closest residence for only a small portion of that time. Consequently, on-site construction activities for the solar farm would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.1 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4. Operational noise levels from the solar farm would not increase existing CNEL levels at any noise-sensitive land uses. Consequently, operational noise levels from the solar farm would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from solar farm decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction and decommissioning activity for the solar farm site would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction and decommissioning activity would be exempt from the Riverside County noise ordinance and noise from construction activity at the solar farm site would be a less-than-significant impact under criterion NZ-5. Operational noise levels at the solar farm site would be less than 45 dBA at the property line during daytime hours, and less than 35 dBA at the property line during nighttime hours. Consequently, operational noise from the solar farm would comply with the noise limits set by the Riverside County noise ordinance for facilities adjacent to rural residential land uses, and would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the solar farm would not generate meaningful ground vibrations. Consequently, ground vibration impacts from solar farm construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Gen-Tie Line A-2

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities for Gen-Tie Line A-2. Maximum 1-hour Leq noise levels associated with construction activities would be 84 dBA at a distance of 100 feet from active construction work areas and about 69 dBA at the nearest existing residences. Maximum average noise levels over a construction day would be 80 dBA at a distance of 100 feet from active construction work areas and about 65 dBA at the nearest residences. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Gen-Tie Line A-2 would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. The Gen-Tie Line corridor would not contain any noise sensitive land uses. Maximum CNEL increments from construction activity would be about 77 dBA at the edge of the Gen-Tie Line corridor, which is within Riverside County's conditionally acceptable range for industrial and utility land uses. There would be no persistent operational noise from Gen-Tie Line A-2. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line A-2 would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. For the residences closest to the Gen-Tie Line corridor, maximum CNEL increments from construction activity would be about 62 dBA, which is within Riverside County's conditionally acceptable range for rural residential land uses. While overall construction activity along Gen-Tie Line A-2 would last about eight months, construction activity at any one location would only last a few weeks. Construction-related traffic would increase noise levels along Kaiser Road, but resulting CNEL levels would remain within Riverside County's normally acceptable range for rural residential land uses. There would be no persistent operational noise from Gen-Tie Line A-2. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Gen-Tie Line A-2 would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. While overall construction activities would last for about eight months, construction activities along the Gen-Tie corridor would be within 0.25 mile of any existing residence for only a small portion of that time. Consequently, on-site construction activities for the Gen-Tie Line A-2 would not constitute long-term sources of noise level increases at noise-sensitive land uses under criterion NZ-4. Construction-related traffic would increase CNEL levels along Kaiser Road for a period of about two years. CNEL levels would be increased by up to 8.1 dBA at a distance of 50 feet from the roadway centerline, with the CNEL increase dropping to no more than 4 dBA at a distance of 500 feet from the roadway centerline. Because CNEL increases would not exceed 10 dBA, construction-related traffic would have a less-than-significant noise impact under criterion NZ-4.

Gen-Tie Line A-2 would not generate any persistent operational noise levels. Consequently, operational noise levels from Gen-Tie Line A-2 would be a less-than-significant impact under criterion NZ-4. Decommissioning noise levels would be similar to but somewhat less than noise levels associated with construction activities. Consequently, noise from Gen-Tie Line decommissioning would be a less-than-significant impact under criterion NZ-4.

Criterion NZ 5. Construction activity for Gen-Tie Line A-2 would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity along Gen-Tie Line A-2 would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-6 and NZ-7.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the Gen-Tie Line would not generate meaningful ground vibrations. Consequently, ground vibration impacts from Gen-Tie Line construction, operation, and decommissioning would be less than significant under criterion NZ-7.

Red Bluff Substation A

Criterion NZ-1. Construction activities would generate higher noise levels than construction-related traffic, operational activities, or decommissioning activities at Red Bluff Substation A. There are no noise-sensitive land uses near Red Bluff Substation A. Maximum 1-hour Leq noise levels associated with construction activities would be about 68 dBA at a distance of 500 feet from active construction activity. Maximum average noise levels over a construction day would be about 66 dBA at a distance of 500 feet from active construction activity. Hearing protection standards adopted by Cal/OSHA are an 8-hour time-weighted average of 90 dBA and a peak noise level of 115 dBA. Noise from construction, operation, and decommissioning of Red Bluff Substation A would not pose a risk of hearing damage at off-site locations, and thus would be a less-than-significant impact under criterion NZ-1.

Criterion NZ-2. Maximum CNEL increments from construction activity would be about 78 dBA at a distance of 100 feet from active construction activity. This is within Riverside County's conditionally acceptable range for industrial and utility land uses. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation A would result in an on-site CNEL level of about 67 dBA. This is within Riverside County's normally acceptable range for industrial and utility land uses. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation A would not create noise-related land use compatibility problems at on-site locations, and would have a less-than-significant impact under criterion NZ-2.

Criterion NZ-3. Red Bluff Substation A is located on and surrounded by BLM land. The Riverside County General plan designation for the substation area is open space – rural. The table of land use compatibility standards in the noise element of the Riverside County General Plan does not include an open space land use designation, but sets a normally acceptable CNEL limit of 75 dBA for agricultural land uses, golf courses, riding stables, and cemeteries. There are no noise-sensitive land uses close to Red Bluff Substation site. Maximum CNEL increments from construction activity would be less than 63 dBA at a distance of 500 feet from active construction activity. Construction-related traffic would have little effect on noise levels along I-10, and there are no noise-sensitive land uses along either of the alternative construction access road corridors. On-site operational noise levels at Red Bluff Substation A would result in an on-site CNEL level of about 67 dBA. The masonry security wall around the substation site would reduce off-site operational noise CNEL levels to about 60 dBA at locations adjacent to the substation site. Noise from decommissioning activities would be similar to but somewhat less than noise from construction activities. Consequently construction, operation, and decommissioning of Red Bluff Substation A would not create noise-related land use compatibility problems at off-site locations, and would have a less-than-significant impact under criterion NZ-3.

Criterion NZ 4. There are no noise-sensitive land uses close enough to Red Bluff Substation A to be affected by construction, operation, or decommissioning noise. Consequently, Red Bluff Substation A would have a less-than-significant noise impact under criterion NZ-4.

Criterion NZ 5. Construction activity for the Red Bluff Substation A site would be limited to daytime hours *pursuant to MM-NOI-1 and* consistent with the Riverside County noise ordinance (beginning about 7:00 AM during most of the year, and perhaps starting as early as 6:00 AM during the summer months). Consequently, construction activity would be exempt from the Riverside County noise ordinance and noise from construction activity at the Red Bluff Substation site would be a less-than-significant impact under criterion NZ-5.

Criterion NZ-6. Ground vibrations from construction or decommissioning activity would not be perceptible at off-site locations. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation A would be less than significant under criterion NZ-6.

Criterion NZ-7. Ground vibrations from construction or decommissioning activity would pose no risk of cosmetic damage to any existing buildings. Operational activities at the substation site would not generate meaningful ground vibrations. Consequently, ground vibration impacts from construction, operation, and decommissioning of Red Bluff Substation A would be less than significant under criterion NZ-7.

Unavoidable Adverse Effects

No unavoidable adverse noise or vibration impacts would result from the implementation of Alternative 3.

4.10.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under Alternative 4, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the construction and operation noise-related impacts of the proposed Project would not occur at the proposed site. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.10.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under Alternative 5, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future renewable energy development. As a result, no renewable energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future renewable energy development, it is expected that the site would continue to remain with the existing ambient noise from its existing condition. Ambient noise of the site would not be expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in impacts from any increase in noise at the Project site. However, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.10.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under Alternative 6, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Different solar technologies use different machinery during construction and would create different ambient noise levels during operation. However, it is expected that all solar power technologies would require the use of large construction vehicles that would create unwanted noise close to the construction activity and some intermittent noise during operations. However, as with the proposed Project, it is expected that other solar technologies would create only small increases in ambient noise during operation. As such, this No Action Alternative could result in an impact from increased ambient noise during construction and operation similar to those under the proposed Project.

4.10.9 Cumulative Impacts

Cumulative noise or vibration impacts would occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of noise or vibration impacts on a given area over a longer period of time. The factors of geographic extent and time frame for noise and vibration impacts are discussed below.

Geographic Extent

Noise

The noise impacts of the Project alternatives stem primarily from temporary construction activities. Because noise levels decline rapidly with distance from the noise source, the geographic extent of noise impacts is limited to local areas. As demonstrated by the construction noise and traffic noise analyses presented previously, the geographic extent of potentially significant noise impacts seldom extends more than 1,000 feet from the area of noise generation.

Vibration

The ground vibration impacts of the Project alternatives stem primarily from temporary construction activities. Ground vibrations dissipate more rapidly than airborne noise levels, limiting the geographic extent of ground vibration impacts to the immediate vicinity of the vibration source. As demonstrated by the ground vibration analyses presented previously, the geographic extent of potentially significant ground vibrations seldom extends more than a few hundred feet from the source of the vibrations.

Time Frame

Noise

Noise does not persist in the environment beyond the period during which it is being generated. Federal, state, and local noise criteria and standards are based primarily on daily or hourly noise level conditions. Daily noise levels are seldom aggregated or averaged over time periods longer than one year. Consequently, the time frame for cumulative noise issues requires at least partial overlap in the periods when noise is being generated from more than one project. Construction activities for the Desert Sunlight Project alternatives would be limited to 2011, 2012, and the first half of 2013. Because the Desert Sunlight Project alternatives would generate very little operational noise, cumulative noise issues are limited to the construction activity years.

Vibration

Vibrations do not persist in the environment beyond the period during which they are being generated. Ground vibration criteria and standards are all based on short-term conditions. Consequently, the time frame for cumulative vibration issues requires at least partial overlap in the periods when ground vibrations are being generated from more than one project. Construction activities for the Desert Sunlight Project alternatives would be limited to 2011, 2012, and the first half of 2013. Because the Desert Sunlight Project alternatives would generate no meaningful operational vibrations, cumulative vibration issues are limited to the construction activity years.

Past, Present, and Reasonably Foreseeable Future Projects

Current ambient noise conditions represent the cumulative effect of noise generation on a local geographic scale. Except for the I-10 vicinity, existing noise levels in the Project vicinity are generally low. *There are no known existing ground vibration issues in the Project Study Area. Existing projects and facilities listed in Table 3.18-2 are too far from the proposed solar farm area to create cumulative noise impacts in combination with any of the solar farm alternatives.*

Most of the projects listed in Table 3.18-3 are too far from the proposed solar farm site to generate site-related cumulative noise issues in combination with the solar farm alternatives, transmission line alternatives, or Red Bluff Substation alternatives. Only two projects listed in Table 3.18-3 have the potential for cumulative site-related noise effects in combination with the Desert Sunlight Project. Transmission Line Alternatives A-1 and A-2 would pass through or near the Chuckwalla Solar I Project site. In addition, the Desert Harvest Project is adjacent to the south side of the Desert Sunlight Solar Farm site. Thus, only the Chuckwalla Solar I and Desert Harvest Projects have the potential for cumulative site-related noise impacts in combination with the proposed Desert Sunlight Project.

Cumulative Impact Analysis

The alternative transmission line corridors all cross I-10, and the Red Bluff Substation alternatives are near I-10. Consequently, cumulative noise issues for the Proposed Action in combination with existing conditions are limited to the transmission line and Red Bluff Substation alternatives in combination with existing noise levels along I-10. The transmission line alternatives would cross I-10 near the Red Bluff Substation alternative locations. Because there are no noise-sensitive receptors located close to the Red Bluff Substation alternatives, cumulative noise conditions from Project construction activities in these areas in combination with existing I-10 traffic noise conditions would result in a less-than-significant impact. There are no noise-sensitive land uses along any access road options for either of the Red Bluff Substation alternatives. In addition, construction of the solar farm, Gen-Tie Line, and Red Bluff Substation would increase traffic volumes on I-10 by less than one percent, resulting in a cumulative CNEL increase of about 0.04 dBA. Thus, Alternatives 1, 2, or 3 would not be cumulatively considerable in combination with existing cumulative noise conditions, and there would be no significant cumulative noise impacts.

Most of the projects listed in Table 3.18-3 would contribute construction traffic to portions of I-10. Because the time frames for construction of the different projects in Table 3.18-3 generally are not known, it is unclear which of the projects might have construction periods that overlap with the construction time frame for the Desert Sunlight Project. In addition, no estimates of construction-related traffic are available for most of the projects listed in Table 3.18-3. Notwithstanding such uncertainties, it is not plausible to assume that the cumulative construction traffic generated by concurrent projects would more than double the existing traffic volumes on I-10 (currently 21,000 to 23,000 vehicles per day with 40 percent truck traffic). Since traffic volumes on I-10 would need to be doubled to cause even a 3 dBA increase in noise levels along I-10, no significant noise impact is plausible for the cumulative effects of construction-related traffic from projects listed in Table 3.18-3.

The timing for approval and construction of the Chuckwalla Solar I and Eagle Mountain Soleil Projects is not known, but could potentially overlap with part of the construction period for the Desert Sunlight Project. Consequently, there is the potential for temporary cumulative noise impacts from the Desert Sunlight Project in combination with either or both of these other solar energy projects. However, because the geographic extent of *stationary* construction-related noise issues is limited to distances of 1,000 feet or less, and *the geographic extent of potential ground vibration impact is limited to a distance of a few hundred feet from the source of the vibrations, and* no noise- *or vibration-*sensitive land uses are within that distance from both the Desert Sunlight Project and one or more of the other solar energy projects, no significant cumulative noise impacts from on-site construction activities would be expected from the Chuckwalla Solar I Project or the Eagle Mountain Soleil Project in combination with the Desert Sunlight Project.

The foreseeable renewable projects in the California desert as listed in Table 3.18-1 would generally be too far from the Desert Sunlight Project to have any cumulative noise *or groundborne vibration* impacts in combination with the Desert Sunlight Project. *While it is likely that construction traffic that would be associated with these foreseeable renewable energy projects would use the same freeways as the Proposed Action construction traffic, the cumulative use of these freeways would not result in significant increases to existing noise or vibration levels of those highways*.

Due to the limited geographic extent of potential noise and ground vibration impacts (as discussed above), *construction noise and vibration that would be associated with* the Desert Sunlight Project would *not be cumulatively considerable and* no significant cumulative noise or ground vibration impacts *would occur* in combination with any past, present, or *reasonably* foreseeable future projects. *Similarly, operation of the Proposed Action would not contribute to adverse long-term increases in noise or vibration levels in the area. Because no substantial noise or vibration increases would result from the Proposed Action, it would be consistent with the local noise regulations and would not be cumulatively considerable. Therefore, there would be no operational noise or vibration impacts.*

There would be no cumulative noise or vibration impacts under the No Action and No Project Alternatives (Alternatives 4, 5, or 6) because there would be no right-of-way grant for development of the solar farm area and associated facilities. Any future proposals for use of the site would be subject to separate environmental analysis.

4.11 PUBLIC HEALTH AND SAFETY/HAZARDOUS MATERIALS

4.11.1 Methodology for Analysis

Baseline conditions for the impact analysis presented in this section were established in Section 3.11. The *indicators* applicable to the analysis of potential impacts on public health and safety from a proposed project under NEPA or CEQA include reportable quantities of hazardous materials under CERCLA and quantitative exposure thresholds under OSHA and/or CalOSHA. The criteria were defined based on review of relevant data associated with the Project area and Appendix G of the CEQA Guidelines.

To evaluate impacts from existing hazardous waste within the Project Study Area, a review was conducted of the Phase I Environmental Site Assessment completed for the Project. The Applicant's Plan of Development (POD) was reviewed to evaluate impacts from hazardous materials that would be used during construction and operations and maintenance.

County maps were reviewed to determine the Project's proximity to schools and airports. In addition, the risk of fire based on hazard maps and assessments provided in the County of Riverside General Plan (2003) were considered. The County of Riverside General Plan was also reviewed for requirements for Emergency Response Plans, hazard management plans, and wildfire potential. The Applicant's Plan of Development was reviewed for their proposal as related to worker health and safety, hazardous materials management, spill prevention and Intentionally Destructive Acts.

Based on the affected environment detailed in Section 3.11, Table 4.11-1 presents the potential for alternative Project components to have impacts to public health and safety.

Table 4.11-1
Comparison of Action Alternative Features Relevant to Public Health and Safety/Hazardous Materials

Public Health and Safety/Hazardous Materials Element	Alternative 1			Alternative 2			Alternative 3		
	SF_B	GT-A-1	Red Bluff Substation A	SF-B	GT-B-2	Red Bluff Substation B	SF-C	GT-A-2	Red Bluff Substation A
Hazardous Materials/ Hazardous Waste	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Airports*	No	No	Yes	No	No	Yes	No	No	Yes
Schools	No	No	No	No	No	No	No	No	No
Emergency Evacuation and Emergency Response Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wildfire	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intentionally Destructive Acts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* The Desert Center Communications Site (Telecom Site) element of the Red Bluff Substation *is located in the vicinity of a privately-owned air strip.*

4.11.2 CEQA Significance Criteria

Public health and safety and exposure of the environment and/or the public to hazardous materials and waste would be significantly affected by the proposed Project if one or more of the following criteria are met:

- H-1. Increase exposure of humans or the environment to potentially hazardous levels of chemicals due to the disturbance of contaminated soils or to the discharge or disposal of hazardous materials into soils;
- H-2. Increase significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- H-3. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment;
- H-4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the Cortese List of underground leaking storage tanks) that would create a significant hazard to the public or environment;
- H-5. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- H-6. Mobilize contaminants in the soil or groundwater, creating potential pathways of exposure to humans or wildlife that would result in exposure to contaminants at levels that would be expected to be harmful;
- H-7. Expose workers to contaminated or hazardous materials at levels in excess of those permitted by the Federal Occupational Safety and Health Administration (OSHA) in CFR 29, Part 1910, and the California Occupational Safety and Health Agency (Cal/OSHA) in California Code of Regulations (CCR) Title 8, or expose members of the public to direct or indirect contact with hazardous materials from proposed Project construction or operations;
- H-8. Expose people or structures to a significant risk of loss, injury, or death involving electrocution or cause excessive exposure to wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands;
- H-9. Result in safety hazards to people that may be located in the vicinity of private air strips or airports located within two miles of the Project; or
- H-10. Expose people to significant hazards or structures to loss as a result of intentionally destructive acts.

For all Project alternatives, the following criterion was determined to be inapplicable or to result in no impact under alternatives. The determination regarding this significance criterion is discussed below and then this significance criterion is not considered further.

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

This criterion was determined to be inapplicable or to result in no impact: no component associated with any Project alternative is located within one-quarter of a mile of the closest school, the Eagle Mountain Elementary School. There would be no impacts under this criterion from any component of the Project.

The following EMF information is provided to allow an understanding of the issue by the public and decision makers. As the Solar Farm is brought on-line and starts to produce electricity, and electricity is transmitted through the Gen-Tie line, EMF fields would be generated. *Currently, there is no agreement among scientists regarding the potential health risk related to EMFs. However, i*n response to a situation of scientific uncertainty and public concerns regarding EMF, the following mitigation would be implemented by the Applicant for the Solar Farm and Gen-Tie Line, *and by* SCE for the Red Bluff Substation.

The Applicant will prepare a Field Management Plan that specifies, where feasible, "no-cost" and "low-cost" measures, to reduce exposure from the Solar Farm and Gen-Tie facilities (or Red Bluff Substation). No-cost mitigation measures would be undertaken, and low-cost options, when they meet certain guidelines for field reduction and cost, would be adopted through the project certification process and specified in a Field Management Plan. This issue is not addressed further.

4.11.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Construction of SF-B would require clearance of approximately *3,912* acres. Development of the solar farm site is described in Section 2.2.4 (Alternative 1). In addition to the solar array, other permanent land uses include the Operation & Maintenance (O&M) Facilities, On-Site Substation, and Visitors Center. Internal roads would be constructed as part of this alterative.

Hazardous Materials/Hazardous Waste

Hazardous Materials. Construction of SF-B would require the use of hazardous materials plus the temporary storage of hazardous wastes. The Project would generate minimal wastes during construction and there would be a limited amount of hazardous materials stored or used on site during construction, as shown in Tables 4.11-2 and 4.11-3. As explained below, the risk of exposure to the cadmium telluride (CdTe) semiconductor material within the PV modules range from non-existent under normal conditions to negligible under foreseeable "worst case" scenarios (wildfire and seismic events).

The Project would require the use hazardous materials during construction of the Project. Hazards to the public or environment may be caused by the transport, use or disposal of hazardous materials as identified in Tables 4.11-2 and 4.11-3. Implementing Applicant Measure AM-HAZ-1 would reduce these impacts.

The use of First Solar PV modules for the Solar Farm would not result in a significant risk of a release of hazardous materials that would be harmful to human health or the environment. Sources of information used to conclude that the proposed PV modules would not result in a significant risk of hazardous materials may be found as part of the Applicant's Supplement to the Plan of

Table 4.11-2
Hazardous Materials / Petroleum Products Stored on Site during Construction

Hazardous Material	Use
Diesel Fuel	Construction Equipment and Vehicles
Gasoline	Construction Equipment and Vehicles
Motor Oil	Construction Equipment and Vehicles
Hydraulic Fluids and Lubricating Oils	Construction Equipment and Vehicles
Solvents and Adhesives	PV Module Assembly
Soil Stabilizers	Roads and PV Assembly Areas
Mineral Oil	Transformers
BLM-Approved Herbicide	On an As-Needed Basis for Invasive Weeds
Batteries, paints, thinners, and cleaning solvents	Construction Equipment and Vehicles

Table 4.11-3
Hazardous Materials / Petroleum Products Stored on Site during Operations

Hazardous Material	Use
Diesel Fuel	Vehicles
Gasoline	Maintenance of Equipment and Vehicles
Motor Oil	Maintenance of Equipment and Vehicles
Soil Stabilizers	Maintenance Roads
Mineral Oil	Transformers
Lubricants	Maintenance of Vehicles
Cleaning Solvents	PV Module Assembly
BLM-Approved Herbicide	On an As-Needed Basis for Invasive Weeds
Batteries, paints, thinners, and cleaning solvents	*Maintenance of Equipment and Vehicles*

Development (16 June 2010) for the proposed Project (First Solar, Inc. 2010a). Hazardous materials are used in the manufacture of the PV modules, including CdTe. During the manufacturing process, the CdTe is bound to a glass sheet by vapor transport deposition, followed by sealing the CdTe layer with a laminate material and a second glass sheet (Fthenakis 2008). While CdTe itself is a hazardous substance in an isolated form (i.e., not embedded within a PV module), any risk to human health or the environment through the proposed Project is minimized by a combination of product design and testing, Project design, monitoring and replacement, and ultimately by the collection and recycling of PV modules in the event they become damaged or defective or upon Project decommissioning.

CdTe contained within PV modules is highly stable and, even if the modules become broken or damaged, would not mobilize from the glass and into the environment except under very specific conditions, none of which constitute plausible exposure scenarios under actual or projected "worst case" Project conditions. One condition would be if glass modules are ground into an extremely fine powder and then subjected to agitation in an acidic environment (Golder Associates 2010). However, these conditions would not occur in the field during any Project operations, *and the modules would not be disposed of* in a landfill. Even assuming an extreme seismic event that resulted in substantial damage to PV modules, the modules would not be *reduced* to a fine powder and, even if this could happen, there still would not be a subsequent exposure to the acidic conditions necessary to mobilize CdTe, which is bound to the glass, into the environment. In addition, once in the environment, CdTe would not migrate because it is insoluble in water and sorbs to soil particles (Golder Associates 2010, Lange 1973). *First Solar's manufacturing facilities are ISO 14001 and 9001 certified. First Solar PV modules conform to Underwriters Laboratories Inc. (UL) and International Electrotechnical Commission (IEC) test standards. First Solar undertakes additional accelerated life testing of its PV modules to evaluate reliability and long-term performance. Based on the results of these tests and performance in the field, First Solar provides a 5-year workmanship warranty and a 25-year power output warranty. The company conducts routine monitoring of existing deployed panels to assess durability and longevity to meet its warranty obligations.*

Another condition under which minor amounts of CdTe could be released from a PV module is if the module is subjected to a fire (Fthenakis 2005). Such conditions are unlikely to occur at the Project site because of the lack of fuel to support a sustained wildfire and the wildfire mitigation measures for the Project (AM-HAZ-4). Grass fires are the most likely fire exposure for ground-mounted PV systems, and these fires tend to be short-lived due to the thinness of fuels. As a result, these fires are unlikely to expose PV modules to prolonged fire conditions or to temperatures high enough to volatilize CdTe, which has a melting point of 1,041 degrees Celsius. Moreover, even if a desert wildfire could reach that temperature, the actual loss of CdTe from a module would be insignificant (approximately 0.04 percent). For these reasons, the probability of sustained fires and subsequent emissions in adequately designed and maintained utility systems appears to be zero (Fthenakis 2005).

In addition, no significant release of CdTe from the PV modules is anticipated if SF-B is subject to a major rainfall event. As discussed in Section 4.17, SF-B is not located on a FEMA 100-year floodplain, although the County of Riverside designates the area as having "possible but undetermined flood hazards." Storm water modeling for a 100-year storm performed for SF-B indicated that construction would not substantially increase the amount of damage to the area that could result from flooding. Furthermore, mitigation measures by the applicant, such as detention and retention of storm water flows and use of elongated posts in risk areas, would reduce the potential for damage to SF-B from flooding. Thus, it is unlikely that flooding would occur, and if it did, that it would damage the PV modules. Moreover, as discussed above, the risk that a significant amount of CdTe would be released from a damaged PV module in any event is insignificant because the CdTe is encapsulated between glass panels and the CdTe within the glass is highly stable even if the glass breaks.

These insignificant impacts are further minimized by First Solar's operational and maintenance protocols used to identify and remove damaged or defective PV modules during annual inspections, routine power output performance checks and resultant array and panel inspections. In addition, the potential for exposures to CdTe at levels of concern is further minimized as First Solar would remove identified damaged or defective PV modules from the Solar Farm site, as well as PV modules at the time of decommissioning, and then collect and recycle them in accordance with First Solar's pre-funded PV module collection and recycling program. In 2005, the Applicant established a pre-funded PV module collection and recycling program so that the Applicant's modules may be returned to the company for recycling at no cost to the end user (First Solar 2010b). The program funds are independently managed as a trust to ensure that they will be available when they are needed in the future, regardless of the future financial status of the Applicant. Approximately 90 percent of all modules collected are recycled into new products, including new Applicant-produced modules (First Solar 2009).

During standard operation of CdTe PV systems, there are no CdTe emissions to the environment. In the exceptional case of accidental fires or broken panels, scientific studies show that CdTe emissions remain negligible *(MEEDAT, 2009; CENER, 2010; and BMU 2005). Finally, even if a release of CdTe were possible in the natural environment of the Project, recent studies indicate that the CdTe compound is significantly less toxic than elemental cadmium under normal operating conditions or under the realistic "worst case" evaluations of seismic, flooding or wildfire scenarios (Zayed and Philippe 2009).*

Potential exposure to hazardous materials may also be caused by discharge of disposal onto soils; or through upset or accidental release. Proposed development of the Solar Farm would include the following mitigations to reduce the impacts from hazardous materials used during construction and operation of the Project and hazardous waste temporarily stored on site prior to appropriate disposal. The Applicant would be responsible for the mitigations.

Hazardous Waste. The Project would not mobilize existing contaminants in groundwater or soil, or expose workers to contaminated or hazardous materials at levels in excess of those permitted by federal and state law. Based on the Phase I Environmental Site Assessment (Phase I) prepared for the proposed Project, there are no Recognizable Environmental Concerns (RECs) (Appendix J). There would not be an increase in exposure of construction or permanent workers or the environment to potentially hazardous levels of chemicals due to the disturbance of previously contaminated soils. No impacts would occur and, therefore, no mitigation is required.

Both the Phase I study and the Class I cultural inventory of the Project site indicated that the site was historically used as a military training facility, and that there is potential for munitions and explosives of concern (MEC) to be present on portions of the site. During the Class III cultural resources survey, evidence of possible MEC has been identified along two of the Gen-Tie Line alternatives. *As a result of historical military training activities associated with DTC-C-AMA, there is also the potential for MEC to occur on other portions of the Project footprint. Implementing AM-HAZ-2 would reduce the potential impacts from MEC, if present within the Project area.*

Airports

The construction of SF-B would not create safety hazards for the one small private air strip or the special use airport in the vicinity. SF-B would be constructed more than one mile from either airstrip. The approximate distance from SF-B to the private air strip adjacent to the former Eagle Mountain mine is 6,500 feet. The approximate distance from the proposed Desert Center Communication Center associated with the Substation alternatives to the Special Use Airport is *5,500* feet. SF-B would have no aboveground structures that would increase safety hazards to the two private air strips. No impacts would occur.

Emergency Evacuation and Emergency Response Plan

The construction of SF-B has the potential for impairing implementation of County of Riverside adopted emergency evacuation and emergency response plans. During construction, activities could affect traffic and emergency routes, including equipment and material delivery. Impacts to existing emergency evacuation and emergency response plans would be significant without implementation of AM-HAZ-3. The Applicant would be responsible for implementing AM-HAZ-3 to reduce these impacts.

Wildfire

SF-B would be located in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire. However, construction of SF-B would increase the potential for a wildfire and could impact the public and environment by exposure to wildfire due to construction activities and ground disturbance. The risk of wildfire would be related to combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off road. The Applicant would be responsible for implementing AM-HAZ-4, which would reduce these impacts. *In addition, as noted above, a wildfire that impacted SF-B would not result in a significant release of CdTe from the PV modules.*

Intentionally Destructive Acts

The risk to workers or the public from damage to the Solar Farm as a result of accidental or intentional actions by outside parties during construction is low because public access would be controlled by security and fencing. Once constructed, the Solar Farm would be monitored by permanent staff. The construction of the Solar Farm would not increase the risk for environmental impacts from intentionally destructive acts. Implementing AM-HAZ-5 would further reduce these impacts.

Gen-Tie Line A-1

Construction of GT-A-1 within the 12.1-mile by 160-foot-wide transmission corridor plus additional fan-shaped areas at corners would result permanent disturbance of *92* acres along the route, as described in Section 2.2.4 (Alternative 1).

Hazardous Materials/Hazardous Waste

During the construction phase of GT-A-1, hazardous materials as identified in Table 4.11-1 would be in use. To ensure worker health and safety and no impacts to the environment, AM-HAZ-1 would be implemented to reduce impacts. A less-than-significant impact would occur. Based on the evidence of possible MEC, prior to construction of GT-A-1, implementation of AM-HAZ-2 would reduce these impacts.

Airports

Construction of GT-A-1 would not create safety hazards for the one small private air strip or the special use airport in the vicinity. Although GT-A-1 would result in construction of 135–foot-tall towers, the location of GT-A-1 is more than one mile from either the air strip or the special use airport. The closest portion of GT-A-1 to either the private air strip or the special use airport is approximately four miles. No impact would occur.

Emergency Evacuation and Emergency Response Plan

During construction of GT-A-1, there would be workers at the site and an Emergency Evacuation and Response Plan would be needed to provide directions for responding during an emergency. During construction, activities could affect traffic and emergency routes, including equipment and material delivery. Impacts to existing emergency evacuation and emergency response plans would be significant without implementation of AM-HAZ-3. To ensure adequate responses during an emergency, AM-HAZ-3 would be implemented to reduce impacts.

Wildfire

GT-A-1 would be located in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire. During construction of GT-A-1, there would be an increased potential for a wildfire that could affect the public and environment by exposure to wildfire due to construction activities. The risk of wildfire would be related to the combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off-road. To ensure adequate response to the threat of wildfire during operation of GT-A-1, AM-HAZ-4 would be implemented to reduce impacts. A less-than-significant impact would occur.

Intentionally Destructive Acts

The risk to workers or the public from damage to GT-A-1 as a result of accidental or intentional actions by outside parties during construction is low because public access would be controlled by fencing or walls. Once constructed, GT-A-1 would be monitored by permanent staff. The construction of GT-A-1 would not increase the risk for environmental impacts from intentionally destructive acts. The Applicant would be responsible for implementing AM-HAZ-5 to reduce impacts from intentionally destructive acts.

Red Bluff Substation A

Construction of Red Bluff Substation A includes the Substation itself and related elements. It would result in approximately *172* acres of permanent disturbance, including *76* acres for the Substation itself, as described in Section 2.2.4 (Alternative 1). The Project also includes construction of the Desert Center Communication Center (not collocated with the Substation and requiring less than 1 acre of disturbance); an access road east of the substation from Chuckwalla Valley Road/Corn Springs Road (Access Road 2, requiring *31* acres of disturbance); an electrical distribution line (8 acres of disturbance); various tie-ins from the Substation to the Gen-Tie Line and to the regional transmission line (DPV1) adjacent to the Substation site (*33* acres of disturbance); and *14* acres of associated drainage features.

Hazardous Materials/Hazardous Waste

Hazardous Materials. Construction of Red Bluff Substation A, the Desert Center Communications Site, and related facilities by SCE would require the use of hazardous materials plus the temporary storage of hazardous wastes. Construction would also result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll-off boxes at the materials staging area. All waste materials that are not recycled would be categorized in order to assure appropriate final disposal. Non-hazardous waste would be transported to local authorized waste management facilities.

The Project would use hazardous materials during construction, *and* exposure to hazardous materials may also be caused by discharge of disposal onto soils, or through upset or accidental release. Significant impacts would occur from the hazardous wastes generated during construction. Operation of Red Bluff Substation A would require nominal Implementation of AM-HAZ-6a through AM-HAZ-6f would reduce the impacts from hazardous materials used.

Hazardous Waste. Red Bluff Substation A would not mobilize existing contaminants in groundwater or soil, or expose workers to contaminated or hazardous materials at levels in excess of those permitted by federal and state law. Based on the Phase I Environmental Site Assessment prepared for the proposed Project, there are no Recognizable Environmental Concerns (RECs) in the area (Appendix J). There would not be an increase in exposure of construction or permanent workers or the environment to potentially hazardous levels of chemicals due to the disturbance of previously contaminated soils. No impacts would occur and, therefore, no mitigation is required.

As discussed for SF-B, both the Phase I study and the Class I cultural inventory of the Project site indicated that the site was historically used as a military training facility, that there is potential for MEC to be present on portions of the site, and that during the Class III survey, evidence of possible MEC has been identified along two of the Gen-Tie route alternatives. Based on this is preliminary information, SCE shall incorporate mitigations identified in AM-HAZ-2 as part of its planning for Red Bluff Substation A in coordination with the BLM.

Airports

Construction of the 185-foot microwave tower at Desert Center Communications Center associated with Red Bluff Substation A *could possibly* create a safety hazard for the special use airport in the vicinity. The tower would be just more than a mile (approximately 5,500 feet) from the special use airport runway. SCE has submitted *a Form 7460-1* to the Federal Aviation Administration (FAA) for the tower. Implementation of AM-HAZ 7, which is to follow FAA requirements for the microwave tower, would reduce impacts.

Emergency Evacuation and Emergency Response Plan

The construction of Red Bluff Substation A has the potential for impairing implementation of County of Riverside adopted emergency evacuation and emergency response plans. During construction, activities could affect traffic and emergency routes, including equipment and material delivery. Impacts to existing emergency evacuation and emergency response plans would be significant without implementation of AM-HAZ-8. Proposed construction of Red Bluff Substation A shall include AM-HAZ-8 to help ensure reduce impacts for emergency evacuation and emergency response plans during construction of Red Bluff Substation A.

Wildfire

Red Bluff Substation A would be constructed in an area of Riverside County that has been determined to have a low to moderate susceptibility to wildfire. However, construction of the Substation would increase the potential for a wildfire and could affect the public and environment by exposure to wildfire from construction activities and ground disturbance. The risk of wildfire would be related to combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off-road. Implementation of AM-HAZ-9 by SCE would reduce these impacts.

Intentionally Destructive Acts

The risk to workers or the public from damage to the Red Bluff Substation A during construction as a result of accidental or intentional actions by outside parties is low because public access would be controlled, primarily by fencing. The construction of the Substation would not increase the risk for environmental impacts from intentionally destructive acts. SCE would be responsible for implementing AM-HAZ-10 to reduce impacts.

Summary of Construction Impacts

The construction of Alternative 1 with SF-B, GT-A-1 and Substation A would increase the exposure of people and the environment to hazards related to:

- Hazardous Materials/Hazardous Waste;
- Emergency Evacuation and Emergency Response Plans;
- Wildfire; and
- Intentionally Destructive Acts.

In addition to these hazards, construction of the 185-foot microwave tower at the Desert Center Communications Center (associated with the Substation) may increase hazards for the special use airport. Completion of identified mitigation measures would reduce these impacts.

Operation and Maintenance

Solar Farm Layout B

Hazardous Materials/Hazardous Waste

During the operation and maintenance phase of SF-B, hazardous materials would still be in use but at a much lower level than during construction. *See the discussion above under Construction that addresses the risk of exposure to the CdTe semiconductor material within the PV modules. Similar to the construction phase of the Project, the operational phase of the Project would have a CdTe exposure risk ranging from non-existent under normal conditions to negligible under foreseeable "worst case" scenarios (wildfire and seismic events).* To ensure worker health and safety and no impacts to the environment, AM-HAZ-1 would be implemented to reduce impacts. A less-than-significant impact would occur.

Airports

The operation of SF-B would not impact either the private air strip or the special use airport. SF-B would not have aboveground structures that would increase the safety hazards to the private air strip or the special use airport. No impact would occur.

Emergency Evacuation and Emergency Response Plan

During operation of SF-B, while there would be fewer workers at the site, an Emergency Evacuation and Response Plan would still be needed to provide directions for responding during an emergency. Regularly scheduled or emergency maintenance would be infrequent. To ensure adequate responses during an emergency, AM-HAZ-3 would be implemented to reduce impacts.

Wildfire

During operation of SF-B, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire due to ongoing operation and maintenance activities. The risk of wildfire would be related to the combustion of native plants caused by smoking and refueling. No vehicles would be used off road. To ensure adequate response to the threat of wildfire during operation of SF-B, AM-HAZ-4 would be implemented to reduce impacts. *In addition, as discussed above, a wildfire that impacted SF-B would not result in a significant release of CdTe from the PV modules.*

Intentionally Destructive Acts

The potential for Intentionally Destructive Acts would remain during operation of SF-B. Mitigation AM-HAZ-5 would be implemented to reduce impacts.

Gen-Tie Line A-1

Hazardous Materials/Hazardous Waste

During the operation phase of GT-A-1, hazardous materials would still be in use but at a much lower level than during construction. To ensure worker health and safety and no impacts to the environment, AM-HAZ-1 would be implemented to reduce impacts.

Airports

As with construction, the operation of GT-A-1 would not impact either the private air strip or the special use airport. While GT-A-1 would include 135-foot-tall towers, the location of GT-A-1 would be more than one mile from the special use airport. The closest portion of GT-A-1 to either the private air strip or the special use airport is approximately four miles. No impact would occur.

Emergency Evacuation and Emergency Response Plan

During operation of GT-A-1, there would be fewer workers at the site, but an Emergency Evacuation and Response Plan would still be needed to provide directions for responding during an emergency. Regularly scheduled or emergency maintenance would be infrequent. To ensure adequate responses during an emergency, AM-HAZ-3 would be implemented to ensure reduced impacts.

Wildfire

During operation of GT-A-1, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire due to ongoing operation and maintenance activities. The risk of wildfire would be related to the combustion of native plants caused by smoking and refueling. No vehicles would be used off road. Mitigation AM-HAZ-4 would be implemented to reduce impacts.

Intentionally Destructive Acts

The potential for Intentionally Destructive Acts would remain during operation of GT-A-1. Mitigation AM-HAZ-5 would be implemented to reduce these impacts

Red Bluff Substation A

Hazardous Materials/Hazardous Waste

During operation, Red Bluff Substation A, the Desert Center Communications Site, and related facilities by SCE would be unmanned but regularly scheduled maintenance plus any emergency repairs would require workers and the potential use of hazardous materials. Hazardous materials would still be in use but at a much lower level than during construction. To ensure worker health and safety and no impacts to the environment, AM-HAZ-6 would be implemented to reduce impacts. A less-than-significant impact would occur.

Airports

Operation of the 185-foot microwave tower at the Desert Center Communications Center associated with Red Bluff Substation A *could possibly* create safety hazards for the Special Use Airport in the vicinity. The tower would be just more than a mile (6,000 feet) from this private special use airport's runway. SCE has submitted an application to the FAA for the tower. Implementation of AM-HAZ-7, which is to follow FAA permit requirements for the microwave tower, would reduce impacts.

Emergency Evacuation and Emergency Response Plan

During operation of the Red Bluff Substation, primary maintenance would be conducted via remote monitoring of collected data. Occasional visits for routine maintenance would be completed and emergency maintenance may also be needed. As a result, an Emergency Evacuation and Response Plan would be needed to provide directions for responding during an emergency. Regularly scheduled or emergency maintenance would be infrequent. To ensure adequate responses during an emergency, AM-HAZ-8 would be implemented to ensure reduced impacts.

Wildfire

During operation of Red Bluff Substation A, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire due to ongoing operation and maintenance activities. The risk of wildfire would be related to combustion of native plants caused by smoking and operating vehicles. To ensure adequate response to the threat of wildfire during operation of Red Bluff Substation B, AM-HAZ-9 would be implemented to reduce impacts.

Intentionally Destructive Acts

The risk to workers or the public from damage to Red Bluff Substation A as a result of accidental or intentional actions by outside parties is low because the Substation would not be staffed and because public access would be controlled by fencing. This would not preclude Intentionally Destructive Acts specifically targeting the Substation. SCE would be responsible for implementing AM-HAZ-10 to reduce impacts from Intentionally Destructive Acts to Red Bluff Substation A to a less-than-significant level.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Substation B, would increase the exposure of people and the environment to hazards related to:

- Hazardous Materials/Hazardous Waste;
- Emergency Evacuation and Emergency Response Plans;
- Wildfire; and
- Intentionally Destructive Acts.

In addition to these hazards, construction of the 185-foot microwave tower at the Desert Center Communications Center (associated with the Substation) may increase hazards for the local private airstrip. Completion of identified mitigation measures would reduce these impacts.

Decommissioning

Decommissioning would involve deconstructing Project components and recycling or disposing or all materials. The Project area would also need to be restored.

Solar Farm Layout B

Hazardous Materials/Hazardous Waste

During the decommissioning phase of SF-B, hazardous materials use would likely be comparable to the use during construction. Waste that would be recycled or disposed of would be generated as part of decommissioning. To ensure worker health and safety and no impacts to the environment, Mitigation HAZ-1 would be implemented to reduce impacts. A less-than-significant impact would occur.

Airports

As with construction, the decommissioning of SF-B would not impact either the private air strip or to the special use airport. All facilities associated with SF-B would be removed. No impact would occur.

Emergency Evacuation and Emergency Response Plan

During the decommissioning of SF-B, there would be more workers at the site. An Emergency Evacuation and Response Plan would be needed to provide directions for responding during an emergency. During decommissioning, activities could affect traffic and emergency routes during equipment and material delivery. Impacts to existing emergency evacuation and emergency response plants would be significant. To ensure adequate responses during an emergency, AM-HAZ-3 would be implemented to ensure reduced impacts.

Wildfire

During the decommissioning activities of SF-B, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire. The risk of wildfire would be related to the combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off road. To ensure adequate response to the threat of wildfire during operation of SF-B, AM-HAZ-4 would be implemented to reduce impacts*. In addition, as noted above, a wildfire that impacted SF-B would not result in a significant release of CdTe from the PV modules.*

Intentionally Destructive Acts

The potential for Intentionally Destructive Acts would remain during decommissioning of SF-B. Mitigation AM-HAZ-4 would be implemented to reduce impacts. Once all Project equipment has been dismantled and removed, the potential for Intentionally Destructive Acts would be eliminated.

Gen-Tie Line A-1

Hazardous Materials/Hazardous Waste

During the decommissioning phase of GT-A-1, use of hazardous materials would be comparable to those levels used construction. To ensure worker health and safety and no impacts to the environment, AM-HAZ-1 would be implemented to reduce impacts.

Airports

As with construction, the decommissioning of GT-A-1 would not impact either the private air strip or the special use airport. Although decommissioning of GT-A-1 would remove structures at least 135 feet tall, the location of GT-A-1 would be more than one mile from the special use airport. The closest portion of GT-A-1 to either the private air strip or the special use airport is approximately four miles. No impact would occur.

Emergency Evacuation and Emergency Response Plan

During decommissioning of GT-A-1, the transmission lines and structures would be dismantled and removed. This would likely require an Emergency Evacuation and Response Plan to provide directions for responding during an emergency. During decommissioning, activities could affect traffic and emergency routes, including equipment and material delivery. Impacts to existing emergency evacuation and emergency response plans would be significant. To ensure adequate responses during an emergency, AM-HAZ-3 would be implemented to ensure reduced impacts. The Applicant would be responsible for implementing AM-HAZ-3 to reduce these impacts.

Wildfire

During decommissioning of GT-A-1, there could be an increased potential for a wildfire that could affect the public and environment. The risk of wildfire would be related to the combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off road. To ensure adequate response to the threat of wildfire during decommissioning of GT-A-1, AM-HAZ-4 would be implemented to reduce impacts.

Intentionally Destructive Acts

The potential for Intentionally Destructive Acts would remain during decommissioning of GT-A-1. Mitigation HAZ-5 would be implemented to reduce impacts. Once all Project equipment has been dismantled and removed, the potential for Intentionally Destructive Acts would be eliminated.

Red Bluff Substation A

Hazardous Materials/Hazardous Waste

Decommissioning of Red Bluff Substation A, the Desert Center Communications Site, and related facilities by SCE would require the use of hazardous materials plus the temporary storage of hazardous wastes. Hazardous materials use likely at the same level as used during construction could be used. As much of the waste as possible would be recycled. Non-recycled waste would be disposed of in an appropriate landfill. Proposed decommissioning of Red Bluff Substation A shall include AM-HAZ-6a through AM-HAZ-6g implemented by SCE to reduce the impacts.

Airports

The decommissioning of the Desert Center Communication Center would include removing the 185-foot microwave tower, thereby removing a safety hazards for the special use airport in the vicinity. No air safety hazards would remain. No impact would occur. No mitigations are proposed.

Emergency Evacuation and Emergency Response Plan

The decommissioning of Red Bluff Substation A has the potential for impairing implementation of County of Riverside adopted emergency evacuation and emergency response plans. During decommissioning, activities could affect traffic and emergency routes, including equipment and material delivery. Impacts to existing emergency evacuation and emergency response plans would be significant without implementation of AM-HAZ-7. Decommissioning of Red Bluff Substation A shall include AM-HAZ-7 to help ensure reduce impacts for emergency evacuation and emergency response plans.

Wildfire

During decommissioning of Red Bluff Substation B, there would be an increased potential for a wildfire that and could impact the public and environment by exposure to wildfire. The risk of wildfire would be related to combustion of native plants caused by smoking, refueling, and operating vehicles and other equipment off road. To ensure adequate response to the threat of wildfire during decommissioning of the Substation, AM-HAZ-9 would be implemented to reduce impacts.

Intentionally Destructive Acts

The risk to workers or the public from damage to the Red Bluff Substation A as a result of accidental or intentional actions by outside parties is low because public access would be controlled by fencing. The decommissioning of Red Bluff Substation A would not increase the risk for environmental impacts from intentionally destructive acts. SCE would be responsible for implementing AM-HAZ-10 to reduce impacts. Once all substation equipment and structures have been dismantled and removed, the potential for Intentionally Destructive Acts would be eliminated.

Summary of Decommissioning Impacts

The decommissioning of Alternative 1 with SF-B, GT-A-1 and Substation B, would increase the exposure of people and the environment to hazards related to:

- Hazardous Materials / Hazardous Waste;
- Emergency Evacuation and Emergency Response Plans;
- Wildfire; and
- Intentionally Destructive Acts.

The decommissioning of Red Bluff Substation B would decrease hazards associated with the 185-foot microwave tower at the adjacent Desert Center Communications Center for the local private air strip.

Summary of Combined Impacts for Alternative 1

The construction, operation and decommissioning of Alternative 1 with SF-B, GT-A-1 and Substation B, would increase the exposure of people and the environment to hazards related to

- Hazardous Materials / Hazardous Waste;
- Emergency Evacuation and Emergency Response Plans;
- Wildfire; and
- Intentionally Destructive Acts.

In addition to these hazards, Red Bluff Substation B has the potential to increase hazards associated with the construction as well as operation and maintenance of a 185-foot microwave tower at the adjacent Desert Center Communications Center for the local private air strip located. Completion of identified mitigation measures would reduce these impacts. The decommissioning of Red Bluff Substation B, however, would decrease hazards associated with the 185-foot microwave tower.

Applicant Measures and Mitigation Measures

Measures proposed by the Applicant or SCE to reduce impacts are listed below.

SF-B and GT-A-1

Hazardous Materials/Hazardous Waste

AM-HAZ-1a: Appropriate spill containment and clean-up kits shall be kept on site during construction and maintained during the operation of *the Solar Farm and Gen-Tie Line*.

AM-HAZ-1b: In accordance with the Emergency Planning & Community Right to Know Act, the Applicant shall supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The Applicant shall prepare the plan for approval by the BLM and *review and comment by* the County of Riverside. The Applicant shall be responsible for implementing the approved plan.

The plan shall include:

- Introduction to the plan that identifies business activities;
- Identification of owner/operator with contact information;
- A hazardous materials inventory statement listing all hazardous materials used during construction and operation;
- A facility map; and
- An emergency response/contingency plan that includes an evacuation plan, emergency contacts, emergency resources, any special arrangements with emergency responders, emergency procedures, post-incident reporting/recording responsibilities; earthquake vulnerability inspection or isolation; emergency equipment; and an employee training plan that documents training areas and capabilities.

AM-HAZ-1c: During construction of SF-B and GT-A-1, Best Management Practices (BMPs) shall include:

- Keeping materials in their original containers with the original manufacturer's label and resealed when possible;
- Avoiding excessive on-site inventories of chemicals; procure and store only the amounts needed for the job;
- Following manufacturer's recommendation for proper handling and disposal;
- Conducting routine inspections to ensure that all chemicals on site are being stored, used, and disposed of appropriately;

- Performing timely maintenance on vehicles/equipment that are leaking oil or other fluids, and placing drip plans under the leak when the vehicle/equipment is parked prior to the maintenance event;
- Performing fueling of vehicles and equipment in locations that are protected from spillage onto exposed ground surface
- Ensuring that all personnel dealing with hazardous materials are properly trained in the use and disposal of these materials in accordance with local, state and federal regulations; and
- Maintaining Material Safety Data Sheets (MSDSs) available on the site for use during Project construction and operation.

AM-HAZ-1d: A Spill Prevention Control and Countermeasures (SPCC) Plan shall be developed and implemented that would identify primary and secondary containment for oil products stored on site as well as training in spill management in the event of an unexpected release. The Applicant shall prepare the plan for approval by the BLM and *review and comment by* the County of Riverside. The Applicant shall be responsible for implementing the approved plan.

The plan shall include requirements specified by 40 CFR Part 112 as follows:

- A description of the facility;
- A self-certification statement;
- A record of plan review and amendments; and
- A list of oil/petroleum product storage containers associated with the facility, identification of the secondary containment systems; identification of spill control measures to be implemented; inspection types and frequency, testing procedures to ensure the integrity of petroleum containers, recordkeeping procedures, personnel training; security; emergency procedures and notifications in case of a spill; a contact list in case of a spill; and SPCC spill reporting requirements.

AM-HAZ-1e: The Applicant shall develop an Environmental Health and Safety Plan for the construction and operation of the Project to ensure it includes all activities and compliance to all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The Applicant shall prepare the plan for approval by the BLM. The Applicant shall be responsible for implementing the approved plan. The plan shall include the following:

- An organizational structure;
- A description of site characteristics and a job hazard analysis;
- A description of site controls that includes a site map; identification of site access restrictions, site security, site work zones, any required exclusion zones, any contaminant reduction zones, relevant support zones, and site communications;
- Training requirements and documentation of training;
- Medical surveillance;
- Personal protective equipment;

- Exposure monitoring;
- Heat stress;
- Spill containment;
- Decontamination;
- Emergency response;
- Relevant standard operating procedures; and
- Confined space (if relevant).

Potential Munitions and Explosives of Concern

AM-HAZ-2: Based on the preliminary information provided in the Phase I ESA and the Class I cultural inventory of the Project site, the Applicant proposes to take the following steps to better determine the nature and extent of potential MEC issues and then take appropriate corrective action measures. *The first step is to better understand the history of military activities within the proposed Project footprint.* This would include further research regarding prior MEC removals that may have been issued in the past for certain areas by military or other investigating entities, and may include consultations with Department of Defense personnel and archival research. *As a result of the historical occurrence of military training activities throughout the DTC-C-AMA, potentially including the Project area, this MEC consultation and archival research will address the entire Project footprint, including the specific areas of concern identified by the Phase I ESA and cultural resource surveys.* With that more comprehensive understanding, the Applicant will propose, as necessary, further appropriate above and below-ground assessments, under the direction of an expert consultant team, to delineate areas for further investigation and then removal. The Applicant, under direction from the BLM, will determine which site-specific in-field investigative techniques and methodologies will be utilized to investigate and resolve potential MEC issues prior to Project construction. Finally, all construction workers will receive appropriate MEC health and safety awareness training to ensure that they know what actions to take if unanticipated MEC or other suspicious articles are encountered during construction.

Emergency Evacuation and Emergency Response Plan

AM-HAZ-3: The Applicant shall provide the County of Riverside with a Project-specific Emergency Response and Inventory Plan prior to initiating construction. The Applicant shall prepare the plan for approval by the BLM and *review and comment by* the County of Riverside. The Applicant shall be responsible for implementing the approved plan. The plan shall include the following:

- An evacuation plan;
- A list of emergency contacts;
- A list of emergency resources;
- Any special arrangements with emergency responders;
- Relevant emergency procedures;
- Post-incident reporting/recording responsibilities;
- Identification of site components that may be vulnerable to earthquakes with procedures for inspection or isolation after a seismic event;

- A list of on-site emergency equipment; and
- An employee training plan that documents training areas and capabilities.

Wildfire

AM-HAZ-4: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a Project-specific fire prevention plan for both construction and operation of the solar farm *and Gen-Tie Line* will be completed prior to initiation of construction. *The fire protection plan shall be approved by the BLM and provided to Riverside County for review and comment.*

The Applicant and SCE shall have a Project-specific fire prevention plan in place during construction, operation and decommissioning of the Project. This plan shall comply with applicable County of Riverside regulations and would be coordinated with the *BLM Fire Management Officer and the* local Fire Department in the Chuckwalla Valley at Tamarisk Park. During construction, the following steps shall be taken to identify and control fires and similar emergencies.

- A network of access roads shall be constructed for adequate fire control and emergency vehicle access to the site.
- Electrical equipment that is part of the Project would only be energized after the necessary inspections and approval to ensure minimal risk of any electrical fire during construction.
- Project staff shall monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks. The Applicant staff vehicles would be equipped with fire extinguishers.
- Transformers located on site shall be equipped with non-toxic mineral-oil based coolant that is non-flammable, biodegradable and contains no polychlorinated biphenyls or other toxic compounds.

Intentionally Destructive Acts

AM-HAZ-5: Emergency Response Plan: An emergency response plan and site security plan shall be completed for the Project facilities *by qualified professionals. These plans shall be developed in accordance with the BLM and DOE requirements and shall include the following:*

- *Identification of a range of potential emergency incidents and associated emergency response agencies affected.*
- *Criteria for short-term response and long-term protective actions.*
- *Clear hierarchy for coordination with emergency response agencies.*
- *A communication plan to provide a rapid flow of information to all responders including state and local emergency agencies. The communication plan shall also include redundant methods of communication should primary systems fail during an emergency.*
- *Detailed medical response plans and procedures, with necessary medical equipment in place prior to operation.*
- *Procedures for facility drills and emergency responder training. Identify and implement specialized training needs and requirements associated with PV panel handling.*

Red Bluff Substation A

Potential Munition and Explosives of Concern

AM-HAZ-2: As described above.

Hazardous Materials/Hazardous Waste

AM-HAZ-6a: SCE shall implement standard fire prevention and response practices for the construction activities where hazardous materials are in use. SCE shall be responsible for implementing the approved plan. The plan shall include the following:

- The purpose and applicability of the plan; and
- Procedures for fire prevention and response that include identification of site-specific and operational risks, tools and equipment needed, and fire prevention and safety considerations; a red-flag warning system, activity levels, fire-related training, and coordination with BLM and County of Riverside.

AM-HAZ-6b: As applicable, SCE shall follow fire codes per California Department of Forestry and Fire Protection (2008) requirements for vegetation clearance during construction of the Project to reduce the fire hazard potential.

AM-HAZ-6c: Hazardous materials and waste handling shall be managed in accordance with the following SCE plans and programs. SCE shall be responsible for implementing the following plans:

- *Spill Prevention, Countermeasure, and Control Plan (SPCC Plan).* In accordance with Title 40 of the CFR, Part 112, SCE shall prepare a SPCC for the proposed substation, as applicable. The plan shall include requirements specified by 40 CFR Part 112 as follows:
    - A description of the facility;
    - A self-certification statement;
    - A record of plan review and amendments; and
    - A list of oil/petroleum product storage containers associated with the facility, identification of the secondary containment systems; identification of spill control measures to be implemented; inspection types and frequency, testing procedures to ensure the integrity of petroleum containers, recordkeeping procedures, personnel training; security; emergency procedures and notifications in case of a spill; a contact list in case of a spill; and SPCC spill reporting requirements.
- *Hazardous Materials Business Plans (HMBPs).* Prior to operation of new or expanded substations, SCE shall prepare or update and submit, in accordance with the Emergency Planning & Community Right to Know Act, an HMBP, as applicable. SCE shall be responsible for implementing the approved plan. The plan shall include:
    - Introduction to the plan that identifies business activities;
    - Identification of owner/operator with contact information;
    - A hazardous materials inventory statement listing all hazardous materials used during construction and operation;

- A facility map;
- An emergency response/contingency plan that includes an evacuation plan, emergency contacts, emergency resources, any special arrangements with emergency responders, emergency procedures, post-incident reporting/recording responsibilities; earthquake vulnerability inspection or isolation; emergency equipment; and an employee training plan that documents training areas and capabilities.

- *Storm Water Pollution Prevention Plan (SWPPP):* A Project-specific construction SWPPP shall be prepared and implemented prior to the start of construction of the Red Bluff Substation A. SCE shall be responsible for implementing the approved plan. The plan shall include:
  - Objectives of the SWPPP;
  - A vicinity map;
  - Pollutant source identification and BMPs selection;
  - Water pollution control drawings;
  - Construction BMP maintenance, inspection and repair;
  - Post-construction storm water management practices;
  - Training;
  - List of subcontractors;
  - Plans and permits
  - Site inspections;
  - Discharge reporting;
  - Record keeping and reports;
  - Sampling and analysis plan for sediments; and
  - Sampling and analysis plan for non-visible pollutants.
- *Health and Safety Program:* SCE shall prepare and implement a health and safety program to address site-specific health and safety issues. SCE shall be responsible for implementing the approved plan. The plan shall include:
  - An organizational structure;
  - A description of site characteristics and a job hazard analysis;
  - A description of site controls that includes a site map; identification of site access restrictions, site security, site work zones, any required exclusion zones, any contaminant reduction zones, relevant support zones, and site communications;
  - Training requirements and documentation of training;
  - Medical surveillance;
  - Personal protective equipment;
  - Exposure monitoring;

- Heat stress;
- Spill containment;
- Decontamination;
- Emergency response;
- Relevant standard operating procedures; and
- Confined space (if relevant).

- *Hazardous Materials and Hazardous Waste Handling:* A Project-specific hazardous materials management and hazardous waste management program plan shall be developed prior to initiation of the Project. Material Safety Data Sheets would be made available to all Project workers. SCE shall be responsible for implementing the plan that shall include:
  - Introduction to the plan that identifies business activities;
  - Identification of owner/operator with contact information;
  - A hazardous materials inventory statement listing all hazardous materials used during construction and operation;
  - A facility map; and
  - An emergency response/contingency plan that includes an evacuation plan, emergency contacts, emergency resources, any special arrangements with emergency responders, emergency procedures, post-incident reporting/recording responsibilities; earthquake vulnerability inspection or isolation; emergency equipment; and an employee training plan that documents training areas and capabilities.
- *Emergency Release Response Procedures:* An Emergency Response Plan as part of the Hazardous Materials Business Plan detailing responses to releases of hazardous materials shall be developed prior to construction activities. All construction personnel, including environmental monitors, shall be aware of state and federal emergency response reporting guidelines. SCE shall be responsible for implementing the plan.

AM-HAZ-6d: Hazardous materials shall be used or stored and disposed of in accordance with federal, state, and local regulations.

AM-HAZ-6e: The Substation shall be grounded to limit electric shock and surges that could ignite fires.

AM-HAZ-6f: All construction and demolition waste shall be removed and transported to an appropriately permitted disposal facility.

Airport

AM-HAZ-7: SCE shall *submit FAA Form 7460-1 and receive a Determination of No Hazard to Navigable Airspace and comply with any AC/7460-1K (Obstruction Marking and Lighting) requirements from the FAA* for construction of the 185-foot microwave tower associated with the Desert Center Communications Center.

Emergency Evacuation and Emergency Response Plan

AM-HAZ-8: SCE shall provide the *BLM and the* County of Riverside with a Project-specific Emergency Response and Inventory Plan prior to initiating construction. SCE shall be responsible for implementing the approved plan. The plan shall include the following.

- An evacuation plan;
- A list of emergency contacts;
- A list of emergency resources;
- Any special arrangements with emergency responders;
- Relevant emergency procedures;
- Post-incident reporting/recording responsibilities;
- Identification of site components that may be vulnerable to earthquakes with procedures for inspection or isolation after a seismic event;
- A list of on-site emergency equipment; and
- An employee training plan that documents training areas and capabilities.

Wildfire

AM-HAZ-9: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a Project-specific fire prevention plan for both construction and operation of the substation shall be completed by SCE prior to initiation of construction. The plan shall include the following:

- The purpose and applicability of the plan; and
- Procedures for fire prevention and response that include identification of site-specific and operational risks, tools and equipment needed, and fire prevention and safety considerations; red-flag warning system, activity levels, fire-related training, and coordination with BLM and County of Riverside.

Intentionally Destructive Acts

AM-HAZ-10: *Develop and implement a fire protection plan. The Applicant shall develop and implement a fire protection plan for use during construction and operation. The Applicant shall submit the plan, along with maps of the Project site and access roads, to the BLM for approval and CAL FIRE/Riverside County Fire Department for review and comment prior to the start of construction. The fire protection plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:*

- *All internal combustion engines, stationary and mobile, shall be equipped with spark arresters. Spark arresters shall be in good working order.*
- *Light trucks and cars with factory-installed (type) mufflers shall be used only on roads where the roadway is cleared of vegetation. These vehicle types shall maintain their factory-installed (type) mufflers in good condition.*

- *Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.*
- *Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.*
- *Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats.*
- *The Applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.*
- *Smoking shall be limited to paved areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents). Smoking shall be prohibited during a Red Flag Warning issued for the Project area.*

Cease work during Red Flag Warnings. During construction and operation, all non-emergency construction and maintenance activities shall cease when a Red Flag Warning is issued by the National Weather Service for the Project area. This provision shall be clearly stated in the fire prevention plan. An Emergency Response Liaison shall ensure implementation of a system that allows for immediate receipt of Red Flag Warning information from the National Weather Service.

Install electrical safety signage. Prior to energization or final inspection, whichever occurs first, the Applicant shall install electrical safety signage on all solar arrays in the immediate vicinity of all wiring and on all electrical conduit using weather-resistant and fade-proof materials. The purpose of this measure is to reduce the risk of electric shock and fire. Warning signs shall be designed to be evident to any person tampering with, working on, or dismantling project photovoltaic panels. Signs shall read: "CAUTION: Solar PV Wiring May Remain Energized After Disconnection during Daylight Hours. Tampering with Wiring May Result in ELECTRIC SHOCK or FIRE. Death or Serious Injury May Result. Do Not Expose Wires to Vegetation or Other Flammable Materials." This requirement shall be clearly stated in the fire prevention plan.

CEQA Significance Determination

Solar Farm Layout B

During construction, operation and maintenance, and decommissioning of SF-B, hazards to the public or the environment may be posed by transportation, use, or disposal of hazardous materials, including (but not limited to) gasoline, diesel fuel, oil, paints, chemicals, or waste oils and construction waste (CEQA significance criteria H-1, H-2, H-3, and H-6). The Applicant's use of appropriate spill containment and cleanup kits would contain accidental hazardous material releases (AM-HAZ-1a). The Applicant's Hazardous Materials and Waste Management Plan (AM-HAZ-1b) would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases. Best management practices by the Applicant would ensure that hazardous materials used during construction, operation, and maintenance of SF-B would not be accidentally released into the environment (AM-HAZ-1c). During construction, operation, and decommissioning of SF-B, hazards to the public or the environment also could be posed by the improper transport, storage, use, or disposal of hazardous materials. The Applicant's SPCC would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous materials

(AM-HAZ-1d). Potential impacts from hazardous materials and hazardous waste would be less than significant with mitigation.

To ensure worker health and safety during construction, maintenance and operation, and decommissioning (CEQA significance criterion H-7), the Applicant would complete a site-specific health and safety plan (AM-HAZ-1e). Potential impacts to worker health and safety would be less than significant with mitigation.

As a result of past uses in the region that include SF-B, the Applicant proposes to take steps to delineate the nature and extent of potential MEC issues (CEQA significance criterion H-4). Mitigation AM-HAZ-2 would resolve potential MEC issues before construction.

During construction, operation and maintenance, and decommission of SF-B, activities that could affect traffic and emergency routes include equipment and materials delivery, construction equipment movement, and worker commutes (CEQA significance criterion H-5). Implementation of an Applicant-prepared Emergency Evacuation and Emergency Response Plan (AM-HAZ-3) would ensure no impacts to existing emergency response plans and evacuation plans. Potential impacts to adopted emergency response plans and emergency evacuation plans would be less than significant with mitigation.

During construction, operation and maintenance, and decommissioning of SF-B, wildfires may be caused by combustion of native materials, smoking, and refueling and operating vehicles and other equipment off road (CEQA significance criterion H-8). The Applicant's Fire Management Plan (AM-HAZ-4) establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. Potential impacts from wildfire would be less than significant with mitigation.

Currently, there are no airports within one mile from SF-B (CEQA significance criterion H-9). Impacts to airports would be less than significant without mitigation.

SF-B could be subject to intentionally destructive acts (sabotage or terrorism) that could cause potential human and environmental impacts (fire, explosion, missile, or other impact force). Although not a CEQA significance criterion (H-10), an emergency response plan and site security plan shall be completed for SF-B by the Applicant (AM-HAZ-5). In light of the sensitive nature of information contained in these plans, these documents will not be available for general public review. These plans shall be developed in accordance with the BLM and DOE requirements and would reduce impacts to less than significant.

Gen-Tie Line A-1

During construction, operation and maintenance, and decommissioning of GT-A-1, hazards to the public or the environment may be posed by transportation, use, or disposal of hazardous materials, including (but not limited to) gasoline, diesel fuel, oil, paints, chemicals or waste oils, and construction waste (CEQA significance criteria H-1, H-2, H-3, and H-6). The Applicant's use of appropriate spill containment and cleanup kits would contain accidental hazardous material releases (AM-HAZ-1a). The Applicant's Hazardous Materials and Waste Management Plan (AM-HAZ-1b) would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases. Best management practices by the Applicant would ensure that use of hazardous materials during construction, operation, and maintenance of GT-A-1 would not be accidentally released into the environment (AM-HAZ-1c). During construction, operation, and decommissioning of GT-A-1, hazards to the public or the environment also could be posed by the improper transport, storage, use, or disposal of hazardous materials. The Applicant's SPCC would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous materials (AM-HAZ-1d). Potential impacts from hazardous materials and hazardous waste would be less than significant with mitigation.

To ensure worker health and safety during construction, maintenance and operation, and decommissioning (CEQA significance criterion H-7), the Applicant would complete a site-specific health and safety plan (AM-HAZ-1e). Potential impacts to worker health and safety would be less than significant with mitigation.

As a result of past uses in the region that include GT-A-1, the Applicant proposes to take steps to delineate the nature and extent of potential MEC issues (CEQA significance criterion H-4). Mitigation AM-HAZ-2 would resolve potential MEC issues before construction.

During construction, operation and maintenance, and decommission of GT-A-1, activities that could affect traffic and emergency routes include equipment and materials delivery, construction equipment movement, and worker commutes (CEQA significance criterion H-5). Implementation of an Applicant-prepared Emergency Evacuation and Emergency Response Plan (AM-HAZ-3) would ensure no impacts to existing emergency response plans and evacuation plans. Potential impacts to adopted emergency response plans and emergency evacuation plans would be less than significant with mitigation.

During construction, operation and maintenance, and decommissioning of GT-A-1, wildfires may be caused by combustion of native materials, smoking, refueling, and operating vehicles and other equipment off road (CEQA significance criterion H-8). The Applicant's Fire Management Plan (AM-HAZ-4) establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. Potential impacts from wildfire would be less than significant with mitigation.

Currently, there are no airports within one mile from GT-A-1 (CEQA significance criterion H-9). Impacts to airports would be less than significant without mitigation.

GT-A-1 could be subject to intentionally destructive acts (sabotage or terrorism) could cause potential human and environmental impacts (fire, explosion, missile or other impact force). Although not a CEQA significance criterion (H-10), an emergency response plan and site security plan shall be completed for SF-B by the Applicant (AM-HAZ-5). In light of the sensitive nature of information contained in these plans, these documents will not be available for general public review. These plans shall be developed in accordance with the BLM and DOE requirements and would reduce impacts to less than significant.

Red Bluff Substation A

Hazardous Waste / Hazardous Materials

During construction, operation and maintenance, and decommissioning of Red Bluff Substation A, hazards to the public or the environment may be posed by the transportation, use, or disposal of hazardous materials, including (but not limited to) gasoline, diesel fuel, oil, paints, chemicals, or waste oils and construction waste (CEQA significance criteria H-1, H-2, H-3, and H-6). A fire prevention and response plan by SCE for construction, operation and maintenance, and decommissioning would minimize risks of fire (AM-HAZ-6a). Potential impacts from wildfire would be less than significant with mitigation.

During construction and decommissioning of Red Bluff Substation A, wildfires may be caused by combustion of native materials, smoking, refueling, and operating vehicles and other equipment off road (CEQA significance criteria H-8). The Applicant's Fire Management Plan (AM-HAZ-6b) establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. Potential impacts from wildfire would be less than significant with mitigation.

During construction, operation and maintenance, and decommissioning of Red Bluff Substation A, hazards to the public or the environment may result from hazardous materials used and hazardous waste generated. SCE plans and programs (AM-HAZ-6c) as follows would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases.

- Spill Prevention Control and Countermeasures Plan. Hazards to the public or the environment also could be posed by the improper transport, storage, use, or disposal of hazardous materials (CEQA significance criteria H-1, H-2, H-3, and H-6). SCE's SPCC Plan would ensure that SCE minimizes, avoids, or cleans up unforeseen spills of hazardous materials (AM-HAZ-6c). Potential impacts from accidental releases of petroleum products from the Red Bluff Substation A site would be less than significant with mitigation.
- Hazardous Materials Business Plan. During construction, operation and maintenance, and decommission of Red Bluff Substation A, activities that could affect traffic and emergency routes include equipment and materials delivery, construction equipment movement, and worker commutes (CEQA significance criterion H-5). Implementation of an Applicant-prepared Emergency Evacuation and Emergency Response Plan would ensure no impacts to existing emergency response plans and evacuation plans (AM-HAZ-6c and AM-HAZ-8). Potential impacts to adopted emergency response plans and emergency evacuation plans would be less than significant with mitigation.
- Stormwater Pollution Prevention Plan. Hazards to the public or the environment also could be posed by the accidental release of pollutants from the site into the environment (CEQA significance criteria H-1, H-2, H-3, and H-6). SCE's SWPP plan would ensure that SCE minimizes, avoids, or cleans up unforeseen spills of hazardous materials (AM-HAZ-6c). Potential impacts from accidental releases of pollutants from the Red Bluff Substation A site would be less than significant with mitigation.
- Health and Safety Plan. To ensure worker health and safety during construction, maintenance and operation, and decommissioning (CEQA significance criterion H-7), a site-specific health and safety plan would be completed by SCE (AM-HAZ-6c). Potential impacts to worker health and safety would be less than significant with mitigation.
- Emergency Release Response Procedures. Construction, operation and maintenance, and decommission of Red Bluff Substation A could result in accidental release of hazardous

materials or hazardous waste. Implementation of the Hazardous Materials Business plan by SCE as detailed earlier would ensure no impacts from accidental hazardous materials or hazardous waste releases (AM-HAZ-6c). Potential impacts from accidental releases would be less than significant with mitigation.

During construction, operation and maintenance, and decommissioning of Red Bluff Substation A, hazardous materials used have the potential for being improperly stored (CEQA significance criteria H-1, H-2, H-3, and H-6). Proper storage in accordance with local, state, and federal regulations would ensure no impacts from accidental release (AM-HAZ-6d). Potential impacts from improperly stored hazardous materials would be less than significant with mitigation.

Red Bluff Substation A has the potential for generating electric shock and surges that could ignite wildfires (CEQA Criterion H8). Grounding Red Bluff Substation A during construction would reduce impacts from electric shock and surges (AM-HAZ-6f). Potential impacts from electric shock and surges would be less than significant with mitigation.

Potential Munitions and Explosives of Concern

As a result of past uses in the region that include Red Bluff Substation A, SCE proposes to take steps to delineate the nature and extent of potential MEC issues (CEQA significance criterion H-4). AM-HAZ-2 would resolve potential MEC issues before construction.

Airport

Construction, operation and maintenance, and decommissioning of the communication tower associated with the Desert Center Communications Center that is part of Red Bluff Substation A would increase airport safety hazards for the private use airfield located just more than a mile away (CEQA significance criterion H-9). Implementation of any mitigation measures identified by the FAA for the Desert Center Communications Center tower would mitigate safety hazards (AM-HAZ-7). Impacts to the local private air strip would be less than significant with mitigation.

Emergency Evacuation and Emergency Response Plan

During construction, operation and maintenance, and decommission of Red Bluff Substation A, activities that could affect traffic and emergency routes include equipment and materials delivery, construction equipment movement, and worker commutes (CEQA significance criterion H-5). Implementation of an Applicant-prepared Emergency Evacuation and Emergency Response Plan would ensure no impacts to existing emergency response plans and evacuation plans (AM-HAZ-6c and AM-HAZ-8). Potential impacts to adopted emergency response plans and emergency evacuation plans would be less than significant with mitigation.

Wildfire

During construction, operation and maintenance, and decommissioning of Red Bluff Substation A, wildfires may be caused by combustion of native materials, smoking, refueling, and operating vehicles and other equipment off road (CEQA significance criterion H-8). SCE's Fire Management Plan (AM-HAZ-9) establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. Potential impacts from wildfire would be less than significant with mitigation.

Intentionally Destructive Acts

Red Bluff Substation A could be subject to intentionally destructive acts (sabotage or terrorism) that could cause potential human and environmental impacts (fire, explosion, missile or other impact force). Although not a CEQA significance criteria (H-10), an emergency response plan and site security plan shall be completed for Red Bluff Substation A by SCE (AM-HAZ-10). In light of the sensitive nature of information contained in these plans, these documents will not be available for general public review. These plans shall be developed in accordance with the BLM and DOE requirements and would reduce impacts to less than significant.

Unavoidable Adverse Effects

Implementation of Alternative 1 would not result in unavoidable adverse impacts. Hazards to public health and safety would be mitigated as specified earlier in this section to prevent unavoidable impacts.

4.11.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts to public health and safety resulting from constructing SF-B would be the same as describe for Alternative 1.

Gen-Tie Line B-2

Construction of GT-B-2 within the 10-mile by 160-foot-wide transmission corridor plus additional fan-shaped areas at corners would result in a permanent disturbance of *68* acres along the route, as described in Section 2.2.4 (Alternative 2).

The impacts to public health and safety resulting from constructing GT-B-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation B

Construction of Red Bluff Substation B includes the Substation itself and related elements. It would result in approximately *130* acres of permanent disturbance, including *76* acres for the Substation itself, as described in Section 2.2.4 (Alternative 2). Construction of the Substation also includes construction of the Desert Center Communications Center (not collocated with the Substation and less than 1 acre of disturbance), an access road from Eagle Mountain Road that would result in 1 acre of disturbance, an electrical distribution line (*less than* 1 acre of disturbance) various tie-ins from the Substation to the Gen-Tie Line and to the regional transmission line (DPV1) adjacent to the Substation site (*22* acres of disturbance), and *20* acres of associated drainage features.

The impacts to public health and safety resulting from constructing Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1

Summary of Construction Impacts

Construction impacts for Alternative 2 to public health and safety would be the same as those identified for Alternative 1.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from operating and maintaining GT-B-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The impacts resulting from operating and maintaining Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Operation and Maintenance Impacts

Operation and maintenance impacts for Alternative 2 to public health and safety would be the same as those discussed for Alternative 1

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation B

The impacts resulting from decommissioning Red Bluff Substation B would be the same as those identified under Alternative 1.

Summary of Decommissioning Impacts

Decommissioning impacts for Alternative 2 to public health and safety would be the same as those identified for Alternative 1.

Summary of Combined Impacts for Alternative 2

The summary of combined impacts for construction, operation and maintenance, and decommissioning Alternative 2 would be the same as detailed for Alternative 1. With mitigations detailed for Alternative 1, impacts would be reduced.

Applicant Measures and Mitigation Measures

Significance criteria and mitigations for Alternative 2 components (SF-B, GT-B-2 and Red Bluff Substation B) are the same as detailed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determinations for SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determinations for GT-B-2 would be the same as those discussed under Alternative 1.

Red Bluff Substation B

The CEQA significance determinations for Red Bluff Substation B would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Unavoidable Adverse Effects

Implementation of Alternative 2 would not result in any unavoidable adverse impacts. Hazards to public health and safety would be mitigated as specified earlier in this section to prevent unavoidable impacts.

4.11.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Construction of SF-C would require clearance (land clearing) of approximately 3,045 acres. Development of the solar farm site is described in Section 2.2.4 (Alternative 3). In addition to the solar array, other permanent land uses include the Operation & Maintenance (O&M) Facilities, On-Site Substation, Visitors Center, and internal roads would be constructed as part of this alternative.

Although less land is disturbed, the impacts to public health and safety resulting from constructing SF-C would be the same as those discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

Construction of GT-A-2 within the 10.5-mile by 160-foot-wide transmission corridor plus additional fan-shaped areas at corners would result in permanent disturbance of *86* acres along the route, as described in Section 2.2.4 (Alternative 3).

The impacts resulting from constructing SF-C would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

Construction of Red Bluff Substation A would be the same as were described under Alternative 1, except that a different access road for the Substation would be used. The access road to the Substation for this alternative would be from Kaiser Road via Aztec Road to the west (Access Road 1). Similar to the Access Road 2 under Alternative 1, improvements to this access road would require approximately *31* acres of disturbance.

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed for Red Bluff Substation B under Alternative 1.

Summary of Construction Impacts

Construction impacts for Alternative 3 to public health and safety would be the same as those summarized for Alternative 1.

Operation and Maintenance

Solar Farm Layout C

The impacts resulting from operation and maintenance of SF-C would be the same as those discussed for SF-B under Alternative 1.

Gen-Tie Line A-2

The impacts resulting from operation and maintenance of GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting from operation and maintenance of Red Bluff Substation A would be the same as those discussed for Red Bluff Substation A under Alternative 1.

Summary of Operation and Maintenance Impacts

Operation and maintenance impacts for Alternative 3 to public health and safety would be the same as those summarized for Alternative 1.

Decommissioning

Solar Farm Layout C

The impacts resulting from decommissioning SF-C would be the same as those discussed for SF-B under Alternative 1. While less equipment would be removed from the site, the same plans for protecting worker safety and the environment would be required. Mitigation requirements would be the same as those summarized for SF-B.

Gen-Tie Line A-2

The impacts resulting from decommissioning GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those discussed for Red Bluff Substation B under Alternative 1.

Summary of Decommissioning Impacts

Decommissioning impacts for Alternative 3 to public health and safety would be the same as those summarized for Alternative 1.

Summary of Combined Impacts for Alternative 3

The summary of combined impacts for construction, operation and maintenance, and decommissioning Alternative 3 would be the same as described for Alternative 1. With mitigations detailed for Alternative 1, impacts would be reduced.

Applicant Measures and Mitigation Measures

Mitigations for Alternative 3 components (SF-C, GT-A-2 and Red Bluff Substation A) are the same as detailed for Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-C would be the same as those discussed for SF-B under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determination for GT-A-2 would be the same as those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The CEQA significance determination for Red Bluff Substation A would be the same as those discussed for Red Bluff Substation B under Alternative 1.

Unavoidable Adverse Effects

Implementation of Alternative 3 would not result in unavoidable adverse impacts. Hazards to public health and safety would be mitigated as specified earlier in this section to prevent unavoidable impacts.

4.11.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action

Under this alternative, the proposed Desert Sunlight Solar Farm Project (including the Solar Farm, Gen-Tie Line, and Red Bluff Substation) would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts caused by the potential effects of hazardous and hazardous materials to public health and safety and the environment would not occur. The potential target presented by a solar project for Intentionally Destructive Acts would not exist. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.11.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar energy projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. Therefore, this No Action Alternative would not increase potential exposure to the public health and safety and the environment from hazards and hazardous materials from the construction, operation, and closure of the proposed Project. However, in the absence of this Project, other solar energy projects may be constructed to meet state and federal mandates in other locations, and those projects would have similar impacts in other locations.

4.11.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Construction and operation requirements for solar technologies vary; however, it is expected that all solar technologies require some grading and some infrastructure. The effects of the exposure of the public and environment to hazards and hazardous materials would need to be mitigated, to the extent practical, through mitigations proposed to reduce effects associated with hazards and hazardous materials as with the proposed Project. Because it is expected that all solar technologies would use of hazardous materials and would introduce certain hazards to the public and environment, the impacts to public health and safety from the construction, operation, and closure of the alternative would likely be similar to under the proposed Project.

4.11.9 Cumulative Impacts

Geographic Scope

The geographic area considered for cumulative impacts on Public Health and Safety / Hazardous Materials is within the I-10 corridor from Indio to Blythe, California. A number of alternative energy projects anticipated to be located within the region, primarily east of the Project Study Area, could contribute to a cumulative effect on public health and safety from hazardous materials. A few projects within the region concentrated near Blythe, California, along with the Proposed Action or alternatives, could contribute to cumulative impacts to the region (see Tables 3.18-2 and 3.18-3 in Section 3.18 for complete project list).

Past, Present, and Reasonably Foreseeable Future Projects

Existing projects within the region include an existing combined-cycle natural gas plant in Blythe, California, two prisons, and other facilities whose proximity is far enough (greater than 10 miles) from the Proposed Action and alternatives area that they would not contribute to a cumulative impact in the case of an accidental hazardous materials release.

Cumulative Impact Analysis

For hazardous materials spills *during construction, in particular, but also during operation and maintenance*, worker and public health and safety issues that involve fire and emergency response related to the Proposed Action could result in a cumulative effect when combined with the incremental impacts other projects, including proposed renewable energy projects in the geographic area considered. Work safety, emergency response, and fire protection impact could occur in the event of a simultaneous emergency response to multiple locations such that those resources could be overwhelmed and could not respond effectively. *Although the chances that two or more alternative energy facilities would require emergency response simultaneously may be low, a response to one distant site could impede or preclude a simultaneous response to another facility, residential or commercial location, or other location in demand. With the implementation of Applicant Measures and mitigation measures, the Proposed Action would not be cumulatively considerable and would not result in a cumulative impact.*

The potential for off-site impacts *related* to public health and safety resulting from hazardous materials used *during construction, operation and maintenance, and decommissioning* at the Project site *has been determined to be below thresholds of concern with implementation of the identified mitigation measures above. This determination is* based on the nature of the materials used and the engineering and administrative controls implemented to prevent and control accidental releases of hazardous materials related to the Project. *Other past, present, and reasonably foreseeable renewable energy projects, such as Genesis, Palen, Blythe, and Desert Harvest Solar Projects located in the region, are subject to similar regulatory requirements related to the handling, storage, and disposal of hazardous materials and wastes. As such, the potential for inadvertent releases at any one facility is minimized, and there would otherwise be no substantive releases or emissions that when combined with other projects within the region would represent a cumulative effect.* Implementation of emergency response plans and fire management plans in the event of an emergency would *also be standard protocols for facilities in the region and similarly effective in ensuring no cumulative effects related to emergency response or wildfires. The cumulative impacts would be the same for all three action alternatives. B*ecause there are no *past,* existing, or *reasonably* foreseeable facilities in the immediate proximity of the site that would use large amounts of hazardous chemicals, *the Proposed Action and Alternatives 2 and 3 would not have cumulative impacts related to the potential* accidental release of hazardous materials.

Because construction would not occur under the No Action and No Project Alternatives (Alternatives 4, 5, and 6), these alternatives would not contribute to cumulative impacts.

4.12 RECREATION

4.12.1 Methodology for Analysis

The effects of the proposed Project on the recreation environment were assessed based on the following considerations, including whether its construction, operation or decommissioning would directly or indirectly impact recreational opportunities including hiking, backpacking and long-term camping in established federal, state, or local recreation areas and/or wilderness areas. Off-highway vehicle (OHV) travel is the recreational use most impacted by the proposed Project. Figure 4.12-1 shows the OHV routes and closure in the vicinity of SF-B.

4.12.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on recreation if it would:

- *Increase the use of neighborhood and regional recreation facilities such that the physical deterioration of the facilities would be substantial or accelerated; or*
- *Include recreation facilities or require the construction or expansion of recreation facilities that might have an adverse physical effect on the environment.*

However, these criteria were determined to be inapplicable or to result in no impact under each alternative because there are no neighborhood or regional recreation facilities within the proposed Project area, and because there are no recreation facilities included in the proposed Project, nor does the Project require the construction of recreation facilities that would result in an impact.

4.12.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Construction of SF-B would develop *3,912* acres of undeveloped multiple use BLM land as a Solar Farm. As described in Chapter 3, recreation use in the project area is very low. Most recreation use is related to driving for pleasure, sightseeing, rock hounding, hiking, hunting/target shooting, or photography. Most visitors are local residents of Desert Center or Blythe. *Four BLM-designated open routes for OHV and other vehicular travel are located in the vicinity of the Solar Farm site: Power Line Road (NECO Route #660334), Kaiser Steel Road (660335), an unnamed route that intersects Kaiser Steel Road on the north side of the Solar Farm (660298), and an unnamed route that runs north-south from the intersection of Kaiser Road and Power Line Road (660260). These OHV routes would remain open to the public during construction of the proposed Solar Farm site, except for unnamed route 660260 (see Figure 4.12-1).*

A Solar Energy Visitors Center (Visitors Center) would be constructed just off the road at the main entrance to the Solar Farm. The Visitors Center would consist of an approximately 50-foot-by-50-foot (approximately 0.06-acre) building on a concrete pad that would include items such as a scale model of the Project and exhibits on solar power designed for both students and members of the general public. Given the rare current use of the area for recreation other than OHV use, there could be a gain to recreation *and tourism* within the area with the construction of the Visitors Center. This could result in a benefit to local business that does not now occur.

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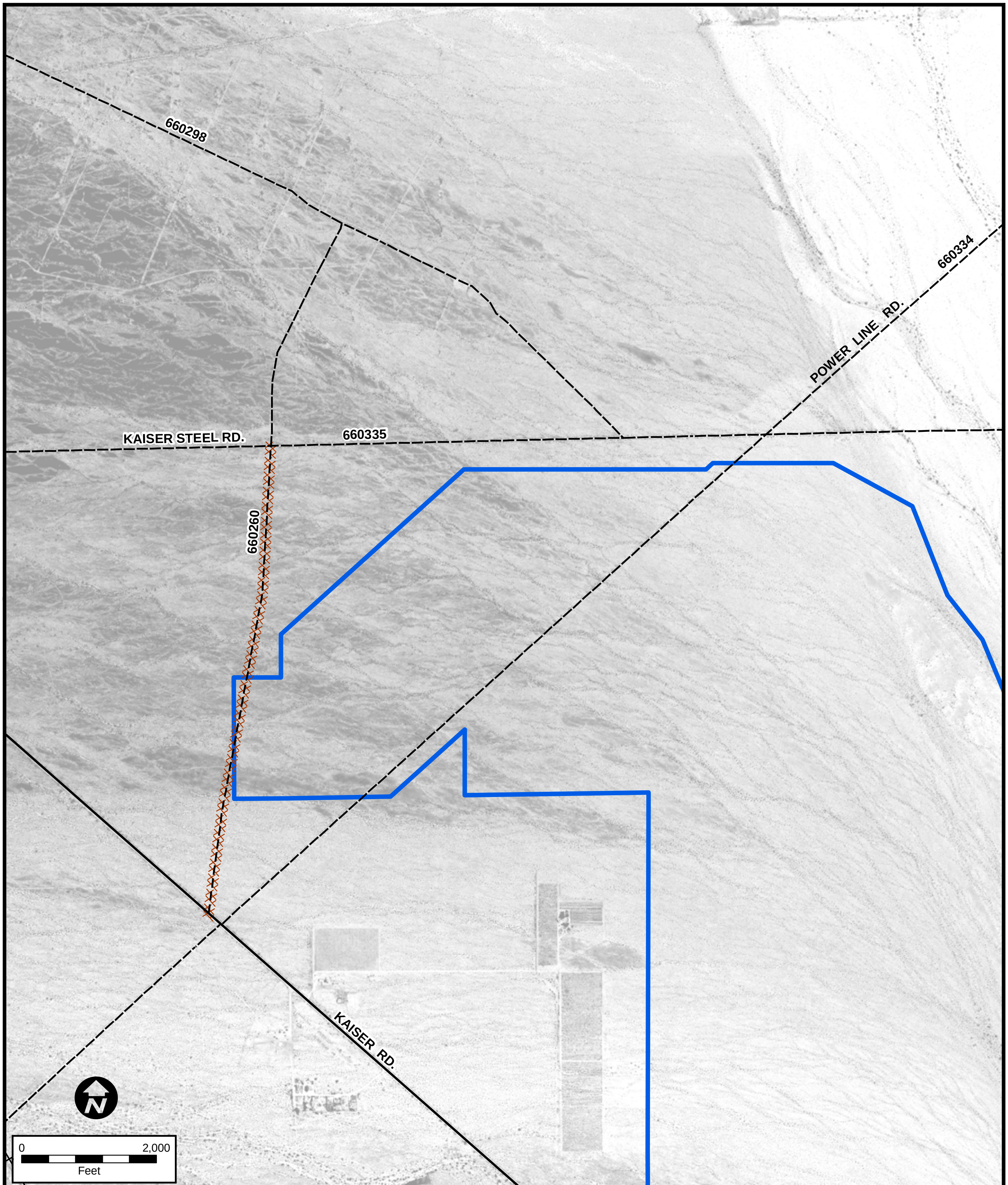

LEGEND

Open OHV Route

Existing OHV Route to be Closed

Local Road (Paved)

660335 NECO Route Number

Solar Farm Boundary (Alternative B)

Adapted from: First Solar, 2011.

DESERT SUNLIGHT SOLAR FARM

Figure 4.12-1

OHV Travel Route Closures

Gen-Tie Line A-1

GT-A-1 would be located in an area that does not contain designated recreational areas or recreational activity. There would be no impact related to the construction of GT-A-1 because no OHV travel routes would be affected.

Red Bluff Substation A

The Red Bluff Substation A is not located within or near an area that is designated for recreational activities. Impacts from construction of Red Bluff Substation A would be the same as those described for GT-A-1 because no OHV travel routes would be affected.

Summary of Construction Impacts

The construction of SF-B under Alternative 1 would close *a portion of one OHV route*; however, other travel options exist in the area. There are no OHV or travel routes within GT-A-1 and Red Bluff Substation A. Construction of the Visitors Center could have beneficial impacts to the area. Construction of Alternative 1 would not have an impact on the lands or recreation opportunities in Joshua Tree National Park.

Operation and Maintenance

Solar Farm Layout B

The proposed operation and maintenance of SF-B would have the same impacts as those under SF-B construction because *a portion of one route (the unnamed route that runs north-south from the intersection of Kaiser Road and Power Line Road, to Kaiser Steel Road) would be closed to vehicular traffic during the operation and maintenance of the Solar Farm.* However, alternative routes would be available to the public, minimizing access disruptions.

Kaiser Steel Road, an unnamed route that intersects Kaiser Steel Road on the north, and Power Line Road, which traverses SF-B, would remain open. There are no future plans to expand OHV travel or play opportunities in the Project area.

Gen-Tie Line A-1

GT-A-1 would be located in an area that does not contain designated recreational areas, OHV, or other recreational vehicle activity. Therefore, operation and maintenance impacts would be the same as those under the construction phase of GT-A-1.

Red Bluff Substation A

Red Bluff Substation A is not located within or near an area that is designated for recreational activities. There would be no impact because no OHV or recreational vehicular travel routes would be affected.

Summary of Operation and Maintenance Impacts

The operation and maintenance phase of Alternative 1 would have impacts similar to those under the construction phase of Alternative 1.

Decommissioning

Solar Farm Layout B

Decommissioning of SF-B would result in the reopening of *the OHV route that was* closed during the construction, maintenance, and operational phases of the proposed Project.

Gen-Tie Line A-1

Decommissioning impacts would be similar to construction impacts described for GT-A-1.

Red Bluff Substation A

Decommissioning impacts would be similar to construction impacts described for Red Bluff Substation A.

Summary of Decommissioning Impacts

Following decommissioning, the OHV route that was closed would be reopened. While this would reduce impacts resulting from construction and operation of SF-B by returning this resource to its original condition, decommissioning would not necessarily improve this resource, resulting in no impact on recreational resources.

Summary of Combined Impacts for Alternative 1

The construction, operation and maintenance of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would convert approximately *4,176* acres of BLM-administered land to use for electric power generation and distribution. The construction of Alternative 1 would require closure of a portion of *an unnamed OHV route. Other roads in the vicinity would provide alternative routes of travel during its closure. This route could be reopened at decommissioning.*

Application Measures and Mitigation Measures

No mitigation measures, project design features, best management practices, or other measures related to recreation would be implemented.

CEQA Significance Determination

Since the CEQA significance criteria for recreation are not applicable to this project, no CEQA significance determination is required.

Unavoidable Adverse Effects

There are no unavoidable significant impacts under Alternative 1. The proposed Project components are not within recreation use areas or, with regard to SF-B, the proposed Project activities would result in less-than-significant impacts to recreational activities.

4.12.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B would be the same as those discussed under construction of SF-B under Alternative 1.

Gen-Tie Line B-2

Although the route for the construction of GT-B-2 is different, impacts resulting from constructing GT-B-2 would be the same as those discussed for construction of GT-A-1 under Alternative 1.

Red Bluff Substation B

Impacts resulting from constructing Red Bluff Substation B under Alternative 2 would be similar to those discussed for constructing Red Bluff Substation A under Alternative 1.

Summary of Construction Impacts

The construction of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would have impacts similar to those described under Alternative 1.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from operating and maintaining GT-B-2 would be similar to those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The impacts resulting from operating and maintaining Red Bluff Substation B would be similar to those under Alternative 1.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would have impacts similar to those described for Alternative 1.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 would be similar to those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation B

The impacts resulting from decommissioning Red Bluff Substation B would be similar to those discussed for Red Bluff Substation A under Alternative 1.

Summary of Decommissioning Impacts

Decommissioning impacts under Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be similar to those described for Alternative 1.

Summary of Combined Impacts for Alternative 2

The combined impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be similar to those described for Alternative 1.

Applicant Measures and Mitigation Measures

No mitigation measures, project design features, best management practices, or other measures related to recreation would be implemented.

CEQA Significance Determination

Since the CEQA significance criteria for recreation are not applicable to this project, no CEQA significance determination is required.

Unavoidable Adverse Effects

No unavoidable significant impacts would result from the implementation of Alternative 2.

4.12.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Impacts from construction of SF-C would be similar to those described for SF-B except that there would be no impact to OHV travel or recreational activities because construction of SF-C would not require that any OHV routes be closed.

Gen-Tie Line A-2

Although construction of GT-A-2 has a different route, impacts resulting from constructing GT-A-2 would be similar to those discussed for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts would not change due to Access Road 2, coming from the east via Chuckwalla Valley Road, Corn Springs Road, and a pipeline access road.

Summary of Construction Impacts

The construction of Alternative 2 with SF-C, GT-A-2 and Red Bluff Substation A would have impacts similar to those described under Alternative 1.

Operation and Maintenance

Solar Farm Layout C

Impacts from operation and maintenance of SF-C would be similar to those described for SF-B with the exception that there would be no impact to OHV travel or recreational activities because *no OHV routes in the vicinity would be closed.*

Gen-Tie Line A-2

Impacts from operation and maintenance of GT-A-2 would be similar to those described for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts would not change due to Access Road 2.

Summary of Operation and Maintenance Impacts

The operation and maintenance impacts of Alternative 3 with SF-C, GT-A-2, and Red Bluff Substation A would be similar to those described for Alternative 1.

Decommissioning

Solar Farm Layout C

Impacts from decommissioning SF-C would be similar to those described for SF-B under Alternative 1, with the exception that there would be no impact to OHV travel or recreational activities because the OHV routes in the area would not be closed.

Gen-Tie Line A-2

Impacts from decommissioning GT-A-2 would be similar to those described for GT-A-1 under Alternative 1.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts would not change due to Access Road 2.

Summary of Decommissioning Impacts

The decommissioning impacts of Alternative 3 with SF-C, GT-A-2, and Red Bluff Substation A would be similar to those described for Alternative 1.

Summary of Combined Impacts for Alternative 3

The combined impacts of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would be similar to those described for Alternative 1, except that there would be no impact to OHV or recreational activities as construction of SF-C would not require that *a portion of an OHV route be closed.*

Applicant Measures and Mitigation Measures

No mitigation measures, project design features, best management practices, or other measures related to recreation would be implemented.

CEQA Significance Determination

Since the CEQA significance criteria for recreation are not applicable to this project, no CEQA significance determination is required.

Unavoidable Adverse Effects

No unavoidable significant impacts would result from the implementation of Alternative 3.

4.12.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM. The BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site, which includes the Gen-Tie Lines and the proposed Red Bluff Substation sites, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, there would be no changes in recreation activities within the proposed Project area. In addition, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.12.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM. The BLM would amend the CDCA Plan to make the proposed site, including the Gen-Tie lines and proposed Red Bluff Substation sites, unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no increase in traffic. As a result, this no action alternative would not result in impacts to recreation, OHV and other recreational vehicle travel under the proposed Project. However, in the absence of this project, other projects (including other non-solar renewable energy projects) may be constructed on this site or others to meet state and federal mandates, and those projects would have similar impacts on recreation on this or other locations.

4.12.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts to recreation from the construction and operation of the solar project would likely be similar to the recreation issues as the proposed Project. As such, this No Action Alternative could result in impacts to recreation activities similar to the impacts under the proposed Project.

4.12.9 Cumulative Impacts

Geographic Extent

The geographic extent for the consideration of cumulative impacts to recreation is the California Desert District, *with emphasis on eastern Riverside County. Even though the recreation impacts resulting from the proposed Project would be limited, the* analysis of cumulative impacts to recreation *needs to* take into account a wide area because the large number of applications for development of renewable energy facilities*, if approved, would preclude the use of those lands for other uses*. Table 3.18-1 lists proposed energy projects in the California Desert District on BLM land.

Existing Cumulative Conditions

Past development near the proposed Project area, which includes the *area for the* Red Bluff Substation and Gen-Tie *Line*, are those projects listed in Table 3.18-2 *as "existing projects".* Many recreational opportunities are on lands in eastern Riverside County, along the I-10 corridor.

These existing projects illustrate the recreational uses of the area which are OHV and passenger vehicle pleasure driving, and Long Term Visitor Areas (LTVA) where recreationists can stay during the winter in RVs for up to seven months. A nearby attraction is the General Patton Museum at Chiraco Summit. The Museum is on BLM land but is operated by a nonprofit group.

Although the proposed Project area is in close proximity to Joshua Tree National Park, *the general lack of facilities serving visitors, developed access, and permanent natural water sources, as well as the steep terrain, limit* the number of visitors to this portion of Joshua Tree Wilderness. *The number of visitors, while unknown, is likely to be low. The Chuckwalla Valley Raceway, a private-use raceway and airstrip, has been developed in the Project area, thereby adding a new recreational opportunity in the area.*

Past, Present, and Reasonably Foreseeable Future Projects

Table 3.18-3 lists foreseeable projects in the proposed Project area, which is the I-10 corridor in eastern Riverside County, *and Table 3.18-1 lists foreseeable renewable energy projects on BLM land in the California Desert District.* As shown in *Table 3.18-3*, over 25 projects are proposed in the project area, nearly half of which have been approved or are under construction and over 20 of which are renewable energy projects.

Several of the future projects are residential in nature and include recreational facilities. The proposed Mojave Trails National Monument, which would protect and provide recreational opportunities on approximately 941,000 acres of federal land, would increase the amount of recreational opportunities in the region. The Paradise Valley new Town Development would provide recreational uses and facilities for those within the self-contained community.

Cumulative Impact Analysis

Impacts to on-site and off-site recreational users resulting from construction and operation of the proposed Project would be minimal. Impacts associated with closure and decommissioning would likely benefit recreational values, since additional acres would be reclaimed and thereby made available for active or passive recreational use. Accordingly, the potential for incremental, project-specific, impacts to result in a cumulative effect on recreation with other past, present, or reasonably foreseeable future actions is low.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition, including related recreational opportunities, and the effects of past actions. Table 3.18-2 identified existing projects in the area. No existing significant adverse cumulative impact on recreation is apparent. Present and reasonably foreseeable future actions, including other renewable energy projects, making up the cumulative scenario are identified in Table 3.18-3 in Section 3.18. This includes the three projects identified in Section 3.18.4 that are proposed in the project vicinity: Palen Solar Power Project, enXco Desert Harvest Solar Project, and Eagle Mountain Pumped Storage Project. Individually and collectively, these projects would add large and small-scale industrial, utility-related and other uses in the region, resulting in direct preclusion of access to recreational lands that would be dedicated to other, non-recreational uses. Within the California Desert District, approximately 567,882 acres potentially available for recreational use could be lost to solar development, and an additional 433,721 acres could be lost to wind development (refer to Table 3.18-1). However, most of the projects in the cumulative scenario are in areas with low recreation use or potential future opportunities. In some cases, the facilities themselves may become local or regional attractions for travelers or sightseers, especially if the projects include interpretive sites or visitor facilities. This would be a change in type of use, but could result in a net gain for recreation opportunities. To the extent that the No Action/No Project Alternatives would not result in development of the site, no cumulative impact on recreation would occur. Although the Proposed Action's effects on recreation individually would be low for the Project area, this impact, in combination with past, present, and proposed and reasonably foreseeable projects in eastern Riverside County, could highly impact recreation opportunities and experiences of users, communities, and regional populations.

4.13 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.13.1 Methodology for Analysis

In Sections 4.13.3 through 4.13.8, the direct and indirect impacts of each alternative are assessed relevant to socioeconomic concerns and the baseline conditions presented in Section 3.13. The analysis provided in Section 4.13.9 describes the potential cumulative socioeconomic effects as a result of the Project alternatives in combination with other plans, policies, and projects that would occur in the area, as described in Section 3.18.

Table 4.13-1
Comparison of Action Alternative Features Relevant to Socioeconomics

Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Employment	Net increase	Net increase	Net increase	No net change	No net change	No net change
Income	Net increase	Net increase	Net increase	No net change	No net change	No net change
Demand for Housing	No net change	No net change	No net change	No net change	No net change	No net change
Government Services	Potential indirect net increase	Potential indirect net increase	Potential indirect net increase	No net change	No net change	No net change
Environmental Justice	No net change	No net change	No net change	No net change	No net change	No net change
Non-Market Values	Potential net decrease	Potential net decrease	Potential net increase	No net change	No net change	No net change

4.13.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on Socioeconomics if it would:

SE-1. Displace substantial numbers of people or existing housing on a permanent basis, necessitating the construction of replacement housing outside the local region;

SE-2. Induce short-term or long-term population growth to an extent that could not be accommodated by local housing, local services, and infrastructure, including:

SE-2a Generating solid waste or wastewater that exceeds the capacity of existing facilities to accommodate;

SE-3b Requiring the construction of new public service facilities or require the expansion of existing facilities to accommodate an increased need for fire protection, police protection, schools, or other public services;

SE-3. Cause a substantial long-term reduction in revenue for local businesses, government agencies, or Indian tribes;

SE-4. Result in a substantial reduction in the employment and incomes of local residents;

SE-5. Substantially alter the lifestyles or quality of life of populations using or residing in proximity to the proposed Project;

SE-6. Result in a barrier between local residents and the local services and facilities used by these residents;

SE-7. Conflict with applicable land use plans and policies associated with socioeconomics, public services, or utilities; or

SE-8. Disrupt existing utility systems.

For the proposed Project, all of the CEQA significance criteria listed above were determined to be inapplicable or to result in no impact.

4.13.3 Alternative 1 – Proposed Action

Construction

<u>Solar Farm Layout B</u>

Impacts associated with construction of SF-B would be temporary and not result in long-term adverse impacts on the region or local communities of Desert Center, Lake Tamarisk Park, and Eagle Mountain Village.

Access would be maintained to community facilities and services during construction of SF-B. The number of vehicles on local roads for construction material deliveries would increase by roughly 46 vehicles per day on average (roughly 45 deliveries per day for the Desert Sunlight Solar Farm (DSSF) on average and a total of 241 truck deliveries for the on-site substation over the construction period). Employee commuter traffic for construction of the proposed Project is expected to increase the number of vehicles on the road during peak morning and evening commuter hours by an additional 154 trips per day. Given the capacity of I-10 along the delivery and commute corridor, the quality of the interchange, and the light traffic along Kaiser Road, it is unlikely that this additional traffic would cause delays or inhibit access during the 26 months of construction, although isolated delays could occur. In addition, no decline in the projected level of service at key intersections surrounding the proposed Project is anticipated (see Table 4.15-4, Project Impact on Delay and Level of Service [LOS] at Intersections). During construction for each component of the Project, anticipated deliveries, the proposed number of vehicles per day, and construction timing and duration would be made available to the public to allow residents and visitors to better plan for such delays. This would be incorporated into the Project implementation/construction requirements.

The majority of the Project construction workforce would be employed by residents of Riverside County to construct the proposed Project. The Project construction workforce is expected to average approximately 350 to 400 craft workers over the 26-month construction period, with a peak on-site craft workforce of approximately 500 craft workers during Months 5 through 16 of the construction period. In addition to craft workers, an average of 40 management and non-craft employees are expected on-site. *<u>Another 10 construction workers on average would be required for the construction of the On-site Substation. The peak construction worker employment for this component of the project would occur in Months 6 to 7 when a peak of 30 employees would be needed for the substation construction.</u>*

This equates to an average of *<u>400 to 450 and a peak of 570</u>* total on-site workers for the construction of the proposed Project (First Solar 2010). The construction workforce would be recruited from within Riverside County and elsewhere in the surrounding region as much as practicable. Employment of construction personnel would be beneficial to local businesses and the local economy through increased expenditure of wages for goods and services. Construction personnel would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy. These expenditures and benefits could accrue to the local economies surrounding the proposed Project or the local economies of workers' places of residence. However, the influx of the construction workforce would alter the isolated, quiet, and sparsely populated character of the communities surrounding the proposed Project site during the construction period, which would be a temporary impact to the quality of life to residents of Desert Center, Lake Tamarisk Park, and Eagle Mountain.

Tax revenues collected from the construction of the proposed Project are expected to result in additional revenue to Riverside County of approximately $15 million over the construction period, including approximately $10 million of sales taxes and $5 million from assessments for transportation projects. New property tax revenues resulting from the proposed Project are expected to total approximately $12 million over the first 25 years of the proposed Project's lifetime (First Solar 2010).

Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (BLM and CEC 2009) and Sunlight has indicated that the labor force for the proposed Project would be derived from Riverside County to the extent possible. Based on Table 3.13-4 in Section 3.13, the peak level of employment for these facilities would represent about 0.78 percent of construction employment in Riverside County. The peak labor force would represent approximately 1.3 percent of the May 2009 Riverside County (Riverside-San Bernardino-Ontario Metropolitan Statistical Area) (BLS 2010b) employment typical to solar projects, assuming the labor force needed for the proposed Project would require the following construction labor categories typical to solar projects: surveyors; operators; construction laborers; carpenters; plumbers, pipefitters, and steamfitters; paving crew; electricians; cement finishers; ironworkers; millwrights; construction managers; supervisors/managers of construction trades and extraction workers; helpers - construction trades; and engineers. Because this is such a small portion of the regional available labor force, it is assumed that minimal population in-migration would occur as a result of construction at SF-B. Therefore, notable impacts would not occur to existing population levels or employment distribution within the study area from the proposed SF-B.

Impacts from construction on public services and facilities are usually associated with population in-migration and growth in an area, which increase the demand for a particular service and lead to the need for expanded or new facilities. An increase in population in any given area may result in the need to develop new or alter existing public services and associated facilities to accommodate increased demand. Since most of the workforce would be derived from Riverside County, which as of 2008 had over 864,000 workers in its total workforce, no permanent in-migration is anticipated, and the proposed Project would not result in population growth that could generate a need for expanded school facilities in the county. Similarly, it also is unlikely that the construction workforce for SF-B would require housing in excess of the existing supply. Based on the data provided in Section 3.13, in-migration of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe and Indio, which have approximately 35 lodging facilities, offering an average of 55 rooms per facility.

Project construction has the potential for resulting in positive and negative social impacts to local and regional residents' "quality of life." Non-social components of area residents' "quality of life" such as traffic effects or changes to the *landscape's character are identified and discussed separately in Sections 4.15 (Traffic) and 4.16 (Visual). Social components of area's residents "quality of life" generally will consist of the residents' attitudes and values to community conditions, social interactions and economic well-being.*

The additional new income for the local economy from the proposed Project would have a positive, but short-term, contribution towards supporting local business and maintaining the local communities' economic vitality. The positive effect for the local area's economy would be increased given the local area's recent and on-going economic weaknesses as a result of both longer term changes and the more recent economic downturn. The continued viability of Desert Center and Blythe's local business community is essential for their long term well-being. Increased local employment opportunities would improve local residents' standard of living and will help retain younger residents who otherwise would be more likely to leave the community if there are insufficient local employment opportunities. Consequently, local communities' social attitudes to the proposed action may generally be expected to increase based on the extent that local residents are employed (either directly or indirectly) or otherwise benefit from the Project.

Project-related in-migration of new residents could also affect the social character of the local study area. An influx of new individuals with different values, lifestyles, and/or socio-demographic backgrounds could have a positive or negative influence on the quality life and/or community values. The existing community members' attitudes and opinions to any such changes may vary greatly among individuals. However, in general, the magnitude of the in-migration would need to be relatively substantial for the social environment to be noticeably altered. Furthermore, social changes typically require, or are most commonly associated with, permanent changes to the community's composition and/or attitudes rather than as the result of short-term influences or changes.

As discussed above, the majority of construction workers for the Project would be expected to commute daily to the site. Given that most workers would travel by the shuttle bus to the site from their homes located east or west of Desert Center, local residents may have little daily interaction with most workers. It is possible that some construction workers could chose to commute weekly from their homes and stay within the local area at local hotels/motels, rent homes, or look for other types of accommodations. In this case, after the workday is over, these individuals would be more likely to interact with existing residents at local businesses or community facilities. However, given the limited number of construction workers expected to stay in the local area during the work week, the presence of these individuals would not be expected to result in substantial or long-term adverse effects to the local area's social composition and character.

The fire prevention plan that would be in place during construction would ensure adequate access in case of emergencies and would protect against the possibility of fires generated by construction of the Project and operation of the proposed Project, which would minimize the need for additional fire protection to the site. In addition, on-site security, including fencing, lighting, and a security booth that would be manned 24 hours per day during both construction and operation of the SF-B, would minimize increased demand on law enforcement. Sunlight would also require all new employees to complete health and safety training and follow standard construction safety measures during construction of SF-B, which would minimize the incidence of increased demand for hospital or emergency services. Given that the construction workforce for SF-B would most likely already be employed in the regional construction industry in Riverside County and would be subject to similar safety risks and protection measures as a function of this employment, no increase in the demand on hospital or emergency services within the county are anticipated.

During the approximately 26-month construction period, an estimated 1,300 to 1,400 acre-feet of water would be needed for soil compaction, dust control, and sanitary needs for construction of SF-B. Most of the construction water would be used during site grading, and the peak daily water demand during construction of the Project is estimated at approximately 1.3 million gallons per day (First Solar 2010). Sunlight anticipates using the nearby wells, which historically had been used by the Eagle Mountain Mine during the years that it produced iron ore, or installing a well on-site. Sampling and analysis to assess water sufficiency and quality at each active well would be conducted to ensure that wells would be operated at the appropriate capacity. If a new well were installed on-site, it would be operated such that water consumption would be consistent with water availability in the Chuckwalla Groundwater Basin. Therefore, construction of the SF-B would not change the ability of the water suppliers identified in Section 3.13 to serve the demands of the region.

The only anticipated construction wastes would be broken PV modules, wood, concrete, and miscellaneous packaging materials. Damaged PV modules would be returned to Sunlight's manufacturing facility in Ohio and recycled, so they would not become part of the waste stream in Riverside County. Construction wastes would be disposed of in accordance with local, state, and federal regulations, while portable toilets used during construction would be regularly pumped out and the waste would be hauled away and disposed of by appropriately licensed organizations. All construction wastes produced at the Project locations would be properly collected, recycled (if possible), treated (if necessary), and disposed of in an appropriate manner and in full compliance with all regulatory requirements, such as the Integrated Waste Management Act of 1989. The nearest landfill is in Desert Center (60 tons per day maximum capacity, 19.9 percent remaining) and Blythe (400 tons per day maximum capacity, 49.4 percent remaining) (California Department of Resources Recycling and Recovery 2010). The waste generated by the SF-B would occur over a 26-month period and would be dispersed among the available appropriate landfills, such that the daily waste exported off-site would be a fraction of the maximum daily throughput for any of the landfills administered by the Riverside County Waste Management Department.

Gen-Tie Line A-1

Construction of GT-A-1 would employ fewer workers from the regional economy, would generate less construction traffic to hinder access to public facilities and services, would generate less construction waste, and would require less water than SF-B. The employment of fewer construction workers would provide less of a benefit to the regional economy. The workforce for GT-A-1 is expected to average 25 employees over the 20-month Gen-Tie Line construction period, with a peak of approximately 60 employees *during Months 6 to 8.* Employment of construction personnel would be beneficial to local businesses in adjacent communities through increased expenditure of wages for goods and services. These expenditures and benefits could accrue to the local economies surrounding the proposed Project or the local economies of workers' places of residence. However, the influx of the construction workforce would alter the isolated, quiet, and sparsely populated character of the communities surrounding the proposed Project site during the construction period, which would be a temporary impact to the quality of life to residents of Desert Center, Lake Tamarisk Park, and Eagle Mountain. Employment of construction personnel would also be beneficial to the regional economy through additional employment of residents within Riverside County. Construction personnel would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy.

Because the number of construction workers required would represent a small portion of the regional available labor force (0.06 percent at peak), it is assumed that minimal population in-migration would be unlikely. Therefore, no noticeable adverse impacts would occur to existing population levels, employment distribution, or public facilities and services in Riverside County from the construction of GT-A-1.

The GT-A-1 would not present a barrier to local facilities and services. Given the capacity of I-10 along the delivery and commute corridor, the quality of the interchange, and the light traffic along Kaiser Road, it is unlikely that additional traffic during the construction of GT-A-1 would cause delays or inhibit access during the 20 months of construction, although isolated delays could occur. At the peak of GT-A-1 construction, 40 workers would continue to take personal vehicles, and one shuttle bus with a capacity of 20 people would be used, for a total of 41 commute vehicles that would travel to the GT-A-1 construction area each day. In addition, a total of 240 material deliveries would generate truck traffic over the 20-month construction period. Information concerning construction timing and duration would be made available to the public to allow residents and visitors to better plan for any delays.

The fire prevention plan that would be in place during construction of SF-B would also apply to construction of GT-A-1, and would minimize the demand that this construction would place on the California Department of Forestry and Fire Protection.

Construction of GT-A-1 is expected to require approximately 2,035,000 gallons (approximately 6.25 acre-feet) of water over the 20-month construction period, with a peak use of 40,000 gallons per day during the foundation installation. This water would be transported from SF-B, so it would be derived from the same source, adding to the water demand from either the existing nearby wells that had been used by the Eagle Mountain Mine or an on-site well at the Project site. Sampling and analysis to assess water sufficiency and quality at each active well would be conducted to ensure that wells would be operated at the appropriate capacity.

Construction wastes would be similar to those described for SF-B, excluding broken PV modules. These wastes would be disposed of in accordance with local, state, and federal regulations and would occur over a 20-month period and be dispersed among the available appropriate landfills, such that the daily waste exported off-site would be a fraction of the maximum daily throughput for any of the landfills administered by the Riverside County Waste Management Department.

Red Bluff Substation A

Although access would be maintained to community facilities and services during construction of Red Bluff Substation A, the increase in the number of vehicles on local roads for construction material deliveries could delay or inhibit access during construction. Anticipated construction timing and duration would be made available to the public to allow residents and visitors to better plan for such delays.

An average of 25 construction personnel on-site each day would be used for construction of the Red Bluff Substation A components. The construction personnel would be contracted or derived from SCE construction crews. This would generate minimal additional construction employment when compared to the income and employment ROI. Employment of construction personnel would be beneficial to local businesses through increased expenditure of wages for goods and services and the regional economy through increased employment and tax revenues. Construction personnel would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy. These expenditures and benefits could accrue to the local economies surrounding the proposed

Project or the local economies of workers' places of residence. However, the influx of the construction workforce would alter the isolated, quiet, and sparsely populated character of the communities surrounding the proposed Project site during the construction period, which would be a temporary impact to the quality of life to residents of Desert Center, Lake Tamarisk Park, and Eagle Mountain.

Because the number of construction workers required represents such a small portion of the regional available labor force, population in-migration would not be expected as a result of construction activities at Red Bluff Substation A, including the proposed telecom system that would provide monitoring and remote operations capabilities of the electrical equipment at Red Bluff Substation A and transmission line. Therefore, no notable adverse impacts would occur to existing population levels or employment distribution within the Project area from Red Bluff Substation A or the telecom system. In addition, since impacts on public services and facilities are usually associated with population in-migration and growth in an area, and no such growth would occur as a result of construction of either of these facilities, a notable increase in the demand for local public facilities and services, such as schools, churches, libraries, hospitals, fire and emergency response, and law enforcement, are not anticipated. Access for emergency services would continue to be maintained throughout the construction period.

Water would be required for dust suppression and potentially for mixing concrete if local suppliers were not available. An estimate of the water requirements would be developed during detailed engineering design and would not exceed the capacity of existing water supply utilities or wells. All waste materials not recycled would be categorized by SCE in order to assure appropriate final disposal. Nonhazardous waste would be transported to local authorized waste management facilities, such that the daily waste exported off-site would be a fraction of the maximum daily throughput for any of the landfills administered by the Riverside County Waste Management Department.

Summary of Construction Impacts

Any impacts on socioeconomics associated with construction of the SF-B, GT-A-1, and Red Bluff Substation A would be temporary, and no impacts that could occur to environmental justice populations would be disproportionate to these populations.

The total project construction workforce is expected to average approximately 450 to 500 workers over the 26-month construction period. This includes both the craft and management employment for all three components of the project: Solar Farm Layout B (including the onsite substation); Gen-Tie Line A-1 and the Red Bluff Substation A. The peak on-site workforce would be up to 655 construction workers during Months 6 through 7 of the construction period at the three construction sites (First Solar 2010).

SF-B and the Red Bluff Substation A would be situated entirely on BLM land and, as such, the construction of these facilities would not displace either local or regional businesses or residents, nor would it result in a substantial reduction in the employment or income in the regional and local economy. They would, however, result in short-term increases in regional employment and income if the construction crew hired to work on the Project were not previously employed. It could indirectly generate increased expenditures, income, and employment in the local economies in which the construction workforce spends its earnings and would generate direct expenditures in the regional economy for equipment, supplies (such as ready-mix concrete), and services, which are estimated to generate approximately $15 million over the construction period, including approximately $10 million of sales taxes (which would mainly benefit the state and provide a smaller benefit to the region) and $5 million from assessments for transportation projects. The addition of improvements on this property would increase its value and the associated Riverside County property tax revenue, which are expected to total approximately $12 million over the first 25 years of the proposed Project's lifetime (First Solar 2010).

The Project's expected new local employment opportunities and economic benefits to local business may be expected to improve the economic well being for many area residents. Furthermore, given the limited number of construction workers expected to stay in the local area during the work week, the presence of these individuals would not be expected to result in substantial or long-term adverse effects to the local area's social composition and character for the duration of facility construction.

Although the residential population of Census Tract 458 is identified both in terms of race/ethnicity and income as environmental justice community of concern, it is unlikely that the proposed Project would disproportionately adversely affect these residents. The health and safety of all residents and visitors, including children, would be protected by fencing and security cameras and a security booth that would be manned 24 hours per day during both construction and operation. A minimal amount of night lighting would also be provided for security. A fire prevention and protection plan would be in place in accordance with Riverside County regulations, and hazardous materials use and storage on-site would be limited. Appropriate material safety data sheets would be available to the public, and spill containment and cleanup kits would be kept on-site during construction and maintained during the operation of the Project. Construction of the Project components would not displace low-income or minority populations, and access to public facilities would be maintained throughout the construction phase.

The proposed Project components would be constructed in accordance with the federal, state, and local plans and policies associated with socioeconomics, public services, and utilities identified in Section 3.13, Socioeconomics and Environmental Justice.

Operation and Maintenance

Solar Farm Layout B

Operation and maintenance of the proposed SF-B would employ between 10 and 15 full-time employees in shifts. *A work week may be compromise of 7 or 8 employees working 10 hours per day. If night time work is required, the shifts would be adjusted to assign the required number of personnel to 10 hour evening shifts. Security staff for the project would consist of two day shift employees and two night shift employees working 12 hour shifts. The project employment* would be a socioeconomic benefit that would not generate population growth in Riverside County beyond the capacity of available housing or public services and facilities. *The Project's small operating staff would not be expected to result in any social impacts to the local communities.*

Operation and maintenance of the proposed SF-B would require a potable water supply. However, the site's small operating workforce would require only a few hundred gallons per day (approximately 0.2 acre-feet per year). This would not create a substantial demand on the public water supply beyond capacity and would not represent a noticeable impact.

Because the small amounts of sanitary wastewater that would be generated by the operations and maintenance workforce would be handled by an on-site septic system and leach field and since the water for this purpose would be drawn from an on-site well, it would not increase the demand on an existing local sanitary waste facility or require additional local government funding for new facilities.

Gen-Tie Line A-1

There would be no new operations workforce associated with GT-A-1 beyond those associated with the SF-B and Red Bluff Substation A, and there would be no effects on population, housing, employment, income, or environmental justice populations associated with the operation of the GT-A-1 line. Removal of larger vegetation that could inhibit access to GT-A-1 would also reduce the likelihood of fire, which would minimize the demand potentially placed on the California Department of Forestry and Fire Protection.

Red Bluff Substation A

No additional employment would occur for the operation and maintenance of the Red Bluff Substation A and its associated components, including the telecom site, and there would be no further demand for water, waste, or other utilities and services. Therefore, there would be no further socioeconomic or environmental justice impacts from operation and maintenance of this facility.

Summary of Operation and Maintenance Impacts

Operation and maintenance of the SF-B, GT-A-1, and Red Bluff Substation A would not result in measurable impacts on the socioeconomics of the region or local communities, and most impacts would occur during the construction phase. Likewise, no impacts that could result from operation and maintenance on environmental justice populations would be disproportionate to these populations. Operations would not displace either businesses or residents, nor would it substantially reduce the employment or income in the regional economy.

None of the Project components would result in a barrier between local residents in Desert Center, Eagle Mountain Village, or Lake Tamarisk Park and the local facilities and services used by these residents. Access to Eagle Mountain School would continue to be provided via Eagle Mountain Road and Kaiser Road. Access to Eagle Mountain Baptist Church, Eagle Mountain Church of the Nazarene Parsonage, and the Riverside County Fire Department in the Lake Tamarisk area would continue to be provided via Kaiser Road. Gas stations, food, and lodging in Desert Center and along Desert Center Rice Road would continue to be accessible to residents in Eagle Mountain Village, the Lake Tamarisk area, Desert Center, and other surrounding communities. These communities would be gaining an additional facility once the visitor center is completed.

SF-B and GT-A-1 would be visible to residents and travelers along Kaiser Road, including at Lake Tamarisk Park and Eagle Mountain Village, from cultivated land to the north of Desert Center Rice Road and to drivers along Kaiser Road, Desert Center Rice Road and I-10. For most of its length, the GT-A-1 line would follow existing roads, which would minimize its impact on these views. Any potential alteration of views could affect the level of visual satisfaction that these residents and visitors experience in this area, but it would be unlikely to result in lifestyle changes unless reactions were to cause residents and visitors to leave the area. In addition, other development at this site consistent with BLM management of the area could have a similar effect.

Decommissioning

Solar Farm Layout B

Socioeconomic impacts that would result from decommissioning SF-B are similar to those described for construction. Decommissioning SF-B would likely require a similar number of workers during a similar timeframe to properly shut down and dismantle the SF-B. However, decommissioning and reclamation would be subject to a site-specific review when the facility reaches the end of its useful life.

Gen-Tie Line A-1

Impacts resulting from decommissioning GT-A-1 are similar to those described under the Alternative 1 construction phase.

Red Bluff Substation A

Impacts resulting from decommissioning Red Bluff Substation A are similar to those described under the Alternative 1 construction phase.

Summary of Decommissioning Impacts

The decommissioning of the Project components contained in Alternative 1 would result in short-term impacts on the regional economy in Riverside County through an increase in employment required to decommission the DSSF once the facility reaches the end of its useful life. After closure, measures would be taken to stabilize disturbed areas once equipment and structures were decommissioned and removed from the Project locations. These measures would be outlined fully in the Decommissioning Plan, which would be created to ensure that decommissioning was conducted in accordance with then-current land use plans, policies, or regulations.

Summary of Combined Impacts for Alternative 1

Impacts on socioeconomics would result from the effects of workers within the greater Riverside County region and construction dollars spent in the adjacent communities. Short-term impacts would primarily occur during the construction phase of the proposed Project and would therefore be temporary, ceasing once Project operations commence. Employment of construction personnel would be beneficial to local businesses in adjacent communities, such as Desert Center, including the local grocery store, gas station, and local eateries, through increased expenditure of wages for goods and services. However, due to the limited number and location of these businesses, the communities of Desert Center, Lake Tamarisk Park, and Eagle Mountain could experience potential quality of life or social impacts due to the increased presence of Project construction workers and traffic without gaining much benefit to their local economy. Employment of construction personnel would also be beneficial to the regional economy through additional employment of residents within Riverside County.

The proposed Project under Alternative 1 would not cause existing housing or persons to be displaced, necessitating the construction of replacement housing elsewhere. In addition, there would be no impact from construction workers requiring housing that exceeds the supply of local housing or temporary housing facilities and minimal potential changes in the demand for labor or in local employment. The existing infrastructure in Riverside County and the local communities, such as

Blythe and Indio, would be able to absorb any additional employees that choose to stay closer to the Project area rather than commute from other areas within Riverside County.

This alternative would not disproportionately affect minority or low-income populations and would not result in adverse health or safety impacts that would disproportionately affect children.

Applicant Measures and Mitigation Measures

The following applicant measures would be implemented to ameliorate the potential effects on residents and businesses of increased traffic during construction.

AM-SOCIO-1: The public shall be notified of Project activities and scheduling to inform the public of projected impacts on the surrounding area. This notification shall provide the public with the opportunity to plan their personal and business activities appropriately.

AM-SOCIO-2: Sunlight shall align Gen-Tie lines along existing linear features (such as Kaiser Road) to minimize the social effects of potential visual impacts.

CEQA Significance Determination

Solar Farm Layout B

SE-1—The SF-B would not displace substantial numbers of people or existing housing on a permanent basis, necessitating the construction of replacement housing outside the local region because no residences would be located within the area of disturbance for the Project. The Project would have no impact under this criterion.

SE-2—The SF-B would not induce short-term or long-term population growth to an extent that could not be accommodated by local housing, local services, and infrastructure, because at its peak, the proposed Project would employ 630 workers, all of whom would already reside in Riverside County. Additionally, the abundance of lodging in Riverside County, including the cities of Blythe and Indio, would be adequate for workers that choose to stay closer to the proposed Project area. For the same reason, the SF-B would not generate solid waste or wastewater that exceeds the capacity of existing facilities, nor would it require the construction of public service facilities or the expansion of facilities to accommodate an increased need for fire protection, police protection, schools, or other public services. The Project would have no impact under this criterion.

SE-3—The SF-B would not cause a substantial long-term reduction in revenue for local businesses, government agencies, or Indian tribes because the SF-B is entirely on BLM land and would not be competing with any of these entities for business. However, it could generate additional tax revenue by improving the property. The Project would have no impact under this criterion.

SE-4—The SF-B would not result in a substantial reduction in the employment and incomes of local residents because all workers required for the Project, including construction, maintenance, and operations personnel, would be hired from within Riverside County, thereby adding to the employment and income of regional and local residents. The Project would have no impact under this criterion.

SE-5—The SF-B could potentially impact lifestyles of people using or residing near the proposed Project from visual disturbance, increased traffic volumes, and the presence of construction crews and equipment. These impacts would be minimized by the implementation of the applicant measures AM-SOCIO-1 and AM-SOCIO-2. The Project would have no impact under this criterion after the applicant measures are implemented.

SE-6—The SF-B would not result in a barrier between local residents and the local services and facilities used by these residents because the Project area is entirely on BLM lands and away from residences and services used by Riverside County and adjacent communities. The Project would have no impact under this criterion.

SE-7—The SF-B would be consistent with anticipated levels of growth and demand for public infrastructure, the development constraints identified in the Desert Center Area Plan, and California goals for increasing renewable energy as a percentage of the energy supply. It also would not result in a permanent increase in population that would require increases in public infrastructure. Therefore, the SF-B would not conflict with applicable land use plans and policies associated with socioeconomics, public services, or utilities. As identified in the Plan of Development (First Solar 2010), recyclable materials would be collected separately and recycled, consistent with the Integrated Waste Management Act of 1989. The Project would have no impact under this criterion.

SE-8—The SF-B would not disrupt utility systems in the towns of Desert Center, Lake Tamarisk Park, and Eagle Mountain Village because utility service would continue uninterrupted throughout construction and operation of SF-B. The Project would have no impact under this criterion.

Gen-Tie Line A-1

Impacts on the thresholds of significance from construction and operation of the GT-A-1 are the same as those described above for the SF-B. Therefore, no mitigation measures are identified to reduce the impacts below the level of significance.

Red Bluff Substation A

Impacts on the thresholds of significance from construction and operation of the Red Bluff Substation A are the same as those described above for the SF-B. Therefore, no mitigation measures are identified to reduce the impacts below the level of significance.

Unavoidable Adverse Effects

There are no unavoidable or significant impacts under Alternative 1 because any impacts that would occur during the construction phase would be temporary. It is expected that although construction would require additional human activity in the Project area, all hired workers would originate from within Riverside County and would therefore not place any undue strain on pubic infrastructure and services offered by adjacent communities beyond *their* current capacity. It would also not require the construction of additional housing because most workers would either commute to the Project or would stay in lodging facilities near the Project area, such as in the towns of Blythe and Indio. *As discussed in Section 3.14 (Social and Economic Setting) the local population represents an environmental justice community of concern.*[1] *However, the project would not be expected to* result in *any* disproportionately high and

[1] *It is worth noting that the residential population of the community of Desert Center and other nearby residents is only a very small proportion (less than 5 percent) of the population represented by the three census tracts. Desert Center's population is estimated to be a few hundred residents and the actually minority composition of the local communities near the Project is unknown. In any case, the actual number of minority and non-minority individuals actually living near the Project that would potentially be impacted by the Project will be very limited.*

adverse environmental or human health impacts *to the minority community given the potential for positive economic impacts to local and residents and at most minor and temporary Project-related adverse social impacts.*

4.13.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The socioeconomic and environmental justice impacts of GT-B-2 are similar to those described under GT-A-1 since the same workforce and construction and operation activities would occur at this site as would occur at GT-A-1. The exceptions to this are that less water would be required during construction and that the views of this line and access delays would be unlikely to affect travelers along Desert Center Rice Road and more likely to affect those on the southern portion of Eagle Mountain Road. The lower water requirement would not affect locally provided water utilities since it would be derived from wells used by the Project site. Quality of life effects associated with views of the power line and concerns about its location near population centers would be minimized by its location along existing linear features (roads).

During construction, public facilities and services access delays could still occur along Kaiser Road for residents of Lake Tamarisk Park and to those traveling along Eagle Mountain Road to I-10; however, such delays would not occur in the area along Desert Center Rice Road. The same number of vehicles would be expected for GT-B-2 as for GT-A-1. Information concerning construction timing and duration would be made available to the public to allow residents and visitors to better plan for such delays.

Red Bluff Substation B

The socioeconomic and environmental justice impacts of Red Bluff Substation B are the same as those described under Alternative 1. The same number of workers and the same construction activities would occur at the proposed site for Substation B as would occur at the proposed site for Substation A.

Red Bluff Substation B would be situated on a parcel of private land that SCE would acquire and would not displace either businesses or residents, nor would it result in a substantial reduction in the employment or income in the local economy. The addition of improvements on this property would increase its value and the associated regional property tax revenue.

The proposed Red Bluff Substation B would be constructed in accordance with the federal, state, and local plans and policies associated with socioeconomics, public services, and utilities identified in Section 3.13, Socioeconomics and Environmental Justice. Use of this site would be consistent with the current General Plan designation of Open Space – Rural. This is because educational, religious, and utility uses that would be established to serve the surrounding community are directed by General Plan land use compatibility policies to areas with Community Development, Rural Community, or Rural foundation designations. These include the Rural Village Overlay, as well as the Open Space – Rural and Agriculture designations, as long as the facility would be compatible in scale and design with surrounding land uses, would not generate excessive noise, traffic, light, fumes, or odors that might have a negative impact on adjacent neighborhoods, and would not jeopardize public health and safety (Riverside County 2003).

Summary of Construction Impacts

Construction impacts under Alternative 2 are the same as those described under Alternative 1, except that less water would be used during the construction phase.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from operating and maintaining the GT-B-2 are similar to those discussed under Alternative 1.

Red Bluff Substation B

The impacts resulting from operating and maintaining the Red Bluff Substation B are similar to those discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

Operation and maintenance impacts under Alternative 2 are similar to those described under Alternative 1.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 are similar to those discussed under Alternative 1.

Red Bluff Substation B

The impacts resulting from decommissioning the Red Bluff Substation B are similar to those discussed under Alternative 1.

Summary of Decommissioning Impacts

The impacts resulting from decommissioning all the Project components of the proposed Project are similar to those discussed under Alternative 1.

Summary of Combined Impacts for Alternative 2

The overall socioeconomic impacts of Alternative 2 are essentially the same as those described under Alternative 1. Although the physical effects of Alternative 2 would occur at slightly different locations, they would not have any notably different socioeconomic impacts.

Applicant Measures and Mitigation Measures

The applicant measures that would be implemented under Alternative 2 are the same as those discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B is the same as that discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determination for the GT-B-2 is the same as that discussed under Alternative 1.

Red Bluff Substation B

The CEQA significance determination for the Red Bluff Substation B is the same as that discussed under Alternative 1.

Unavoidable Adverse Effects

Unavoidable adverse effects are the same as those described under Alternative 1.

4.13.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

The impacts resulting from constructing SF-C are similar to those discussed under Alternative 1, except that the SF-C would be smaller and would generate slightly less power at 413 megawatts. As such, impacts would be reduced proportionally due to the reduced Project size, requiring a smaller workforce to construct SF-C and reduced economic revenue for the region and adjacent communities.

Gen-Tie Line A-2

The socioeconomic and environmental justice impacts of GT-A-2 are similar to those described for GT-A-1 since the same workforce and construction activities would occur at this site as would occur at GT-A-1. The exceptions to this are that more water would be required during construction and that this line would cross cultivated land and other property. However, it would follow the existing SCE 161 kV transmission line ROW across these areas, which would minimize quality of life effects associated with views of the power line and concerns about its location near population centers. Construction on or near these cultivated areas could temporarily disrupt these activities in portions of these areas, which could result in a temporary reduction in economic activity that would be derived from these cultivated areas. The area within GT-A-2 would be permanently excluded from cultivation, thus permanently disrupting the economic activity in those areas of GT-A-2 that are currently under cultivation. Preventive measures would be undertaken to protect these properties from wind and water transport of soil through appropriate erosion control. The greater water requirement would not affect locally provided water utilities since it would be derived from wells used by the SF-C.

Public facilities and services access delays could still occur along Desert Center Rice Road in the vicinity of the Desert Flatts gas station, McGoo's Mini Mart, and Farming Biodiesel. The same number and type of vehicles and equipment are expected for GT-A-2 as for GT-A-1. Information concerning construction timing and duration would be made available to the public to allow residents and visitors to better plan for access delays.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A are the same as those discussed under Alternative 1, with the following exception: Construction of Access Road 2 would employ crews from the region, which could benefit the regional economy if it would reduce construction unemployment in Riverside County. Employment of construction personnel would be beneficial to local businesses adjacent to the Project Area, such as Desert Center, Lake Tamarisk Park, and Eagle Mountain Village and the regional Riverside County economy through increased expenditure of wages for goods and services.

Because the number of construction workers required is expected to be a small portion of the regional available labor force, minimal population in-migration would likely occur as a result of construction for Access Road 2. Therefore, any impacts on existing population levels, employment distribution, or the demand for public facilities and services in Riverside County from the construction of Access Road 2 would be minimal.

Although Access Road 2 would not present a barrier to local facilities and services, the increase in the number of vehicles on local roads for construction material deliveries could delay or inhibit access. Information concerning construction timing and duration would be made available to the public to allow residents and visitors to better plan for such delays.

Water and waste disposal would be required for construction of Access Road 2; however, as described above and in Section 3.13, Socioeconomics and Environmental Justice, the surrounding area has adequate water supply and waste disposal facilities to accommodate these requirements.

Summary of Construction Impacts

The socioeconomic impacts of construction under Alternative 3 are similar to those described under Alternative 1, except it would result in slightly less employment impacts and tax revenue due to the reduced footprint and smaller workforce required for construction.

No socioeconomic impacts associated with Access Road 2 would occur, and no impacts that could occur to environmental justice populations would be disproportionate to these populations because Access Road 2 would upgrade an existing road extending from Chuckwalla interchange with I-10 at Corn Springs Road, would extend eastward to Red Bluff Substation A, and would follow along the Devers Palo Verde Transmission Line. Additionally, the Access Road 2 would also not displace either businesses or residents, nor would it result in a substantial reduction in the employment or income in the regional economy. It could result in short-term increases in regional employment and income if the construction crew hired within Riverside County were not currently employed. It could indirectly generate increased expenditures, income, and employment in the local economy through local expenditures on equipment, supplies, and services.

Because it would occupy an existing roadway and follow an existing transmission line, Access Road 2 would not create a barrier between local residents and local facilities and services or generate views that could reduce the value of the area to local residents and visitors.

Construction of the proposed Access Road 2 would be conducted in accordance with the federal, state, and local plans and policies associated with socioeconomics, public services, and utilities identified in Section 3.13, Socioeconomics and Environmental Justice.

Operation and Maintenance

Solar Farm Layout C

The impacts resulting from operating and maintaining SB-C are similar to those discussed under Alternative 1.

Gen-Tie Line A-2

The impacts resulting from operating and maintaining GT-A-2 are similar to those discussed under Alternative 1.

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A are the same as those discussed under Alternative 1.

There would be no new operations workforce associated with Access Road 2, and there would be no effects on population, housing, employment, income, or environmental justice populations associated with the operation of this facility.

Summary of Operation and Maintenance Impacts

Operation and maintenance impacts under Alternative 3 are similar to those described under Alternative 1.

Decommissioning

Solar Farm Layout C

The impacts resulting from decommissioning SF-C are similar to those discussed under Alternative 1.

Gen-Tie Line A-2

The impacts resulting from decommissioning GT-A-2 are similar to those discussed under Alternative 1.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A are the same as those discussed under Alternative 1.

<u>Summary of Decommissioning Impacts</u>

The impacts resulting from decommissioning all the Project components under Alternative 3 are similar to those as identified in Alternative 1.

Summary of Combined Impacts for Alternative 3

Combined socioeconomic impacts of the SF-C, GT-A-2, and Red Bluff Substation A are similar to those described under Alternative 1, except Alternative 3 would result in slightly fewer impacts on regional employment and income due to the reduced size of the SF-C and subsequent smaller workforce required for construction. The addition of the Access Road 2 under Alternative 3 would not have a measurable socioeconomic impact on the region or adjacent communities because it is upgrading an existing roadway.

Applicant Measures and Mitigation Measures

The applicant measures that would be implemented under Alternative 3 are the same as those described under Alternative 1.

CEQA Significance Determination

<u>Solar Farm Layout C</u>

The CEQA significance determination for SF-C is the same as that discussed under Alternative 1.

<u>Gen-Tie Line A-2</u>

The CEQA significance determination for GT-A-2 is the same as that discussed under Alternative 1.

<u>Red Bluff Substation A</u>

The CEQA significance determination for Red Bluff Substation A and Access Road 2 is the same as that discussed under Alternative 1.

Unavoidable Adverse Effects

Unavoidable adverse effects are the same as those described under Alternative 1.

4.13.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Project would not be approved by the BLM and the agency would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project Study Area, and no installation of power generation and transmission equipment (including the GT-A-1 and Red Bluff Substation) would be constructed. The BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the socioeconomic impacts of the proposed Project and the public benefits that could *<u>occur</u>* as a result of the proposed Project would not *<u>happen</u>* as a result of development of the proposed site at this time but *may* occur in the future if the site were developed for other uses. These impacts include construction and operation employment and income, expenditures, income, and employment associated with increased employment and equipment expenditures in the regional economy, increases in sales and use tax revenues to local governments, and improvements to public infrastructure (electric utility capacity). *The potential minor adverse social impacts to local residents would also not occur.*

The benefits of the proposed Project in reducing greenhouse gas emissions from *carbon-based* generation would also not occur. In addition, there would be no increases in use of public facilities and infrastructure and the development of infrastructure adjacent to residences and public facilities. However, the land for the proposed Project would become available to other uses that are consistent with the BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on this or other sites.

4.13.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the BLM would not approve the proposed Project and would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project Site, and no power generation and transmission equipment (including the GT-A-1 and Red Bluff Substation) would be installed. The BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the Project Study Area, including the Red Bluff Substation area and Gen-Tie Line, would continue to remain in its existing condition, with no structures or facilities constructed or operated on the Project Study Area. As a result, the socioeconomic impacts of the proposed Project and the public benefits that could *occur* as a result of the proposed Project would not *happen*. These impacts include construction and operation employment and income, the expenditures, income, and employment associated with increased employment and equipment expenditures in the regional economy, increases in sales and use tax revenues to local governments, and improvements to public infrastructure (electric utility capacity). In addition, there would be no increases in use of public facilities and infrastructure and the development of infrastructure adjacent to residences and public facilities. However, in the absence of this Project, other projects may be constructed *that* meet state and federal mandates, and *if developed* those projects *might* have similar *or lesser* impacts on this or other sites.

4.13.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the BLM would not approve this proposed Project and would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project Study Area.

As a result, the socioeconomic impacts of the proposed Project and the public benefits that could accrue as a result of the proposed Project *may* still occur. These impacts include construction and operation employment and income, the expenditures, income, and employment associated with increased employment and equipment expenditures in the regional economy, increases in sales and use tax revenues to local governments, and improvements to public infrastructure (electric utility capacity) *along with the placement of an industrial solar plant similar to this Project*. However, the impacts would not occur as a result of development of the proposed site at this time. In addition, the increases in use of public facilities and infrastructure and the development of infrastructure adjacent to residences and public facilities would not occur at this time but would likely occur as the result of another project (potentially another solar project) at this location. However, any potential socioeconomic benefit to the region and local communities would not occur as a result of this proposal.

4.13.9 Cumulative Impacts

As discussed above in Section 4.13.3, the proposed Project and alternatives would not cause existing housing or persons to be displaced, necessitating the construction of replacement housing elsewhere. In addition, there would be no impact from construction workers requiring housing that exceeds the supply of local housing or temporary housing facilities and minimal potential changes in the demand for labor or in local employment. As growth has been accounted for in various local and regional plans and projections and no changes to that growth would be likely to occur as a result of the proposed Project and alternatives, displacement of and demand for housing and changes in the local labor market would not be considered as cumulative impacts and are not discussed further. A cumulative impact would result if impacts from the Project alternatives, when combined with other past, present, and future projects, would exceed the significance criteria presented in Section 4.13.2.

Geographic Extent

The geographic scope for the analysis of impacts on socioeconomics consists of Riverside County and the cities contained therein. This geographic extent is appropriate because socioeconomic factors such as public services and utilities are provided by local jurisdictions or districts, and the regional labor force is expected to come primarily from within Riverside County. Table 3.18-2 and Table 3.18-3 provide lists of projects within the geographic extent for the socioeconomics cumulative scenario.

The criteria by which socioeconomic, public services, and utilities impacts would be cumulatively considered significant are the same as those identified above in Section 4.13.2, CEQA Significance Criteria.

Existing Cumulative Conditions

Past development and population growth within Riverside County have impacted employment, public services, utilities, and housing demands. Population increases have increased development in Riverside County, mainly in incorporated areas, have expanded the demand for housing, and have increased the available workforce. Additional development in turn increases pressure on existing public services and utility systems. Continued development thus provides additional infrastructure to increase capacity and change employment opportunities. Section 3.13, Socioeconomics and Environmental Justice, describes existing socioeconomic, public services, and utilities conditions within the affected counties and cities. Cumulative impacts of the development of the Project alternatives, in conjunction with the projects described in Table 3.18-1 through Table 3.18-3, and the overall continued development of the region would continue to result in the potential for increased job opportunities, increased housing, public services and utilities demands, and land use development impacts, including redevelopment, expansion of facilities, and displacement.

Past, Present, and Reasonably Foreseeable Future Projects

Tables 3.18-1 through 3.18-3 lists past, present, and foreseeable projects in the Project area, which is the I-10 corridor in eastern Riverside County. Over 25 projects are proposed in the Project area, nearly half of which have been approved or are under construction and over 20 of which are renewable energy projects. At least fifteen of the proposed projects, including the proposed Project, would permanently disturb over 1,000 acres of land each.

The present and foreseeable projects in the Project area would significantly increase developed human use of land in the area. These projects are typical of an area where human presence and use is growing and include industrial, commercial, and residential developments as well as energy and infrastructure projects.

Cumulative Impact Analysis

Construction and operation of *the proposed Project* would not contribute to temporary or permanent displacements of businesses or residents in Riverside County that could occur as a result of the projects identified in Table 3.18-3. Employment of construction personnel for *the proposed Project* and the cumulative projects listed in Table 3.18-3 would be beneficial to local businesses and the regional and local economy through increased expenditure of wages for goods and services. In addition, the *proposed Project* would contribute to local expenditures on materials and supplies for construction, which in combination with other past, ongoing, and future projects would generate expenditures, income, and employment in the regional and local economy, stimulating economic growth. *Construction and operation of the proposed Project would have similar incremental impacts in combination with the projects listed in Table 3.18-1 and Table 3.18-2. However, the demand for labor for construction of these projects could result in a reduction in the workforce available in Riverside County for the proposed Project. If there are insufficient available supplies of qualified construction workers available, the projects could derive some of the construction employment from outside Riverside County. Given the relatively small size of the labor force required for the proposed Project, it would be unlikely that the incremental increased demand for labor would result in in-migration into Riverside County or additional pressure on the planned future capacity of public utilities and services. Therefore, the effects of the proposed Project on increases in employment and demands on public services and facilities would be minimal.*

Sunlight has indicated that personnel for construction of the cumulative projects listed in Table 3.18-3 would be drawn from local populations in Riverside County, creating new temporary and permanent employment and economic benefit to the regional economy. Although the *proposed Project* alone would not be likely to generate population in-migration because of the large available labor pool in Riverside County, the demand for construction employment generated by the *proposed Project* in combination with extensive proposed solar development in the region would increase the demand for skilled labor, which could be beyond the capacity of the region to accommodate. *Under such circumstance, the unmet labor* demand could result in in-migration that could change the character of the regional labor force *and add new residents to the region*.

The resulting population growth *could* require additional housing and could necessitate expansion of public services and facilities if the construction period of these projects were to overlap *and the* *resulting demand for workers exceeded the available supply of workers and regional housing and lodging capacity*. In particular, the capacity of water and waste disposal facilities could be strained, emphasizing the need for conservation and recycling. A portion of the cumulative influx of construction labor would increase pressure on the available temporary lodging, which is described in greater detail in Section 3.13-2, Existing Conditions, Population and Housing.

An extensive cumulative analysis for the region has been recently conducted for the Blythe Solar Power Project (BSPP) that specifically determined the average and peak construction labor needs and supply conditions under the extremely improbable circumstance that peak construction of 13 planned BLM solar projects (including both the Blythe project and the proposed Project) occur at the same time (BSPP 2010). The cumulative impact scenario for the Blythe project is predominately the same as that determined for the proposed Project and consequently, the analysis and findings of the BSPP are determined to be applicable for evaluating the cumulative impacts for the proposed Project as discussed below.

The total labor demand for near-term construction (2012 to 2017) of all 13 major solar projects is estimated to be roughly equivalent to an average of 5,000 full-time construction workers per year (BSPP 2010). This level of construction worker labor demand would represent the minimum employment impact on the regional study area since it assumes that all the BLM solar project construction work would be evenly performed over the five-year period. The analysis also determined that a "worst case" maximum of 11,360 construction workers would be required in the region.

The actual cumulative construction labor force demand within the study region will be higher than the 5,000 workers and likely considerably lower than the 11,360 maximum workers. The average construction period for BLM solar projects is estimated to be approximately 3.6 years and some seasonality may be expected as developers favor construction during the region's cooler winter months. Therefore, conservatively assuming that all the projects would be completed within the five-year cumulative scenario period, the regional labor need for a realistic "worst case condition" would be for four projects to have peak labor needs during the same year.[2]

Given an average construction period of 3.6 years, it would also be expected up to 11 projects would be ongoing during an expected peak labor demand period of 2012 to 2014. Therefore, the peak construction labor demand for the cumulative analysis is estimated to be equivalent to the total construction labor demand for seven solar projects under average construction conditions and four solar projects during peak construction. Altogether, such a rate of solar construction would be expected to require a total of 7,180 construction workers for the various BLM solar projects along the I-10 corridor during the years of major solar project development (BSPP 2010).[3]

In addition, there could also be demand for construction workers from the planned non-BLM solar project proposed for the Blythe Airport (requiring an estimated 150 construction workers annually). The future construction needs of the several other non-solar projects on BLM land in the region are not known but, altogether, reasonably could be expected to have an annual construction labor need roughly comparable to another solar project (i.e., 530 construction workers) (BSPP 2010).

Therefore, 7,860 construction workers is very conservatively estimated to represent the maximum likely future cumulative labor force demand from the region's planned solar and non-solar development. This estimate assumes all the identified projects would be developed within the five-year cumulative analysis period.[4] *The proposed project's maximum potential*

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[2] The peak construction requirement typically occurs during mid-construction, suggesting that 2012 to 2014 would be most likely to experience peak labor demands.

[3] This assumes a typical 470 MW solar projects requiring 527 workers under average construction conditions and 873 workers during their shorter periods of peak construction.

[4] In actuality, construction labor shortages (and related wage escalation) would also be expected to become a possible constraint reducing the pace of future development occurring.

contribution to this cumulative effect would be approximately seven percent during its peak construction period. The Project's average contribution to the cumulative impact would be approximately six percent during its non-peak construction.

The total work force of skilled construction workers currently living in eastern Riverside County is estimated to be approximately 14,665. Future demand for 7,860 construction workers would be equivalent to employment for more than half of the current skilled labor force. Such demand for construction workers far exceeds the current unemployed construction labor force but approximately 850 additional skilled construction workers are expected to be added to the eastern Riverside County labor force by 2016. The cumulative labor force demand would still represent more than half the region's currently forecasted future skilled construction labor force (BSPP 2010).

Eastern Riverside County's current unemployed labor force is estimated to be 24,340. The construction worker demand would represent approximately a 32 percent decrease in the regional study area's unemployment level. Although many of the region's currently unemployed residents may lack transferable skills or have the physical aptitude to acquire the necessary skills required by cumulative labor demand, many residents could be adequately trained to be employable. Furthermore, some of the construction work would be more entry-level positions which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors could also have the capabilities to qualify for solar construction work. In such cases, some job transferring may occur, especially since the construction jobs may be expected to be relatively well-paid and attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents. Finally, the cumulative labor force demand on eastern Riverside County also could be partly reduced as projects located in more central Riverside County (such as the proposed Project) would be closer to cities and potential workers outside the regional study area. Consequently, these projects could meet some of their labor needs from residents from Desert Hot Springs, Morongo Valley, or Banning.

Nonetheless, there could be demand for specialized construction trades that exceed the available labor supply for that specialty within eastern Riverside County. In which case, it is assumed that those job positions would be filled by workers relocating into the region from elsewhere. It is difficult to estimate the extent of future weekly commuting or other in-migration that would be necessary to meet the future cumulative labor needs within the region. However, as a conservative assumption, other social and economic impacts analyses for solar projects have suggested that a 15 percent rate of in-migration would be a conservative and reasonable assumption. Such a proportion of in-migration applied to the projected maximum future cumulative labor force demand would suggest that up to 1,165 construction workers could require temporary housing in the region (BSPP 2010).

Riverside County's suitably skilled construction labor force is estimated to be approximately 69,100. This suggests that there is likely to be a considerable additional potential labor force available that could be willing to commute weekly or temporarily relocate to the local area. Consequently, from a broader geographic and labor force perspective, no significant shortages of adequately skilled construction workers is foreseen if adequate and/or suitable housing is available for relocating near the projects' sites.

There are expected to be some suitable and available temporary lodging at local hotel/motel lodging. Although availability and pricing may vary, the overall supply of 22,508 hotel/motel rooms would likely provide a substantial proportion. In addition, lodging availability would increase if the construction workforce would be willing to commute a greater distance. Additional workers could be accommodated in vacant housing, which totaled 6,283 units in Blythe, Coachella, and Indio alone and 102,507 units in Riverside County as a whole. Although, room availability and prices could be higher during the winter months, based on County-wide vacancy rate estimates, nearly 300 rooms could be available in the local area.

Given that some construction workers might be willing to share rooms and save on their lodging costs, the existing local hotel/motels could be able to satisfy up to 450 future construction workers seeking local temporary housing. If construction workers were willing to commute 1.25 to 1.75 hours daily to the site, the supply of potential hotel/motel increases dramatically to an estimated 8,285 rooms, which would correspond to 2,420 rooms. There would be more than sufficient temporary housing for an expected 1,165 construction workers.

In addition to the available lodging in the local area, there are also potentially considerable under-utilized homes in the local area that may be suitable for rent by construction workers seeking local housing. As shown in Table 3.13-3, approximately 880 homes are currently estimated to be vacant in Blythe and another 5,013 local housing units may be available within Indio. Given that some construction workers could be willing to share homes to reduce their lodging costs, these housing units could provide more sufficient housing for the projected cumulative local housing demand.

Some of the solar developers might also choose to develop onsite housing facilities for their construction work forces. For example, on-site worker accommodations are planned as part of the Rice Solar project by its developer.[5] The Eagle Mountain Pumped Storage project near Desert Center is located at a former mine site that has housing previously used by mine workers.

In summary, there is potential for short-term adverse cumulative social and economic impacts in the region associated with the demand for skilled construction labor for the dozen solar projects proposed for future development within eastern Riverside County. Analysis suggests that future construction labor demand would be greatest from 2012 to 2014, and may be sufficient to exceed the existing local work force within eastern Riverside County; hence, there may be increased demand for temporary local housing from construction workers seeking to commute weekly to the local area. However, given the estimated availability of lodging and possible rental housing, it is expected that there will be adequate and suitable housing to meet any future construction worker temporary housing demand. Therefore, no adverse social or economic impacts would be expected.

Socioeconomic impacts on local businesses and residents adjacent to the Project area or along construction transportation routes would result from visual impacts, vehicular or pedestrian access delays or detours, land use impacts, or health and safety concerns. The extent that these impacts would affect the perceived quality of life in the areas adjacent to any of the proposed projects would be minimized by aligning the Gen-Tie Lines along existing linear features (such as Kaiser Road) and making the public aware of construction timing, duration, and location so that they may better plan for construction-related access issues. It is expected that the added daily traffic from construction vehicles would not have a noticeable impact on traffic volumes given the existing high volumes of car and truck traffic on I-10, even with partially overlapping construction periods for several projects. The cumulative effects of the proposed Project in combination with reasonably foreseeable projects on each of these resource areas are analyzed in this chapter in Sections 4.10, Noise, 4.16, Visual Resources, 4.15, Traffic, Transportation, and Public Access, 4.9, Lands and Realty, and 4.11, Public Health and Safety/Hazardous Materials. Any associated contribution to a short-term loss of local business revenue impacts would not be cumulatively significant, and any contribution of the proposed Project to perceived social impacts due to the construction activity of Project facilities along with the listed cumulative projects would be minor and temporary for the duration of the project construction.

The proposed Project would require water for dust control and concrete production during construction and would generate construction waste largely in the form of soil from earthwork, grading and

[5] Development of temporary worker housing facilities is more likely to be possible at projects (such as Rice), which are located on private property.

excavations, and the removal of structures. As a result, related projects in conjunction with construction of the *proposed Project* would place demands on local water or solid waste services during similar construction activities. These impacts would be minimal, ensuring that *the proposed Project* would not cumulatively contribute to an impact with the addition of other reasonably foreseeable projects.

The Project vicinity and geographic region is experiencing and will continue to experience increasing demands for public services and utilities as a result of continued growth. Agencies with development approval authority review individual project consistency with existing local and regional plans and programs. California laws require specific plans, projects, and planning and development programs to be consistent with local general plans. Therefore, when development proposals are consistent with local general plans, and those, in turn, are consistent with county and regional plans, the goals and policies of county and regional plans are implemented through the local actions on development proposals. As a consequence, if reasonably foreseeable development projects in the cumulative area of impact are consistent with the applicable local government plan and policy documents, then the impacts of those projects have already been anticipated and accounted for and are, therefore, consistent with the plans and policies listed in Table 3.18-3.

As a part of these plans, local planning agencies augment or develop water, wastewater, and solid waste facilities to meet the anticipated needs of population projected for the region. The water, wastewater, and solid waste needs related to the *proposed Project* are expected to be within the parameters of regional capacities, projections, and plans applicable to the geographic extent of the cumulative impact area. Therefore, the current cumulative impact of all development projects within the cumulative area of impact on water and solid waste facilities serving the areas would be reduced with the implementation of mitigation and because the impacts of growth would have already been anticipated and accommodated in approved plans.

The potential for construction activities of the *proposed Project* to increase potential fire hazards would be minimized by the fire prevention plan that would be in place during construction and would ensure adequate access in case of emergencies. Also, it would protect against the possibility of fires generated by construction and therefore would not noticeably contribute to cumulative fire hazards.

Because the *proposed Project would not* preclude emergency access, the addition of future projects would not cumulatively contribute to emergency response times.

There would be no permanent or temporary displacement of low-income or minority businesses or residents under the *proposed Project* to contribute to potential cumulative effects on minority populations. The health and safety of these populations would be protected during both construction and operation at the same levels as other populations by implementing the safety measures described in the Revised Project Description provided by the Applicant. It is assumed that future projects would be required to mitigate *any significant* impacts on these populations; therefore, cumulative impacts on minority and low-income populations as a result of the *proposed Project* in combination with cumulative projects also would be minimal.

Construction and operation of *the proposed Project* would not contribute to temporary or permanent displacements of businesses or residents in Riverside County that could occur as a result of the projects identified in Table 3.18-3. In addition, *the proposed Project* would contribute to local expenditures on materials and supplies for construction, which, in combination with other past, ongoing, and future projects, would generate expenditures, income, and employment in the local economy, stimulating economic growth.

The incremental effects of construction and operation of the proposed Project would not have a cumulatively considerable impact on socioeconomic and environmental justice resources when combined with the past, existing, and future projects identified in Table 3.18-1 through Table 3.18-3.

Due to similarities in their components and construction requirements, the socioeconomic and environmental justice cumulative impacts for Alternatives 2 and 3 would be the same as described for the proposed Project and would not be cumulatively considerable. There would be no cumulative socioeconomic and environmental justice impacts under the No Action and No Project Alternatives (Alternatives 4, 5 or 6) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. Any future proposals for use of the site would be subject to separate environmental analysis.

4.14 SPECIAL DESIGNATIONS

4.14.1 Methodology for Analysis

This section discusses the special designation impacts that would occur with implementation of the proposed Action or alternatives. *Direct* effects may occur during construction from noise, fugitive dust, and lighting that could affect users in designated ACECs and/or Wilderness Areas. Other *direct* effects include visual impacts on users in designated Wilderness Areas. Visual impacts are discussed in further detail in Section 4.16. Direct effects could also occur if activities would disturb resources for which a special designations area was designated.

4.14.2 CEQA Significance Criteria

There are no CEQA significance criteria defined for special designations.

4.14.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

SF-B *would be* within two miles of the Joshua Tree Wilderness Area administered by the National Park Service. Fugitive dust, *traffic and lighting* from construction would create a temporary visual distraction for users of this wilderness.

Gen-Tie Line A-1

No impacts on special designation areas are expected from constructing GT-A-1.

Red Bluff Substation A

There is the potential for direct *impacts* on the Chuckwalla Mountains *and Palen-McCoy* Wilderness Areas associated with construction of Substation A and the associated Desert Center 12kV distribution line. In particular, noise and nighttime lighting could affect the wilderness experience within that area, making human presence more noticeable. Fugitive dust from construction would create a temporary visual distraction for *a limited number of users of portions of these Wilderness Areas.*

Substation A would be adjacent to the Alligator Rock ACEC, which was established to protect archaeological resources. These resources would not be impacted due to construction of the Substation because they would not be disturbed by human presence, noise, and dust. There would be no impacts on the Alligator Rock ACEC from construction of Red Bluff Substation A. The access road for Red Bluff Substation A would be to the east from Corn Springs Road. As a result, there would be no impacts during construction on the Alligator Rock ACEC.

Summary of Construction Impacts

Alternative 1 would cause temporary direct impacts on both the Joshua Tree Wilderness Area and Chuckwalla Mountains, *and Palen-McCoy* Wilderness Areas as a result of constructing SF-B and Red Bluff Substation A, respectively. *Direct* impacts would be associated with fugitive dust, noise, and nighttime lighting. Constructing Alternative 1 would not cause impacts on the cultural resources within the Alligator Rock ACEC.

Operation and Maintenance

Solar Farm Layout B

The limited number of visitors to a portion of Joshua Tree Wilderness would experience impacts on their opportunities for solitude. There would also be visual impacts from the strong form, line, and color contrast of the panels and other structures and from sunlight glint and glare reflecting from these structures. While operation and maintenance would not cause any direct impact on the Joshua Tree Wilderness, visitors traversing the southwest areas of the Coxcomb Mountains would experience permanent *direct* effects. *These effects vary by viewing location, and are discussed in detail in Section 4.16, Visual Resources.*

Gen-Tie Line A-1

No impacts on special designation areas are expected from operating and maintaining the GT-A-1.

Red Bluff Substation A

During operation and maintenance of the substation, lights would normally be off. Where needed, lights would be shielded, would *be* directed downward, and would be motion sensitive to minimize glare in surrounding areas. As such, operation and maintenance are unlikely to cause direct impacts on users of the Chuckwalla Mountains Wilderness.

Operating and maintaining Red Bluff Substation A and the access road from Corn Springs Road (Access Road 2) are unlikely to cause direct or indirect impacts that would disturb cultural resources within the Alligator Rock ACEC.

Summary of Operation and Maintenance Impacts

Operation and maintenance of the SF-B would cause *direct* visual impacts on *limited number of* users of the Joshua Tree Wilderness Area.

Decommissioning

Solar Farm Layout B

Decommissioning SF-B would cause temporary, ~~in~~direct disturbance to *a limited number of* users of the Joshua Tree Wilderness Area, similar to those described for constructing SF-B.

After SF-B has been decommissioned, the permanent visual impacts described for operation and maintenance of SF-B would be removed and the site would return to its natural undeveloped state.

Gen-Tie Line A-1

No impacts on special designation areas are expected from decommissioning of GT-A-1.

Red Bluff Substation A

Decommissioning Red Bluff Substation A would cause temporary ~~in~~direct disturbance to users of the Chuckwalla Mountains Wilderness *Area*, similar to those described for constructing this substation. No impact would occur to the Chuckwalla Mountains Wilderness *Area* or the Alligator Rock ACEC.

Summary of Decommissioning Impacts

Decommissioning the project components of Alternative 1 would cause temporary and permanent indirect impacts on users of the Joshua Tree Wilderness Area and Chuckwalla Mountains, *and Palen-McCoy* Wilderness Areas, as described for construction, operation, and maintenance.

Summary of Combined Impacts for Alternative 1

Construction, operation, maintenance, and decommissioning SF-B would cause temporary direct impacts on users of the Joshua Tree Wilderness Area. Constructing and decommissioning Red Bluff Substation A would cause temporary impacts on users of the Chuckwalla Mountains Wilderness *Area*.

Applicant Measures and Mitigation Measures

The following Applicant proposed mitigation would be implemented by SCE on an as-needed basis.

AM-SD-1: During operation and maintenance of Red Bluff Substation A, lights shall normally be off. Where needed during emergency and scheduled work during the night, lights shall be shielded, *shall* be directed downward, and shall be motion sensitive to minimize glare in surrounding areas.

Mitigation measures described in Section 4.6, Cultural Resources, would be implemented to reduce impacts on cultural resources within the Alligator Rock ACEC.

CEQA Significance Determination

Since there are no CEQA significance criteria for special designations, no CEQA significance determination can be made.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on special designations as a result of Alternative 1.

4.14.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No impacts on any special designations are expected as a result of constructing GT-B-2.

Red Bluff Substation B

No impacts on any special designations are expected as a result of constructing Substation B.

Summary of Construction Impacts

Constructing Alternative 2 would cause temporary *direct* impacts on users of the Joshua Tree Wilderness Area, as described above under Alternative 1.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No impacts on any special designations are expected as a result of operating and maintaining GT-B-2.

Red Bluff Substation B

During emergency and/or maintenance of Red Bluff Substation B during the night, AM-SD-1 would be implemented to reduce impacts. A less than significant impact would occur.

Summary of Operation and Maintenance Impacts

Constructing Alternative 2 would cause permanent *direct* impacts on users of the Joshua Tree Wilderness Area, as described above under Alternative 1.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B are the same as those discussed under Alternative 1.

Gen-Tie Line B-2

No impacts on any special designations are expected as a result of decommissioning GT-B-2.

Red Bluff Substation B

No impacts on any special designations are expected as a result of decommissioning Substation B.

Summary of Decommissioning Impacts

Decommissioning Alternative 2 would cause temporary *direct* impacts on users of the Joshua Tree Wilderness Area, as described above for Alternative 1.

Summary of Combined Impacts for Alternative 2

All impacts associated with construction, operation, maintenance, and decommissioning SF-B are similar to those described under Alternative 1. Alternative 2 would cause no additional impacts on special designations.

Applicant Measures and Mitigation Measures

The mitigation measure for Alternative 2 is the same as described for Alternative 1.

CEQA Significance Determination

Since there are no CEQA significance criteria for special designations, no CEQA significance determination can be made.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on special designations as a result of Alternative 2.

4.14.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Impacts from constructing SF-C are similar to those described for SF-B. *Direct* impacts would be slightly reduced due to the smaller footprint of SF-C.

Gen-Tie Line A-2

No impacts on any special designations are expected as a result of constructing GT-A-2.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A are the same as those discussed under Alternative 1. No impacts on any special designations are expected as a result of constructing the access road from Kaiser Road (Access Road 1).

Summary of Construction Impacts

Temporary *direct* impacts on users of the Joshua Tree Wilderness Area, Chuckwalla Mountains Wilderness *Area, and Palen-McCoy* Wilderness *Area* as a result of constructing SF-C and Red Bluff Substation A, respectively, are similar to those described under Alternative 1. Constructing the access road from Kaiser Road (Access Road 1) would not cause any direct or indirect impacts on special designations.

Operation and Maintenance

Solar Farm Layout C

Impacts from operating and maintaining SF-C are similar to those described for SF-B. Indirect impacts are slightly reduced due to the smaller footprint of SF-C.

Gen-Tie Line A-2

No impacts on any special designations are expected as a result of operating and maintaining GT-A-2.

Red Bluff Substation A

No impacts on any special designations are expected as a result of operating and maintaining Red Bluff Substation A, as described above under Alternative 1. No impacts on any special designations are expected as a result of operating and maintaining the access road from Kaiser Road (Access Road 1).

Summary of Operation and Maintenance Impacts

Operating and maintaining the project components in Alternative 3 would cause direct impacts on users of the Joshua Tree Wilderness Area, as described above for SF-B under Alternative 1. Impacts would be slightly reduced due to the reduced footprint of SF-C. No additional impacts on special designations are expected from operating and maintaining the project components in Alternative 3.

Decommissioning

Solar Farm Layout C

Impacts from decommissioning SF-C are similar to those described for SF-B. *Direct* impacts would be slightly reduced due to the smaller footprint of SF-C.

Gen-Tie Line A-2

No impacts on any special designations are expected as a result of decommissioning GT-A-2.

Red Bluff Substation A

The impacts from decommissioning Red Bluff Substation A are the same as those discussed under Alternative 1. No impacts on any special designations are expected as a result of decommissioning the access road from Kaiser Road (Access Road 1).

Summary of Decommissioning Impacts

Decommissioning SF-C would cause temporary impacts on users of the Joshua Tree Wilderness Area, similar to those described for SF-B. Due to the smaller footprint of SF-C, impacts would be slightly reduced in comparison to SF-B. Decommissioning Red Bluff Substation would cause temporary impacts on users of the Chuckwalla Mountains Wilderness *Area*, as described for SF-B.

Summary of Combined Impacts for Alternative 3

Construction, operation, maintenance, and decommissioning SF-C would cause temporary and direct impacts on users of the Joshua Tree Wilderness Area. Constructing and decommissioning Red Bluff Substation A would cause temporary ~~in~~direct impacts on users of the Chuckwalla Mountains Wilderness *Area*.

Applicant Measures and Mitigation Measures

The mitigation measure for Alternative 3 is the same as described for Alternative 1.

CEQA Significance Determination

Since there are no CEQA significance criteria for special designations, no CEQA significance determination can be made.

Unavoidable Adverse Effects

There would be no unavoidable significant impacts on special designations as a result of Alternative 3.

4.14.6 Alternative 4—No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the BLM would not approve the proposed Desert Sunlight Solar Farm Project and would not amend the CDCA Plan *of 1980, as amended*. As a result, no solar energy project would be constructed, and the BLM would continue to manage the Project site consistent with the existing land use designation in the CDCA Plan *of 1980, as amended.*

Because there would be no amendment to the CDCA Plan of 1980, as amended, and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts on special designation areas from construction or operation of the project would occur. In particular, no direct or indirect impacts on ACECs, wilderness areas, or other special designations would occur that would affect the resources these special designation areas are meant to protect. However, the land on which the project is proposed would become available to other uses that are consistent with the BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects could be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations, *and could affect special designation areas in those locations*.

4.14.7 Alternative 5—No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Energy Development (No Action with Plan Amendment)

Under this alternative, the BLM would not approve the proposed Desert Sunlight Solar Farm Project and would amend the CDCA Plan of 1980, as amended, to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan of 1980, as amended.

Because the CDCA Plan of 1980, as amended, would be amended to make the area unavailable for future solar energy development, it is expected that the Project site would continue to remain in its existing condition unless another use is designated in this amendment. As a result, the Special *Designation* Areas that overlap with the site are not expected to change noticeably from existing conditions and, as such, this No Action Alternative would have no adverse impact on Special *Designation* Areas within and adjacent to the site in the long term. However, in the absence of this project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts on other locations and could affect special designation areas *in those locations*.

4.14.8 Alternative 6—No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Action with Plan Amendment)

Under this alternative, the BLM would not approve the proposed Desert Sunlight Solar Farm Project and would amend the CDCA Plan of 1980, as amended, to allow for other solar projects on the Project site. As a result, it is possible that another solar energy project could be constructed on the Project site.

Because the CDCA Plan of 1980, as amended, would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, it is likely that impacts on Special *Designation* Areas would result from the construction and operation of the solar technology and resulting ground disturbance and would likely be similar to the impacts on Special *Designation* Areas from the proposed Project, including impacts on desert wildlife or wilderness areas. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in impacts on Special Designation Areas similar to the impacts under the proposed Project.

4.14.9 National Park Service

The purpose of this subsection is to summarize the direct, indirect and cumulative impacts of the Project on lands under the authority of the National Park Service; namely, Joshua Tree National Park (JTNP) and Joshua Tree Wilderness. The impacts are summarized below for the topics of viewshed, air quality, noise, wildlife, construction workers, and dark skies. Additional discussion associated with National Park Service lands is located in Sections 3.2, 3.4, 3.10, 3.16, 4.2, 4.4, 4.10, and 4.16.

Viewshed

Direct Impacts

The proposed Project would not result in direct physical modification to any portion of JTNP or its visual appearance for visitors. Instead, the proposed Project would have a direct impact on views of the Chuckwalla Valley experienced by users of the portion of the park that would be within the Project's viewshed. The Chuckwalla Valley as seen from JTNP is relatively unencumbered by visual disturbances, although several small population centers (e.g., Desert Center and Lake Tamarisk) and utility corridors presently constitute cultural modifications that distract slightly from the valley's natural appearance. Due to the location of the Project, which would be closer to the park boundaries; and its size and character, which would be largely industrial; it would have the potential to adversely affect the wilderness and solitude experience for backcountry hikers that access those portions of JTNP with views of the Chuckwalla Valley.

As discussed in Chapter 3.14 (National Park Service Section), and the end of Chapter 3.16, visitor use in this portion of the park is estimated to be low. The highly visited areas of JTNP—those with facilities that serve visitors, such as campgrounds, picnic areas, ranger stations, and developed trails—are further west and outside of the Project's viewshed. The portion of the park within the Project's viewshed for Alternatives 1, 2, and 3 can be seen in Figure 4.16-8, 4.16-9, and 4.16-10, respectively. There are only minor differences between alternatives in terms of the viewshed within JTNP boundaries. The full extent of JTNP is not shown in these figures. However, the park as a whole is approximately 800,000 acres, and it is estimated that the proposed Project would be visible from less than five percent of the park's geographic area, and by a far lesser fraction of the park's visitors. For these reasons, the general impact to the visitor experience is expected to be low. The Project's visual contrast from within park boundaries is estimated as follows:

KOP 2 (Figure 4.16-3) provides a low-elevation view from the boundary of JTNP and Joshua Tree Wilderness, which, as discussed in Chapter 4.16 indicates a weak to moderate contrast within the landscape (for contrast definitions, see Table 3.16-1). This is due in large part to the effect of perspective foreshortening, which reduces the apparent size and scale of the Project due to a low elevation difference and the narrow angle of view. While elevated and mountainous portions of JTNP are further removed in distance, the increase in elevation would cause the size and shape of the Project to become increasingly apparent. As viewed from higher elevations, the level of contrast in form, line, and texture would increase substantially; but this increase in contrast would be tempered by a decreased dominance of the Project within the affected views. As vantage points increase in elevation and distance away from the Project, views become increasingly regional and panoramic, thereby decreasing the portion of view affected by the Project. Despite this, the proposed Project would appear spatially prominent and central to the views of the northern Chuckwalla Valley. From these locations, viewers would observe a high level of visual contrast between the proposed Project and the surrounding desert basin and mountain landscape. The Project would appear co-dominant with the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be moderate-to-high, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers in Joshua Tree Wilderness would be substantial.

During construction, dust plumes would be controlled using dust palliatives and limiting vehicle speeds, as described in the air resources analysis in Section 4.2. Light pollution would be minimized with the implementation of mitigation measure MM-VR-4. Other mitigation measures to reduce the Project's contrast in the landscape (e.g., VR-1, VR-5 and VR-6) do not reduce the overall prominence and major elements of contrast (color and texture) of the Project as viewed from elevated vantage points.

For the reasons above, impacts to views of the Chuckwalla Valley for backcountry hikers accessing the eastern ends of JTNP would remain moderate-to-high.

Indirect Impacts

There are no indirect effects on the viewshed.

Cumulative Impacts

Due to the number and extent of projects in the cumulative scenario, visual disturbances would dominate views of the Chuckwalla Valley from elevated vantage points in JTNP, resulting in a strong contrast with the existing visual environment. Affected viewers (backcountry hikers) would witness industrial landscapes and activities that are out of character with the desert landscape. Because the proposed Project is the project in the cumulative scenario that is closest to JTNP, the viewsheds of other projects within the cumulative scenario are likely to affect a similar or lesser area of JTNP than the proposed Project. This makes the proposed Project a substantial contributor to cumulative impacts on NPS land. As discussed in Direct Impacts, above, the proposed Project would have a moderate impact on views of the Chuckwalla Valley for low numbers of backcountry hikers. This is primarily because the project would not dominate the view of the valley as a whole. However, the addition of numerous other projects in the cumulative scenario would substantially alter the character of the valley, and would lessen the feeling of solitude, isolation and wilderness that is enjoyed by backcountry hikers in JTNP. Mitigation measures MM-VR-1 through MM-VR-6 would lessen the adverse effects of a sprawling industrialized landscape along the surface of the I-10 corridor, as a result of the development of the cumulative scenario. Nonetheless, the Project would have a substantial contribution to a cumulatively adverse visual impact.

Air Quality

Direct Impacts

Section 4.2 acknowledges that fugitive dust from Project construction activities would create a temporary visual distraction for some users of JTNP. A detailed discussion of Project-related fugitive dust and mitigation measures is presented in Section 4.2, Air Resources. Fugitive dust emissions during construction of the solar farm would occur primarily during daytime hours. The Applicant would implement a dust control plan that would include the use of dust suppressants during facility construction. Airborne dust generated from the site would be widely dispersed and greatly reduced in concentration by nighttime hours. Construction activity would be phased across the solar farm site over a 26-month period, limiting the amount of disturbed area that could produce fugitive dust from wind erosion at night. Therefore, project construction activities would not be expected to produce adverse changes in night sky visibility caused by fugitive dust, for users of JTNP.

Indirect Impacts

Development of the Project would replace natural vegetation and ground surface conditions with cleared land, solar panel arrays, buildings, equipment pads, gravel roads, and related features. There would be a change in wind erosion conditions associated with these land surface changes. However, it is estimated that development of the Project would result in long-term reductions in fugitive dust emissions that would primarily be attributed to implementation of mitigation that would require the periodic application of dust palliatives between the rows of solar panels using a water *truck. Therefore, development of the Project site would not be expected to increase the wind erosion susceptibility of the site (see the wind erosion discussion under Operation and Maintenance in Section 4.2, Air Resources). The net change in wind erosion would not be detectable by visual observation.*

Cumulative

As discussed above, the Project would not produce major dust-related changes in night sky visibility. The air quality effects from construction would not last long enough to alter current federal or state attainment status designations for particulate matter emissions for the Project Area. The timing for approval and construction of other cumulative projects is not known, but could potentially overlap with part of the construction period for the proposed Project. Consequently, there is the potential for short-term adverse cumulative fugitive dust effects from the Project, in combination with other solar energy projects. All cumulative projects would also need to comply with local ordinances prohibiting nuisances or requiring dust control. Direct particulate matter emissions, such as fugitive dust emissions from construction activities, generally would have a more localized effect, with the most noticeable effects occurring within one-half mile or less of active construction sites. Fugitive dust emissions would be widely dispersed and greatly reduced in concentration with distance from the source. Due to the long distance between JTNP and the Project and cumulative projects, and incorporation of dust control measures, the cumulative effects to night sky visibility, as a result of dust-related changes would not have an appreciable effect. In addition, via the Dust Control Plan in the Environmental and Construction Monitoring and Compliance Program (ECMCP), any dust-induced changes to night sky as a result of the Project would be mitigated as appropriate per the plan. Operational emissions would be minor and would not have the potential to increase regional cumulative emissions.

Noise Impacts

Direct Impacts

As indicated in Subsection 4.10.3, noise from construction activity would generally be audible at locations less than a half mile from the proposed Project site. Operational activities at the Project site would not generate much noise. During construction, there would be 10 to 15 on-site employees on the Project site on any given day. There would be limited amounts of vehicle and ATV traffic on the site, but this vehicle activity would be intermittent, and would not be expected to generate off-site adverse noise effects. It is unlikely that noise levels associated with construction or operations of the Project would be audible at JTNP. Therefore, project construction and operational activities would not result in adverse noise-related effects on users of JTNP. A detailed discussion of the noise-related effects that would be associated with the Project are presented in Section 4.10, Noise and Vibration.

Indirect Impacts

There would be no indirect noise-related effects associated with the Project.

Cumulative Impacts

Cumulative noise or vibration effects would occur if multiple projects would happen in the same geographic areas at the same time or when sequential projects extend the duration of noise or vibration effects on a given area over a longer period of time. Current ambient noise conditions represent the cumulative effect of noise generation on a local geographic scale. Except for the I-10 vicinity, existing noise levels in the Project vicinity are generally low. There are no known existing ground vibration issues in the Project Study Area. Only two cumulative projects – the Chuckwalla Solar I and Desert Harvest projects have the potential for cumulative site-related noise effects in combination with the proposed Project. The timing for approval and construction of these projects is not known, but could potentially overlap with part of the construction period for the proposed Project. However, it would be expected that no adverse cumulative noise effects would result from construction or operational activities for the following reasons: 1) the geographic extent of *stationary construction-related noise issues would be limited to distances of 1,000 feet, or less; 2) the geographic extent of potential ground vibration impact would be limited to a distance of a few hundred feet from the source of the vibrations; and 3) the relatively long distance from JTNP to the project sites.*

Wildlife

Direct Impacts

There would be no direct impacts to wildlife within the JTNP and Joshua Tree Wilderness as construction and operation of the Project would occur outside of Park or Wilderness area boundaries.

Indirect Impacts

The development of the Project site would result in a permanent conversion of desert habitat to industrial/commercial uses within the NECO planning area, which includes the JTNP and the Joshua Tree Wilderness area. The loss of intermountain and foraging habitat would have indirect impacts to the long-term viability of wildlife that are found in or use the surrounding National Parks and Wilderness areas.

Intermountain movements provide a genetic connection with a larger metapopulation and are the source of colonization of vacant habitat. Intermountain areas of the desert floor that bighorn sheep traverse between mountain ranges are as important to the long-term viability of populations as are the mountain ranges themselves. Actions that impair the ability of bighorn sheep to move between mountain ranges include fencing along highways or other boundaries, canals, and high densities of human habitation. These will limit the potential for natural colonization and gene exchange, both of which are key to metapopulation viability. Proposed exclusion fencing surrounding the Solar Farm and Red Bluff Substation could impact the movement of wildlife between the Eagle Mountains and Coxcomb Mountains and the Joshua Tree National Park/Bighorn Sheep WHMA.

These indirect impacts to wildlife would be reduced by implementation of the Habitat Compensation Plan required in Applicant Measure BIO-1 and Mitigation Measure BIO-2.

Cumulative Impacts

Land use in the cumulative analysis area has been historically altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative impacts area characterize overall development trends in the Chuckwalla Valley. Ongoing development in the area is dominated by renewable energy development. Major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system. Other projects in the cumulative study area include several transmission lines and non-renewable energy development, as well as residential and commercial development (see Tables 3.18-2 and 3.18-3). In consideration of the existing and future development in the region, the Project would contribute to cumulative impacts on wildlife movement between the Park and Wilderness areas and foraging habitat potential used by wildlife within JTNP and Joshua Tree Wilderness Area.

The increment direct and indirect effects to wildlife movement foraging habitat would be reduced with the implementation of the Habitat Compensation Plan included in Appendix H of this document and required in Applicant Measure BIO-1, and Mitigation Measure BIO-2. These measures would ensure that habitat loss of these areas is adequately compensated for and equivalent habitat would be protected offsite.

Dark Skies

Direct Impacts

During construction, dusk-to-dawn security lighting would be required for the construction staging areas, parking area, construction office trailer entries, site access points, and the security guard booth. Most of these areas would be concentrated on a 10 to 20 acre area on the southwestern corner of the proposed 3,912-acre Project site (see Figure 2-30). Staging areas would be eight acres each, scattered at four locations across the site. Lighting is not planned for typical construction activities because construction activities would occur primarily during daylight; however, if required, any lighting would be limited to that needed to ensure safety and would be temporary. Security lighting during operations would be limited to shielded, down-directed, area-specific lighting for the Operations and Maintenance Facility, on-site substation, visitor center, main entrance gate, and security guard booth. Service lighting would be placed in key safety-sensitive areas, such as the switchyard of the on-site Substation. Service lighting would be provided by floodlights, which would be controlled by a local switch or lighting contactor and would only be used during the course of maintenance and emergency activities. Temporary portable service lighting could be used occasionally in other portions of the solar farm for operations and maintenance activities.

As described above, the lighting footprint of the Project during construction and operation would be largely confined to a small area on the southwestern corner of the Project site. The Project Area as a whole would never be flooded with light. While it is not feasible to totally eliminate the amount of back-reflected light from shielded, down-directed lamps, the presence and extent of nighttime operations and maintenance lighting would not be substantially out of character with other existing lighting sources found scattered throughout the Chuckwalla Valley (see Chapter 3.14 for a description of existing light sources). As such, the Project represents a minor addition to the total nighttime light environment within the Chuckwalla Valley and the proposed Project is unlikely to contribute much to sky glow given that skies remain dark in spite of the presence, extent and character of existing light sources. Further, the visitor use of the eastern end of JTNP is considered low, as discussed in the viewshed section. Detailed information on the location, intensity and type of light sources would be specified in the lighting plan to be developed during the Project's final design phase. Further, Mitigation Measure MM-VR-4 (see Chapter 4.16) provides performance standards to be met in the development and implementation of a lighting plan.

The preparation of a Lighting Mitigation Plan would ensure that the lighting requirements of the proposed Action and Alternatives do not substantially contribute to light pollution in the region and for backcountry hikers in JTNP. Further, Section 4.2, Air Resources, concludes that the net change in wind erosion as a result of the Project would be minor, and would not be detectable by visual observation. The air resources section also concludes that changes in night sky visibility due to project-related fugitive dust would be minor.

Indirect Impacts

A decrease in night sky visibility via sky glow is an effect that is not limited to the Project's viewshed. Light sources many miles away can decrease the visibility of the night sky for people in areas outside of the viewshed (e.g., the portion of JTNP that has developed visitor serving facility but is outside the Project's viewshed). However, as described above, the Project's contribution to the existing light environment, with mitigation, would be minor.

Cumulative Impacts

Due to the number and extent of projects in the cumulative scenario, the lighting requirements of the solar facilities and other projects would have an appreciable effect on the visibility of the night sky for users of JTNP. Lighting mitigation requirements for individual projects are unlikely to reduce the cumulative effect to dark skies, and in combination, would be substantially out of character with the existing light environment. Therefore, the Project, due to its proximal *location to JTNP relative to other projects in the cumulative scenario, would have a substantial contribution to a cumulatively adverse visual impact.*

Construction Workforce

Direct Impacts

There would be no direct impacts from project construction workers to JTNP and Joshua Tree Wilderness resources as construction and operation of the Project would occur outside of Park or Wilderness area boundaries.

Indirect Impacts

The NPS has potential concerns that project construction workers might choose to camp within JTNP either at NPS-designated campsites or informally and commute daily to work at the proposed Project site.

Any impacts associated with construction workers for the Project would be temporary and indirect. The majority of the Project construction workforce would be Riverside County residents. The total project construction workforce is expected to average approximately 400 to 450 craft workers over the 26-month proposed Project construction period, with a peak on-site craft workforce of approximately 570 craft workers.

Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (BLM and CEC 2009) and the Applicant has indicated that the labor force for the proposed Project would be derived from Riverside County to the extent possible. The socioeconomic information and analysis in Sections 3.13 and 4.13 determine that there are more than sufficient unemployed Riverside County residents to meet the Project's construction workers needs. Consequently, it is expected that minimal population in-migration would occur as a result of the Project construction.

Similarly, it also is unlikely that the construction workforce would require housing in excess of the existing supply. Based on the data and analysis in Section 3.13 and 4.13, any in-migration by the construction workforce could be accommodated by the available hotel rooms and housing vacancies in the nearby cities of Blythe and Indio, which have approximately 35 lodging facilities with an average of 55 rooms per facility.

Most of the JTNP campgrounds are located in the northwest area of the park and are too great a distance for Project construction workers to commute from on a daily basis. Only the Cottonwood Campground is readily accessible from I-10. The campground has 62 individual sites available on a first-come first-served basis year round. There are also three group sites that can be reserved. There is a 30-day camping limit each year for park visitors (of which at most 14 nights total may occur from October through May). The Cottonwood Campground would likely be 45 minutes to an hour's drive from the Project site. The campground has basic camping amenities of water and a dump station for RVs but no shower facilities or utility hook-ups are available. Consequently, the campground would likely have a limited attraction as overnight accommodations for Project workers.

Informal camping by construction workers would most likely be an issue in the eastern JTNP areas that are closer to the Project site and less visited by other park visitors or park rangers. Proposed mitigation measure MM-NPS-03 specifically identifies measures to reduce the likelihood of informal camping occurring by Project workers. Given these measures and the absence of any support facilities, informal camping within JTNP would likely have a limited attraction as overnight accommodations for Project workers resulting in a minor impact on the NPS camping facilities and natural resources from construction workers.

Cumulative Impacts

Depending on their locations, other solar projects near the JTNP may cause similar impacts compared to the proposed Project. However, the other solar projects are either a similar or greater distance from the JTNP and therefore would be expected to have an equal or lesser impact (on a per worker basis) on park resources. As discussed in Section 4.13, there will be sufficient employable Riverside County residents to meet the projects' cumulative construction workers needs. It is therefore expected that minimal population in-migration would occur as a result of the construction of the currently foreseen solar construction projects in Riverside County. Furthermore, there are substantial housing and overnight accommodations available in the region to meet any demand for project workers to temporarily relocate closer to their project site. Consequently, there would be a minor cumulative impact on the NPS camping facilities and natural resources from construction workers.

Mitigation Measures

The Record of Decision or Right-of-Way Grant stipulations will recognize an Interagency Agreement between the BLM and NPS. This Interagency Agreement will establish roles and responsibilities, and the agencies will work cooperatively with the Applicant to develop an Environmental and Construction Monitoring and Compliance Program (ECMCP). The NPS will significantly contribute to the development of detailed criteria in the lighting, dust control, and noise mitigation and monitoring for the Project.

MM-SD-01. The NPS shall be afforded the opportunity to review and comment on the following pre-construction plans required for the Project prior to approval of the plans by the BLM and CPUC: the Vegetation Resources Management Plan, the Lighting Mitigation Plan, the Dust Control Plan, the Integrated Weed Management Plan, and the Construction Traffic Control Plan. Review and comment by the NPS must be within time frames specified by the BLM.

MM-SD-02. The Applicant shall enter into a funding agreement or other financial mechanism, as may be specified in the Record of Decision or Right-of-Way Grant, to reimburse the NPS for reasonable costs incurred in the monitoring of the following measures (whether applicant-proposed or BLM-recommended) to address temporary indirect impacts on the Joshua Tree National Park:

- *Fugitive dust: AM AIR 1, AM-AIR 6 and MM-VR-3, concerning the development and implementation of a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403; MM-AIR 3, requiring annual re-application of dust palliatives at the Solar Farm site; and AM-GEO-2 and AM-GEO-4, as they relate to the suppression of fugitive dust during construction and operation.*
- *Noise: AM-NZ-1, limiting most construction activity to daytime hours.*
- *Nighttime lighting: MM-VR-4, requiring the design and installation of a lighting mitigation plan concerning temporary and permanent exterior lighting.*

MM-SD-03. A Signage and Guidance Plan shall be developed for JTNP by the Applicant and reviewed and approved by both the NPS and the BLM prior to the start of construction of the Project. The intent of this plan is to address the potential indirect effects on NPS land as a result of the influx of workers associated with the mobilization, construction, and demobilization of the Project. The plan shall include the following elements:

- *Design and installation of directional and informational signage that identify areas of JTNP available for day, overnight, and long-term stays; off-limit areas; and pertinent park rules and regulations;*

- *Design and installation of strategically placed gates, bollards, or the like, inside the boundary of JTNP, where deemed necessary, for the purpose of vehicular control on NPS parkland located nearest the Project boundary;*
- *Educational instruction for Project construction workers on park rules and regulations pertinent to JTNP and Joshua Tree Wilderness Area. This instruction shall be integrated into the Worker Environmental Awareness Program;*
- *Requirements for the retention and/or removal of any items installed as part of the plan following completion of construction of the Project; and,*
- *Funding mechanism for implementing the plan.*

Items installed as part of the plan shall have a nexus to the NPS's need to address the likely impacts associated with above normal numbers of users of JTNP facilities during the mobilization, construction, and demobilization period of the Project.

4.14.10 Cumulative Impacts

Geographic Extent

Since the Project would impact the Joshua Tree, Chuckwalla Mountains *and Palen-McCoy* Wilderness Areas, the geographic extent of analysis is the area encompassing the northern boundary of the Joshua Tree Wilderness *Area* south to the southern boundary of the Chuckwalla Mountains Wilderness *Area*. The eastern and western boundaries would also be determined by the Wilderness Area boundaries. The Alligator Rock ACEC is included in this geographic extent. *To a lesser extent, Palen-McCoy Wilderness, since it would be within the viewshed of the Project Study Area is also considered within this analysis.*

Existing Cumulative Conditions

The pristine Joshua Tree, Chuckwalla, *and Palen-McCoy* Wilderness Areas are surrounded by largely undeveloped lands. The Alligator Rock ACEC is also largely undeveloped, though it is nearly adjacent to I-10. DPV1 transmission line has been built through the Alligator Rock ACEC.

Past, Present and Reasonably Foreseeable Future Projects

DPV1 transmission line is an existing project that currently passes through the Alligator Rock ACEC. DPV2 transmission line is a proposed future project that would also pass through the Alligator Rock ACEC. Both projects may contribute to cumulative impacts to the ACEC. The temporary impacts from the proposed Action in conjunction with the future DPV2 project could cause cumulative impacts to the *viewshed of the* Chuckwalla Wilderness Areas and the Alligator Rock ACEC *by adding a second transmission line adjacent to the existing line*. No other known projects have been proposed within the Alligator Rock ACEC, Joshua Tree, Chuckwalla Mountains *or Palen-McCoy* Wilderness Areas.

Depending on their locations, other solar projects near the Joshua Tree Wilderness *Area* and Chuckwalla Mountains Wilderness *Area* may cause similar impacts compared to the proposed Project.

Overall Conclusion

Due to the distance from the wilderness areas and lack of other development proposed within the Alligator Rock ACEC, impacts from the proposed Project are unlikely to be cumulatively adverse.

4.15 TRANSPORTATION, TRAFFIC AND PUBLIC ACCESS

4.15.1 Methodology for Analysis

This section discusses the transportation and public access impacts that would occur with implementation of the Proposed Action or alternatives with respect to the impact criteria identified below in Sections 4.15.2 and 4.15.3. Effects may occur from physical changes to roads, construction activities, introduction of construction- or operations-related traffic on local roads, or changes in traffic volumes created by either direct or indirect workforce changes in the area. Because the traffic analysis was conducted for all Project components together in order to capture the maximum impacts to traffic and transportation, and because the analysis is relevant to all Project components and alternatives, the traffic analysis results are presented separately in Section 4.15.4, with additional detail provided in the complete traffic analysis found in Appendix I. These results are then used for the analysis of each action alternative.

4.15.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on transportation (CEQA does not define significance criteria for public access) if it would:

TA-1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

TA-2. Conflict with an applicable congestion management program, including but not limited to Level of Service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; or

TA-3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks.

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact under all alternatives:

- Substantially increase hazards due to a design feature such as sharp curves or dangerous intersections or incompatible uses:

  No road hazards such as insufficient line of sight or sharp curves were observed on the existing roadway system. Reconfiguration of the existing roadway system would not be required under any of the action alternatives; therefore, there would be no adverse effect.

- Result in inadequate emergency access:

  There are no features of the existing roadway system that would limit or prevent emergency access. Reconfiguration of the existing roadway system would not be required under any of the action alternatives; therefore, emergency access would remain the same and there would be no adverse effect.

Under all action alternatives new access roads, both temporary and permanent, would be designed and constructed to allow the movement of large vehicles, would provide periodic locations where vehicles can turn around, and would be sufficient to accommodate emergency vehicles such as ambulances and fire trucks; therefore, there would be no adverse effect on emergency access.

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities:

  Public buses along I-10 are the only public transportation known to use the Project area. Project-generated traffic would be a small percentage of the total traffic on I-10; therefore, these public buses would not be adversely affected. There are no future plans to expand public transportation in the Project area, nor are such plans likely due to the area's sparse population. Nevertheless, implementation of any of the action alternatives would not preclude an expansion of public transportation in the Project area.

  There are no bicycle routes in the Project area; therefore, there would be no adverse effects. There are no future plans to designate bicycle routes in the Project area, although implementation of any of the action alternatives would not preclude the future designation of bicycle routes in the Project area.

4.15.3 Quantitative Traffic Analysis

A quantitative traffic analysis was performed by Hernandez Kroone & Associates (HKA) to assist in identifying and evaluating the potential traffic, transportation and public access impacts of the proposed Project (HKA 2010). The detailed traffic study is provided in Appendix I. A summary of the traffic analysis methodology is presented here.

Because no traffic would be generated as a result of any of the three No Action Alternatives (Alternatives 4 through 6), the quantitative traffic analysis described in this section is only relevant to the Action Alternatives (Alternatives 1 through 3).

In addition, the traffic study only analyzed projected construction traffic levels because construction traffic would greatly exceed operation and maintenance traffic and would be similar to traffic during decommissioning. Therefore, an analysis of construction traffic impacts serves as an analysis of the maximum impact level of the Project.

The quantitative traffic analysis examined the impacts of the three Project components together in order to capture the maximum impacts to traffic and transportation. Because the construction of the Project components would overlap, analyzing the Project components individually would not accurately reflect the overall impact of the Project. Impacts from the individual components would be less than those of the entire proposed Project. Likewise, impacts from the reduced size of the Solar Farm under Alternative 3 during construction would be less than those of the full size Solar Farm alternatives (Alternatives 1 and 2) because there would be slightly less Project-generated traffic in order to construct the Project. Traffic impacts from Project operations would, however, remain substantially similar under each of the three Solar Farm action alternatives.

The traffic impact analysis can be broken down into four steps. First, the future traffic volume of the area is estimated. This is referred to as "projected future traffic" and provides a yardstick against which to measure the impact of Project-generated traffic. Second, the number of trips that would be generated by the proposed Project is estimated. This is referred to as "Project trip generation." Third, the distribution of these trips on existing roadways is estimated. This is referred to as "Project trip distribution and assignment." Finally, the impact of the proposed Project is determined by calculating the level of service (LOS) of area roadways and intersections when Project-generated trips are added to the projected future traffic volume.

Projected Future Traffic

The projected future traffic volume in the area provides a yardstick against which to measure the impact of Project-generated traffic. Several growth measurements were analyzed to determine which one provided the best method to estimate future traffic in the Project area. A two percent annual growth rate was determined to be appropriate for use in the traffic analysis to project future traffic volume.

Project Trip Generation

Project trips represent the volume of traffic that would be added to the road system by implementation of the proposed Project. For this analysis, Project trips were estimated through an analysis of the number of trips required to construct, operate, and maintain the proposed Project. Project trips include employees commuting to and from the Project site, construction equipment trips, deliveries of materials, visitor trips, and other miscellaneous trips to the Project site.

The number of Project trips would be similar regardless of which *action* alternative[1] was chosen. Therefore, the Project trips were not estimated separately for each alternative and the traffic analysis was performed using a single dataset.

The only Project trips relevant to the quantitative traffic analysis are those that occur during the AM and PM peak traffic hours. Because traffic volume would likely be greatest during these hours, analyzing these periods provides a conservative assessment of overall traffic impacts. The AM peak traffic hour occurs during the period from 6:00 AM to 9:00 AM. The PM peak traffic hour occurs during the period from 4:00 PM to 6:00 PM (HKA 2010).

Construction Trips

Construction would occur over a period of 26 months. Chapter 2 provides details on the construction plan related to traffic and transportation including the number of employees, construction equipment trips, material deliveries, and the construction schedule. Because this section focuses on the information used to perform the traffic analysis, much of the information provided in Chapter 2 is not repeated here.

Construction Employee Trips

Table 4.15-1 contains the daily employee trips to the Project site components in passenger car equivalents (PCEs), as well as the trips that would occur during the AM and PM peak traffic hours. A PCE can be thought of as a measure of the impact that a mode of transport has on traffic compared to a regular passenger car. For example, if a regular passenger car is assigned a value of

[1] *Alternatives 1, 2, and 3 are action alternatives, and Alternatives 4, 5, and 6 are no action alternatives.*

Table 4.15-1
Project Trips for Construction Employees

Project Component	Daily Trips (one-way trips; PCE)	AM Peak Hour (one-way trips, PCE)		PM Peak Hour (one-way trips, PCE)	
		In	Out	In	Out
Solar Farm and Gen-Tie Line	204	88	2	-	10
Red Bluff Substation	108	46	-	-	8
Visitors and miscellaneous trips	10	-	-	-	-
Total	**322**	**134**	**2**	**-**	**18**

Source: HKA 2010

"1," a bus or tractor trailer might be assigned a value of "3" or "4" while a motorcycle might be assigned a value of "0.5." By assigning PCEs, a quantitative analysis that takes into account all vehicle types can be performed.

By comparing the "Daily Trips" column, which represents total trips in a 24-hour period, with the "AM Peak" and "PM Peak" columns, it is apparent that some Project trips would occur outside of the AM and PM peak traffic hours. For example, the work day would likely end at 3:30 PM; therefore, the majority of employees would leave the Project site prior to the PM peak traffic hour. However, because traffic volume would be greatest during peak hours, the quantitative traffic analysis only analyzes peak hours.

The methodology by which HKA arrived at the numbers in Table 4.15-1 is detailed in the traffic study (Appendix I). For example, the 204 one-way trips to the Solar Farm and Gen-Tie Line consist of the following:

- Twenty-five round trips by buses with 20 seats each to shuttle employees to the site from nearby cities. Using a PCE of 1.5 for the buses, this equates to 76 one-way trips.
- Sixty round trips by private vehicles, which equates to 120 one-way trips. Even though buses would be provided, it is assumed that approximately 10 percent of employees would continue to drive private vehicles with one or two passengers.
- Eight one-way trips for security guards. Two guards would staff each of two 12-hour shifts.

Construction Equipment Trips

Table 4.15-2 contains an estimate of the daily construction equipment trips that would occur during the AM and PM peak traffic hours only. The majority of the construction equipment and material deliveries would occur outside of peak traffic hours. For example, the oversize flat-bed tractor trailers that would deliver construction equipment to the site are not allowed by regulation to travel on major highways such as I-10 during peak traffic hours. However, smaller trucks such as concrete mixers would likely travel during the AM peak hour because concrete needs to be poured at cooler temperatures and because these trucks can be unloaded quickly. In order to provide a realistic estimate of the impact of truck trips on traffic and transportation, approximately one-third of the average daily truck trips were assumed to occur during the AM peak traffic hour. A PCE of 3 was used to estimate the impact of these truck trips.

Table 4.15-2
Project Trips for Construction Equipment

Project Component	Daily Trips (one-way trips, PCE)	AM Peak Hour (one-way trips, PCE)		PM Peak Hour (one-way trips, PCE)	
		In	Out	In	Out
Construction equipment	18	10	8	-	-
Material deliveries	15	8	7	-	-
Total	**33**	**18**	**15**	**-**	**-**

Source: HKA 2010

The methodology by which HKA arrived at the numbers in Table 4.15-2 is detailed in the traffic study (Appendix I). The number of construction equipment trips used in the quantitative traffic analysis (33 one-way peak-hour PCE trips each workday) is considered realistic given the travel conditions and restrictions for these vehicles.

Operation and Maintenance Trips

The trip volume during operation and maintenance of the proposed Project would be much lower than during construction.

Solar Farm

During operation and maintenance of the Solar Farm, each of two 12-hour shifts would be staffed by 10 employees (up to a maximum of 15 employees) and two security guards. Seven deliveries would also occur each weekday. The Visitor Center would be open from 10:00 AM to 3:00 PM each weekday and would be staffed by one employee. Therefore, the average daily traffic (over a 24-hour period) would be 32 round trips, or 64 one-way trips.

Over half of these trips would occur outside of peak traffic hours. For example, employees working the 6:00 AM to 6:00 PM shift would arrive and depart outside of peak traffic hours. In addition, trips to the Visitor Center would not occur during peak traffic hours, and some deliveries would likely occur during non-peak hours.

About 14 one-way trips would occur during each of the peak traffic hours. Table 4.15-3 presents the average daily traffic over a 24-hour period and the trips that would occur during peak traffic hours.

Table 4.15-3
Solar Farm Operation and Maintenance Project Trips

Trip Type or Origin/Destination	Daily Trips (one-way trips, PCE)	AM Peak Hour (one-way trips, PCE)		PM Peak Hour (one-way trips, PCE)	
		In	Out	In	Out
Solar Farm (two shifts)	40	-	10	10	-
Guard Shack (two shifts)	8	-	2	2	-
Visitor Center*	2	-	-	-	-
Deliveries	14	1	1	1	1
Total	**64**	**1**	**13**	**13**	**1**

* One round trip per day has been assumed for purposes of this analysis.
Source: HKA 2010

Gen-Tie Line

The Gen-Tie Line would be inspected annually and maintenance would be performed on an as-needed basis, regardless of the alternative selected. Traffic associated with these activities could occur at any time; therefore, these trips have been assumed to occur outside of peak traffic hours.

Red Bluff Substation

The Red Bluff Substation would be monitored remotely and would have approximately three to four visits a month, regardless of the alternative selected. Traffic associated with these activities could occur at any time; therefore, these trips have been assumed to occur outside of peak traffic hours.

Project Trip Distribution and Assignment

Project trip distribution and assignment is the process of analyzing the likely origin and destination of Project-generated traffic within the roadway system. The majority of Project trips would access the Project site from I-10, SR-177, and Kaiser Road. Figure 4.15-1 shows the trip distribution and assignment in percentages. A detailed explanation of trip distribution and assignment can be found in the traffic study (Appendix I).

Solar Farm

All traffic would access the Solar Farm construction site via Kaiser Road. Because of the limited development north of the Project site, only three percent of traffic has been assumed to travel southbound on Kaiser Road. The remaining 97 percent has been assumed to travel northbound on Kaiser Road. On I-10, 67 percent of all traffic has been assumed to travel eastbound and 27 percent westbound based on population density in the surrounding communities (HKA 2010).

Gen-Tie Line

Employees working on the Gen-Tie Line would travel different routes depending on the section of the line that was under construction at a particular time. All Gen-Tie Line construction traffic was assumed to exit I-10 at the SR-177 interchange and then turn either north or south depending on the current construction location.

Red Bluff Substation

The route used to access the substation site would vary depending on the alternative. For Red Bluff Substation A, Project traffic would use the I-10 and SR-177 interchange and proceed south and east along Aztec Avenue. There is also a Red Bluff Substation A sub-alternative, under which traffic would exit I-10 at the Corn Springs exit and proceed to the site via Chuckwalla Valley Road and Corn Springs Road. For Red Bluff Substation B, Project traffic would use the I-10 and Eagle Mountain Road interchange. To represent the highest level of potential traffic impacts in the quantitative traffic analysis, all Red Bluff Substation construction traffic was assumed to exit I-10 at the SR-177 interchange. If alternate interchanges were utilized, there would be less Project traffic and, therefore, less impact at the I-10 and SR-177 interchange.

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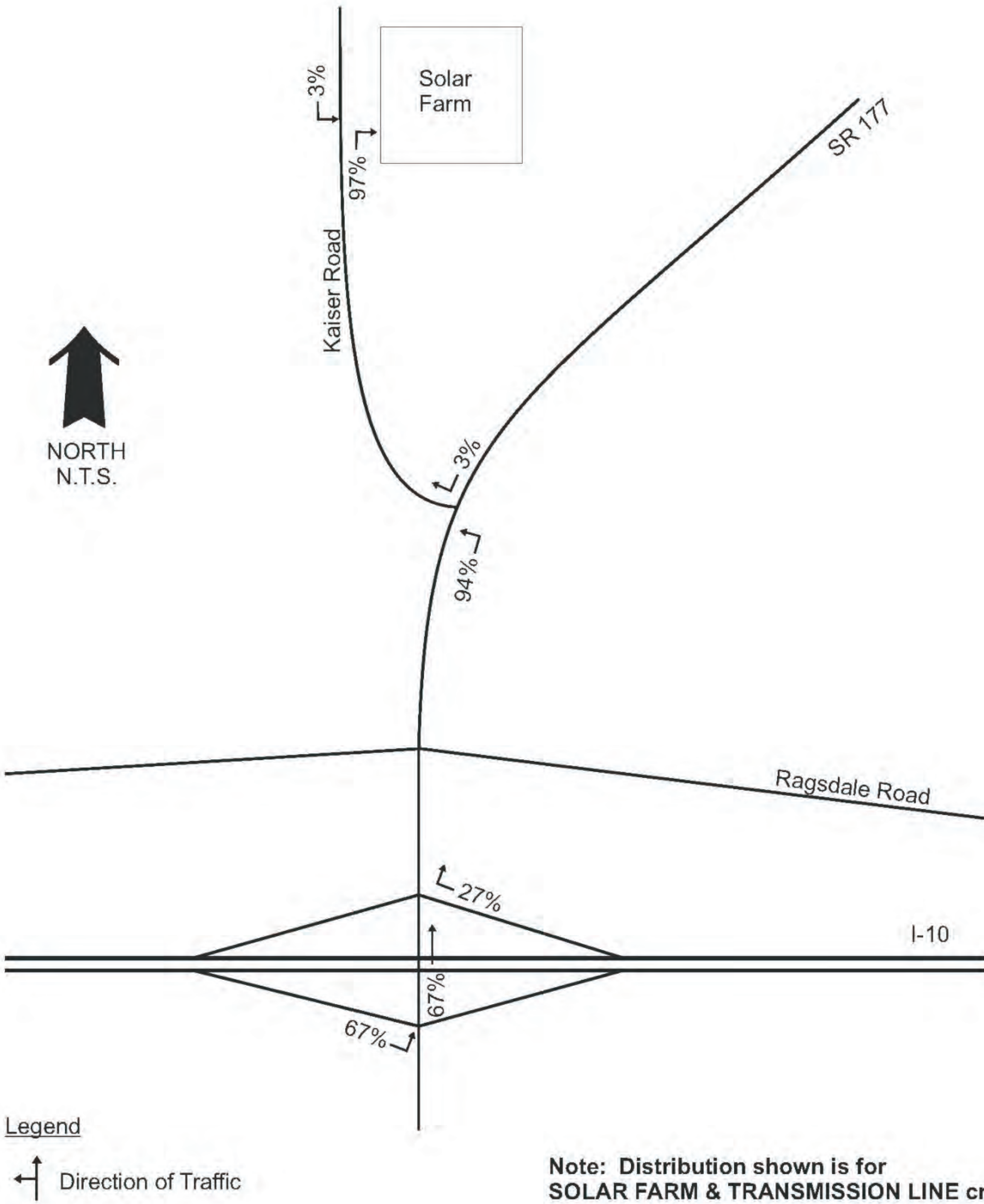


Note: Distribution shown is for SOLAR FARM & TRANSMISSION LINE crews

Source: Hernandez, Kroone & Associates, Inc. 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 4.15-1

Trip Distribution and Assignment in Percentages

Impacts of the Proposed Project on LOS and Delay at Intersections

HKA analyzed the construction Project trip data discussed in the previous sections using the Highway Capacity Manual 2000 methodology to determine the LOS at the three intersections that would be the most adversely affected by the proposed Project. As shown in Table 4.15-4, the LOS at all three intersections would remain at "A," which is the highest or best performance level.

Table 4.15-4
Project Impact on Delay and Level of Service (LOS) at Intersections

Intersection	Delay without Project (seconds)	LOS without Project	Delay with Project (seconds)	LOS with Project
AM Peak Hour				
SR-177 and I-10 Eastbound	9.0	A	9.6	A
SR-177 and I-10 Westbound	8.6	A	9.3	A
SR-177 and Kaiser Road	8.5	A	8.6	A
PM Peak Hour				
SR-177 and I-10 Eastbound	8.9	A	9.0	A
SR-177 and I-10 Westbound	8.7	A	8.8	A
SR-177 and Kaiser Road	8.6	A	8.7	A

Source: HKA 2010

The LOS is based on a measure of the number of seconds a driver is delayed at an intersection. Table 3.15-4 shows the impact of the proposed Project on driver delay. Although the delay increases slightly at all intersections during Project construction, the LOS remains at "A." The Riverside County General Plan Circulation Element states that all County-maintained roads and conventional state highways shall operate at LOS "C" or better (Riverside County 2003). The Riverside County congestion management program (CMP) states that all state highways and principal arterials shall operate at LOS "E" or better (Riverside County 2007). The impact of Project-generated traffic at the affected intersections would be acceptable by County standards.

The data analyzed in the traffic study is a realistic estimate of the peak Project impacts. Impacts to intersections not included in the study and during other times of day or phases of construction would be less than those calculated in the traffic analysis.

Increase in Traffic Volume on Roadway Segments

On February 17, 2010, 108 vehicles (one-way trips) were counted on Kaiser Road north of Lake Tamarisk during a 24-hour period (HKA 2010). During operation and maintenance, an additional 64 vehicles (one-way trips) would travel this route during a 24-hour period on a typical weekday (HKA 2010). The number of trips added to these roads during construction would be higher, especially during the peak construction period (months 6 through 8). Although the intersection LOS analysis demonstrates that the impacted intersections would continue to operate at an acceptable LOS, local residents and others who are familiar with local roads would likely perceive the increase in traffic as substantial, even during operation and maintenance, because the existing volume of traffic is so low and the Project-generated traffic would seem substantial in comparison.

4.15.4 Alternative 1 – Proposed Action

Construction

<u>Solar Farm Layout B</u>

Performance of the Roadway System

As discussed in Section 4.15.3, the LOS at impacted intersections would remain at LOS A during construction, with only slight increases in delay at those intersections. LOS A is the highest standard of performance for the roadway system. Intersections operating at LOS A are in conformance with Riverside County's LOS performance standards. Impacts would be further reduced with implementation of AM-TRANS-1.

Air Traffic Impacts

SF-B would overlap a low-level military flight path. The Applicant would coordinate with the Department of Defense R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, as well as with local regional military installations to ensure that no impacts or conflicts occur during construction (AM-TRANS-4). SF-B would be sufficiently distant from the Eagle Mountain landing strip and the former Desert Center Airport that no impacts would occur. Construction of SF-B would not substantially increase traffic at regional airports as most trips to the site would take place in cars or trucks.

Road Deterioration

All road surfaces deteriorate with use over time and require maintenance, such as addressing potholes, and periodic resurfacing. Roads also deteriorate due to extreme weather or poor design and construction. Project-generated traffic, especially heavy truck traffic, would accelerate the rate of deterioration of public roads traveled. While the contribution of the proposed Project to road deterioration would be negligible on I-10 because Project-generated traffic would be a small portion of total traffic, impacts on certain local roads could be more pronounced. Impacts would be reduced with implementation of AM-TRANS-2.

Road Closures and Rerouting

No road closures or rerouting would occur.

<u>Gen-Tie Line A-1</u>

Impacts from construction of GT-A-1 would be the same as those described for SF-B for performance of the roadway system, air traffic, and road deterioration.

Road Closures and Rerouting

<u>Traffic controls (such as flaggers) may be required for short durations during construction of GT-A-1 for certain activities, such as stringing wire across roads.</u> Industry-standard construction warning signs would be posted along roads. Flaggers or other traffic controls would be implemented as necessary to assure the efficient movement of traffic and the safety of travelers and construction workers. Utility crossings would be completed and signed in accordance with the guidelines of the agency that controls the affected roads. *<u>Traffic controls would be managed through implementation of AM-TRANS-1.</u>*

Red Bluff Substation A

Impacts from construction of Red Bluff Substation A would be the same as those described for SF-B for performance of the roadway system and road deterioration. No road closures or rerouting would be required.

Air Traffic Impacts

In addition to potentially overlapping low-level military flight paths as described for SF-B, the Desert Center Communications Site (Telecom Site) would be approximately 5,500 feet from the runway of the former Desert Center Airport, which is now a private special-use airport. The Telecom Site, which would contain a 185-foot tall tower, *is located north of the airport and perpendicular to the runway centerline. Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the FAA if an object to be constructed has the potential to affect navigable airspace according to these standards. However, it is not mandatory that a Form 7460-1 be filed with the FAA because the airport is privately-owned and privately-used and there is no FAA approved instrument approach procedure.* Coordination with the FAA would still be prudent. Coordination with the airport owners (AM-TRANS-3) would occur prior to construction.

Summary of Construction Impacts

The construction of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would result in the following adverse impacts.

Delay at intersections would increase slightly; however, the LOS of these intersections would remain at “A,” which is the highest standard of performance.

Portions of the Project would overlap low-level military flight paths, and coordination with the military would be required. The Telecom Site would be approximately 5,500 feet from the runway of the former Desert Center Airport, and coordination with the airport owners would occur prior to construction.

Project-generated traffic would contribute to deterioration of local roads; however, Sunlight would document road conditions prior to and after construction and contribute fair share cost to required repairs.

Traffic controls (such as flaggers) may be required for short durations during construction of GT-A-1 for certain activities, such as stringing wire across roads; however, a Construction Traffic Control Plan (AM-TRANS-1) would be developed and would ensure adherence to applicable regulations and implementation of industry-standard traffic controls.

Operation and Maintenance

Solar Farm Layout B

Because there would be less Project-generated traffic on area roads during operation and maintenance of SF-B (as compared to during construction), impacts related to performance of the roadway system (specifically, LOS and intersection delay) and road deterioration would be reduced. There would be no impact to air traffic as any necessary mitigation would have been implemented prior to construction. Impacts to road closures or rerouting would be the same as those described for construction of SF-B.

Gen-Tie Line A-1

Because there would be less Project-generated traffic on area roads during operation and maintenance of Gen-Tie Line A-1 (as compared to during construction), impacts related to performance of the roadway system (specifically, LOS and intersection delay) and road deterioration would be reduced. There would be no impact to air traffic as any necessary mitigation would have been implemented prior to construction. No road closures or rerouting would occur during operation and maintenance.

Red Bluff Substation A

Because there would be less Project-generated traffic on area roads during operation and maintenance of Red Bluff Substation A (as compared to during construction), impacts related to performance of the roadway system (specifically, LOS and intersection delay) and road deterioration would be reduced. There would be no impact to air traffic as any necessary mitigation would have been implemented prior to construction. No road closures or rerouting would occur during operation and maintenance.

Summary of Operation and Maintenance Impacts

The operation and maintenance of Alternative 1 would have the following impacts.

Delay at intersections would decrease substantially compared to construction levels because there would be less Project-generated traffic. The LOS of these intersections would remain at “A,” which is the highest standard of performance.

The volume of Project-generated traffic would be too low during operation and maintenance to substantially contribute to deterioration of local roads, reducing this impact.

There would be no impact on low-level military flight paths or the former Desert Center Airport as any necessary mitigation would have been implemented prior to construction.

There would be no impact related to road closures or rerouting because none would occur during operation and maintenance.

Decommissioning

Solar Farm Layout B

Decommissioning impacts would be similar to construction impacts described for SF-B.

Gen-Tie Line A-1

Decommissioning impacts would be similar to construction impacts described for GT-A-1.

Red Bluff Substation A

Decommissioning impacts would be similar to construction impacts described for Red Bluff Substation A.

Summary of Decommissioning Impacts

The impacts of decommissioning Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would be similar to the impacts of construction. Decommissioning Alternative 1 would have the following impacts.

Delay at intersections would increase slightly; however, the LOS of these intersections would remain at "A," which is the highest standard of performance.

Portions of the Project would overlap low-level military flight paths, and coordination with the military would be required. The Telecom Site would be approximately 5,500 feet from the runway of the former Desert Center Airport, and coordination with the airport owners would occur prior to construction.

Project-generated traffic would contribute to deterioration of local roads; however, Sunlight would document road conditions prior to and after construction and contribute fair share cost to required repairs.

Traffic controls (such as flaggers) may be required for short durations during decommissioning of GT-A-1 for certain activities, such as removing wire at road crossings; a Construction Traffic Control Plan (AM-TRANS-1) would be developed to ensure adherence to applicable regulations and implementation of industry-standard traffic controls.

Summary of Combined Impacts for Alternative 1

The construction and decommissioning of Alternative 1 with SF-B, GT-A-1 and Red Bluff Substation A would increase vehicle traffic in the area (TA-1 and TA-2); however, analysis of delay and LOS at Project intersections indicates that the intersections would continue to operate at an acceptable level (LOS "A"). Vehicle traffic during operation and maintenance would be less than that during construction and decommissioning; therefore, impacts would be reduced during this phase of the Project.

The construction and decommissioning of Alternative 1 have the potential to impact low-level military flight paths and the former Desert Center Airport. Coordination with the military and the airport owners would occur prior to Project construction. No impacts would occur during operation and maintenance because potential impacts and necessary mitigations would be agreed upon prior to construction.

Traffic associated with the construction and decommissioning of Alternative 1 would contribute to deterioration of local roads; however, Sunlight would document road conditions prior to and after construction and contribute fair share cost to required repairs. The volume of traffic associated with operation and maintenance would be too low to substantially contribute to road deterioration.

Traffic controls (such as flaggers) may be required for short durations during construction and decommissioning of GT-A-1 for certain activities, such as removing wire at road crossings; a Construction Traffic Control Plan (AM-TRANS-1) would be developed to ensure adherence to applicable regulations and implementation of industry-standard traffic controls.

Applicant Measures and Mitigation Measures

The following applicant measures (AMs) would be implemented to reduce adverse traffic impacts. No mitigation measures are proposed.

AM-TRANS-1: Sunlight shall prepare a Construction Traffic Control Plan in conjunction with Riverside County and/or Caltrans in accordance with Caltrans Manual on Uniform Traffic Control Devices and the California Joint Utility Traffic Control Manual (2010). At a minimum, the Plan shall address the following:

- Identify all necessary transportation permits, including those for oversize vehicles, hazardous materials transport, haul routes, and roadway ROW encroachment;
- Determine timing of heavy equipment and building materials deliveries, scheduling these trips for off-peak hours to the extent feasible;
- Determine timing of construction worker arrival and departure times, scheduling these trips for off-peak hours to the extent necessary;
- Determine need and procedures for redirecting construction traffic with a flagger;
- Determine need for signing, lighting, and traffic control device placement;
- Ensure access for emergency vehicles to the Project site and through temporary lane closures;
- Identify haul routes requiring rail crossings (outside the Project area) by oversize vehicles and safety measures to ensure no impacts would occur;
- Identify temporary lane closure or other travel disruptions on road segments and at intersections (if lane closures are required on state highways, demonstrate compliance with Section 517 *and Chapter 600* of Caltrans' Encroachment Permits Manual, *and Chapter 13 of Caltrans' Right of Way Manual*);
- Ensure access to residential and commercial property near the Project; and
- Identify safety procedures for exiting and entering the site access gates.

AM-TRANS-2: Sunlight shall document road conditions at the beginning and end of Project construction and decommissioning and contribute fair share cost for pavement maintenance and other needed repairs.

AM-TRANS-3: Sunlight shall share Project information with the airport owners if a transmission line alternative that runs near the former Desert Center Airport's runway is selected to assure that no special precautions are needed.

AM-TRANS-4: Sunlight shall coordinate with the Department of Defense R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, as well as with local regional military installations regarding low-level flight operations relative to the Project to assure that no special precautions are needed.

CEQA Significance Determination

Solar Farm Layout B

TA-1 and TA-2

The construction and decommissioning of SF-B would increase vehicle traffic in the area; however, analysis of delay and LOS at impacted Project intersections indicates that the intersections would continue to operate at LOS "A," the highest standard of performance. LOS "A" is an acceptable performance level according to the Riverside County General Plan and Congestion Management Program. Therefore, impacts would be less than significant. However, AM-TRANS-1 would be implemented to further reduce the level of impacts. Vehicle traffic during operation and maintenance would be less than that during construction and decommissioning. Impacts would remain less than significant during this phase of the Project, but would be reduced compared to construction and decommissioning. Therefore, construction, operation, and decommissioning of SF-B would have less-than-significant impacts on the LOS at the Project's intersections.

The construction, maintenance, and decommissioning of SF-B would not result in any impacts to alternative modes of transport. Mass transit in the area is limited to commercial buses traveling I-10. Project-generated travel would be a small portion of traffic on I-10; therefore, there would be no noticeable impact. There are no bicycle or pedestrian facilities on Project roads; SF-B would have no impacts on alternative modes of transport.

TA-3

The construction and decommissioning of SF-B has the potential to interfere with low-level military flight path operations, resulting in a significant impact. To reduce the level of this impact, Sunlight would implement AM-TRANS-4 to coordinate with the military prior to construction. As such, construction and decommissioning of SF-B would have less-than-significant impacts on low-level military flight path operations. No impacts would occur during operation and maintenance because potential impacts and necessary mitigations would be agreed upon prior to construction. Therefore, construction, operation, and decommissioning of SF-B would have less-than-significant impacts on air traffic patterns.

Gen-Tie Line A-1

The CEQA significance determination would be the same as that described for SF-B for all impacts, TA-1 through TA-3.

Red Bluff Substation A

The CEQA significance determination would be the same as that described for SF-B for TA-1 and TA-2. For TA-3, the construction and decommissioning of the Telecom Site has the potential to interfere with operations at the former Desert Center Airport, resulting in a significant impact. To reduce the level of this impact, Sunlight would implement AM-TRANS-3 to coordinate with the airport owners prior to construction. As such, construction and decommissioning of the Telecom Site would have less-than-significant impacts. No impacts would occur during operation and maintenance because potential impacts and necessary mitigations would be agreed upon prior to construction. Therefore, construction, operation, and decommissioning of the Telecom Site would have less-than-significant impacts on air traffic patterns.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 1.

4.15.5 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Construction impacts for GT-B-2 would be the same as those described for GT-A-1 in Alternative 1.

Red Bluff Substation B

Construction impacts for Red Bluff Substation B would be the same as those described for Red Bluff Substation A in Alternative 1.

Summary of Construction Impacts

The construction impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be the same as those described for Alternative 1.

Operation and Maintenance

Solar Farm Layout B

The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Operation and maintenance impacts for GT-B-2 would be the same as those described for GT-A-1 in Alternative 1.

Red Bluff Substation B

Operation and maintenance impacts for Red Bluff Substation B would be the same as those described for Red Bluff Substation A in Alternative 1.

Summary of Operation and Maintenance Impacts

The operation and maintenance impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be the same as those described for Alternative 1.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Decommissioning impacts for GT-B-2 would be the same as those described for GT-A-1 in Alternative 1.

Red Bluff Substation B

Decommissioning impacts for Red Bluff Substation B would be the same as those described for Red Bluff Substation A in Alternative 1.

Summary of Decommissioning Impacts

The decommissioning impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be the same as those described for Alternative 1.

Summary of Combined Impacts for Alternative 2

The combined impacts of Alternative 2 with SF-B, GT-B-2 and Red Bluff Substation B would be the same as those described for Alternative 1.

Applicant Measures and Mitigation Measures

The measures identified for Alternative 1 would also be implemented under Alternative 2.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B would be the same as that discussed under Alternative 1 for all criteria, TA-1 through TA-3.

Gen-Tie Line B-2

The CEQA significance determination for GT-B-2 would be the same as that discussed for GT-A-1 under Alternative 1 for all criteria, TA-1 through TA-3.

Red Bluff Substation B

The CEQA significance determination for Red Bluff Substation B would be the same as that discussed for Red Bluff Substation A under Alternative 1 for all criteria, TA-1 through TA-3.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 2.

4.15.6 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

Impacts from construction of SF-C would be similar to those described for SF-B with the following exceptions. Because SF-C would be approximately *767* acres smaller, there would be some reduction in the amount of construction traffic, which would result in improved roadway system performance and reduced road deterioration. These differences would be small and have not been quantified. Therefore, the impact levels are assumed to be the same as those described for SF-B.

Gen-Tie Line A-2

Impacts from construction of GT-A-2 would be similar to those described for GT-A-1 with the following exception. GT-A-2 is located near the former Desert Center Airport, which is now a private special-use airport *with no FAA-approved instrument approach procedure*. GT-A-2, with towers approximately 120 feet tall, would be located approximately 2,800 feet from the nearest point on the runway. *At this location, and assuming the base elevation of the runway and towers are similar, the towers would be located below the 20:1 obstacle clearance surface that would typically be associated with a public use airport operated under visual flight rules (VFR). Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the FAA if an object to be constructed has the potential to affect navigable airspace according to these standards. It is not mandatory that a Form 7460-1 be filed with the FAA because the airport is privately-owned and privately-used and there is no FAA-approved instrument approach procedure. However, it would be prudent to coordinate with the FAA*. Coordination with the airport owners (AM-TRANS-3) would occur prior to construction. Therefore, construction of GT-A-2 would not have *a significant* impact on navigable airspace.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A would be the same as those discussed under Alternative 1. The impacts discussed under Alternative 1 would not change with the alternate access road.

Summary of Construction Impacts

The construction impacts of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would be the same as those described for Alternative 1 with the following exceptions. In addition to the Telecom Site (see Alternative 1), GT-A-2 would be approximately *2,800* feet from the runway of the former Desert Center Airport, and coordination with the airport owners would occur prior to construction.

Operation and Maintenance

Solar Farm Layout C

Impacts from operation and maintenance of SF-C would be similar to those described for SF-B.

Gen-Tie Line A-2

Impacts from operation and maintenance of GT-A-2 would be the same as those described for GT-A-1 (Alternative 1).

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A would be the same as those described under Alternative 1. The impacts discussed under Alternative 1 would not change with the alternate access road.

Summary of Operation and Maintenance Impacts

The operation and maintenance impacts of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would be the same as those described for Alternative 1.

Decommissioning

<u>Solar Farm Layout C</u>

Impacts from decommissioning SF-C would be similar to those described for SF-B (see Alternative 1).

<u>Gen-Tie Line A-2</u>

Impacts from decommissioning GT-A-2 would be the same as those described for GT-A-1 (Alternative 1).

<u>Red Bluff Substation A</u>

The impacts resulting from decommissioning Red Bluff Substation A would be the same as those described under Alternative 1. The impacts discussed under Alternative 1 would not change with the alternate access road.

<u>Summary of Decommissioning Impacts</u>

The decommissioning impacts of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would be the same as those described for Alternative 1, with the exception that both the Telecom Site and GT-A-2 would be approximately 2,800 feet from the runway of the former Desert Center Airport and coordination with the airport owners would occur prior to construction.

Summary of Combined Impacts for Alternative 3

The combined impacts of Alternative 3 with SF-C, GT-A-2 and Red Bluff Substation A would be the same as those described for Alternative 1 with the following exceptions. In addition to the Telecom Site (see Alternative 1), GT-A-2 would be approximately 2,800 feet from the runway of the former Desert Center Airport, and coordination with the airport owners would occur prior to construction.

Applicant Measures and Mitigation Measures

The measures identified for Alternative 1 would also be implemented under Alternative 3.

CEQA Significance Determination

<u>Solar Farm Layout C</u>

The significance determination for SF-C would be the same as those described for SF-B (see Alternative 1) for all criteria, TA-1 through TA-3.

<u>Gen-Tie Line A-2</u>

The significance determination for GT-A-2 would be the same as those described for GT-A-1 (see Alternative 1) for TA-1 and TA-2. For TA-3, the construction and decommissioning of GT-A-2 has the potential to interfere with operations at the former Desert Center Airport, resulting in a significant impact. To reduce the level of this impact, Sunlight would implement AM-TRANS-3 to coordinate with the airport owners prior to construction. As such, construction and decommissioning of GT-A-2 would have less-than-significant impacts on air traffic patterns. No impacts would occur during operation and maintenance because potential impacts and necessary mitigations would be agreed upon prior to construction. Therefore, construction, decommissioning, and operation of GT-A-2 would have less-than-significant impacts on transportation.

Red Bluff Substation A

The CEQA significance determination for Red Bluff Substation A would be the same as that discussed under Alternative 1 for all criteria, TA-1 through TA-3. The impacts discussed under Alternative 1 would not change with the alternate access road.

Unavoidable Adverse Effects

No unavoidable adverse impacts would result from implementation of Alternative 3.

4.15.7 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site. BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the transportation and public access impacts of the proposed Project would not occur at the proposed site. However, the land on which the Project is proposed would become available to other uses that are consistent with BLM’s land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would have similar impacts in other locations.

4.15.8 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site. BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no increase in traffic. As a result, this No Action Alternative would not result in impacts to transportation and public access under the proposed Project. However, in the absence of this Project, other projects (including other non-solar renewable energy projects) may be constructed on this site or others to meet state and federal mandates, and those projects would have similar impacts on this or other locations.

4.15.9 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the Project site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, the increases in traffic from the construction and operation of the solar project would likely be similar to the transportation and public access impacts from the proposed Project. As such, this No Action Alternative could result in impacts to transportation and public access similar to the impacts under the proposed Project.

4.15.10 Cumulative Impacts

Geographic Extent

The geographic extent of the area impacted by transportation is the road network within and directly connected to the Project area *(i.e., generally within the I-10 corridor)* because this defines the road network that would be affected by traffic generated by existing and foreseeable future projects.

The geographic extent of the area impacted by public access is the CDD because this is the area covered by the BLM's CDCA Plan, the land use planning document that applies to the Project area.

The criteria by which transportation and public access impacts would be cumulatively considered significant are the same as those identified above in Sections 4.15.2 and 4.15.3.

Past, Present, and Reasonably Foreseeable Future Projects

Past development near the Project area includes those projects listed in Table 3.18-2. Projects 1 through 5, 7, 8, *10, 11 and 12* have been implemented. Traffic associated with these projects would already be utilizing the road network, would therefore be accounted for in the traffic study performed by HKA, and would be part of the baseline for the Project-specific impact analysis. Project 6 is a project to designate additional energy corridors. Project 6 itself would not generate any traffic; however, future energy projects that utilize the newly designated corridors could add traffic to Project area roads if they were sited and constructed within the Project area. Project 9 is the Kaiser iron ore mine, which was closed *to primary steelmaking* in 1983 and therefore would not contribute traffic to area roads.

The region of interest for cumulative transportation and traffic impacts includes primary regional roadways providing access to Riverside County and the adjacent areas, as well as airspace in the proximate proposed Project site radius. Thus, most of the projects listed in Table 3.18-3 can be considered close enough to the proposed Project to have the potential for cumulative impacts related to traffic and transportation.

Foreseeable renewable energy projects on BLM land in the CDD are listed in Table 3.18-1. Proposed projects outside of the I-10 corridor are not a consideration in the cumulative analysis of traffic and transportation for the proposed Project because traffic associated with these projects would not travel the same portions of the road network.

Cumulative Impact Analysis

Table 3.18-3 lists foreseeable projects in the Project area, which is the I-10 corridor in eastern Riverside County. Projects H, N, R, S, and U have the potential to affect the local road network (excluding I-10; see Figure 3.18-2). Of these projects, S, the Eagle Mountain Landfill Project, is similar in size to the proposed Project and would likely generate a similar amount of vehicle trips and other traffic and transportation impacts. The other projects are smaller and would likely generate a smaller number of vehicle trips and other traffic and transportation impacts.

Cumulative impacts would be greatest if the peak construction period of all of these projects overlapped. Although this worst-case scenario is unlikely, even if it were to occur, it is unlikely that the LOS of the affected intersections and roadway segments would degrade below “C,” the allowable limit in the Riverside County General Plan Vehicle Circulation Element (Riverside County 2003), because the local road network currently operates at LOS “A” and the Project-generated traffic would not be sufficient to degrade the LOS this much.

Using intersection delay to quantify LOS, the proposed Project would only slightly increase the delay; however, the increase would place the amount of delay near the border between LOS “A” and “B.” LOS “A” is defined as less than 10 seconds of delay and LOS “B” is defined as between 10 and 15 seconds of delay (Transportation Research Board 2000). In a worst-case scenario where construction peak periods overlapped for all projects proposed in the Project area, the LOS might temporarily degrade to “B” but would not likely degrade to “C.” Both LOS “B” and “C” are allowable according to the Riverside County General Plan; therefore, the cumulative impact would be less than significant. Although the local road network would remain at an acceptable LOS, local residents and others who are familiar with the area may perceive the increase in traffic as significant because the existing volume of traffic is so low and the additional traffic would seem significant in comparison. Because the vehicle circulation system in the area would continue to operate within the established standards, impacts would not be cumulatively considerable.

Cumulative impacts to I-10 have been considered separately from the remainder of the road network because, as the major transportation corridor in the area, it is likely that *construction vehicle trips* from foreseeable future projects would *have the greatest potential to combine cumulatively* on I-10 compared to other roads. It is likely that construction traffic, including tractor trailers, for all projects shown on Figure 3.18-2 would traverse some portion of I-10. Because the area is sparsely developed, it is likely that equipment and workers would have to travel long distances to project sites and could traverse a good portion of I-10 in eastern Riverside County regularly during their involvement with the projects. In a worst-case scenario where construction peak periods overlapped for all projects proposed in the Project area, the LOS of I-10 might temporarily degrade slightly, but would not likely degrade below the acceptable LOS “C.” Additional delay at on- and off-ramps would be the most likely impact perceived by travelers. Even a worst-case scenario would not likely exceed the capacity of I-10, which has two lanes in both directions in this area. Both LOS “B” and “C” are allowable according to the Riverside County General Plan.[2] Because the vehicle circulation system in the area would continue to operate within the established standards, impacts would not be cumulatively considerable.

[2] The LOS standards identified in the General Plan were developed in consultation with the California Department of Transportation (Caltrans), Riverside County Transportation Commission, Riverside County, and local agencies.

Operational vehicle trips would not have the potential to significantly impact local roadway performance standards, as they would be limited to minimal routine maintenance and inspection trips. This small volume of traffic would not have a cumulatively considerable contribution to average daily traffic volumes on local roadways.

There are many low-level military flight paths in the area. The implementation of these foreseeable projects could present additional obstacles for low-level flight, limiting the military's ability to conduct these operations and resulting in a cumulatively considerable impact to air travel. However, there are few airports in the area and few if any projects would be in proximity to them. Any conflicts would be expected to be resolved between the affected airport and the proponent of the specific project; therefore, no cumulative impacts would result.

Since the results of the traffic study demonstrate that the vehicular circulation would continue to operate acceptably and would therefore not conflict with established standards of performance, the Project would not create a cumulatively considerable effect. Some alternatives of the Project could impact air travel; however, these impacts have been reduced to less-than-significant by Applicant Measures and would therefore not be cumulatively considerable.

Impacts to public access would be cumulatively considerable because the total amount of land proposed for conversion by the projects listed in Table 3.18-3 would substantially reduce the amount of publicly-accessible land in the area. However, the proposed Project would not make a cumulatively considerable contribution to this impact because it represents a small fraction of the total amount of land proposed for conversion.

The Applicant Measures for traffic and transportation recommended for construction of the proposed Project and Alternatives 2 and 3 would reduce cumulative construction traffic impacts. Based on the short-term nature of construction, any temporary increase in vehicle trips, limits on public access, and transportation-related impacts would result in a less-than-significant cumulatively considerable contribution to construction traffic and transportation impacts.

The Applicant Measures for aviation-related impacts recommended for operation of the proposed Project and Alternatives 2 and 3 would reduce cumulative operational transportation impacts. The proposed Project and Alternatives 2 and 3 would not contribute to adverse long-term increases in traffic levels in the area. It would be consistent with applicable roadway performance standards and applicable transportation regulations, and would have no cumulatively considerable contribution to operational traffic and transportation impacts, because no substantial traffic- or transportation-related impacts would result from the action alternatives.

There would be no cumulative transportation or public access impacts under the No Action and No Project Alternatives (Alternatives 4, 5, or 6) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. Any future proposals for use of the site would be subject to separate environmental analysis.

4.16 VISUAL RESOURCES

4.16.1 Methodology for Analysis

This visual resources impact analysis evaluates the potential impacts of the alternatives on visual resources in the region of influence. Construction, operation, maintenance, and decommissioning details are described in Chapter 2. Analyzing potential impacts on visual resources included conducting site visits, reviewing public scoping comments (Appendix A), preparing photo simulations of the alternatives, and using GIS for mapping.

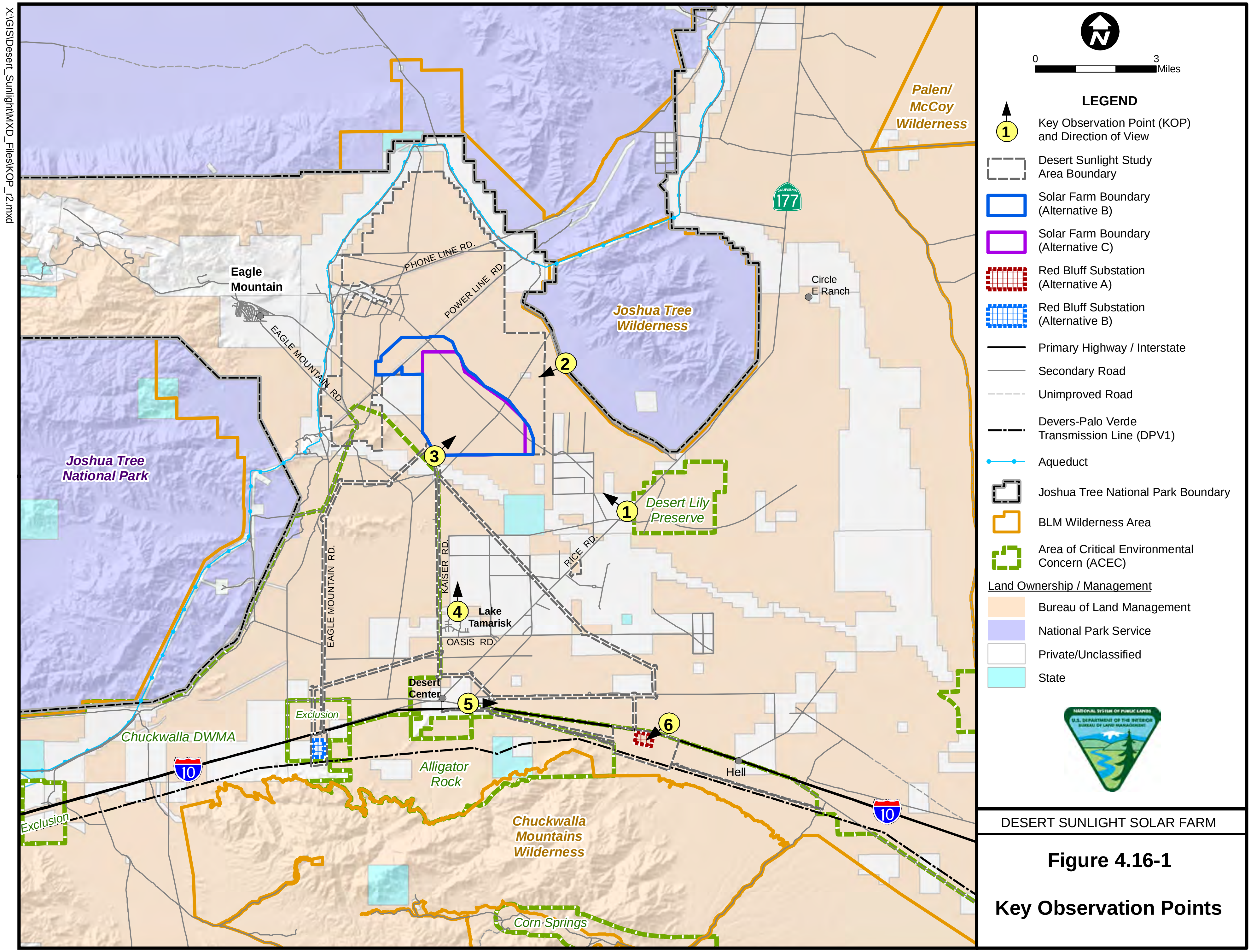
For BLM land, the visual resource contrast rating process (Handbook H-8431-1, Visual Resource Contrast Rating) was used to identify impacts on visual resources. For non-BLM land, CEQA significance criteria, described below, were used to identify impacts on visual resources. As described in Chapter 2, both DSSF alternatives are on BLM land. Various Red Bluff Substation components are on BLM land and non-BLM land. For GT-A-1, approximately 11.4 miles would be on BLM land and approximately 0.6 mile would be on land owned in fee by MWD. For GT-B-2, approximately 9.4 miles would be on BLM land and approximately 0.6 mile would be on land owned in fee by the MWD. For GT-A-2, a total of 6.5 miles would be on BLM land and 4.0 miles would be on private land.

The visual resource contrast rating process is used to determine whether the potential visual impacts from proposed surface-disturbing activities or developments will meet visual resource management (VRM) objectives established for an area or whether design adjustments will be required. The analysis can be used as a guide for resolving visual impacts. The BLM may attach additional mitigation through stipulations, Conditions of Approval, or special design requirements to bring the proposal into compliance, to work with the proponent to modify the proposal or relocate it, or to deny the proposal.

According to Washington Office Information Bulletin Number 98-135, visual design techniques and BMPs should be incorporated to mitigate the potential for short-term and long-term impacts resulting from all resource uses and management activities. Examples of resource uses and management activities are energy development, utility corridors, road construction, recreation and OHV use, wildland fires, mining, vegetation treatments, and increased urban infrastructure needs and associated development on BLM lands (for example, roads, power lines, water tanks, and communication towers).

After reviewing the proposed Project and VRM objectives for the Project area, the visual resources contrast rating process involves selecting and visiting the most critical viewpoints (which are referred to as key observation points [KOPs]) for viewing Project components, preparing visual simulations, and then completing Form 8400-4 for each KOP. The KOPs were selected in coordination with the BLM and represent views of the Project area that viewer groups, described in Section 3.16, are likely to encounter (Figure 4.16-1). The following KOPs are used:

- KOP 1 is a northwestward view of the Project site from SR-177 near the Desert Lily Preserve. The DSSF site is approximately 2.5 miles from the KOP (Figure 4.16-2).



DESERT SUNLIGHT SOLAR FARM

Figure 4.16-1

Key Observation Points

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View towards proposed Desert Sunlight Solar Farm from State Highway 177 looking towards Eagle Mountain, Desert Center, California

Visual simulation depicting Desert Sunlight Solar Farm from State Highway 177

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-2

Key Observation Point (KOP) 1

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- KOP 2 is a southwestward view from Joshua Tree National Park Wilderness Area, near the foot of the Coxcomb Mountains. The Solar Farm site is approximately 1.7 miles from the KOP (Figure 4.16-3). This KOP is not a typical viewing area but is included as a representative site for the occasional hiker who may use this remote and relatively inaccessible portion of the park.
- KOP 3 is an eastward view of the Solar Farm site from Kaiser Road. The Solar Farm is adjacent to Kaiser Road (Figure 4.16-4).
- KOP 4 is a northward view of the Solar Farm and Gen-Tie Line A-1 sites from Lake Tamarisk. The Solar Farm site is approximately four miles from the KOP. The Gen-Tie Line site is adjacent to Kaiser Road (Figure 4.16-5).
- KOP 5 is an eastward view of the Gen-Tie Line A-1 site from Ragsdale Road at Desert Center. The Gen-Tie Line site is approximately three-quarters of a mile north of Ragsdale Road (Figure 4.16-6).
- KOP 6 is a southwestward view of Red Bluff Substation A and Gen-Tie Line A-1 sites from I-10. Gen-Tie Line A-1 is approximately 0.6 mile from the KOP. The Substation site is approximately 0.2 mile from the KOP (Figure 4.16-7).

KOPs 1, 2, 3, 4, and 6 provide general scenic vistas across the landscape. KOPs 3, 4, 5, and 6 provide views of the visual character/quality (local setting), depending on the component of the Project.

After preparing the visual simulations, the visual contrast rating process involves identifying the degree of contrast between simulated Project features and the major features (land/water, vegetation, and structures) in the existing landscape using the basic design elements of form, line, color, and texture by completing Form 8400-4 for each KOP. The degree of contrast is characterized as none, weak, moderate, or strong. When there is no degree of contrast between the existing landscape and proposed Project features, the proposed Project features are not visible or perceived. A weak degree of contrast can be seen but does not attract attention. A moderate degree of contrast begins to attract attention and begins to dominate the characteristic landscape. A strong degree of contrast demands attention, will not be overlooked, and is dominant in the landscape. The completed forms are maintained at the BLM Palm Springs-South Coast Field Office.

In addition to using the visual resource contrast rating process to assess changes to the characteristic landscape, FLPMA requires coordination with local planning. A Project’s inconsistency with local plans, policies, and regulations pertaining to visual resources may also lead to a significant impact determination.

Table 4.16-1 compares the area of temporary and permanent disturbance for the action alternatives. Impacts on visual resources are related to the amount of area disturbed by an alternative. The impacts on visual resources are detailed below under each alternative.

Table 4.16-1
Comparison of Action Alternative Features Relevant to Visual Resources

Project Activity	Project Component (Includes All Related Features)	Type of Disturbance	Alternative 1	Alternative 2	Alternative 3
Construction*	**Solar Farm**				
		Permanent	*3,912*	*3,912*	3,045
	Gen-Tie Line				
		Permanent	*92*	*68*	*86*
	Substation				
		Permanent	*172*	*130*	*172*
Operation and Maintenance	**Solar Farm**				
		Permanent	*3,912*	*3,912*	3,045
	Gen-Tie Line				
		Permanent	*92*	*68*	*86*
	Substation				
		Permanent	*172*	*130*	*172*
Decommissioning	**Solar Farm**				
		Permanent	*3,912*	*3,912*	3,045
	Gen-Tie Line				
		Permanent	*92*	*68*	*86*
	Substation				
		Permanent	*172*	*130*	*172*

*Temporary construction disturbances involve acres that are disturbed during construction but that are reclaimed to predisturbance condition once construction ends. Permanent construction disturbances involve acres that are disturbed during construction and remain disturbed once construction ends.

Under Alternative 1, there would be long-term impacts from construction, operation, and maintenance. For SF-B, GT-A-1, and Red Bluff Substation A (with Access Road 2), this would result in permanent disturbance of *4,176* acres.

Under Alternative 2, there would be long-term impacts from construction, operation, and maintenance. For SF-B, GT-B-2, and Red Bluff Substation B, this would result in the permanent disturbance of *4,110* acres.

Under Alternative 3, there would be long-term impacts from construction, operation, and maintenance. For SF-C, GT-A-2, and Red Bluff Substation A (with Access Road 1), this would result in the permanent disturbance of *3,303* acres.

For Alternatives 1, 2, and 3, there would be long-term impacts from decommissioning. At a minimum, decommissioning is expected to restore the landscape to predisturbance conditions.

The visual resource contrast rating stage assesses changes to the characteristic landscape (i.e., land, water, vegetation, and structures) of BLM land from certain KOPs. Similarly, CEQA significance criteria listed below address changes to these landscape elements for specific visual resources on non-BLM land (e.g., broad scenic vistas and local settings).

View southwest from Joshua Tree National Park Wilderness Area, near the foot of the Coxcomb Mountains, showing existing conditions in the area of the proposed Desert Sunlight Solar Farm, Desert Center, California.

Visual simulation depicting the Desert Sunlight Solar Farm.

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-3

Key Observation Point (KOP) 2

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View northeast from Kaiser Road at the southern boundary of the proposed Desert Sunlight Solar Farm showing existing conditions, Desert Center, California.

Visual simulation depicting the Desert Sunlight Solar Farm On-Site Substation and Gen-Tie Line.

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-4

Key Observation Point (KOP) 3

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View north towards proposed Desert Sunlight Solar Farm from Shasta Drive, Lake Tamarisk, California

Visual simulation depicting Desert Sunlight Solar Farm and Gen-tie Line A-1 from Shasta Drive, Lake Tamarisk, California

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-5
Key Observation Point (KOP) 4

View east along Ragsdale Road showing existing conditions, Desert Center, California.

Visual simulation depicting Gen-Tie line A-1 approximately 0.75 of a mile north of Ragsdale Road
with Interstate 10 crossover to Red Bluff Substation.

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-6

Key Observation Point (KOP) 5

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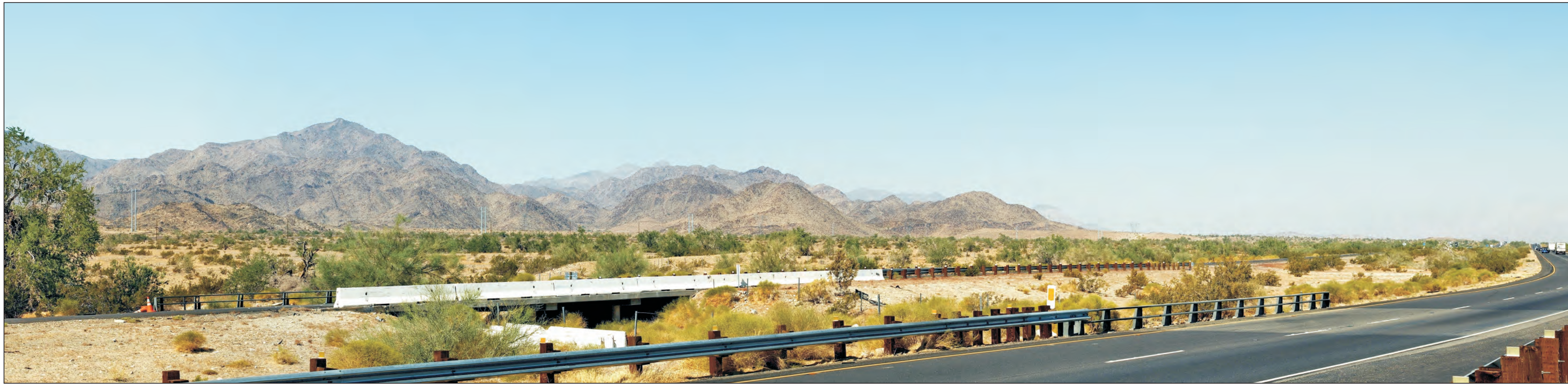

View southwest along Interstate 10 showing existing conditions, Desert Center, California.

Visual simulation depicting Red Bluff Substation Alternative A, Gen-Tie Line A-1, and Loop-In Transmission Line towers approximately 0.2 mile southwest of viewpoint.

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-7

Key Observation Point (KOP) 6

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4.16.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on visual resources on non-BLM land if it would:

VR-1. Have a substantial adverse effect on a scenic vista;

VR-2. Substantially degrade the existing visual character or quality of the site and its surroundings;

VR-3. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area; or

VR-4. Substantially damage scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway.

For the proposed Project, the following was determined to be inapplicable or to result in no impact:

VR-4. Substantially damage scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway. Because there are no officially designated state scenic highways in the region of influence for visual resources, the alternatives would have no impact on substantially damaging scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. Therefore, this significance criterion is not addressed further.

Impacts are characterized as beneficial or adverse and as short-term or long-term. Also, the intensity of impacts are characterized as no impact, less-than-significant impact, less-than-significant impact with mitigation incorporated, and significant and unavoidable impact.

4.16.3 Alternative 1 – Proposed Action

The following configurations of the three Project components are proposed:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line A-1 (GT-A-1); and
- Red Bluff Substation A, with Access Road 2.

Figure 4.16-8 shows the viewshed for Alternative 1. It shows the areas within 15 miles of Alternative 1 from which Alternative 1 buildings and structures would be visible. The analysis below identifies the impacts on visual resources from KOPs within the viewshed.

Construction

Solar Farm Layout B

Construction of SF-B would require clearance of approximately *3,912* acres. Craft workers, management employees, and non-craft employees are expected on site. There would be an average of 390 to 440 and a peak of 540 total on-site workers for the Solar Farm construction. Material delivery trips and construction equipment and vehicles are detailed in Chapter 2.

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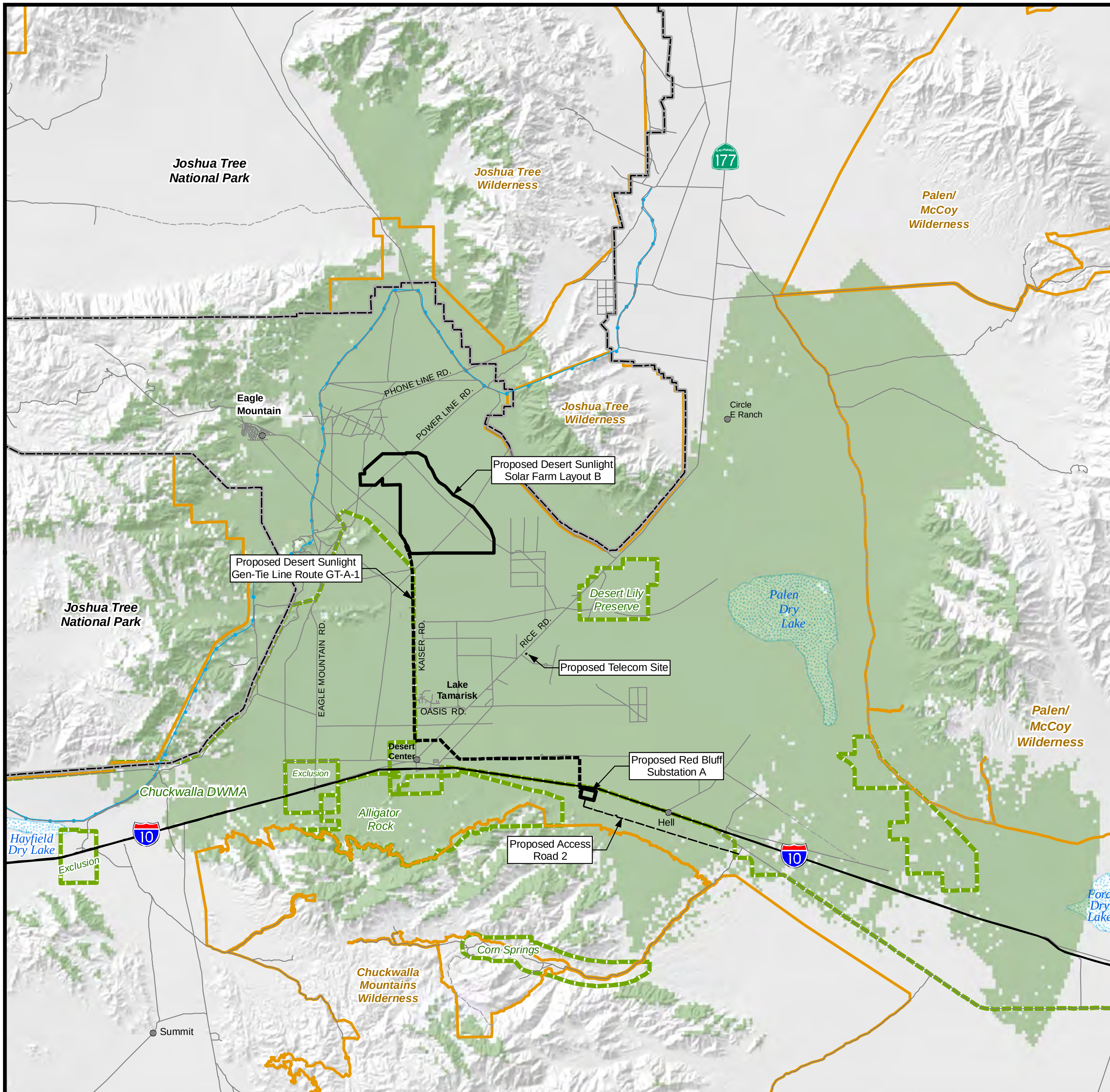

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-8

Viewshed Analysis - Proposed Action

Typical construction work schedules are expected to be 8 hours per day Monday through Friday. Typically, the work day would consist of one shift beginning at 7:00 AM and ending at 3:30 PM. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the work day earlier in summer months to avoid work during the hottest part of the day for health and safety reasons).

Construction activities would be temporary and limited to the duration of the construction schedule. Also, certain construction impacts, such as material deliveries, are not expected to be constant during the work week or to happen at all on weekends.

Visual Contrast Analysis

Readily available views of SF-B are available from KOPs 1, 2, 3, and 4. Construction activities, equipment, and vehicles would be visible from these KOPs.

Construction activities would disturb the ground surface by removing low-growing vegetation, shifting soil, and altering drainage patterns. Surface disturbances would affect visual resources by creating exposed soil across the landscape with a different texture and color and by creating land barren of low-growing vegetation, aggregate, and topsoil.

A butt edge of vegetation would appear along roads, because the roads would lack vegetation found on adjacent land. The band of road lines would abruptly divide the landscape, because the roads would lack vegetation and the natural lines of the topography would be altered.

Construction activities would generate dust from the movement of vehicles, from excavation work, and from wind blowing across exposed soil. Fugitive dust would affect visual resources by diminishing atmospheric clarity.

Construction activities would use lights for safety and illuminating work areas. This would affect visual resources, because construction lights would add light to areas absent of light sources. The work schedule, however, does not involve nighttime work.

Because of the presence of construction equipment and vehicles, there would be glare from reflective surfaces. The intensity and amount of glare would vary throughout the day and would also depend on atmospheric conditions. For example, there would likely be less glare during overcast days than sunny days. The intensity and amount of glare would also vary during the construction cycle. For example, the potential for glare would vary depending on the amount of construction equipment and vehicles present.

Construction activities would involve material deliveries to the Project site, as well as the presence of construction equipment and vehicles. The construction activities would affect visual resources by adding a noticeable level of commotion to an area with little activity. Also, the color of construction equipment and vehicles would not resemble the muted tans and greens of the terrain and vegetation.

Construction activities may generate litter capable of being blown by the wind across the flat desert. This would affect visual resources, because the blight of litter draws attention away from the natural landscape aesthetics.

Although SF-B is in the foreground-middle ground distance zone for KOPs 1, 2, 3, and 4 the KOPs are not all the same distance from SF-B. The degree of contrast, therefore, varies depending on the exact location of the KOP. For KOP 3, the degree of contrast would be strong, involving vegetation changes and structures from construction, due to the proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. Due to distance, however, the degree of contrast would be weak to moderate for KOPs 1, 2, and 4 because there would be less of a contrast involving vegetation changes and structures from construction.

Viewer groups affected by these impacts include limited recreation users in the surrounding mountains and dispersed recreation users on the valley floor; nearby residents in Lake Tamarisk and dispersed private land; visitor-serving businesses in Desert Center; and roadway traffic on Kaiser Road, SR-177, and I-10. Construction activities, vehicles, and equipment at the Project site, as well as en route to the Project site, would be visible to these viewer groups.

Local Plans, Policies, and Regulations

Local plans, policies, and regulations do not address visual resources during temporary construction. They focus more on permanent or long-term elements visible in the landscape, which are addressed below under Operation and Maintenance, as well as Decommissioning.

Gen-Tie Line A-1

Construction for GT-A-1 along the 12-mile by 160-foot wide transmission corridor would result in the permanent disturbance of *92* acres. The workforce for the Gen-Tie Line is expected to average 25 employees over the 20-month Gen-Tie Line construction period. Material delivery trips and construction equipment and vehicles are detailed in Chapter 2.

Visual Contrast Analysis

Views of GT-A-1 are available from KOPs 1, 2, 3, 4, 5, and 6. Impacts from construction activities, equipment, and vehicles would be visible from these KOPs. Impacts similar to those described above under SF-B Interim Visual Management Class would occur during construction of GT-A-1. However, GT-A-1 would disturb a substantially smaller area (see Table 4.16-1) and would be constructed in less time.

Although GT-A-1 is in the foreground-middle ground distance zone for KOPs 1 through 6, the KOPs are not all the same distance from GT-A-1. Therefore, the degree of contrast, varies, depending on the exact location of the KOP. For KOPs 3, 4, and 6, the degree of contrast would be strong, involving vegetation changes and structures from construction due to the proximity of the KOPs to GT-A-1 and the lack of screening elements to block direct views of the Project. Due to distance, however, the degree of contrast would be weak to moderate for KOPs 1, 2, and 5 because there would be less of a contrast involving vegetation changes and structures from construction.

Viewer groups affected by impacts at these KOPs include limited recreationists in the surrounding mountains and dispersed recreationists on the valley floor, nearby residents in Lake Tamarisk and dispersed private land, visitor-serving businesses in Desert Center, and roadway traffic on Kaiser Road, SR-177, and I-10.

Local Plans, Policies, and Regulations

Local plans, policies, and regulations do not address visual resources during temporary construction. They focus more on permanent or long-term elements visible in the landscape, which are addressed below under Operation and Maintenance, as well as Decommissioning.

Red Bluff Substation A

Construction of Red Bluff Substation A includes the substation itself and related components, such as Access Road 2 and telecommunications facilities. It would result in *172* acres of permanent disturbance. Approximately 25 construction personnel would work on any given day. Material delivery trips and construction equipment and vehicles are detailed in Chapter 2.

Visual Contrast Analysis

Views of the Red Bluff Substation A site are available from KOP 6. Impacts from construction, equipment, and vehicles would be visible from this KOP. Impacts similar to those described above under SF-B Interim Visual Management Class would occur during construction of Red Bluff Substation A. However, Red Bluff Substation A would disturb a substantially smaller area (see Table 4.16-1) and would be constructed in less time. Due to the KOP proximity and the lack of screening elements to block direct views of the Project, the degree of contrast would be strong, involving vegetation changes and structures from construction activities. Although viewers typically expect artificial elements next to highways, they also expect the elements to be clustered instead of spread across the landscape. Viewer groups affected by impacts at KOP 6 include dispersed recreationists on the valley floor, as well as I-10 travelers.

Local Plans, Policies, and Regulations

Local plans, policies, and regulations do not address visual resources during temporary construction. They focus more on permanent or long-term elements visible in the landscape, which are addressed below under Operation and Maintenance, as well as Decommissioning.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

Construction of SF-B, GT-A-1, and Red Bluff Substation A would also affect views of the Chuckwalla Valley from adjacent Wilderness Areas (Chuckwalla Mountains Wilderness, Joshua Tree Wilderness, and Joshua Tree National Park), particularly from elevated viewpoints within the Project's viewshed (see Figures 4.16-8 and 4.16-9). KOP 2 provides a low-elevation view from the boundary of Joshua Tree Wilderness, which as discussed above indicates a weak to moderate contrast within the landscape. This contrast result is due in large part to the effect of perspective foreshortening, which reduces the apparent size and scale of the Project because of a low elevation difference and the narrow angle of view. While elevated and mountainous portions of the surrounding wilderness are farther removed in distance, the increase in elevation would cause the size and shape of the DSSF to become apparent. As viewed from higher elevations, the level of contrast in form, line and texture would increase substantially, but this increase in contrast would be tempered by a decreased dominance of the Project within the affected views. Views become increasingly regional and panoramic as vantage points increase in elevation and distance away from the Project, thereby decreasing the portion of view affected by the proposed Project.

However, from the elevated vantage points in Joshua Tree Wilderness (Eagle Mountains to the west and north and Coxcomb Mountains to the east), with their open, unobstructed, and panoramic views, the Project would appear spatially prominent and central to the views of the northern Chuckwalla Valley. From these locations, viewers would *observe a high level of visual contrast between the Project and the surrounding desert basin and mountain landscape. The Project would appear co-dominant with the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be moderate-to-high, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers in Joshua Tree Wilderness would be substantial. Construction-related dust plumes would be controlled using dust palliatives and limiting vehicle speeds, as described in the air resources analysis in Section 4.2. Light pollution would be minimized as described in Mitigation Measure MM-VR-4, lighting control.*

Summary of Construction Impacts

Construction of SF-B, GT-A-1, and Red Bluff Substation A would result in the permanent disturbance of *4,176* acres. As described above, impacts from construction activities, equipment, and vehicles would be visible. The changes to the characteristic landscape from construction would alter visual resources. For KOPs 1, 2, and 5, the degree of contrast would comply with interim visual management III objectives. This is because changes to the characteristic landscape can be either low or moderate. For KOPs 3, 4, and 6, the strong degree of contrast would not comply with interim visual management Class II and III objectives.

The BLM VRM System allows the BLM to require mitigation to bring a proposed Project into greater compliance with class objectives in order to protect and preserve visual resources. The level of change to the characteristic landscape would be reduced with the implementation of Mitigation MM-VR-1 through MM-VR-3, described below under Applicant Measures and Mitigation Measures.

Local plans, policies, and regulations do not address visual resources during temporary construction. They focus more on permanent or long-term elements visible in the landscape, which are addressed with respect to operation and maintenance, as well as decommissioning.

Operation and Maintenance

Solar Farm Layout B

SF-B would occupy approximately *3,912* acres. The Solar Farm site would consist of several main components:

- Main Generation Area - PV arrays, combining switchgear, overhead lines, and access corridors;
- Operation and Maintenance (O&M) Facility;
- Solar Energy Visitors Center;
- On-site Substation; and
- Site Security, Fencing, and Lighting.

The workforce for O&M and security purposes is estimated at an average of 10 full time workers, up to 15 workers maximum. Typical work schedules are expected to be in two 12-hour shifts of 10 workers each. In addition, there will be 24-hour on-site security (two 12-hour shifts anticipated, with two guards each shift).

Visual Contrast Analysis

Views of SF-B are available from KOPs 1, 2, 3, and 4. Operation and maintenance would be visible from these KOPs.

The natural terrain would be graded to allow for the operation of SF-B. The flat form of the power array would mimic the relatively flat form of the valley floor, but would contrast with the rugged mountains. The wide mass of SF-B would dwarf the smaller artificial and natural forms in the landscape. SF-B components would appear to be a single mass that could block views, depending on viewer location. The angular form of SF-B would stand out against the rounded and curving forms of the vegetation and mountains. SF-B would have a more repetitive and ordered form than that of surrounding landscape elements, which is mostly vegetation.

<u>*As stated above, the natural curvilinear and continuous lines of the landscape would contrast with the linear and abrupt edges of SF-B lines.*</u> The linear lines of SF-B, however, would repeat the artificial lines of nearby roads. A butt edge of vegetation would appear around SF-B because the land occupied by SF-B would be cleared of vegetation.

The shades of black and gray of SF-B would contrast with the muted tans and greens of the terrain and vegetation. This contrast would occur during all seasonal variations in flora color. The only areas within the main array that would be lighter in color would be along the access roads and the power array electrical collection buildings.

The smooth texture of the power array would mimic the relatively smooth texture of the valley floor, but would contrast with the rough mountains. The smooth texture of the power array would also contrast with the coarse texture of the vegetation.

Even though night lighting at SF-B would be limited, artificial lighting would be introduced to the area, thereby decreasing nighttime darkness. Based on local recreation activities and public concern, this area is highly valued for its nighttime darkness. New sources of nighttime light would be noticed. Because SF-B uses PV arrays, glare from the arrays is less than that of arrays that use parabolic mirrors to collect heat energy from the sun and refocus the radiation on a receiver tube. Also, exterior lights on the site would be shielded and focused downward and toward the interior of the site to minimize lighting and glare impacts on the night sky and on surrounding areas.

Although SF-B is in the foreground-middle ground distance zone for KOPs 1, 2, 3, and 4, the KOPs are not all the same distance from SF-B. Therefore, the degree of contrast varies, depending on the exact location of the KOP. For KOP 3, the degree of contrast would be strong, involving vegetation changes and structures due to the proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. Due to distance, however, the degree of contrast would be weak to moderate for KOPs 1, 2, and 4 because there would be less of a contrast involving vegetation changes and structures.

Viewer groups affected by these impacts at KOP 3 include nearby residents on dispersed private land and roadway traffic on Kaiser Road. Viewer groups affected by these impacts at KOPs 1, 2, and 4 include dispersed recreational users on the valley floor; nearby residents in Lake Tamarisk, and roadway traffic on SR-177.

Local Plans, Policies, and Regulations

Given the impacts described above under Interim Visual Management Class, SF-B would not meet Riverside County General Plan policies. The size, composition, style, color, and location of SF-B are incompatible with the policies.

Gen-Tie Line A-1

Operation and maintenance for GT-A-1 would result in the permanent disturbance of *92* acres. Approximately 73 transmission structures would be required for this alternative, including 65 tangents and 8 dead-ends. The Applicant proposes to use steel monopoles for GT-A-1. Poles are expected to be approximately 120 feet tall. Typical spacing between structures would be approximately 900 to 1,100 feet. Self-weathering steel would be used for the monopoles. There would be 7.3 miles of access roads that are 14 feet wide.

Visual Contrast Analysis

Varying views of GT-A-1 are available from KOPs 1, 2, 3, 4, 5, and 6. Operation and maintenance would be visible from these KOPs.

GT-A-1 would cut across the landscape and would mostly follow existing roads, some of which already have utility lines nearby. Although GT-A-1 would not be a new utility line to cross the landscape, its size, shape, and composition would be different from the other utility lines.

The regular, narrow, and relatively tall form of the monopoles would be spaced intermittently along GT-A-1. This would create a continuous line of artificial vertical elements connected by discrete wires across the relatively flat landscape. Also, it would reduce the openness of the landscape by visually dividing the valley. Self-weathering steel would be used for the monopoles, which would blend in with the surrounding mountains better than other finishes. Although the even and ordered texture of the monopoles would mimic the texture of other utility lines, it would not resemble the texture of any other landscape element.

GT-A-1 would not contain sources of light. Also, the monopoles would be composed of self-weathering steel, thereby reducing glare.

Although GT-A-1 is in the foreground-middle ground distance zone for KOPs 1, 2, 3, 4, 5, and 6, the KOPs are not all the same distance from GT-A-1. The degree of contrast, therefore, varies depending on the exact location of the KOP. For KOPs 3, 4, and 6, the degree of contrast would be strong, involving vegetation changes and structures due to the proximity of the KOPs to GT-A-1, the lack of screening elements to block direct views of the Project, and the height and number of artificial structures. Due to distance, however, the degree of contrast would be weak to moderate for KOPs 1, 2, and 5 because there would be less of a contrast involving vegetation changes and structures.

Because it would traverse across the landscape, GT-A-1 would be visible by various viewer groups. Viewer groups affected by these impacts at these KOPs include limited recreationists in the surrounding mountains and dispersed recreationists on the valley floor; nearby residents in Lake Tamarisk and dispersed private land; visitor-serving businesses in Desert Center; and roadway traffic on Kaiser Road, SR-177, and I-10.

Local Plans, Policies, and Regulations

Given the impacts described above under Interim Visual Management Class, SF-B would not meet Riverside County General Plan policies. The size, composition, style, color, and location of SF-B are incompatible with the policies.

Red Bluff Substation A

Red Bluff Substation A operation and maintenance includes the substation and related components:

- Red Bluff Substation;
- Transmission Lines (to connect substation to DPV1);
- Gen-Tie Line Connection;
- Modification of Existing 220-kV Structures;
- Distribution Line for Substation Light and Power;
- Telecommunications Facilities;
- Drainage Facilities; and
- Access Road.

The topography of the site would be altered to protect the site from flooding. Access Road 2 would be used to access Red Bluff Substation A. It would result in *172* acres of permanent disturbance.

Visual Contrast Analysis

Views of Red Bluff Substation A are available from KOP 6. Operation and maintenance would be visible from this KOP.

The form of Red Bluff Substation A would not resemble any other form in the landscape. The regular, geometric, and relatively tall form of Red Bluff Substation A and telecommunication facilities would contrast with the undulating form of the terrain and the scattered, ragged, and short form of the vegetation. The narrow vertical elements would create multiple prominent focal points on a relatively flat landscape and dwarf other landscape elements, which is mostly vegetation.

The rigid horizontal and vertical lines of the substation would stand out against the sloped and rounded lines of the terrain and vegetation. A butt edge of vegetation would appear around Red Bluff Substation A, because the land occupied by Red Bluff Substation A would be cleared of vegetation. The band of the access road line would abruptly divide the landscape, because vegetation would be cleared and the natural lines of the topography would be altered. Also, the widening of an existing road would increase the visibility of this road.

Lattice steel towers and tubular steel poles would be galvanized steel with a dulled grey finish. If chain link fence is used, it would have a dulled-finish. The color of the facilities would not resemble the muted tans and greens of the terrain and vegetation. Also, the color of the compacted aggregate of the access road would not resemble the tan color of the surrounding terrain.

The rigid texture of Red Bluff Substation A and telecommunication facilities would stand out against the smooth texture of the terrain and coarse and prickly texture of the vegetation. The moderately smooth access road would approximate the smooth texture of the terrain.

Even though night lighting at Red Bluff Substation A and telecommunication facilities would be limited, artificial lighting would be introduced to the area, thereby decreasing nighttime darkness. Exterior lights on the site would be shielded and focused downward and toward the interior of the site to minimize lighting and glare impacts on the night sky and on surrounding areas. Although the valley and mountains are highly valued for their nighttime darkness (based on local recreation activities and public concern), the areas immediately adjacent to I-10 are already affected by light and glare from I-10 traffic.

Red Bluff Substation A and telecommunication facilities are in the foreground-middle ground distance zone for KOP 6. From KOP 6, the degree of contrast described above would be strong because of the lack of screening elements to block direct views of the site, the height and number of artificial structures, and the proximity of KOP 6 to the Project. Although viewers typically expect artificial elements next to highways, they also expect the elements to be clustered instead of spread across the landscape. Activity on I-10, however, partially distracts views from KOP 6 away from the site. Also, because of the curving nature of I-10 and travelers moving at highway speed, the site would be visible in the foreground distance zone for a limited amount of time.

Viewer groups affected by these impacts at KOP 6 are dispersed recreationists on the valley floor and I-10 travelers.

Local Plans, Policies, and Regulations

Given the impacts described above under Interim Visual Management Class, Red Bluff Substation A would not meet Riverside County General Plan policies. The size, composition, style, color, and location of Red Bluff Substation A are incompatible with these policies.

Visual Impacts for users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts, impacts to the visitor experience at BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high.

Consistency with Interim Visual Resource Management Class Objectives

Operation and maintenance of SF-B, GT-A-1, and Red Bluff Substation A would result in the permanent disturbance of *4,176* acres. As described above, impacts from operation and maintenance would be visible. The changes to the characteristic landscape from operation and maintenance would alter visual resources. For KOPs 1, 2, and 5, the degree of contrast would comply with interim visual management Class II and III objectives, because changes to the characteristic landscape can be either low or moderate. Due to the proximity of KOPs 3, 4, and 6 to Project components, the degree of contrast would not comply with interim visual management Class II and III objectives.

The BLM VRM System allows the BLM to require mitigation to bring a proposed Project into greater compliance with class objectives in order to protect and preserve visual resources. The level of change to the characteristic landscape would be reduced with the implementation of Mitigation MM-VR-4 through MM-VR-6, described below under Applicant Measures and Mitigation Measures.

The size, composition, style, color, and location of Project components are incompatible with Riverside County General Plan policies. Because of the operation and maintenance impacts described above, the Project would not comply with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.

Decommissioning

As required by BLM ROW regulations, a detailed Decommissioning and Reclamation Plan (Decommissioning Plan) *would* be developed in a manner that both protects public health and safety and is environmentally acceptable. Decommissioning of facilities is detailed in Chapter 2.

Solar Farm Layout B

Visual Contrast Analysis

Views of SF-B are available from KOPs 1, 2, 3, and 4. Decommissioning would be visible from these KOPs. Removal of artificial buildings and structures would return the developed site to an undeveloped site. Decommissioning would return natural form and contours to the landscape. It would reestablish native vegetation and natural habitat, such as rocks or logs, to the land. The vegetation would be reestablished to resemble the form and line of the vegetation removed by the Project and monitored to assure successful revegetation. After decommissioning, the characteristic landscape would resemble the existing conditions. However, due to the slow pace of natural desert ecology, it would likely take decades after decommissioning for the landscape to resemble the existing conditions. From the KOPs, the degree of contrast would be weak because decommissioning would leave the landscape in a condition that does not attract attention.

Local Plans, Policies, and Regulations

Decommissioning would remove the buildings, structures, and activities that do not meet Riverside County General Plan policies. Therefore, there would be no buildings, structures, and activities at the site that would violate Riverside County General Plan policies.

Gen-Tie Line A-1

Visual Contrast Analysis

Varying views of GT-A-1 are available from KOPs 1, 2, 3, 4, 5, and 6. Decommissioning would be visible from these KOPs. Removal of artificial structures would return the developed site to an undeveloped site. Decommissioning would return natural form and contours to the landscape. It would reestablish native vegetation and natural habitat, such as rocks or logs, to the land. The vegetation would be reestablished to resemble the form and line of the vegetation removed by the Project and monitored to assure successful revegetation. After decommissioning, the characteristic landscape would resemble the existing conditions. However, due to the slow pace of natural desert ecology, it would likely take decades after decommissioning for the landscape to resemble the existing conditions. From the KOPs, the degree of contrast would be weak because decommissioning would leave the landscape in a condition that does not attract attention.

Local Plans, Policies, and Regulations

Decommissioning would remove the buildings, structures, and activities that do not meet Riverside County General Plan policies. Therefore, there would be no buildings, structures, and activities at the site that would violate Riverside County General Plan policies.

Red Bluff Substation A

Visual Contrast Analysis

Views of Red Bluff Substation A are available from KOP 6. Decommissioning would be visible from this KOP. Removal of artificial structures would return the developed site to an undeveloped site. Decommissioning would return natural form and contours to the landscape. It would reestablish native vegetation and natural habitat, such as rocks or logs, to the land. The vegetation would be reestablished to resemble the form and line of the vegetation removed by the Project and monitored to assure successful revegetation. After decommissioning, the characteristic landscape would resemble the existing conditions. However, due to the slow pace of natural desert ecology, it would likely take decades after decommissioning for the landscape to resemble the existing conditions. From the KOP, the degree of contrast would be weak because decommissioning activities would leave the landscape in a condition that does not attract attention.

Local Plans, Policies, and Regulations

Decommissioning would remove the buildings, structures, and activities that do not meet Riverside County General Plan policies. Therefore, there would be no buildings, structures, and activities at the site that would violate Riverside County General Plan policies.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts, impacts to the visitor experience at BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high during decommissioning. However, once site restoration is achieved, the impacts would be greatly reduced because the site would appear similar to the surrounding landscape.

Consistency with Interim Visual Resource Management Class Objectives

Decommissioning of SF-B, GT-A-1, and Red Bluff Substation A would result in rehabilitating *4,176* acres. As described above, impacts from decommissioning would be visible. The changes to the characteristic landscape from decommissioning would restore the natural visual resources to the landscape. This would not occur until the end of the Project lifespan, which could be greater than 50 years. However, due to the slow pace of natural desert ecology, it would likely take decades after decommissioning for the landscape to resemble the existing conditions. The level of change to the characteristic landscape would comply with interim visual management Class II and III objectives, because changes to the characteristic landscape can be either low or moderate. Decommissioning activities would leave the landscape in a condition that does not attract attention.

Decommissioning would remove the buildings, structures, and activities that do not comply with Riverside County General Plan policies.

Summary of Combined Impacts for Alternative 1

There would be long-term impacts from construction, operation, and maintenance. Construction, operation, and maintenance of SF-B, GT-A-1, and Red Bluff Substation A would result in the permanent disturbance of *4,176* acres. Impacts from construction, operation, and maintenance would be visible. During construction, operation, and maintenance, due to the proximity of KOPs 3, 4, and 6 to Project components, the degree of contrast would not comply with interim visual management Class II and III objectives. During construction, operation, and maintenance, the degree of contrast from KOPs 1, 2, and 5 would comply with interim visual management Class II and III objectives*. Impacts to surrounding wilderness areas and Joshua Tree National Park via visual disturbance are expected to be moderate-to-high.* The degree of contrast from all of the KOPs during decommissioning would comply with interim visual management Class II and III objectives. The level of change to the characteristic landscape would be reduced with the implementation of Mitigation MM-VR-1 through MM-VR-6, described below under Applicant Measures and Mitigation Measures.

Local plans, policies, and regulations do not address visual resources during temporary construction. The size, composition, style, color, and location of Project components during operation and maintenance are incompatible with Riverside County General Plan policies. Because of the operation and maintenance impacts described above, the Project would not comply with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1. Decommissioning would remove the buildings, structures, and activities that do not comply with Riverside County General Plan policies.

Applicant Measures and Mitigation Measures

Mitigation measures to reduce impacts on visual resources are listed below.

Mitigation MM-VR-1: Revegetation. The Applicant and SCE shall minimize the amount of ground surface to be disturbed and revegetate disturbed soil areas, as described below:

- Limit Disturbance Areas. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging before construction, in consultation with the Designated Biologist and VRM specialist. Spoils and topsoil shall be stockpiled in disturbed areas approved by the Designated Biologist. Parking areas, staging and disposal site locations similarly shall be located in areas approved by the Designated Biologist and VRM specialists. All disturbances, Project vehicles and equipment shall be confined to the flagged areas. Vegetation along roadways and boundaries of other disturbed areas shall be scalloped and feathered to reduce the hard line visual impact, especially as seen from Kaiser Road and SR-177.
- Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the minimum necessary and flagged as described above. All vehicles passing or turning around shall do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged or staked) before the onset of construction.

- Revegetation of Temporarily Disturbed Areas. The Applicant and SCE shall prepare and implement a revegetation plan to restore all areas subject to temporary disturbance to pre-Project grade and conditions. Temporarily disturbed areas within the Project area include all proposed locations for linear facilities, temporary access roads, construction work temporary lay-down areas, and construction equipment staging areas.

No less than 30 days following the publication of the BLM's Record of Decision/ROW Issuance, whichever comes first, the Applicant and SCE shall submit to the BLM a final agency-approved revegetation plan that has been reviewed and approved by the BLM.

Within 30 days after completion of Project construction, the Applicant and SCE each shall provide to the BLM for review and approval a written report identifying which items of the revegetation plan have been completed, a summary of all modifications to mitigation measures made during the Project's construction phase, and which items are still outstanding. It shall also include a plan for revegetation monitoring.

Mitigation MM-VR-2: Litter and Trash Control. During construction, all trash and food-related waste shall be placed in self-closing containers and removed weekly as needed from the site.

Mitigation MM-VR-3: Fugitive Dust Control. <u>*To minimize fugitive dust on the Project site, a dust control plan shall be developed that will impose limits on the speed of travel for construction vehicles, and will require that dust palliatives be applied to the site, as described in AM-AIR-1 and AM-AIR6, and in compliance with SCAQMD Rule 403.*</u>

Mitigation MM-VR-4: Lighting Control. Consistent with safety and security considerations, the Applicant and SCE shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the Solar Farm site, including any off-site security buffer areas; b) lighting shall not cause excessive reflected glare; c) direct lighting shall not illuminate the nighttime sky, except for required FAA aircraft safety lighting; d) illumination of the Project and its immediate vicinity shall be minimized; <u>*e) skyglow caused by Project lighting will be avoided,*</u> and <u>*f*</u>) the plan shall comply with local policies and ordinances. <u>*All permanent light sources shall be below 2,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir.*</u> The Applicant and SCE shall submit to the BLM <u>*and CPUC*</u> for review and approval a <u>*L*</u>ighting <u>*M*</u>itigation <u>*P*</u>lan that includes the following:

- <u>*Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would (a) only be used when necessitated by specific work tasks, (b) not be used for dusk-to-dawn lighting, and (c) would be less than 2500 Kelvin color temperature;*</u>
- <u>*Specification and map of all lamp locations, orientations, and intensities, including security, roadway, and task lighting;*</u>
- <u>*Specification of each light fixture and each light shield;*</u>
- <u>*Total estimated outdoor lighting footprint, expressed as lumens or lumens per acre;*</u>
- <u>*Definition of the threshold for substantial contribution to light pollution in Joshua Tree National Park, in coordination with the Night Sky Program Manager (see below);*</u>

- *Specifications on the use of portable truck-mounted lighting;*
- Lighting design shall consider setbacks of Project features from the site boundary to help satisfy the lighting mitigation requirements;
- Light fixtures that are visible from beyond the Project boundary shall have cutoff angles sufficient to prevent lamps and reflectors from being visible beyond the Project boundary;
- *Specification of m*otion sensors *and other controls to* be used, especially for security lighting;
- Surface *treatment specification that will be employed* to minimize glare *and skyglow*;
- *Results of a Lumen Analysis (based on final lighting plans), in consultation with the National Park Service (NPS) Night Sky Program Manager (Chad Moore – (970) 491-3700), in order to determine the extent of night lighting exposures in the surrounding NPS lands. If the lighting exposure on NPS lands exceeds the allowable threshold (which is to be determined in consultation with the NPS Night Sky Program Manager and BLM), additional control measures will be instituted to reduce the lighting exposures to levels below the threshold; and*
- *Documentation that coordination with the NPS Night Sky Program Manager and the BLM has occurred.*

Mitigation MM-VR-5: Surface Treatment of Project Structures/Buildings. The Applicant and SCE shall treat the surfaces of all Project structures and buildings visible to the public such that a) their colors minimize visual contrast by blending with the characteristic landscape colors; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specula and nonreflective, and the insulators shall be nonreflective and nonrefractive. The Applicant and SCE shall comply with BLM requirements regarding appropriate surface treatments for Project elements.

Mitigation MM-VR-6: Project Design. The Applicant and SCE shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see Mitigation MM-VR-5) and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals shall be based on the following factors:

- Earthwork: Select locations and alignments that fit into the landforms to minimize the size of cuts and fills.
- Vegetation Manipulation: Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- Structures: Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges. Use road aggregate and concrete colors that match the color of the characteristic landscape surface. Co-locate facilities within the same disturbed corridor.

- Reclamation and Restoration: Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Replace soil, brush, rocks, and natural debris over disturbed area. Newly introduce plant species shall be of a form, color, and texture that blends with the landscape.

The Applicant and SCE and BLM shall develop a set of visual resources BMPs to serve as a running list of proven practices to reduce the overall visual contrast of the proposed Project.

CEQA Significance Determination

Impacts pertaining to CEQA significance criteria VR-1, VR-2, and VR-3 are described below. KOPs 1, 2, 3, 4, and 6 provide general scenic vistas across the landscape. KOPs 3, 4, 5, and 6 provide views of the visual character/quality (local setting), depending on the Project component. *The second criterion is not applicable to the proposed Project because the Project would not be within view of state scenic highways. The methodology used for determining the significance of an impact for Project components located on BLM land is based on consistency with the applicable VRM objective. This analysis has been completed in the preceding section and will be summarized below.*

The visual sensitivity/visual change methodology is used to determine the significance of a visual impact on privately owned lands because VRM objectives are not applicable to non-BLM land. Under the Visual Sensitivity–Visual Change (VS/VC) method, field (or photo) analysis at each KOP includes developing an overall assessment of the existing landscape character, including visual quality, viewer concern, and viewer exposure. Visual sensitivity is a composite measurement of these factors and it describes the viewing public's sensitivity to visual change. Then, visual contrast, project dominance, and view blockage are assessed at each KOP and typically aided by project simulations. Subsequently, a conclusion may be made on the extent of overall visual change, and taken together with the existing landscape's visual sensitivity, the level of visual impact significance may be assessed.

Solar Farm Layout B

Impact VR-1: General Scenic Vistas

General scenic vistas involving SF-B are available from KOPs 1, 2, 3, and 4. SF-B would be located in an area with an Interim VRM classification of Class III, which aims to "partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class III management objectives.

Construction. As described above, for KOP 3, the degree of contrast of SF-B construction and equipment would be strong, involving changes to vegetation and the installation of structures, as a result of the foreground and middleground proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. Because of the middleground and background distance, with a corresponding low contrast in vegetation changes and erection of structures, the degree of contrast would be weak to moderate for KOPs 1, 2, and 4.

The level of visual contrast of SF-B construction as viewed from KOPs 1, 2, and 4 would be consistent with the Interim VRM objective of the SF-B area. Therefore, impacts to scenic vistas of SF-B construction from KOPs 1, 2, and 4 would be less than significant. However, the level of visual contrast of SF-B construction as viewed from KOP 3 would be inconsistent with the Interim VRM Class III management objectives of the SF-B area. Therefore, impacts to scenic vistas of SF-B from KOP 3 would be significant. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from KOP 3, but not to a level that is less than significant. Also, from the elevated vantage points in Joshua Tree Wilderness (Eagle Mountains to the west and north and Coxcomb Mountains to the east), with their open, unobstructed, and panoramic views, Project construction activities would appear spatially prominent and central to the views of the northern Chuckwalla Valley. From these locations, viewers would observe a high level of visual contrast between the Project construction area and the surrounding desert basin and mountain landscape. Project construction activities would appear co-dominant with the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be moderate-to-high, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers in Joshua Tree Wilderness would be significant. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from Joshua Tree Wilderness, but not to a level that is less than significant.

Operation and Maintenance. As described above, for KOP 3, the degree of contrast of SF-B operation and maintenance would be strong, involving changes to vegetation and structures from construction, because of the proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. As a result of distance, however, the degree of contrast would be weak to moderate for KOPs 1, 2, and 4 because there would be less contrast involving vegetation changes and structures from operation and maintenance.

The level of visual contrast of SF-B operation and maintenance as viewed from KOPs 1, 2, and 4 would be consistent with the Interim VRM objective of the SF-B area. Therefore, impacts to scenic vistas of SF-B operation and maintenance from KOPs 1, 2, and 4 would be less than significant. However, the level of visual contrast of SF-B operation and maintenance as viewed from KOP 3 would be inconsistent with the Interim VRM Class III management objectives of the SF-B area. Therefore, impacts to scenic vistas of SF-B from KOP 3 would be significant. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from KOP 3, but not to a level that is less than significant. Also, from the elevated vantage points in Joshua Tree Wilderness (Eagle Mountains to the west and north and Coxcomb Mountains to the east), with their open, unobstructed, and panoramic views, the Project operation (and maintenance) would appear spatially prominent and central to the views of the northern Chuckwalla Valley. From these locations, viewers would observe a high level of visual contrast between the proposed Project and the surrounding desert basin and mountain landscape. The Project would appear co-dominant with the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be moderate-to-high, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers in Joshua Tree Wilderness would be significant. MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from Joshua Tree Wilderness, but not to a level that is less than significant.

Decommissioning. Short-term impacts to scenic vistas would occur during decommissioning, which is expected to result in the mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to slowly restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to scenic vistas of decommissioning would be less than significant.

Impact VR-2: Local Setting

Views of the local setting involving SF-B are available from KOPs 3 and 4. SF-B would be located in an area with an Interim VRM classification of Class III, which aims to "partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class III management objectives.

Construction. As described above, for KOP 3, the degree of contrast of SF-B construction activities and equipment would be strong, involving foreground and middleground changes to vegetation and installation of structures, as a result of the proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. Because of the middleground and background distance, with a corresponding low contrast in vegetation changes and erection of structures, the degree of contrast would be weak to moderate for KOPs 1, 2, and 4.

The level of visual contrast of SF-B construction as viewed from KOP 4 would be consistent with the Interim VRM objective of the SF-B area. Therefore, impacts to the local setting of SF-B construction from KOP 4 would be less than significant. However, the level of visual contrast of SF-B construction as viewed from KOP 3 would be inconsistent with the Interim VRM Class III management objectives of the SF-B area. Therefore, impacts to the local setting of SF-B from KOP 3 would be significant. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from KOP 3, but not to a level that is less than significant.

Operation and Maintenance. As described above, for KOP 3, the degree of contrast of SF-B operation and maintenance would be strong, involving changes to vegetation and structures from construction, because of the proximity of KOP 3 to SF-B and the lack of screening elements to block direct views of the Project. As a result of distance, however, the degree of contrast would be weak to moderate for KOP 4 because there would be less contrast involving vegetation changes and structures from operation and maintenance.

The level of visual contrast of SF-B operation and maintenance as viewed from KOP 4 would be consistent with the Interim VRM objective of the SF-B area. Therefore, impacts to the local setting of SF-B operation and maintenance from KOP 4 would be less than significant. However, the level of visual contrast of SF-B operation and maintenance as viewed from KOP 3 would be inconsistent with the Interim VRM Class III management objectives of the SF-B area. Therefore, impacts to the local setting of SF-B from KOP 3 would be significant. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/ Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts of SF-B from KOP 3, but not to a level that is less than significant.

Decommissioning. Short-term impacts to the local setting would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than construction. In the long term, decommissioning is expected to slowly restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to the local setting of decommissioning would be less than significant.

Impact VR-3: Light and Glare

Light and glare from SF-B would be visible from KOPs 1, 2, 3, and 4. SF-B would be located in an area with an Interim VRM classification of Class III, which aims to "partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class III management objectives.

Construction. Construction would use lights for safety and illuminating work areas. Lighting would affect visual resources, because construction lights would add light to areas currently absent of light sources. There would be glare from reflective surfaces because of the presence of construction equipment and vehicles. The intensity and amount of glare would vary throughout the day and would also depend on atmospheric conditions. For example, there would likely be less glare during overcast days than on sunny days. The intensity and amount of glare would also vary during the construction cycle. For example, the potential for glare would vary depending on the amount of construction equipment and vehicles present.

As described above, the degree of contrast of SF-B construction would be strong for KOP 3 and weak to moderate for KOPs 1, 2, and 4. SF-B construction lighting and glare would be consistent with Interim VRM Class III management objectives, resulting in a less-than-significant impact, because SF-B construction lighting and glare would attract attention but would not dominate a casual observer's view from KOPs 1, 2, and 4. However, SF-B construction lighting and glare would be inconsistent with Interim VRM Class III management objectives, resulting in a significant impact, because SF-B construction lighting and glare would likely dominate a casual observer's view from KOP 3. Mitigation Measure VR-4 (Light Control) would reduce light and glare impacts of SF-B, but not to a level that is less than significant. Also, because SF-B construction lighting and glare would likely dominate a casual observer's view from elevated perspectives in Joshua Tree Wilderness, SF-B construction lighting and glare would result in a significant impact. MM VR-4 (Light Control) would reduce light and glare impacts of SF-B, but not to a level that is less than significant.

Operation and Maintenance. Even though night lighting at SF-B would be limited, artificial lighting would be introduced to the area, thereby decreasing nighttime darkness. Based on local recreation activities and public concern, this area is highly valued for its nighttime darkness. New sources of nighttime light would be noticed. Exterior lights on the site would be shielded and focused downward and toward the interior of the site to minimize impacts from lighting and glare on the night sky and on surrounding areas. SF-B would also introduce a new source of daytime glare during certain times of the day from certain vantage points.

As described above, the degree of contrast of SF-B operation and maintenance would be strong for KOP 3 and weak to moderate for KOPs 1, 2, and 4. SF-B operation and maintenance lighting and glare would be consistent with Interim VRM Class III management objectives, resulting in a less-than-significant impact, because SF-B operation and maintenance lighting and glare would attract attention but would not dominate a casual observer's view from KOPs 1, 2, and 4. However, SF-B operation and maintenance lighting and glare would be inconsistent with Interim VRM Class III management objectives, resulting in a significant impact, because SF-B operation and maintenance lighting and glare would likely dominate a casual observer's view from KOP 3. Mitigation Measure VR-4 (Light Control) would reduce light and glare impacts of SF-B, but not to a level that is less than significant. Also, because SF-B operation and maintenance lighting and glare would likely dominate a casual observer's view from elevated perspectives in Joshua Tree Wilderness, SF-B operation and maintenance lighting and glare would result in a significant impact. MM VR-4 (Light Control) would reduce light and glare impacts of SF-B, but not to a level that is less than significant.

Decommissioning. Short-term light and glare impacts would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than construction, and is not expected to occur at night. In the long term, decommissioning is expected to restore the landscape to pre-disturbance conditions and would remove all sources of light and glare. Therefore, the overall light and glare impacts of decommissioning would be less than significant.

Gen-Tie Line A-1

Impact VR-1: General Scenic Vistas

General scenic vistas involving GT-A-1 on BLM land are available from KOPs 1, 2, 3, 4, and 6. GT-A-1 would be located in an area with an Interim VRM classification of Class III, which aims to "partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class III management objectives. General scenic vistas involving GT-A-1 on private land are similar to those available from KOP 4, and KOP 4 is therefore used as a proxy for views of GT-A-1 on private land.

Construction. General scenic vistas involving GT-A-1 construction *on BLM* land are available from KOPs 1, 2, 3, 4, and 6. Impacts from construction, equipment, and vehicles would be visible from these KOPs. Impacts are similar to those described above under Interim Visual Management Class for construction of SF-B. However, GT-A-1 would disturb a substantially smaller area (see Table 4.16-1) and would be constructed in less time. *Furthermore, substantially less equipment and personnel would be required at any given place and time for construction of GT-A-1.* The intensity of adverse short-term construction impacts *on BLM land* would be reduced with the implementation of Mitigation MM-VR-1 through MM-VR-3, described above under Applicant Measures and Mitigation Measures. *With implementation of these measures, construction of GT-A-1 would be consistent with Interim VRM Class III management objectives, resulting in a less-than-significant impact to scenic vistas on BLM land. Also, given the smaller scale of GT-A-1 construction, and viewing distance to the elevated vantage points in Joshua Tree Wilderness, the GT-A-1 construction would not appear spatially prominent or central to the views of the northern Chuckwalla Valley. From these locations, viewers would observe a low-to-moderate level of visual contrast between GT-A-1 construction and the surrounding desert basin and mountain landscape. Construction activities would appear subordinate to the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be low-to-moderate, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers at the elevated vantage points in Joshua Tree Wilderness would be adverse but less than significant. MM-VR-1 (Revegetation) is recommended to help reduce visual contrast associated with construction land scars.*

The view from KOP 4 in Lake Tamarisk (Figure 4.16-5) is a natural landscape with no discernible built features. The landscape exhibits high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park are of a natural landscape, and viewer concern is considered high. Viewers from KOP 4 include drivers and passengers in vehicles on Shasta Drive in Lake Tamarisk experiencing views from moving vehicles for a short duration while traveling on the roadway, and nearby residents in Lake Tamarisk experiencing long-term views. Viewer exposure is considered moderate to high. Overall visual sensitivity of KOP 4 is considered moderate to high.

As seen on private land from KOP 4 in Lake Tamarisk (Figure 4.16-5), construction vehicles and equipment would present a visual contrast with the existing natural landscape resulting in a low-to-moderate visual contrast overall. Construction of GT-A-1 would be moderately dominant in the middleground peripheral view from this vantage point relative to other features on the landscape, including the mountains in the background and shrubs in the foreground; dominance is considered low-to-moderate from KOP 4. Construction equipment would not block or impair views from KOP 4, resulting in a low degree of view blockage. Therefore, the overall visual change of GT-A-1 from KOP 4 is low to moderate. In the context of KOP 4's moderate-to-high visual sensitivity, and in consideration of the short-term nature of construction, the overall visual change of GT-A-1 from KOP 4 is moderate, resulting in a less-than-significant impact to scenic vistas on private land.

Operation and Maintenance. General scenic vistas involving GT-A-1 operation and maintenance on BLM land are available from KOPs 1, 2, 3, 4, and 6. Impacts from operation and maintenance would be visible from these KOPs. Impacts are described above under Interim Visual Management Class for operation and maintenance of GT-A-1. Although GT-A-1 is in the foreground-middle ground distance zone for these KOPs, the KOPs are not all the same distance from GT-A-1. Therefore, the degree of contrast varies, depending on the exact location of the KOP. For KOPs 3, 4, and 6, the degree of contrast would be inconsistent with Interim VRM Class III management objectives, resulting in significant and unavoidable impacts. The intensity of adverse long-term operation and maintenance impacts would be reduced to less than significant for KOPs 1 and 2 with the implementation of Mitigation MM-VR-5 and MM-VR-6, described above under Applicant Measures and Mitigation Measures for KOPs 1 and 2. Also, given the smaller scale of GT-A-1, and greater viewing distance to the elevated vantage points in Joshua Tree Wilderness, the GT-A-1 operation and maintenance would not appear spatially prominent or central to the views of the northern Chuckwalla Valley. From these locations, viewers would observe a low-to-moderate level of visual contrast between the GT-A-1 line and the surrounding desert basin and mountain landscape. GT-A-1 would appear subordinate to the other prominent landscape features (desert basin and surrounding mountains). The overall visual change would be low-to-moderate, and in the context of the existing landscape's moderate-to-high visual sensitivity, the resulting visual impact on viewers at the elevated vantage points in Joshua Tree Wilderness would be adverse but less than significant.

The view from KOP 4 in Lake Tamarisk (Figure 4.16-5) is a natural landscape with no discernible built features. The landscape exhibits high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park are of a natural landscape, and viewer concern is considered high. Viewers from KOP 4 include drivers and passengers in vehicles on Shasta Drive in Lake Tamarisk experiencing views from moving vehicles for a short duration while traveling on the roadway, and nearby residents in Lake Tamarisk experiencing long-term views. Viewer exposure is considered moderate to high. Overall visual sensitivity of KOP 4 is considered moderate to high.

As seen on private land from KOP 4 in Lake Tamarisk (Figure 4.16-5), the distant vertical light gray shape of GT-A-1 support poles would present a moderate visual contrast with the existing muted greens, tans, and blues and rounded shapes of the natural landscape. GT-A-1 would be co-dominant in the peripheral view from this vantage point relative to other features on the landscape, including the mountains in the background and the shrubs in the foreground. GT-A-1 would not block or impair views from KOP 4, resulting in a low degree of view blockage. Therefore, the overall visual change of GT-A-1 from KOP 4 is low-to-moderate. In the context of KOP 4's moderate to high visual sensitivity, the overall visual change of SF-B from KOP 4 is moderate. In the context of the long-term nature of GT-A-1, this moderate overall visual change is considered a significant impact to scenic vistas on private land. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts on private land of GT-A-1 from KOP 4, but not to a level that is less than significant.

Decommissioning. Short-term impacts to scenic vistas would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to scenic vistas of decommissioning would be less than significant.

Impact VR-2: Local Setting

Views of the local setting involving GT-A-1 on BLM land are available from KOPs 3, 4, 5, and 6. GT-A-1 would be located in an area with an Interim VRM classification of Class III, which aims to "partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class III management objectives. Views of the local setting involving GT-A-1 on private land are similar to those available from KOP 4, and KOP 4 is therefore used as a proxy for views of GT-A-1 on private land.

Construction. Views of the local setting involving GT-A-1 construction *on BLM land* are available from KOPs 3, 4, 5 and 6. Impacts from construction activities, equipment, and vehicles would be visible from these KOPs. Impacts are similar to those described above under Interim Visual Management Class for construction of SF-B. However, GT-A-1 would disturb a substantially smaller area (see Table 4.16-1) and would be constructed in less time. *Furthermore, substantially less equipment and personnel would be required at any given place and time for construction of GT-A-1.* The intensity of adverse short-term construction impacts *on BLM land* would be reduced with the implementation of Mitigation MM-VR-1 through MM-VR-3, described above under Applicant Measures and Mitigation Measures. *With implementation of these measures, construction of GT-A-1 would not be inconsistent with Interim VRM Class III management objectives, resulting in a less-than-significant impact to the local setting on BLM land.*

The view from KOP 4 in Lake Tamarisk (Figure 4.16-5) is a natural landscape with no discernible built features. The landscape exhibits high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park are of a natural landscape, and viewer concern is considered high. Viewers from KOP 4 include drivers and passengers in vehicles on Shasta Drive in Lake Tamarisk experiencing views from moving vehicles for a short duration while traveling on the roadway, and nearby residents in Lake Tamarisk experiencing long-term views. Viewer exposure is considered moderate to high. Overall visual sensitivity of KOP 4 is considered moderate to high.

As seen on private land from KOP 4 in Lake Tamarisk (Figure 4.16-5), construction vehicles and equipment would present a visual contrast with the existing natural landscape resulting in a low-to-moderate visual contrast overall. Construction of GT-A-1 would be moderately dominant in the middleground peripheral view from this vantage point relative to other features on the landscape, including the mountains in the background and the shrubs in the foreground; dominance is considered low-to-moderate from KOP 4. Construction equipment would not block or impair views from KOP 4, resulting in a low degree of view blockage. Therefore, the overall visual change of GT-A-1 from KOP 4 is low to moderate. In the context of KOP 4's moderate-to-high visual sensitivity, and in consideration of the short-term nature of construction, the overall visual change of GT-A-1 from KOP 4 is moderate, resulting in a less-than-significant impact to the local setting on private land.

Operation and Maintenance. Views of the local setting involving GT-A-1 operation and maintenance are available from KOPs 3, 4, 5 and 6. Impacts from operation and maintenance would be visible from these KOPs. Impacts are described above under Interim Visual Management Class for operation and maintenance of GT-A-1. Although GT-A-1 is in the foreground-middle ground distance zone for these KOPs, the KOPs are not all the same distance from GT-A-1. Therefore, the degree of contrast varies, depending on the exact location of the KOP. For KOPs 3 and 6, the degree of contrast would *be inconsistent with Interim VRM Class III management objectives, resulting* in significant and unavoidable impacts. However, due to distance and the presence of similar linear elements (such as roads and transmission lines), the degree of contrast would result in less-than-significant impacts with mitigation incorporated for KOPs 4 and 5. The intensity of adverse long-term operation and maintenance impacts would be reduced to less than significant with the implementation of Mitigation MM-VR-5 and MM-VR-6, described above under Applicant Measures and Mitigation Measures for KOPs 4 and 5.

The view from KOP 4 in Lake Tamarisk (Figure 4.16-5) is a natural landscape with no discernible built features. The landscape exhibits high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park are of a natural landscape, and viewer concern is considered high. Viewers from KOP 4 include drivers and passengers in vehicles on Shasta Drive in Lake Tamarisk experiencing views from moving vehicles for a short duration while traveling on the roadway, and nearby residents in Lake Tamarisk experiencing long-term views. Viewer exposure is considered moderate to high. Overall visual sensitivity of KOP 4 is considered moderate to high.

As seen on private land from KOP 4 in Lake Tamarisk (Figure 4.16-5), the distant vertical light gray shape of GT-A-1 support poles would present a moderate visual contrast with the existing muted greens, tans, and blues and rounded shapes of the natural landscape. GT-A-1 would be co-dominant in the peripheral view from this vantage point relative to other features on the landscape, including the mountains in the background and shrubs in the foreground. GT-A-1 would not block or impair views from KOP 4, resulting in a low degree of view blockage. Therefore, the overall visual change of GT-A-1 from KOP 4 is low to moderate. In the context of KOP 4's moderate-to-high visual sensitivity, the overall visual change of SF-B from KOP 4 is moderate. In the context of the long-term nature of GT-A-1, this moderate overall visual change is considered a significant impact to the local setting on private land. MM-VR-1 (Revegetation), MM VR-4 (Light Control), MM-VR-5 (Surface Treatment of Project Structures/Buildings), and MM-VR-6 (Project Design) would reduce long-term visual impacts on private land of GT-A-1 from KOP 4, but not to a level that is less than significant.

Decommissioning. Short-term impacts to the local setting would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to the local setting of decommissioning would be less than significant.

Impact VR-3: Light and Glare

Construction. Views of light and glare involving GT-A-1 construction are available from KOPs 1, 2, 3, 4, 5, 6, *and the elevated vantage points in Joshua Tree Wilderness*. Impacts from construction activities, equipment, and vehicles would be visible from these KOPs *and viewing locations*. Impacts are similar to those described above under Interim Visual Management Class for construction of SF-B. However, GT-A-1 would disturb a substantially smaller area (see Table 4.16-1) and would be constructed in less time. The degree of contrast *would not be inconsistent with the Interim VRM Class III management objectives,* result*ing* in less-than-significant impacts. *Also, the degree of contrast would result in less-than-significant impacts when viewed from the elevated vantage points in Joshua Tree Wilderness.*

Operation and Maintenance. The intensity of adverse long-term operation and maintenance impacts would be less than significant at KOPs 1, 2, 3, 4, 5, 6 *and the elevated vantage points in Joshua Tree Wilderness.* GT-A-1 would not contain sources of light. Also, the monopoles would be composed of self-weathering steel, thereby reducing glare.

Decommissioning. Short-term impacts of light and glare would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to restore the landscape to predisturbance conditions. *Therefore, the overall impacts of light and glare from decommissioning would be less than significant.*

Red Bluff Substation A

Impact VR-1: General Scenic Vistas

General scenic vistas involving Red Bluff Substation A on BLM land are available from KOP 6. Red Bluff Substation A would be located in an area with an Interim VRM classification of Class II, which aims to "Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class II management objectives.

Construction. General scenic vistas involving Red Bluff Substation A construction are available from KOP 6. Impacts from construction activities, equipment, and vehicles would be visible from this KOP. *The degree of contrast of Red Bluff Substation A construction activities and equipment would be strong, involving changes in vegetation and structures from construction with no screening elements to block direct views of construction activities. The substation construction would also block views of the mountains. The level of visual contrast of Red Bluff Substation A construction as viewed from KOP 6 would be inconsistent with the Interim VRM Class II management objectives of the area. Therefore, impacts to scenic vistas of Red Bluff Substation A from KOP 6 would be significant. MM-VR-1 (Revegetation), MM-VR-3 (Dust Control), and MM VR-4 (Light Control) would reduce visual impacts of Red Bluff Substation A construction from KOP 6, but not to a level that is less than significant. Given the extended viewing distance (10 to 16 miles) to Joshua Tree Wilderness, substation construction impacts to scenic vistas and elevated vantage points in Joshua Tree Wilderness would be less than significant. MM-VR-1 (Revegetation) is recommended to reduce the visual contrast of land scars associated with construction.*

Operation and Maintenance. General scenic vistas involving Red Bluff Substation A operation and maintenance are available from KOP 6. Impacts from operation and maintenance would be visible from this KOP. Red Bluff Substation A and telecommunication facilities are in the foreground-middle ground distance zone for KOP 6. From KOP 6, the degree of contrast would be *strong* because of the lack of screening elements to block direct views of the site, the height and number of artificial structures, and the proximity of KOP 6 to the Project. Although viewers typically expect artificial elements next to highways, they also expect elements to be clustered instead of spread across the landscape. Activity on I-10, however, partially distracts views from KOP 6 away from the site. Also, because of the curving nature of I-10 and travelers moving at highway speed, the site would be visible in the foreground distance zone for a limited amount of time. *Nonetheless, the high visual contrast of the substation would be inconsistent with the Interim VRM Class II management objectives of the area. Long-term impacts to scenic vistas from the operation and maintenance of Red Bluff Substation A would therefore be significant.* The intensity of adverse long-term operation and maintenance impacts would be reduced (but not to less-than-significant levels) with the implementation of Mitigation MM-VR-4 through MM-VR-6, described above under Applicant Measures and Mitigation Measures. *Given the extended viewing distance (10 to 16 miles) to Joshua Tree Wilderness, substation operation and maintenance impacts to scenic vistas and elevated vantage points in Joshua Tree Wilderness would be less than significant. MM-VR-4 (Light Control) is recommended to reduce visible light and glare associated with operation and maintenance.*

Decommissioning. Short-term impacts to scenic vistas would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to *restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to scenic vistas of decommissioning would be less than significant.*

Impact VR-2: Local Setting

Views of the local setting involving Red Bluff Substation A on BLM land are available from KOP 6. Red Bluff Substation A would be located in an area with an Interim VRM classification of Class II, which aims to "Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class II management objectives.

Construction. Views of the local setting involving Red Bluff Substation A construction are available from KOP 6. Impacts from construction activities, equipment, and vehicles would be visible from this KOP. *The degree of contrast of Red Bluff Substation A would be strong, with the presence of vertical structures with industrial character. The level of visual contrast of Red Bluff Substation A as viewed from KOP 6 would be inconsistent with the Interim VRM Class II management objectives of the area. Therefore, impacts to the local setting of Red Bluff Substation A from KOP 6 would be significant. MM-VR-1 (Revegetation), MM-VR-3 (Dust Control), and MM VR-4 (Light Control) would reduce visual impacts of Red Bluff Substation A from KOP 6, but not to a level that is less than significant.*

Operation and Maintenance. Views of the local setting involving Red Bluff Substation A operation and maintenance are available from KOP 6. Impacts from operation and maintenance would be visible from this KOP. Red Bluff Substation A and telecommunication facilities are in the foreground-middle ground distance zone for KOP 6. From KOP 6, the degree of contrast would be *strong* because of the lack of screening elements to block direct views of the site, the height and number of artificial structures, and the proximity of KOP 6 to the Project. Although viewers typically expect artificial elements next to highways, they expect the elements to be clustered instead of spread across the landscape. Activity on I-10, however, partially distracts views from KOP 6 away from the site. Also, because of the curving nature of I-10 and travelers moving at highway speed, the site would be visible in the foreground distance zone for a limited amount of time. *Nonetheless, the high visual contrast of the substation would be inconsistent with the Interim VRM Class II management objectives of the area. Long-term impacts to the local setting from the operation and maintenance of Red Bluff Substation A would therefore be significant.* The intensity of adverse long-term operation and maintenance impacts would be reduced (but not to less-than-significant levels) with the implementation of Mitigation MM-VR-4 through MM-VR-6, described above under Applicant Measures and Mitigation Measures.

Decommissioning. Short-term impacts to the local setting would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to the local setting of decommissioning would be less than significant.

Impact VR-3: Light and Glare

Views of light and glare involving Red Bluff Substation A on BLM land are available from KOP 6. Red Bluff Substation A would be located in an area with an Interim VRM classification of Class II, which aims to "Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, *form, color, and texture found in the predominant natural features of the characteristic landscape." Project construction, operation, and decommissioning would be considered to result in significant visual impacts if the project would be inconsistent with these Interim VRM Class II management objectives.*

Construction. Views of light and glare involving Red Bluff Substation A construction are available from KOP 6. Impacts from construction activities, equipment, and vehicles would be visible from this KOP. Adverse impacts would be short-term and limited to the duration of construction activities. Also, certain construction activity impacts, such as material deliveries, are not expected to occur for the duration of the work week or at all on weekends. Furthermore, the work day would be during daylight, typically consisting of one shift beginning at 7:00 AM and ending at 3:30 PM. *Light and glare impacts of construction would be seen, but would not dominate the casual observer's attention, and would therefore be consistent with the Interim VRM Class II management objectives of the area. Impacts of light and glare from construction of Red Bluff Substation A would therefore be less than significant. Also, given the extended viewing distance to Joshua Tree Wilderness, Red Bluff Substation A construction lighting and glare would not dominate a casual observer's view from elevated perspectives in Joshua Tree Wilderness, and substation construction lighting and glare would result in a less-than-significant impact on those vantage points. MM VR-4 (Light Control) is recommended to further reduce light and glare impacts of Red Bluff Substation A.*

Operation and Maintenance. Views of light and glare involving Red Bluff Substation A operation and maintenance are available from KOP 6. Impacts from operation and maintenance would be visible from this KOP. Impacts are described above under Interim Visual Management Class for operation and maintenance of Red Bluff Substation A. Red Bluff Substation A and telecommunication facilities are in the foreground-middle ground distance zone for KOP 6. From KOP 6, the degree of contrast would be *high* because of the lack of screening elements to block direct views of the site, the height and number of artificial structures, and the proximity of KOP 6 to the Project. Although viewers typically expect artificial elements next to highways, they expect the elements to be clustered instead of spread across the landscape. Activity on I-10, however, partially distracts views from KOP 6 away from the site. Also, because of the curving nature of I-10 and travelers moving at highway speed, the site would be visible in the foreground distance zone for a limited amount of time. *Nonetheless, the long-term use of lights at the substation would dominate the casual observer's attention and the level of change to the existing landscape would be high, resulting in an inconsistency with the Interim Class II management objectives of the area. Impacts from light and glare would therefore be significant.* The intensity of adverse long-term operation and maintenance impacts would be reduced (but not to less-than-significant levels) with the implementation of Mitigation MM-VR-4, described above under Applicant Measures and Mitigation Measures. *Also, given the extended viewing distance (10 to 16 miles) to the elevated vantage points in Joshua Tree Wilderness, Red Bluff Substation A operation and maintenance lighting and glare would not dominate a casual observer's view from those viewing locations, and the resulting visual impact would be less than significant. MM VR-4 (Light Control) is recommended to further reduce light and glare impacts of Red Bluff Substation.*

Decommissioning. Short-term light and glare impacts would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to restore the landscape to pre-disturbance conditions. *Therefore, the overall light and glare impacts of decommissioning would be less than significant.*

Unavoidable Adverse Effects

There would be long-term significant and unavoidable adverse impacts on scenic vistas, visual character/quality (local setting, artificial light, and local plans, policies, and regulations. Based on the locations of the KOPs used in this analysis, long-term significant and unavoidable adverse impacts on scenic vistas and the local setting would result from *SF-B*, GT-A-1 and Red Bluff Substation A, and long-term significant and unavoidable adverse impacts on artificial light would result from the Red Bluff Substation A.

Alternative 1 is incompatible with Riverside County General Plan policies. Because of operation and maintenance impacts, Alternative 1 would not comply with the following Riverside County General Plan policies: LU 4.1, LU 13.1, LU 13.3, LU 13.5, LU 13.8, LU 20.1, LU 20.2, LU 20.4, DCAP 2.3, DCAP 9.1, and DCAP 10.1.

4.16.4 Alternative 2 – Alternate Action

The following configurations of the three Project components are proposed:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line B-2 (GT-B-2); and
- Red Bluff Substation B.

Figure 4.16-9 shows the viewshed for Alternative 2. It shows the areas within 15 miles of Alternative 2 from which Alternative 2 buildings and structures would be visible. The analysis below identifies the impacts on visual resources from KOPs within the viewshed.

Construction

Solar Farm Layout B

Construction of SF-B would require clearance of approximately *3,912* acres. The impacts resulting from constructing SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Construction for GT-B-2 along the 10-mile by 160-foot wide transmission corridor would result in the permanent disturbance of *68* acres. The impacts resulting from constructing GT-B-2 would be similar to those discussed under GT-A-1 for Alternative 1. However, because GT-B-2 would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be less fugitive dust, material deliveries to the Project site, and construction equipment and vehicles that could diminish visual resources. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation B

Construction of Red Bluff Substation B includes the substation itself and related components. It would result in *130* acres of permanent disturbance. Although there are no KOPs for Red Bluff Substation B, the impacts resulting from constructing Red Bluff Substation B would be similar to

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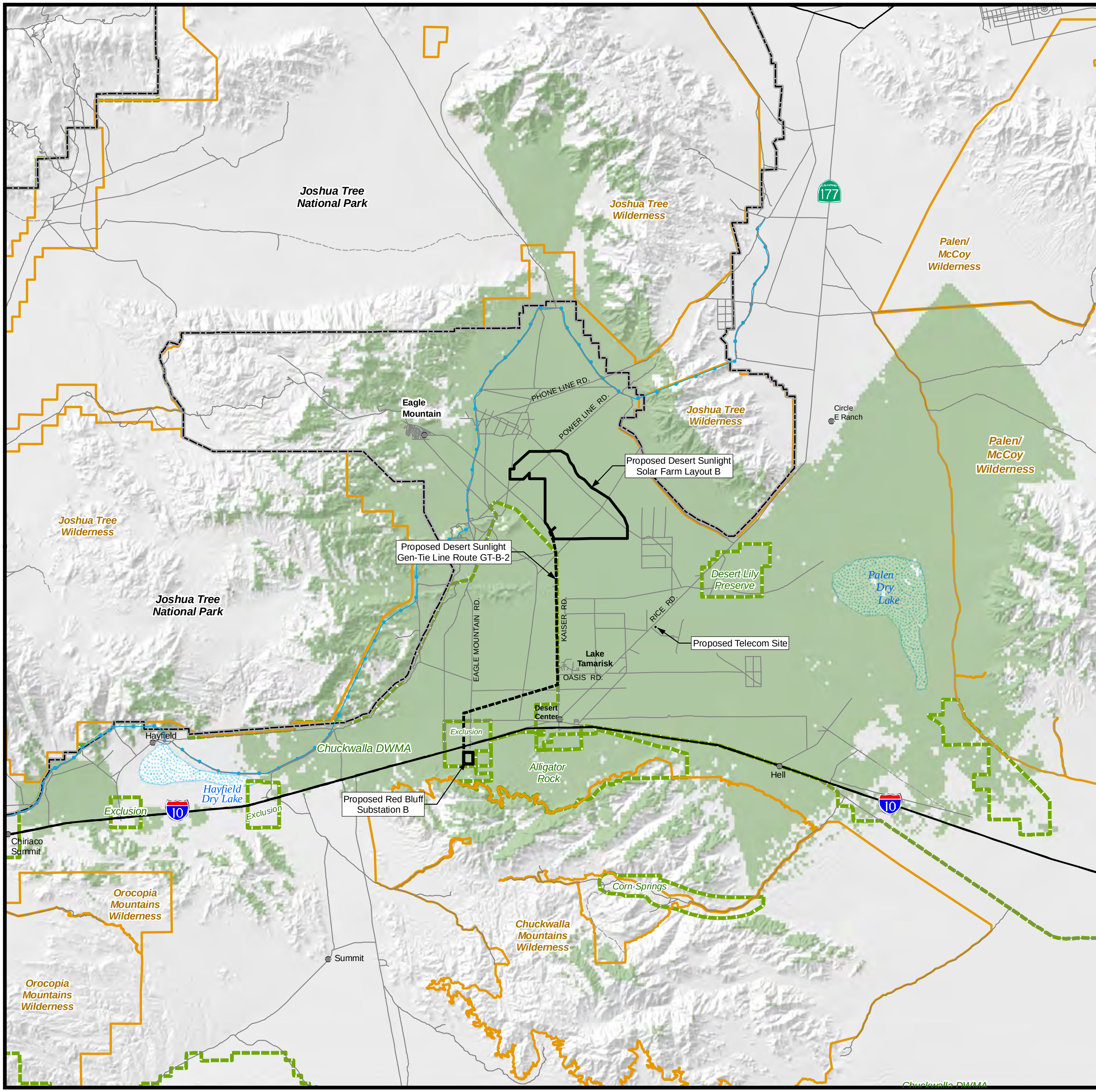

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0 4 Miles

LEGEND

- Calculated Viewshed Based on Alternate Action Features
- Primary Highway / Interstate
- Secondary Road
- Unimproved Road
- Aqueduct
- Intermittent Water Feature
- Joshua Tree National Park Boundary
- BLM Wilderness Area
- Area of Critical Environmental Concern (ACEC)

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-9

Viewshed Analysis - Alternate Action Alternative

those discussed under Red Bluff Substation A for Alternative 1. Although the substations are in different locations, they are in similar settings and are composed of similar Project components. However, because Red Bluff Substation B would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be less fugitive dust, material deliveries to the Project site, and construction equipment and vehicles that could diminish visual resources. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Visual Impacts for users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience to BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high, though slightly reduced in intensity, due to the smaller area of disturbance.

Summary of Construction Impacts

Construction of SF-B, GT-B-2, and Red Bluff Substation B would result in the permanent disturbance of *4,110* acres. As described above, impacts from construction activities, equipment, and vehicles would be visible. The impacts on interim visual management class objectives resulting from construction would be similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone. The mitigation would be the same as those discussed under Alternative 1.

Operation and Maintenance

Solar Farm Layout B

SF-B would occupy approximately *3,912* acres. The impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

Operation and maintenance for GT-B-2 would result in the permanent disturbance of *68* acres. Approximately 58 transmission structures would be required for this alternative, including 53 tangents and 5 dead-ends. There would be 4.3 miles of access roads that are 14 feet wide. The impacts resulting from operating and maintaining GT-B-2 would be similar to those discussed under GT-A-1 for Alternative 1. However, because GT-B-2 would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be fewer artificial vertical elements connected by discrete wires across the relatively flat landscape. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation B

Red Bluff Substation B operation and maintenance includes the substation and related components. It would result in *130* acres of permanent disturbance. Although there are no KOPs for Red Bluff Substation B, the impacts resulting from operating and maintaining Red Bluff Substation B would be similar to those discussed under Red Bluff Substation A for Alternative 1. Although the substations are in different locations, they are in similar settings and are composed of similar Project components. However, because Red Bluff Substation B would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be less access road that would abruptly divide the landscape, vegetation clearing, and alteration of the natural lines of the topography. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience at BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high, though slightly reduced in intensity because of the smaller area of disturbance.

Summary of Operation and Maintenance Impacts

Operating and maintaining of SF-B, GT-B-2, and Red Bluff Substation B would result in the permanent disturbance of *4,110* acres. As described above, impacts from operation and maintenance would be visible. The impacts on interim visual management class objectives resulting from operation and maintenance would be similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone. The mitigation measures are the same as those discussed under Alternative 1.

Decommissioning

The Project has a minimum expected lifetime of 25 years or more, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. Decommissioning of facilities is detailed in Chapter 2.

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1. However, because a smaller area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 would be similar to those discussed under Alternative 1. However, because a smaller area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation B

The impacts resulting from decommissioning Red Bluff Substation B would be similar to those discussed under Alternative 1. Although the substations are in different locations, they are in similar settings and are composed of similar Project components. However, because a smaller area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience at BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high while decommissioning takes place, though slightly reduced in intensity because of the smaller area of disturbance. Once site restoration is achieved, impacts would be reduced or eliminated.

Summary of Decommissioning Impacts

Decommissioning of SF-B, GT-B-2, and Red Bluff Substation B would result in rehabilitating approximately *4,110* acres. The impacts on interim visual management class objectives resulting from decommissioning are similar to those discussed under Alternative 1. However, because a smaller total area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Summary of Combined Impacts for Alternative 2

There would be long-term impacts from construction, operation, and maintenance. Construction, operation, and maintenance of SF-B, GT-B-2, and Red Bluff Substation B would result in the permanent disturbance of *4,110* acres. There would be long-term impacts from decommissioning. At a minimum, decommissioning is expected to restore the landscape to pre-disturbance conditions.

The impacts on interim visual management class objectives are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

The impacts on local plans, policies, and regulations are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts.

Applicant Measures and Mitigation Measures

The mitigation is the same as that discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B is the same as that discussed under Alternative 1.

Gen-Tie Line B-2

The CEQA significance determination for GT-B-2 is the same as that discussed under Alternative 1.

Red Bluff Substation B

Impact VR-1: General Scenic Vistas

General scenic vistas involving Red Bluff Substation B on private land are similar to those available from KOP 6, and KOP 6 is therefore used as a proxy for views of Red Bluff Substation B on private land.

Construction. The view from KOP 6 (Figure 4.16-7) is a predominantly natural landscape with roads visible in the foreground and faint utility towers in the middleground, and with views of the Chuckwalla Mountains Wilderness Area and Alligator Rock ACEC in the background. The landscape exhibits moderate to high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park and the Chuckwalla Mountains and Alligator Rock ACEC are of a natural landscape, and viewer concern is considered high. Viewers from KOP 6 include drivers and numerous passengers in vehicles on I-10 experiencing views from moving vehicles for a short duration while traveling on the roadway. Viewer exposure is considered moderate. Overall visual sensitivity of KOP 6 is considered moderate to high.

As seen on private land from KOP 6 (Figure 4.16-7), construction vehicles and equipment in the foreground view would present a visual contrast with the existing natural landscape resulting in a moderate-to-high visual contrast overall. Construction of Red Bluff Substation B would be dominant in the foreground view from this vantage point relative to other features on the landscape, including the mountains in the background and shrubs and transmission towers in the middleground; dominance is considered high from KOP 6. Construction equipment would block or impair views from KOP 6, resulting in a high degree of view blockage. Therefore, the overall visual change of Red Bluff Substation B from KOP 6 is moderate to high. In the context of KOP 6's moderate-to-high visual sensitivity, even considering the short-term nature of construction, the overall visual change of Red Bluff Substation B construction is moderate to high, resulting in a significant impact on scenic vistas. Mitigation Measure VR-1 (Revegetation), Mitigation Measure VR-3 (Dust Control), and Mitigation Measure VR-4 (Light Control) would reduce visual impacts of Red Bluff Substation B from KOP 6, but not to a level that is less than significant.

Operation and Maintenance. The view from KOP 6 (Figure 4.16-7) is a predominantly natural landscape with roads visible in the foreground and faint utility towers in the middleground, and with views of the Chuckwalla Mountains Wilderness Area and Alligator Rock ACEC in the background. The landscape exhibits moderate to high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park and the Chuckwalla Mountains and Alligator Rock ACEC are of a natural landscape, and viewer concern is considered high. Viewers from KOP 6 include drivers and numerous passengers in vehicles on I-10 experiencing views from moving vehicles for a short duration while traveling on the roadway. Viewer exposure is considered moderate. Overall visual sensitivity of KOP 6 is considered moderate to high.

The CEQA significance determination for Red Bluff Substation B construction impacts, as viewed from elevated vantage points in Joshua Tree Wilderness, is the same as that discussed under Alternative 1.

As seen on private land from KOP 6 (Figure 4.16-7), the presence of substation equipment and transmission towers in the foreground view would present a visual contrast with the existing natural landscape, resulting in a moderate-to-high visual contrast overall. Red Bluff Substation B would be dominant in the foreground view from this vantage point relative to other features on the landscape, including the mountains in the background and shrubs and transmission towers in the middleground; dominance is considered high from KOP 6. The substation equipment would block or impair views from KOP 6, resulting in a high degree of view blockage. Therefore, the overall visual change of Red Bluff Substation B from KOP 6 is moderate-to-high. In the context of KOP 6's moderate-to-high visual sensitivity, the overall visual change of Red Bluff Substation B is moderate-to-high, resulting in a significant impact on scenic vistas. Mitigation MM-VR-4 through MM-VR-6 would reduce visual impacts of Red Bluff Substation B, but not to a level that is less than significant.

The CEQA significance determination for Red Bluff Substation B operation and maintenance impacts, as viewed from elevated vantage points in Joshua Tree Wilderness, is the same as that discussed under Alternative 1.

Decommissioning. Short-term impacts to scenic vistas would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to slowly restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to scenic vistas of decommissioning would be less than significant.

Impact VR-2: Local Setting

Views of the local setting involving Red Bluff Substation B on private land are similar to those available from KOP 6, and KOP 6 is therefore used as a proxy for views of Red Bluff Substation B on private land.

Construction. The view from KOP 6 (Figure 4.16-7) is a predominantly natural landscape with roads visible in the foreground and faint utility towers in the middleground, and with views of the Chuckwalla Mountains Wilderness Area and Alligator Rock ACEC in the background. The landscape exhibits moderate to high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park and the Chuckwalla Mountains and Alligator Rock ACEC are of a natural landscape, and viewer concern is considered high. Viewers from KOP 6 include drivers and numerous passengers in vehicles on Interstate 10 experiencing views from moving vehicles for a short duration while traveling on the roadway and dispersed recreationists on the valley floor. Viewer exposure is considered moderate. Overall visual sensitivity of KOP 6 is considered moderate to high.

As seen on private land from KOP 6 (Figure 4.16-7), construction vehicles and equipment in the foreground view would present a visual contrast with the existing natural landscape resulting in a moderate-to-high visual contrast overall. Construction of Red Bluff Substation B would be dominant in the foreground view from this vantage point relative to other features on the landscape, including the mountains in the background and shrubs and transmission towers in the middleground; dominance is considered high from KOP 6. Construction equipment would block or impair views from KOP 6, resulting in a high degree of view blockage. Therefore, the overall visual change of Red Bluff Substation B from KOP 6 is moderate to high. In the context of KOP 4's moderate-to-high visual sensitivity, even considering the short-term nature of construction, the overall visual change of Red Bluff Substation B construction is moderate to high, resulting in a significant impact on the local setting. MM-VR-1 (Revegetation), MM-VR-3 (Dust Control), and MM VR-4 (Light Control) would reduce visual impacts of Red Bluff Substation B from KOP 6, but not to a level that is less than significant.

Operation and Maintenance. The view from KOP 6 (Figure 4.16-7) is a predominantly natural landscape with roads visible in the foreground and faint utility towers in the middleground, and with views of the Chuckwalla Mountains Wilderness Area and Alligator Rock ACEC in the background. The landscape exhibits moderate to high degrees of variety, vividness, intactness, and harmony. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park and the Chuckwalla Mountains and Alligator Rock ACEC are of a natural landscape, and viewer concern is considered high. Viewers from KOP 6 include drivers and numerous passengers in vehicles on Interstate 10 experiencing views from moving vehicles for a short duration while traveling on the roadway and dispersed recreationists on the valley floor. Viewer exposure is considered moderate. Overall visual sensitivity of KOP 6 is considered moderate to high.

As seen on private land from KOP 6 (Figure 4.16-7), the presence of substation equipment and transmission towers in the foreground view would present a visual contrast with the existing natural landscape, resulting in a moderate-to-high visual contrast overall. Red Bluff Substation B would be dominant in the foreground view from this vantage point relative to other features on the landscape, including the mountains in the background and the shrubs and transmission towers in the middleground; dominance is considered high from KOP 6. The substation equipment would block or impair views from KOP 6, resulting in a high degree of view blockage. Therefore, the overall visual change of Red Bluff Substation B from KOP 6 is moderate to high. In the context of KOP 6's moderate-to-high visual sensitivity, the overall visual change of Red Bluff Substation B is moderate to high, resulting in a significant impact on the local setting. Mitigation MM-VR-4 through MM-VR-6 would reduce visual impacts of Red Bluff Substation B, but not to a level that is less than significant.

Decommissioning. Short-term impacts to the local setting would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to slowly restore the landscape to pre-disturbance conditions. Therefore, the overall impacts to the local setting of decommissioning would be less than significant.

Impact VR-3: Light and Glare

Views of light and glare involving Red Bluff Substation B on private land are similar to those available from KOP 6, and KOP 6 is therefore used as a proxy for views of Red Bluff Substation B on private land.

Construction. Red Bluff Substation B construction would occur during the day and would not introduce sources of nighttime light. Glare would occur from vehicle windows and polished surfaces of equipment, but would be minimal. Visual sensitivity is high at KOP 6; however, the degree of visual change as a result of glare is low. In the context of the short-term nature of construction, impacts from light and glare as a result of construction of Red Bluff Substation B would be less than significant.

The CEQA significance determination for Red Bluff Substation B construction impacts, as viewed from elevated vantage points in Joshua Tree Wilderness, is the same as that discussed under Alternative 1.

Operation and Maintenance. The view from KOP 6 (Figure 4.16-7) is a predominantly natural landscape with roads visible in the foreground and faint utility towers in the middleground, and with views of the Chuckwalla Mountains Wilderness Area and Alligator Rock ACEC in the background. The landscape exhibits moderate-to-high high degrees of variety, vividness, intactness, and harmony. In addition, the area is highly valued for its nighttime darkness. Visual quality at KOP 4 is considered moderate to high. Viewer expectations of this area of public land adjacent to Joshua Tree National Park and the Chuckwalla Mountains and Alligator Rock ACEC are of a natural landscape and a dark nighttime landscape, and viewer concern is considered high. Viewers from KOP 6 include drivers and numerous passengers in vehicles on Interstate 10 experiencing views from moving vehicles for a short duration while traveling on the roadway and dispersed recreationists on the valley floor. Viewer exposure is considered moderate. Overall visual sensitivity of KOP 6 is considered moderate to high.

Even though night lighting at Red Bluff Substation B would be limited, artificial lighting would be introduced to the area, thereby decreasing nighttime darkness. Exterior lights at the substation would be shielded and focused downward and toward the interior of the site to minimize lighting and glare impacts on the night sky and on surrounding areas. Structures would be finished to reduce glare. Nonetheless, nighttime lighting would present a moderate-to-high visual contrast with the existing nighttime darkness of the landscape. The nighttime lighting of the substation would be highly dominant in the foreground view for passengers and recreationists nearby KOP 6. The overall visual change as a result of nighttime lighting at Red Bluff Substation B would be moderate to high. In the context of the moderate-to-high visual sensitivity at KOP 6, nighttime lighting impacts of Red Bluff Substation B would be significant. MM VR-4 (Light Control) would reduce visual impacts of Red Bluff Substation B from KOP 6, but not to a level that is less than significant.

The CEQA significance determination for Red Bluff Substation B light and glare impacts, as viewed from elevated vantage points in Joshua Tree Wilderness, is the same as that discussed under Alternative 1.

Decommissioning. Short-term impacts of light and glare would occur during decommissioning, which is expected to result in mobilization of personnel and equipment similar to Project construction. Decommissioning is expected to be *less intense and last for a shorter duration than Project construction. In the long term, decommissioning is expected to slowly restore the landscape to pre-disturbance conditions. Therefore, the overall impacts of light and glare from decommissioning would be less than significant.*

Unavoidable Adverse Effects

The unavoidable adverse impacts are the same as those discussed under Alternative 1.

4.16.5 Alternative 3 – Reduced Footprint Alternative

The following configurations of the three Project components are proposed:

- Solar Farm Layout C (SF-C);
- Gen-Tie Line A-2 (GT-A-2); and
- Red Bluff Substation A, with Access Road 1.

Figure 4.16-10 shows the areas within 15 miles of Alternative 3, from which Alternative 3 buildings and structures would be visible. The analysis below identifies the impacts on visual resources from KOPs within the viewshed.

Construction

Solar Farm Layout C

Construction of SF-C would require clearance of approximately 3,045 acres. The impacts resulting from constructing SF-C are similar to those discussed under SF-B for Alternative 1. However, because SF-C would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be less fugitive dust, material deliveries to the Project site, and construction equipment and vehicles that could diminish visual resources. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

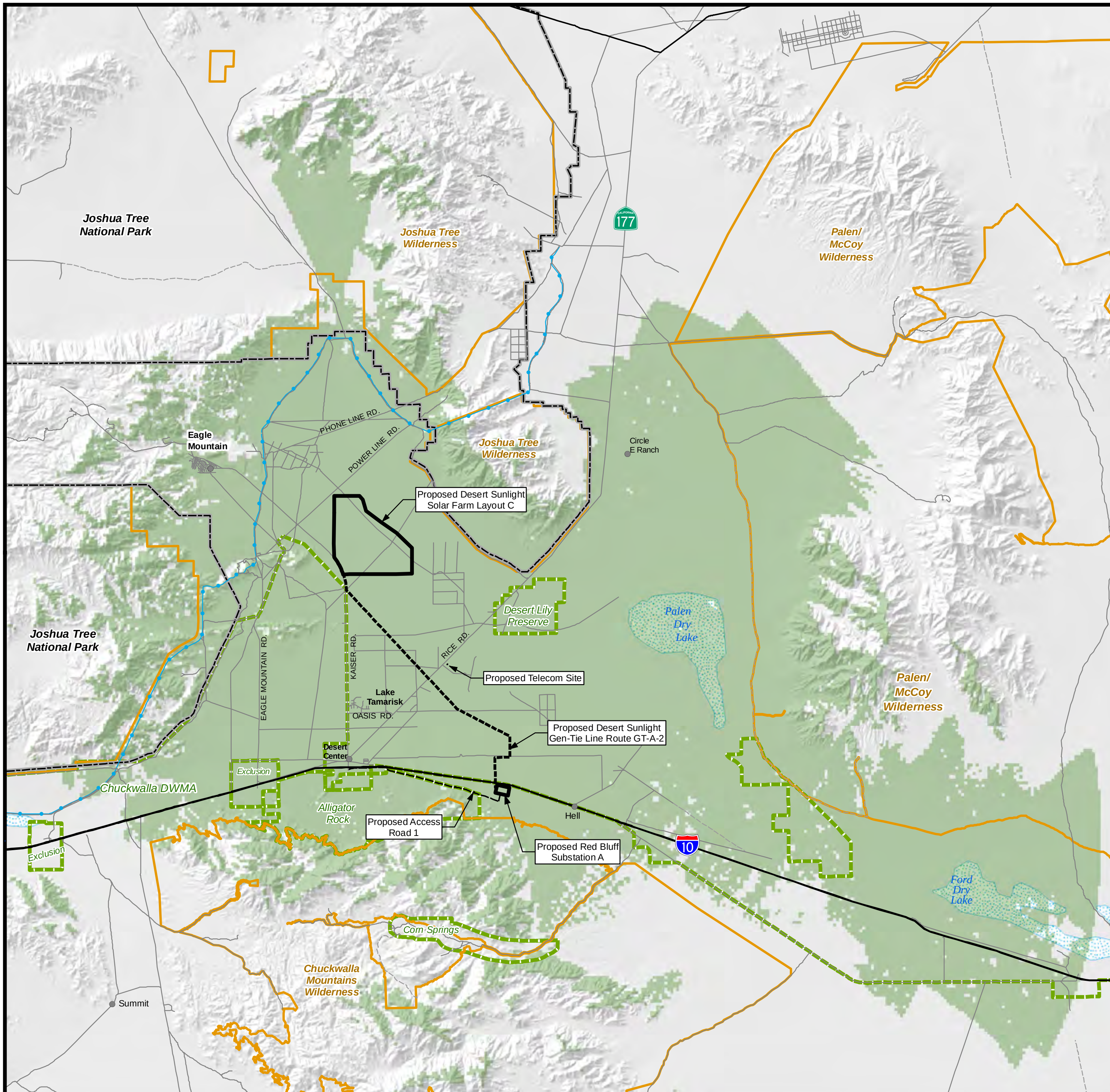
Gen-Tie Line A-2

Construction for GT-A-2 along the 10-mile by 160-foot wide transmission corridor would result in the permanent disturbance of *86* acres. The impacts resulting from constructing GT-A-2 are similar to those discussed under GT-A-1 for Alternative 1. However, because GT-A-2 construction would disturb a smaller area, there would be fewer temporary impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be less fugitive dust, material deliveries to the Project site, and construction equipment and vehicles that could diminish visual resources. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation A

Construction of Red Bluff Substation A includes the substation itself and related components. It would result in *172* acres of permanent disturbance. The impacts resulting from constructing Red Bluff Substation A (with Access Road 1) are similar to those discussed under Red Bluff Substation A for Alternative 1.

X:\GIS\Desert_Sunlight\MXD_Files\Viewshed_Alt3.mxd



0 4 Miles

LEGEND

- Calculated Viewshed Based on Reduced Footprint Features
- Primary Highway / Interstate
- Secondary Road
- Unimproved Road
- Aqueduct
- Intermittent Water Feature
- Joshua Tree National Park Boundary
- BLM Wilderness Area
- Area of Critical Environmental Concern (ACEC)

DESERT SUNLIGHT SOLAR FARM

Figure 4.16-10

Viewshed Analysis - Reduced Footprint Alternative

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience to BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high, though slightly reduced in intensity because of the smaller area of disturbance.

Summary of Construction Impacts

Construction of SF-C, GT-A-2, and Red Bluff Substation A (with Access Road 1) would result in the permanent disturbance of *3,303* acres. As described above, impacts from construction activities, equipment, and vehicles would be visible. The impacts on interim visual management class objectives resulting from construction are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone. The mitigation measures are the same as those discussed under Alternative 1.

Operation and Maintenance

Solar Farm Layout C

SF-C would occupy approximately 3,045 acres. The impacts resulting from operating and maintaining SF-C are similar to those discussed under SF-B for Alternative 1. However, because SF-C would disturb a smaller area, there would be fewer impacts (see Table 4.16-1). For example, because a smaller area would be disturbed, there would be fewer artificial and angular forms at the Solar Farm to stand out against the rounded and curving natural forms of the adjacent vegetation and mountains. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Gen-Tie Line A-2

Operation and maintenance for GT-A-2 would result in the permanent disturbance of *86* acres. Fifty-nine transmission structures would be required for this alternative, including 51 tangents and 8 dead-ends. There would be 10 miles of access roads that are 14 feet wide. The impacts resulting from operating and maintaining GT-A-2 are similar to those discussed under GT-A-1 for Alternative 1. However, because GT-A-2 would disturb a *smaller* area, there would be *fewer* impacts (see Table 4.16-1). For example, because a *smaller* area would be disturbed, there would be *fewer* artificial vertical elements connected by discrete wires across the relatively flat landscape. Although there would be *fewer* impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation A

Red Bluff Substation A operation and maintenance includes the substation and related components. It would result in *172* acres of permanent disturbance. The impacts resulting from operating and maintaining Red Bluff Substation A (with Access Road 1) are similar to those discussed under Red Bluff Substation A for Alternative 1.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience to BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high, though slightly reduced in intensity because of the smaller area of disturbance.

Summary of Operation and Maintenance Impacts

Operating and maintaining of SF-C, GT-A-2, and Red Bluff Substation A (with Access Road 1) would result in the permanent disturbance of *3,303* acres. As described above, impacts from operation and maintenance would be visible. The impacts on interim visual management class objectives resulting from operation and maintenance are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone. The mitigation is the same as those discussed under Alternative 1.

Decommissioning

The Project has a minimum expected lifetime of 25 years or more, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. Decommissioning of facilities is detailed in Chapter 2.

Solar Farm Layout C

The impacts resulting from decommissioning SF-C are similar to those discussed under Alternative 1. However, because a smaller area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Gen-Tie Line A-2

The impacts resulting from decommissioning GT-A-2 would be similar to those discussed under Alternative 1. However, because a *smaller* area would be decommissioned, there would be *fewer* impacts. Although there would be *fewer* impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A (with Access Road 1) are similar to those discussed under Alternative 1.

Visual Impacts for Users of BLM Wilderness Areas and Joshua Tree National Park

For the same reasons discussed under construction impacts of Alternative 1, impacts to the visitor experience to BLM wilderness and Joshua Tree National Park from visual disturbances would be moderate-to-high while decommissioning takes place, though slightly reduced in intensity, because of the smaller area of disturbance. Once site restoration is achieved, visual impacts would be reduced or eliminated.

Summary of Decommissioning Impacts

Decommissioning SF-C, GT-A-2 and Red Bluff Substation A (with Access Road 1) would rehabilitate *3,303* acres. The impacts on interim visual management class objectives resulting from decommissioning would be similar to those discussed under Alternative 1. However, because a smaller total area would be decommissioned, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

Summary of Combined Impacts for Alternative 3

There would be long-term impacts from construction, operation, and maintenance. Construction, operation, and maintenance of SF-C, GT-A-2, and Red Bluff Substation A (with Access Road 1) would result in the permanent disturbance of *3,303* acres. There would be long-term impacts from decommissioning. At a minimum, decommissioning is expected to restore the landscape to pre-disturbance conditions *over time*.

The impacts on interim visual management class objectives are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts. Although there would be fewer impacts, the intensity of impacts would not change because of the Project's prominence in the foreground-middle ground distance zone.

The impacts on local plans, policies, and regulations are similar to those discussed under Alternative 1. However, because a smaller total area would be disturbed, there would be fewer impacts.

Applicant Measures and Mitigation Measures

The mitigation is the same as that discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

The CEQA significance determination for SF-C is the same as that discussed under Alternative 1, although somewhat reduced in intensity due to the reduced size of the facility. The conclusions on consistency with VRM objectives remain the same because the reduction in facility size is not sufficient to reduce the visual contrast from KOP 3 to moderate.

Gen-Tie Line A-2

The CEQA significance determination for GT-A-2 is the same as that discussed under Alternative 1. *While GT-A-2 involves a different route than GT-A-1, the conclusions on consistency with VRM objectives remain the same because GT-A-2 would affect the same visual setting and similar viewer types and volumes.*

Red Bluff Substation A

The CEQA significance determination for Red Bluff Substation A is the same as that discussed under Alternative 1.

Unavoidable Adverse Effects

The unavoidable adverse impacts are the same as those discussed under Alternative 1.

4.16.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed DSSF Project would not be approved by the BLM, and the BLM would not amend the CDCA Plan. As a result, no Project components would be constructed, and the BLM would continue to manage its land consistent with existing land use designations. Alternative *4* would have no impact on visual resources and would comply with applicable local plans, policies, and regulations.

Because there would be no amendment to the CDCA Plan and no Project components approved for the site under this alternative, it is expected that the land would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the views of the land are not expected to change noticeably from existing conditions under this alternative, so this No Action Alternative would not result in adverse impacts on visual resources at this location. However, the land on which the Project is proposed would be available to those facilities identified in the existing CDCA Plan, as well as those that may be considered through the plan amendment process. In addition, in the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates. Project impacts from another renewable energy project would likely be similar to those from the proposed Project.

4.16.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed DSSF Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the Project Study Area unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site, and the BLM would continue to manage the site consistent with existing land use designations. Alternative 5 would have no impact on visual resources and would comply with applicable local plans, policies, and regulations.

Because the CDCA Plan would be amended so no solar energy projects could be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, in the absence of the proposed Desert Sunlight Solar Farm Project, other non-solar energy projects (e.g., mining, recreation, utilities, and other energy development) may be constructed. Details regarding these potential non-solar energy projects would be speculative. The views of the site are not expected to change noticeably from existing conditions under this alternative and, therefore, this No Action Alternative would not result in adverse impacts on visual resources at this location.

4.16.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this alternative, the proposed DSSF Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed in the Project Study Area.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts would result from the construction and operation of the solar technology and would likely be similar to the impacts from the proposed Project. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. The benefits of the proposed Project in displacing fossil fuel-fired generation, and reducing associated pollutant emissions could occur with a different solar technology at this site and therefore with this alternative. As such, this No Action Alternative would result in impacts similar to those under the proposed Project, which is described above.

4.16.9 Cumulative Impacts

Geographic Extent

The ROI for visual resources is defined as the viewshed, an area seen from a particular location to the visible horizon. Delineation of the viewshed from the proposed Project location must extend from the top elevation of all of the proposed facilities rising at the Project location, expanded to 5.5 feet above the ground of the visible horizon. *The geographic extent of the cumulative analysis is generally coincident with the boundaries of the Project viewshed, shown in Figures 4.16-8 (for the Proposed Action) and Figure 4.16-9 (for the alternative action).*

Existing Cumulative Conditions

This discussion identifies existing developments near the proposed Project site that have contributed to the cumulative conditions for visual resources. The natural landscape has been altered by Eagle Mountain Pumping Plant, Kaiser Mine, and West-wide Section 368 Energy Corridors. These projects are shown on Figure 3.18-2 and are described in Tables 3.18-2 and 3.18-3. These projects directly introduced artificial infrastructure, buildings, structures, and light to the natural landscape of the Chuckwalla Valley.

Eagle Mountain Pumping Plant primarily involves a site-specific building. West-wide Section 368 Energy Corridors primarily involves transmission lines traversing through the landscape. The former Eagle Mountain Mine operation was on approximately 3,800 acres. Although there are mine operation buildings and structures, most of the alterations to the landscape are associated with the topography and mountain landforms. The moderately developed area of the mine covers approximately 320 acres.

Past, Present, and Reasonably Foreseeable Future Projects

This discussion identifies *past, present, and* future foreseeable projects near the proposed Project site that would affect visual resources. *Ongoing activities are residential activities associated with Lake Tamarisk, business activities associated with the Desert Center, recreation (such as sightseeing and off-highway driving) in the valley, and travel along transportation routes. For the most part, these activities are not highly developed or industrialized.*

Future projects near the Project site include the Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, Green Energy Express Transmission Line Project, Eagle Mountain Soleil Project, Chuckwalla Valley Raceway, and Chuckwalla Solar I. These projects are shown on Figure 3.18-2 and described in Tables 3.18-2 and 3.18-3. These foreseeable future projects involve visual elements similar to the proposed Project. For example, transmission lines, roads, and industrialized facilities and activities would be found at these foreseeable future projects.

Cumulative Impact Analysis

This discussion evaluates the cumulative contribution of the proposed Project impacts *from construction and operation activities,* in combination with past, present, and future activities along the I-10 corridor.

To the extent that construction of the proposed Project would be visible within the same field of view as one or more of the cumulative projects also under construction, adverse cumulative visual impacts would potentially result. This impact would be caused by the visible presence of construction equipment, vehicles, materials, and personnel. However, these visual impacts would be temporary. Because these are short-duration impacts for each of the projects in the cumulative scenario and not all of the cumulative scenario projects would be under construction simultaneously, the construction-period impacts would not create significant cumulative effects. No additional mitigation measures are recommended beyond Mitigation (such as MM-VR-1 through MM-VR-6 and other forms of mitigation) to minimize the sprawl of an industrialized landscape along the surface of the I-10 corridor are available to reduce adverse unavoidable cumulative impacts on visual resources

Operation and maintenance of the proposed Project would continue to transform the relatively undeveloped valley into a valley with industrial buildings and structures. Alternative 1, for example, would be on *4,176* acres, most of which would be densely developed. The incremental effect of altering scenic landscapes, the local setting, and artificial light, when combined with the same effects created by other past projects, ongoing activities, and foreseeable projects would create significant and permanent adverse cumulative impacts because of the increase in the total area of land disturbed by the projects and the increase in the number and density of artificial elements visible. Also, the proposed Project would form a line of visible development from Eagle Mountain across the valley floor toward the southeast where Chuckwalla Valley Raceway and Chuckwalla Solar I would occur. There is no mitigation that would reduce permanent adverse cumulative impacts to minor or less than significant.

The proposed Project would have significant and permanent adverse impacts on visual resources. Due to their type and location, the future foreseeable projects are expected to have impacts similar to those of the proposed Project; consequently, cumulative adverse impacts on visual resources would be significant and permanent. The cumulative impacts would involve the conversion of natural desert landscapes to landscapes with prominent industrial character (complex industrial forms and lines and surface textures and colors not found in natural desert landscapes). *There are several large and highly visible projects in the cumulative scenario, including the Desert Harvest Solar Project, the Palen Solar Power Project, and the Eagle Mountain Pumped Storage Project. The proposed Project and these other projects would contribute considerable visual disturbance to the area, and would dominate views of the Chuckwalla Valley from elevated vantage points (e.g. Joshua Tree National Park), resulting in a strong contrast with the existing visual environment.* Viewers within the I-10 corridor, *as well as dispersed recreational users of surrounding wilderness areas*, would witness industrial landscapes and activities that are out of character with the desert landscape. Mitigation (such as MM-VR-1 through MM-VR-6 and other forms of mitigation) to minimize the sprawl of an industrialized landscape along the surface of the I-10 corridor are available to reduce adverse unavoidable cumulative impacts on visual resources. *Nonetheless, the proposed Project's contribution to visual impacts would be cumulatively considerable.*

No Action Alternatives (Alternatives 4, 5, and 6)

As a result of the similarities in their components and construction requirements, the visual resource cumulative impacts for Alternatives 2 and 3 would be the same as described for the proposed Project and would be cumulatively considerable. There would be no cumulative visual resource impacts under the No Action and No Project Alternatives (Alternatives 4, 5, or 6) because there would be no right-of-way grant for development of the Solar Farm area and associated facilities. Any future proposals for use of the site would be subject to separate environmental analysis.

4.17 WATER RESOURCES

4.17.1 Methodology for Analysis

Sunlight performed surface water (storm water) and groundwater modeling for the Project Study Area, to analyze potential impacts to water resources from the different Project alternatives.

Storm water hydrology studies were performed for Sunlight for SF-A (AECOM 2010a) and SF-B (AECOM 2010b) to evaluate the impacts of the proposed Project facilities on surface water flow, sediment transport, local scour effects, and geomorphology of landforms (both reports are included in Appendix G). The boundaries of the hydrologic model include almost the entire Project Study Area, although detailed two-dimensional modeling was performed primarily in the Solar Farm Layout areas, including the portions of Eagle Creek and Big Wash that cross the Solar Farm Layout areas, and the portion of Pinto Wash that is just east of the Solar Farm Layout areas. Model boundaries are shown in Figure 2 of the storm water hydrology study reports (AECOM 2010a and 2010b; Appendix G). The boundaries and elevations of hydrologic basins for the study were defined using Light Detection and Ranging (LIDAR) topographic survey data and USGS's National Elevation Dataset and EPA's BASINS model.

A two-dimensional model (FLO-2D) was built to simulate flow patterns and sediment transport in the solar farm layout areas, with hydrologic flows for the different storm scenarios estimated using the USACE HEC-HMS model in the areas upgradient and cross-gradient from the FLO-2D model domain. The model was run for the design case (100-year storm: 3.58 inches total rainfall) and the 10-year storm (1.96 inches total rainfall) under multiple scenarios, including existing conditions, construction of SF-B with and without decompaction of soil, and construction of SF-A with and without decompaction of soils. As stated in Chapter 2, the area between PV modules will be decompacted after installation of the modules. A small tractor will decompact the upper 6 inches of soil (approximately) in a strip approximately 9 feet wide in between the PV modules. Therefore the results of the soil decompaction scenarios for the model are discussed in impacts analysis below.

Groundwater flow modeling was performed for Sunlight to evaluate impacts to the Chuckwalla Valley groundwater basin from use of basin groundwater for construction and operations and maintenance water (AECOM 2010d; Appendix G). The regional USGS superposition model for the Colorado River aquifer was used for the groundwater flow modeling (Leake et. al. 2008). This regional model is a two-dimensional model developed using MODFLOW 2000 code. Sunlight's groundwater flow model utilized the Parker-Palo Verde-Cibola area of the regional model.

USGS developed the regional model to assess the effect of groundwater pumping on flow to and from the Colorado River. The following modifications to the regional model were implemented to adapt the model to the purpose of evaluating the impacts of pumping at the scale of the Project (AECOM 2010d; Appendix G):

- USGS's uniform grid spacing of 0.25 mile (1,320 feet) was modified as follows to increase the resolution of the model in the vicinity of the pumping wells:
    - The model grid spacing was set at 30 feet for the first 300 feet around the pumping well.

  - The model grid spacing was set at 100 feet from 300 feet away from the pumping well up to one mile from the pumping well.
  - The model grid spacing was gradually increased from 100 feet to 1,320 feet for the remainder of the model domain.
- USGS's uniform transmissivity of 26,000 ft^2/day was varied across the model domain to better reflect the actual distribution of transmissivities within the study area. Sunlight's groundwater flow model divided the model domain into four zones, and the transmissivities assigned to these zones ranged from 1,000 ft^2/day to 26,000 ft^2/day, based upon published data from across the Chuckwalla Valley groundwater basin. Figure 4 in the groundwater modeling report shows the distribution of transmissivities across the model domain (AECOM 2010d; Appendix G). The transmissivity in the vicinity of the Solar Farm (Zone 1 in the model) was varied in multiple model runs from 6,300 ft^2/day to 8,500 ft^2/day.
- USGS's uniform saturated thickness for the aquifer of 500 feet was varied in multiple model runs, from 150 feet to 500 feet, to evaluate sensitivity to different interpretations of saturated thickness.
- USGS's uniform aquifer storage coefficient of 0.2 was varied in multiple model runs from 0.05 to 0.2, to bracket the range of storage coefficients expected across the study area. The lower storage coefficient of 0.05 is consistent with confined conditions, such as are probably present to the east of the study area; while the larger storage coefficient is more representative of an unconfined aquifer, such as is found in the western portion of the basin.

Changes in the default values used for the USGS model were based upon site-specific data and data from across the Chuckwalla Valley groundwater basin. The model provides a conservative estimate of drawdown in the groundwater surface (i.e. overpredicts drawdown) because it assumes there is no recharge to the basin from precipitation or underflow from other groundwater basins, and therefore the only source of groundwater for pumping is from storage in the aquifer or changes in flux from the Colorado River (AECOM 2010d; Appendix G). In reality, as discussed in the Alternative 1 analysis, there is a large amount of recharge to the basin from precipitation and other sources.

Sunlight's model assumed pumping from at a rate of *600-650* acre-feet per year (AFY) for a 24-month period to simulate the construction period (a slightly conservative, higher rate over a shorter period than the proposed 26-month construction period), and 0.2 AFY for 30 years to simulate the long term operations and maintenance requirements of the Project.

4.17.2 CEQA Significance Criteria

Under CEQA, the proposed Project would have a significant impact on water resources if it would:

WR-1. Violate any water quality standards or waste discharge requirements;

WR-2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;

WR-3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;

WR-4. Substantially increase the potential for flooding or the amount of damage that could result from flooding;

WR-5. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

WR-6. Otherwise substantially degrade water quality;

WR-7. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

WR-8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows; or

WR-9. Expose people or structures to a significant risk of loss, injury or death involving flooding including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow.

4.17.3 Alternative 1 – Proposed Action

Construction

Solar Farm Layout B

Groundwater

Construction of *Solar Farm Layout B* would disturb *3,912* acres, would take approximately 26 months, and would require approximately *1,200 to 1,300* acre-feet (AF) of water, or an average pumping rate of about 600 to 650 AFY. Most of the demand for water during construction is for dust control. Smaller quantities of water are required for compacting soil, mixing concrete, washing equipment, sanitation, and other uses. The peak water demand is estimated at approximately 1.3 million gallons per day (equivalent to an annualized rate of about 1,500 AFY). *Project water demand would be met by local groundwater, either from nearby existing wells that are located in the Project Study Area or through two new wells, to be constructed closer to the Solar Farm site. During construction, pumped groundwater would be stored in one or more of several temporary water storage ponds. These ponds would be designed, constructed, and maintained in accordance with all local and state guidelines. Best Management Practices (BMPs) would be implemented to prevent groundwater contamination, overtopping during flood events, and interference with raven management or migratory birds.*

Figure 3.17-4 shows the locations of the proposed new well and the nearby existing wells. Nearby active wells currently have a production capacity of between 800 and 2,200 AFY (First Solar 2009), and these wells would be sufficient to meet Project water demand. *Annual groundwater budget in the* Chuckwalla Valley groundwater basin has been estimated at 10,000 to 20,000 AFY, *before existing current groundwater use is incorporated* (BLM and CEC 2010). Current groundwater use within the basin *has been* reported to be in the range of 5,000 to 7,000 AFY (Eagle Crest Energy Company 2008).

Groundwater budgets developed for the Chuckwalla Valley groundwater basin for the Palen Solar Power Project Environmental Impact Statement (BLM and CEC 2010), and the Genesis Solar Energy Project (WorleyParsons 2009), are presented in Table 4.17-1. Both groundwater budgets *account for existing groundwater users, and both* identify recharge from precipitation (mainly from runoff

Table 4.17-1
Groundwater Budgets for Chuckwalla Valley Groundwater Basin

Groundwater Budget Inputs	Palen Solar Power Project (AFY)[1]	Genesis Solar Power Project (AFY)[2]
INFLOW		
Recharge from precipitation	8,588	9,440
Underflow from Pinto and Orocopia Valley GW Basins	3,500	3,500
Irrigation return flow	800	800
Wastewater return flow	831	831
TOTAL INFLOW (AFY)	13,719	14,571
OUTFLOW		
Groundwater extraction	10,361	10,475
Underflow to Palo Verde Mesa GW basin	400	400
Evapotranspiration at Palen Dry Lake	350	350
TOTAL OUTFLOW (AFY)	11,111	11,225
BUDGET BALANCE (NET INFLOW AFY)	**2,608**	**3,346**

Notes:
1. Groundwater budget data from BLM and CEC, 2010. Staff Assessment and Draft Environmental Impact Statement, Palen Solar Power Project, March 2010.
2. Groundwater budget data from WorleyParsons, 2009. Groundwater Resources Investigation, Genesis Solar Energy Project, Riverside County, California, January 2009.

from the surrounding ranges that occurs at the basin margins) as the primary source of inflow to the basin. The primary outflow is from groundwater pumping, which was estimated to be *slightly* over 10,000 AFY*, approximately 3,000 AFY greater than the upper limit of the groundwater use estimate provided by the Eagle Crest Energy Company in 2008*. Both studies concluded that there is net inflow into the basin, with the Palen Solar Power Project EIS identifying a net inflow of 2,608 AFY and the groundwater resources investigation for the Genesis Solar Energy Project identifying a net inflow of 3,346 AFY.

These data indicate that there is sufficient groundwater available in the Chuckwalla Valley groundwater basin to provide the estimated 600 to *650* AFY needed for construction of *Solar Farm Layout B* over the estimated 26-month construction period, and that the proposed Project would not deplete groundwater supplies in the basin *during the construction period*. The condition in which total inflow exceeds total outflow from the basin implies that basinwide groundwater levels, on average, are rising, although when averaged over the 604,000 acres of Chuckwalla Valley, the average increase in water levels would be minimal: on the order of 1/20-inch per year.

Sunlight's groundwater flow model evaluated localized impacts to the groundwater surface from pumping *650* AFY needed for construction of SF-B. Table 4.17-2 provides a summary of the different model runs, the variation in input parameters for the model runs, estimated drawdown at the pumping well and location of the figure showing the results in the groundwater modeling report in Appendix G.

Sunlight's groundwater flow modeling results indicated that drawdown at the pumping well could range from about 5 feet to 17.8 feet, depending on the characteristics of the aquifer. Transmissivity is a measure of the permeability and the saturated thickness of the aquifer. The rate that water can be withdrawn from a well is largely a function of permeability of the aquifer materials. If the permeability is low, then the drawdown in the well has to be higher to achieve the same yield as a well that taps a highly permeable aquifer. Therefore, groundwater modeling was conducted to

Table 4.17-2
Desert Sunlight Solar Farm Numerical Groundwater Model Runs
Predicted Drawdown at the Pumping Well

Transmissivity (ft^2/d)	Storage Coefficient	Aquifer Saturated Thickness (ft)	Maximum Predicted Drawdown at Pumping Well (ft)	Results are Shown In
6,300	0.2	500	15.46	Figure 5
8,500	0.2	500	11.89	Figure 6
6,300	0.05	500	17.80	Figure 7
8,500	0.05	500	13.18	Not Shown
6,300	0.2	150	6.78	Figure 8
8,500	0.2	150	5.24	Not Shown
6,300	0.05	150	6.64	Figure 9
8,500	0.05	150	6.46	Not Shown

Note: Data in this table is taken from Table 1 in "Numerical Groundwater Model Evaluation of Proposed Project Groundwater Pumping, Desert Sunlight Solar Farm, Chuckwalla Valley, Riverside, CA", AECOM, June 2010.

bracket the range of aquifer conditions expected to occur at the proposed well locations. A cone of depression is created when a well is pumped, as the groundwater in the surrounding aquifer flows toward the pump. Over time, the cone of depression reaches a nearly steady state in response to a steady pumping rate. The steady state cone of depression can be portrayed as a series of groundwater elevation contours, with the greatest decrease in groundwater elevation at the well, and the change in elevation decreasing with distance away from the well. A decline in water levels could potentially have an effect on pumping from adjacent wells by reducing the saturated thickness and requiring the other wells to be pumped harder to maintain the same yield.

Under the most extreme assumptions considered in Sunlight's groundwater modeling runs, a drawdown of one foot would occur at a distance of up to approximately one mile from the pumping well (AECOM 2010d, Figure 7; Appendix G). The nearest existing well to the proposed pumping well for the proposed Project is approximately 4,210 feet away, where the drawdown would be slightly more than one foot (AECOM 2010d, Figure 7; Appendix G). Such a small decline in groundwater elevation would have little effect on the cost of pumping the other well, and is within the range of normal fluctuations in groundwater levels. It should be noted that while the groundwater elevation locally within the cone of depression created by pumping the well would decline, the average groundwater elevation in the basin would continue to increase, because net inflow to the basin would continue to be greater than outflow from the basin. (Note that this statement does not take into account other foreseeable projects proposed in the basin that are discussed in the cumulative impacts analysis, below).

Data from both the groundwater modeling and the groundwater budgets indicate that pumping groundwater in the Chuckwalla Valley groundwater basin for use during construction of SF-B would not substantially deplete groundwater or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or the water table would be lowered *beyond the direct well drawdown area discussed above.* The total volume of water that would be used (*1,200-1,300* AF or approximately *600 to 650* AFY) over the 26-month construction period is substantially less than the approximately 2,600 to 3,300 AFY of net inflow to the Chuckwalla Valley groundwater basin calculated from the water balance studies performed for the Palen Solar Power Project and the Genesis Solar Energy Project (BLM and CEC 2010; WorleyParsons 2009). Impacts to nearby wells would be low, with projected drawdown in these wells due to pumping for the proposed Project generally less than one foot, with an aquifer saturated thickness of 500 feet. Palen Dry Lake is approximately six miles from the Project Study Area, and Ford Dry Lake is approximately 12 miles from the Project Study Area. Impacts to these water bodies would be negligible, due to their distance from the Project Study Area and the short distance over which the cone of depression from pumping the Sunlight groundwater well dissipates.

As described in Chapter 2, *Alternative 1* includes decompacting the soil in the area between the rows of the solar panel arrays after they are installed, in order to increase storm water infiltration and promote vegetation regrowth. Results of storm water modeling performed by Sunlight (discussed in more detail in the Drainage and Surface Water and Flooding subsections) indicated that the total surface water outflow volume from SF-B would increase by 2.5 percent (168 AF) during a 100-year storm without the soil decompaction, and would increase by 1.2 percent (81 AF) during a 100-year storm with the soil decompaction (AECOM 2010b; Appendix G; *see also discussion in the subsequent subsection*). The small increase in surface runoff under the 100-year storm scenario with or without soil decompaction indicates that SF-B would have only a very small effect on surface water infiltration, and an even smaller impact on groundwater recharge, because not all of the surface water that infiltrates into the subsurface recharges the aquifer. *Thus, the* surface water modeling *completed for the Project* demonstrates that construction of SF-B would not interfere with groundwater recharge.

Drainage and Surface Water

During construction, to install the solar panels, the ground would be compacted. This would reduce the infiltration capacity of the soil and increase runoff. *Although the panels are impervious, the panels are elevated on supports that allow the runoff to be directed to the bare ground underneath the panels, and so the panels themselves do not affect the infiltration capacity of the soil.* Sunlight performed hydrologic, hydraulic, sediment transport and scour analyses of storm water for SF-B under multiple scenarios. One of the scenarios included decompaction of the soil in the area between the solar arrays to restore infiltration rates similar to those prior to construction. Results of the modeling for the decompaction scenario indicated the following (AECOM 2010b; Appendix G):

- Peak outflow for existing conditions versus future conditions represented by SF-B would increase by 0.5 percent (116 cubic feet per second [cfs]) for the 100-year storm, and would increase by 1.1 percent (58 cfs) for the 10-year storm.
- Total outflow volume for existing conditions versus future conditions would increase by 1.2 percent (81 AF) for the 100-year storm, and would increase by 2.8 percent (55 AF) for the 10-year storm.
- There was no change in the maximum flow depths for existing conditions versus future conditions for both the 100-year and 10-year storm
- The sediment transport analysis indicated that there was no change in degradation (erosion) of the ground surface for existing conditions versus future conditions under this alternative for both the 10-year and 100-year storms.

Maximum on-site flow depth for this alternative for the 100-year storm with decompaction would be 2.2 feet, occurring in locations in the eastern portion of the site, because of influence of the Pinto Wash, which is located immediately east of SF-B (see Figure 3.17-3 and Figure 9 in AECOM 2010b; Appendix G).

The surface water and drainage impacts from construction of SF-B with decompaction are relatively small. The peak outflow for the modeled area increased by 0.5 percent for the 100-year storm, and 1.1 percent for the 10-year storm. The total outflow increased by 1.2 percent for the 100-year storm and 2.8 percent for the 10-year storm. There was no change in the maximum flow depths or erosion for both the 100-year and 10-year storm. These are all very small changes or no change. The sediment transport modeling demonstrates that construction of SF-B would not substantially alter the existing drainage pattern of the area such that it would result in substantial erosion or siltation on- or off-site. The hydraulic modeling demonstrates that construction of SF-B would not substantially increase the potential for flooding or the amount of damage that could result from flooding, because the change in the flood characteristics between the existing conditions and SF-B is very small. Furthermore, the change in outflow volume is sufficiently small that construction of SF-B would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems.

Sunlight may also implement other mitigation measures to mitigate post-construction impacts such as installing retention basins upstream of SF-B to intercept storm water flows or installing check dams *within the Project area*, to reduce outflow volume by retaining storm water on site. These measures would reduce the amount of surface flow coming on to the site during storms and increasing residence time of surface water flows on site, thereby reducing flow depths, outflow volumes, and the amount of sediment transport at the Project site, and further minimizing the impacts of Project construction. These and other mitigation measures are discussed in the Applicant Measures and Mitigation Measures section below.

Water Quality

Since there are no permanent water bodies in the Project Study Area and only intermittent surface water flows occur, any impacts on surface water quality would be transient. Surface water could be a mechanism for mobilizing and transporting contaminants beyond the boundaries of the site, and surface water infiltration might, under unusual conditions, transport contaminants to groundwater. Due to the high rate of evaporation, the relatively great depth to groundwater and the presence of clay layers beneath the study area that would impede vertical migration of surface water, the potential for groundwater to be impacted by vertical transport of contaminants to the water table by surface water infiltration is expected to be very low. The potential for water quality impacts would be further reduced by implementation of construction BMPs, including minimizing storage and use of chemicals that could cause water quality impacts, good management of chemicals to avoid spills or releases, and swift response to clean up any spills if they occur.

Potential sources of contaminants associated with construction activities include:

- Hazardous substances and petroleum products used in construction;
- Leaching, corrosion, or other releases of chemicals contained in PV equipment; and
- Wastewater.

Hazardous materials such as gasoline and motor fuels and lubricants used for vehicles and mineral oil used for transformers, *would* be stored or used on site during construction. Table 2.3-8 lists chemicals/petroleum products that would be used during construction. During construction, typical construction wastes, such as wood, concrete and miscellaneous packaging materials would be generated. These wastes *would* be disposed of in accordance with local, state, and federal regulations.

Sunlight would prepare an SWPPP for the proposed Project that *would* identify structural and nonstructural BMPs to manage the offsite discharge of storm water from SF-B. *Although it is not anticipated that NPDES permitting would apply to the proposed Project,* Sunlight would coordinate with the Colorado River Basin RWQCB regarding potential coverage under the Construction General Permit for Storm Water Discharge for the proposed Project. Sunlight would prepare a Spill Prevention Control and Countermeasure (SPCC) Plan, as required to address cumulative storage of more than 10,000 gallons of mineral oil in the electrical transformers to be used in the Project. Appropriate spill containment and clean-up kits would be maintained on site during construction, to provide mitigation in the event of a chemical spill.

Potential impacts from chemical spills would be mitigated through development of BMPs, including secondary storage of chemical products, provision of spill containment and clean-up equipment and training of construction personnel in the management of chemicals and use of spill equipment.

The solar arrays are constructed of thin-film cadmium telluride *(CdTe)* modules mounted on steel racks supported by steel posts. *During the manufacturing process, the CdTe is bound to a glass sheet by vapor transport deposition, followed by sealing of the CdTe layer with a laminate material and a second glass sheet. Thus, CdTe is encapsulated, would not be in contact with rain water, and therefore would not contribute to surface water contamination. Moreover, as discussed in Section 4.11, the risk that a significant amount of CdTe would be released from a damaged PV module is anticipated to be insignificant.*

Sanitary waste generated during the construction phase would be *disposed of via a septic system on site. The septic system would be designed and installed in accordance with state and local regulations to sufficiently isolate discharge from groundwater supply wells, and to protect groundwater quality. Therefore, the proposed septic system would not substantially reduce groundwater quality. Sunlight would coordinate with the Riverside County Department of Environmental Health to determine whether a Report of Waste Discharge for the septic system would need to be filed with the RWQCB. Additionally, prior to construction, Sunlight would apply for a septic system operating permit, as required by Riverside Code Section 8.124 (Ordinance 650.5). Prior to approval of a septic system operating permit, the Riverside County Department of Environmental Health would require an Onsite Water Treatment System (OWTS) Report for Land Divisions. The report details the location, depth, and design of the septic system, and requires a percolation test. The report also requires a conclusion that the proposed septic system would not violate any Department of Environmental Health or RWQCB standards.*

An approved jurisdictional determination regarding the presence or absence of Waters of the US from the USACE was obtained by the Applicant in December 2010. As indicated in the determination, all of the drainages that would be affected by implementation of the Project would occur within a closed basin with no outlet. Specifically, the jurisdictional determination found that water features on the Project site drain entirely to the closed Palen Dry Lake basin, with no apparent connection to interstate or foreign commerce. The desert washes located on site are considered non-jurisdictional in reference to the federal Clean Water Act, and therefore implementation of storm water quality and operation period industrial water quality NPDES permits would not be applicable.

In the absence of permitting requirements, water quality degradation could occur as a result of discharges from the Project site during construction and operation. Therefore, implementation of additional mitigation measures for the protection of water quality, as specified under the Applicant Measures and Mitigation Measures subsection below, would be required.

There are no existing facility-specific waste discharge requirements in place along any of the land areas where Project components would be implemented. Also, due to the absence of any perennial waters of the state in or near the Project area, as well as the very small change to existing storm water runoff conditions associated with the Project, it is not anticipated that the RWQCB would issue Waste Discharge Requirements for storm water runoff associated with the Project. Therefore, implementation of the proposed Project would not interfere with or exceed any waste discharge requirement or other water quality standard.

Flooding

The Proposed Project site is located in unincorporated Riverside County, in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel 06065C2425G. This area has not been mapped by FEMA and, therefore, there are no defined 100-year flood hazard areas at the Proposed Project site, and DOE's Floodplain Environmental Review Requirements, which are outlined in 10 CFR 1022, do not apply to the Proposed Project. The area is classified as Zone D, "areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted by FEMA. Flood insurance rates are commensurate with the uncertainty of the flood risk." As such, this alternative would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, and would not place within a FEMA-delineated 100-year flood hazard area structures which would impede or redirect flood flows.

Storm water modeling performed for SF-B and discussed under surface water and drainage indicated that the 100-year storm had the following characteristics (AECOM, 2010b; Appendix G):

- A maximum peak flow depth of 2.2 feet for existing conditions and for SF-B.
- *The maximum potential flow depths occur in the east portion of SF-B, because of the influence of Pinto Wash. The highest flow depths within the SF-B footprint are generally in the area of Big Wash, and are between 1.5 and 2.0 feet.*
- An average flow depth of 0.8 feet for both the existing conditions and for SF-B.
- A peak velocity of 5.0 ft/s and an average velocity of 1.9 ft/s for both the existing conditions and for SF-B.
- An increase in outflow volume of 116 AF between the existing conditions and SF-B, an increase of 0.5 percent.

The potential flooding impacts from construction of SF-B are relatively small. The peak outflow for the modeled area increased by 0.5 percent for the 100-year storm, and total outflow increased by 1.2 percent, with no change in the maximum or average peak flow depths. These are all very small changes or no change. The hydraulic modeling demonstrates that construction of SF-B would not substantially increase the potential for flooding or the amount of damage that could result from flooding, because the change in the flood characteristics between the existing conditions and SF-B is very small. Furthermore, construction of SF-B would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow, because the Proposed Project site is not near a dam, levee or a coastline.

Potential for Withdrawal of Water from the Colorado River

Public comments on the DEIS identified a concern that Project-related groundwater use could affect the adjacent Palo Verde Mesa Groundwater Basin by inducing flows from the Colorado River into that basin, and that any resulting use of Colorado River water without an entitlement would be illegal. In response to these concerns, the Applicant has completed an additional analysis of the potential effects of the Project on groundwater levels, as relevant to the proposed Colorado River Accounting Surface Rule (Appendix O). As discussed in greater detail in Section 3.17, Water Resources, the proposed rule specifies that the Accounting Surface is predicted to be at an elevation of between 238 and 242 feet msl (Figure 6 of Wiele et al. 2008). Withdrawal of groundwater from below this Accounting Surface would be considered equivalent to withdrawal of water from the Colorado River.

To evaluate potential for the Project to withdraw water from the Colorado River, AECOM (2011; see Appendix O) evaluated historical, current, and projected static water level below the Project site and in the Upper Chuckwalla Valley and evaluated to what extent the static water level is above or below the proposed Accounting Surface.

As discussed in greater detail in Appendix O, available well data indicate that static water level elevation in the vicinity of the Project site has been measured between 469 feet and 504 feet msl. A review of cross sections and potentiometric maps from prior investigations of the Upper Chuckwalla Valley show that the water level elevation has been interpreted to be between about 500 to 540 feet msl in the area of the Project site. The difference between the static water level measurements for the wells in the vicinity of the Project site and the interpreted potentiometric surface from prior investigations and the proposed Accounting Surface is between 241 and 266 feet. These data show that static water level is well above the proposed Accounting Surface. These water level data, either from the wells or used in the interpretation of the potentiometric surface, were collected from 1961 and 1992.

More recent data from a well close to the community of Desert Center (5S/16E-7P01, 7P02) and several miles south-southeast of the Desert Sunlight Project site show similar water level elevations to those measured in the early 1960s, then show a period of water level decline in the mid-1980s as a result of expanded agricultural operations, where combined pumping exceeded 20,000 acre-feet per year, which is well above historical water usage for the western part of the basin. These agricultural operations began to be curtailed in the late 1980s and water levels in the Desert Center area have recovered to levels similar to the early 1960s. The most recent water level elevation measured in Well 5S/16E-17P02 was 462 feet msl or about 220 feet above the proposed Accounting Surface.

Another important element in the potential implications of the Accounting Surface for the Project is the proposed groundwater pumping and the predicted level of drawdown in the water supply wells where Project water supplies are obtained. A numerical groundwater model was developed for the DEIS (Appendix G) to evaluate potential effects from Project pumping on adjacent water supply wells and on the basin storage. Project water use during operation will be minimal (0.2 AFY over a 30-year Project life for a total of only 60 AF). Project water use that was modeled during construction was between 1,300 and 1,400 af over a 26-month construction period. The model predicted drawdown in either a single well or two water supply wells of between about 10 and 20 feet over the construction period. Given the above water elevation data, the drawdown will be well above the proposed Accounting Surface.

In conclusion, this comparison of available historical and recent groundwater level data from wells in the vicinity of the Desert Sunlight Solar Farm Project site and prior interpretations of the water level elevation below the Project site reveal that the static water level elevation associated with the Project is well above the proposed Accounting Surface. A buffer of more than 200 feet is indicated in the groundwater level data. The data indicate that the Project would therefore not affect the Accounting Surface as it would draw groundwater from well above the surface of what is termed "tributary" water (other than a Colorado River source, Wiele et al. 2008). The "tributary" water replenishing groundwater withdrawals by the Project is therefore attributable to inflow from precipitation, mountain front recharge, Pinto Basin underflow and Hayfield Basin underflow (GEI 2009a).

Gen-Tie Line A-1

Groundwater

The total length of GT-A-1 is 12.2 miles. The Gen-Tie Line would be suspended on steel monopoles that are approximately 120 feet tall. Spacing between the poles would be approximately 900 to 1,100 feet. Construction of this line would require a total of 2,035,000 gallons of water (approximately 6.25 AF of water) over a two-year period*, or 3.175 AFY*. As previously discussed, Project water *demand would be met by local groundwater, either from nearby existing wells that are located in the Project Study Area or through two new wells to be constructed closer to the Solar Farm site.* The groundwater budget analyses performed for the Palen and Genesis Solar Energy Projects indicated a net inflow of groundwater into the Chuckwalla Valley groundwater basin of approximately 2,600 to 3,300 AFY. The 6.25 AF increase in water usage within the basin spread over two years is 1 percent of the estimated net inflow, and therefore would not substantially deplete groundwater or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or the water table would be lowered.

Surface Water and Drainage

GT-A-1 would be constructed above ground, and would be supported by towers as described above. The storm water modeling performed for SF-B indicated very little change in drainage or surface water flow characteristics in the area where the solar farm arrays *would* be built. Changes to the land surface for GT-A-1 would be much less than the changes to the land where the solar farm arrays would be built, because the gen-tie line is a linear feature, and the towers that support the line would be much more spread out than the supports for SF-B. Therefore, the impacts to surface water and drainage from the construction of GT-A-1 would be less than the impacts from construction of SF-B, which were identified in the Solar Farm Layout B section as very small. Therefore, construction of GT-A-1 would not cause substantial erosion or siltation, would not increase the potential for flooding or the amount of damage that could result from flooding, and would not contribute additional runoff water.

Water Quality

As described above for SF-B, there are no permanent water bodies in the Project Study Area and only intermittent surface water flows occur. Therefore, no impacts on surface water quality are expected. The potential for groundwater to be impacted by vertical transport of contaminants to the water table by surface water infiltration is expected to be very low. The potential for water quality impacts would be further reduced by implementation of Construction BMPs.

Flooding

Flooding impacts of GT-A-1 *would be* less than those for SF-B, because the footprint for GT-A-1 is smaller than the footprint for SF-B, and because the towers that support the gen-tie line are more spread out than the supports for SF-B. The flooding impacts from the construction of SF-B were identified in the Solar Farm Layout B section as very small, and flooding impacts from construction of GT-A-1 can be expected to be less than those for SF-B. Therefore, construction of GT-A-1 would not substantially increase the potential for flooding or the amount of damage that could result from flooding. Furthermore, construction of GT-A-1 would not expose people or structures to a significant risk of loss, injury or death involving flooding including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow, because the proposed Project site is not near a dam, levee or a coastline.

Red Bluff Substation A

Groundwater

Construction of Red Bluff Substation A will require a total of approximately 300 acre-feet of water, and operation and maintenance will require less than 0.1 acre-feet per year. Therefore this alternative would not substantially deplete groundwater or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or the water table would be lowered.

Although the Red Bluff Substation A would cover up to *172* acres with impervious surfaces, it is expected to have minor impact on groundwater recharge. Most recharge occurs in stream channels or washes on the margins of the basin, where precipitation at higher elevations runs off onto the valley floor. The amount of precipitation that occurs at lower elevations on the valley floors is much less, and when distributed over a large area moistens the surface soil but does not infiltrate deeply. By collecting and concentrating runoff, the buildings and other impervious surfaces could contribute to a small increase in groundwater recharge. The 10-year storm on the valley floor is estimated to have a peak intensity of about 0.3 inch in 5 minutes. Assuming that about half of this amount runs off, the total runoff from the impervious surfaces of the site would be about 1½ acre-foot. If concentrated into a small area such as a drainage channel or wash, a fraction of this runoff might percolate to the water table.

Surface Water and Drainage

The Red Bluff Substation alternative A would be located on approximately 7*6* acres of land, just south of I-10. Additional Substation-related Project elements for Red Bluff Substation A would require an additional *96* acres, for a total disturbed area of *172* acres. The Substation is down-slope from the Chuckwalla Mountains, and there are three eroded channels that traverse the Substation A site; these channels would require alteration in order to protect the Substation from potential flooding impacts. Preliminary engineering studies show that a channel on the up-slope side of the Substation can convey storm water runoff around the Substation, with the flow in the channel discharging through two existing culverts under I-10. Internal surface runoff would be managed by use of a detention basin *totaling approximately 269 acres in area*. The purpose of a detention basin is to reduce peak flows. Given the estimated peak runoff of the 10-year storm of 0.3 inch in 5 minutes, and assuming that about half of the incident rainfall would be directed to the detention basin, the retention basin would receive about 1½ acre feet, or enough water to fill the detention basin to a depth of 3 feet in a relatively short time.

Drainage improvements for Substation A would disturb approximately *14* acres, which is included in the *73* acres of disturbance for Substation-related Project elements discussed above.

The preliminary engineering studies indicate that construction of Substation A may alter the existing drainage pattern of the area. A channel would be constructed to route flows around Substation A. *The proposed channel would be sized sufficiently to be able to convey flood flows at a volume equivalent to that expected during a 100-year flood event. Approximately 269 acres of* detention basins would reduce the amount of runoff discharged during the peak of a storm and would help to prevent flooding. *Therefore, potential changes in flooding patterns, both onsite and off site, associated with implementation of the Project would be minimal.*

Water Quality

Impacts to water quality are unlikely to occur at the Red Bluff Substation for the same reasons described above for the construction of SF-B. The Red Bluff Substation A would *include installation of a 500 kW backup generator, which would run on diesel. Operation of Substation A including the backup generator would* require the limited use of hazardous materials such as fuels, lubricants and cleaning solvents. A Construction Storm Water Pollution Prevention Plan would be prepared for the Project, and this plan would identify construction BMPs to be implemented to avoid spills and respond to spills if they occur. The Plan would also outline protective measures, notification, and cleanup requirements for any incidental spills or other potential releases of hazardous materials.

Sanitary waste generated during the construction phase would be disposed of via an on-site septic system. The septic system would be designed and installed in accordance with state and local regulations in order to sufficiently isolate discharge from the proposed system from groundwater supply wells, and to protect groundwater quality. Therefore, the proposed septic system would not substantially reduce groundwater quality. SCE would coordinate with the Riverside County Department of Environmental Health to determine whether a Report of Waste Discharge for the septic system would need to be filed with the RWQCB. Additionally, prior to construction, SCE would apply for a septic system operating permit, as required by Riverside Code Section 8.124 (Ordinance 650.5). Prior to approval of a septic system operating permit, the Riverside County Department of Environmental Health would require an Onsite Water Treatment System (OWTS) Report for Land Divisions. The report details the location, depth, and design of the septic system, and requires a percolation test. The report also requires a conclusion that the proposed septic system would not violate any Department of Environmental Health or RWQCB standards.

Flooding

Construction of Red Bluff Substation A would require alteration of three eroded channels that cross the Substation A site in order to protect the Substation from potential flooding impacts. Preliminary engineering studies show that a channel on the up-slope side of the Substation can convey storm water runoff around the Substation, with the flow in the channel discharging through two existing culverts under I-10. Internal surface runoff would be managed by use of a detention basin located on the south end of the Substation. It is anticipated the basin would measure approximately 120 feet by 200 feet, and this basin would also discharge to the channels around the Substation. Drainage improvements for Substation A would disturb approximately *14* acres, which is included in the *96* acres of disturbance for Substation-related Project elements discussed above.

The preliminary engineering studies indicate that construction of Substation A may alter the existing drainage pattern of the area, but construction of a channel to route flows around the Substation A and construction of a detention basin at the substation would mitigate potential flooding impacts. Therefore, construction of Substation A along with the channel and on site detention basin would not substantially increase the potential for flooding or the amount of damage that could result from flooding. Furthermore, construction of Substation A would not expose people or structures to a significant risk of loss, injury or death involving flooding including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow, because the proposed Project site is not near a dam, levee or a coastline.

Summary of Construction Impacts

This section discusses the combined impacts of all Alternative 1 Project components.

Groundwater Supply. Groundwater budgets for the Chuckwalla Valley groundwater basin developed for the Palen and Genesis Solar Energy Projects indicate there is a net inflow into the groundwater basin of approximately 2,600 to 3,300 AFY. The proposed Project water demand *for all components of Alternative 1* would be on the order of *778 to 828* AFY for the 26-month construction period *(total of 1,656 AF over the entire construction period*), or approximately *24 to 32* percent of the available surplus inflow to the groundwater basin.

Drainage. Although soil compaction could slightly reduce infiltration rates in the soils locally impacted by construction activities, the amount of groundwater recharge that occurs from infiltration of precipitation on the central portions of the basin is relatively low, and most recharge occurs at the basin margins. Nevertheless, decompaction of the soil over 36 percent of the SF-B footprint would minimize any reduction in groundwater recharge caused by compacting the surface soil during construction of this alternative.

Drawdown in the aquifer in the vicinity of the well used to provide water for construction of this alternative would be a maximum of approximately 18 feet, with minor drawdown extending more than one mile from the pumping well. These impacts would be temporary since they would occur only during the construction period, and there would continue to be net surplus annual groundwater storage in the basin, which is expected to result in a continued rise in average groundwater elevations in the basin.

Construction of this alternative would alter surface drainage patterns, but hydrologic modeling indicated construction of Alternative 1 would result in minor changes in the 100-year storm characteristics:

- Peak outflow from the SF-B area footprint would increase by 0.5 percent;
- Total outflow from the SF-B area footprint would increase by 1.2 percent;
- There would be no change in maximum peak flow depths and no change in erosion of the ground surface.

Water Quality

Runoff from storms could transport spilled substances off site into intermittent stream channels. The impacts on surface water quality would be temporary and would have environmental significance mainly because of the potential to distribute contaminants more broadly. The most effective mitigation is spill prevention and quick response to cleanup any spills if they occur. A Construction Storm Water Pollution Prevention Plan will be prepared and implemented and will identify potential contaminants and chemical storage areas, drainage patterns at the site, and BMPs to prevent spills and to respond to spills if they occur. Among the most common types of spills during construction would be spills of hydraulic fluid and fuels. Examples of spill avoidance procedures include storing only small quantities of fuels and chemicals; storing hazardous substances in a limited number of designated central locations; storing chemicals and hazardous materials indoors or under cover so that they do not come into contact with rain or storm water; using secondary containment; and performing periodic inspections to maintain good housekeeping and ensure that appropriate materials management practices are implemented. Spill response kits will be maintained at designated locations near chemical and fuel storage and use sites. Site personnel will be provided appropriate training in implementing the SWPPP, including spill response procedures and chemical management procedures.

Flooding

Storm runoff modeling indicates that potential for flooding would not significantly increase during construction of Solar Farm B. The GT-A-1 would not increase flooding potential. Red Bluff Substation A would be constructed over the site of several intermittent stream channels that convey runoff from the Chuckwalla Mountains. The design of Red Bluff Substation A incorporates diversion channels to divert runoff around the footprint of the substation. In addition, the construction schedule will be phased to address site drainage issues early on. Once constructed, the diversion channels will reduce the potential for flooding the construction site. *Retention basins approximately 269 acres* in area will be constructed to capture runon and slow and reduce peak flows.

Operation and Maintenance

Solar Farm Layout B

Groundwater

Once the Project is constructed, operations and maintenance water demand would be on the order of a couple of hundred gallons per day, approximately 0.2 AFY. There would be no water use for electricity generation, and the only anticipated water use would be for drinking, washing and the toilets in the Operations and Maintenance (O&M) facility and in the Visitor's Center. O&M *water demand would be met by local groundwater, either from nearby existing wells that are located in the Project Study Area or through two new wells to be constructed closer to the Solar Farm site.* An approximately 5,000 gallon above-ground water tank will be installed adjacent to the O&M facility for site water needs, and this tank would be supplied by the well. If groundwater supplied by the well does not meet drinking water standards, then potable water will be supplied from alternative sources, *such as bottled water or via a small-scale on-site drinking water purification system.*

The groundwater budget analyses performed for the Palen and Genesis Solar Energy Projects indicated a net inflow of groundwater into the Chuckwalla Valley groundwater basin of approximately 2,600 to 3,300 AFY. The 0.2 AFY increase in water usage within the basin is less than 0.01 percent of the estimated net inflow, and therefore would not substantially deplete groundwater or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or the water table would be lowered.

Surface Water and Drainage

Hydrologic, hydraulic, sediment transport and scour analyses of storm water for SF-B indicated the following (AECOM 2010b; Appendix G):

- Peak outflow for existing conditions versus future conditions represented by SF-B would increase by 0.5 percent (116 cfs) for the 100-year storm, and would increase by 1.1 percent (58 cfs) for the 10-year storm.
- Total outflow volume for existing conditions versus future conditions would increase by 1.2 percent (81 AF) for the 100-year storm, and would increase by 2.8 percent (55 AF) for the 10-year storm.
- There was no change in the maximum flow depths for existing conditions versus future conditions for both the 100-year and 10-year storm.
- The sediment transport analysis indicated that there was no change in degradation (erosion) of the ground surface for existing conditions versus future conditions under this alternative for both the 10-year and 100-year storms.

Maximum flow depths for this alternative for the 100-year storm would be 2.2 feet, which would occur in the eastern portion of SF-B, caused by the influence of Pinto Wash (see Figure 3.5-3 and Figure 9 in AECOM 2010b; Appendix G).

Minimizing the increase in the runoff volume and peak outflow described above is based on decompacting the soil between solar panels to increase infiltration potential. Sunlight may also implement other mitigation measures to mitigate post-construction impacts such as installing retention basins *on the* upstream *portion* of SF-B to intercept storm water flows or installing check dams to reduce outflow volume by retaining storm water on site. These measures would reduce the amount of surface flow coming on to the site during storms and increasing residence time of surface water flows on site, thereby reducing flow depths, outflow volumes, and the amount of sediment transport at the Project site, and further minimizing the impacts of Project construction. These and other mitigation measures are discussed below.

Water Quality

It is unlikely that water quality would be impacted by operation and maintenance of the proposed Project for the same reasons described above for the construction phase of the Project. Smaller quantities of chemicals and petroleum products would be used or stored during operation and maintenance. Prevention and response to potential spills or releases of mineral oil from the electrical transformers would be addressed by implementation of a SPCC Plan.

Sunlight would prepare an SWPPP for the proposed Project which would identify structural and non-structural BMPs to manage the offsite discharge of storm water from SF-B. *Although it is not anticipated that NPDES permitting would apply to the proposed Project,* Sunlight would coordinate with the Colorado River Basin RWQCB regarding potential coverage under the Construction General Permit for Storm Water Discharge for the proposed Project. Sunlight would also prepare an SPCC Plan, due to the presence on the site of oil-containing transformers. Appropriate spill containment and clean-up kits would be maintained on site during construction, to provide mitigation in the event of a chemical spill. Appropriate spill containment and clean-up kits would be maintained on site during construction, to provide mitigation in the event of a chemical spill.

Flooding

As discussed above, the depth of runoff on the SF-B site in response to a 100-year runoff event prior to buildout is expected to be on the order of 1.5 to 2 feet in the zones where the existing washes cross the center of the site, and would be as much as 2.2 feet on the eastern edge of the site on the margin of Pinto Wash. The Project is not expected to increase these depths significantly. Flooding of this magnitude, however, may cause significant erosion, since the site will have been regraded to fill existing gullies. Riverside County will review the grading design to ensure that it meets drainage requirements.

Modeling results indicate that the Project would increase flows in Pinto Wash downstream of the Project site by approximately one percent.

<u>Gen-Tie Line A-1</u>

Groundwater

Operation and maintenance of the transmission lines would require routine but infrequent inspection along the access roads constructed for that purpose. Maintenance of the roads would require periodic regrading and repair of washouts. These activities may require application of water for dust control. The water might be taken from various sources and transported to the site by truck. The quantities required would not be significant. Relatively small quantities of groundwater are expected to be used for operating and maintenance of the GT-A-1, and therefore, no impacts on groundwater are expected.

Surface Water and Drainage

GT-A-1 facilities are mostly above ground, and once installed would not alter drainage patterns or surface water infiltration rates. Normal gulley erosion is expected to occur along the access roads used to inspect and maintain the transmission lines, and the roads may require occasional regrading or repair, but these activities are not expected to impact surface drainage patterns.

Water Quality

Most of the potential for water quality impacts would occur during construction, and as described above are expected to be small. There would be very limited use of hazardous materials or chemicals to support operation and maintenance of the GT-A-1 portion of the Project.

Flooding

GT-A-1 is not expected to contribute to increased flooding potential compared to existing conditions, because the footprint is relatively small, and compaction impacts that could reduce infiltration would be limited to the access road. The transmission poles and the access road are not expected to impede storm water flows. Erosion by storm water flows that cross the access road may cause washouts that would require regrading of the road. If culverts are installed, then flooding could occur at the culverts if they become clogged by sediment or debris.

Red Bluff Substation A

Groundwater

Once constructed, the Red Bluff Substation would be unmanned, and electrical equipment within the substation would be remotely monitored. *Operation of the substation would require additional groundwater pumping for sanitary needs, estimated at less than 100 gallons per month.*

Surface Water and Drainage

The substation would be constructed in an area traversed by existing washes that are subject to periodic high flows. As described above, surface drainage would be routed around the facility to protect the site. The design will meet building permit requirements.

Water Quality

Most of the potential for water quality impacts would occur during construction. There would be very limited use of hazardous materials or chemicals to support operation and maintenance of Red Bluff Substation A, and negligible opportunity for spills. Therefore, no water quality impacts are expected during operation and maintenance of the Red Bluff Substation A.

Flooding

The natural drainage channels would be altered to prevent flooding and erosion of the Red Bluff Substation A site. The design is intended to achieve an acceptable flood risk in accordance with permit requirements. The Project will not alter potential for flooding downstream of the site.

Summary of Operation and Maintenance Impacts

The impacts on water resources from operation and maintenance of the Project are expected to be less than during the construction phase of the Project. Groundwater consumption for operation and maintenance is estimated to be negligible, about *0.3* AFY, and may be supplied by a new production well or existing wells. Overall, the impact on groundwater elevations in the basin would not be measurable. Over time, runoff is likely to continue to cause erosion and the surface will need to be repaired to maintain access. This may require use of small quantities of water for dust control. An SPCC Plan would be implemented to address mineral oil contained in the electrical transformers at SF-B. Inspection and monitoring of the equipment is expected to reduce the potential for a release, and if a release occurs, the mineral oil will be cleaned up. The mineral oil would not contain PCBs. The potential for impacts to surface water or ground water quality from a spill or release during operation and maintenance of the Project is expected to be low because there is low potential for a release, a protective level of response would be implemented if a spill occurs, and because there are no permanent surface water bodies and groundwater is at relatively great depth.

Decommissioning

Solar Farm Layout B

Groundwater

The impacts on groundwater supply from decommissioning are expected to be similar to, or less than, the impacts during construction, assuming that the purpose of decommissioning would be to restore the site to approximately its initial condition, and therefore are not expected to be substantial. The scope of the decommissioning phase of the Project is not known. It is expected that structures would be removed, involving some ground disturbance, but it is not known whether the site would be regraded or revegetated. The types of activities necessary to remove the solar panels, underground cable, and other materials would require use of construction equipment with the potential for leaks and spills of hydraulic fluid and fuels. It is not known whether transformers would be drained, but if they were, the work would be done in accordance with the SPCC Plan. If regrading of the site is required, it would be done in accordance with a grading permit, requiring preparation and implementation of a Construction SWPPP. Dust control measures would be implemented, requiring a source of water. Impacts on groundwater storage would be temporary and would include localized lowering of the water table.

Surface Water and Drainage

Removal of the solar panels, roads, buildings, underground utilities, and other installed equipment would result in soil disturbance similar in magnitude to the disturbance caused by construction. Removal of the solar panels, roads and buildings would expose the ground surface to erosion by water. There would be limited vegetation cover on the site to slow water erosion. The natural desert pavement, which becomes established very gradually as wind removes soil leaving rocks to cover the surface, will have been removed, leaving surface soils more vulnerable to erosion. After decommissioning, natural erosion processes would work to establish a new network of drainage channels through the site, similar to the drainage pattern that existed prior to construction. Since these effects would occur over a large area, they might result in alteration of the broader drainage pattern by allowing channels to converge further upslope than under current conditions, reducing the number of channels and deepening the primary channels. These effects would be most severe in the less-frequent higher magnitude runoff events, and therefore might not be observed for many years.

Water Quality

Because there are no permanent surface water features in the Project Study Area, the impacts of decommissioning on surface water quality would be transient, resulting in an increase in sediment transported downslope in runoff. During decommissioning, a Construction Storm Water Pollution Prevention Plan would be implemented and the plan would include BMPs to address management of chemicals and hazardous materials, including fuel and lubricants that may be required for decommissioning activities. The impacts would be similar to those described for construction of the Project.

Flooding

As discussed above, decommissioning may result in increased erosion and greater concentration of runoff, and downslope transport of soil while new drainage patterns become reestablished. This may result in localized flooding in areas where sediment is redeposited. In particular, if erosion increases, sediment is likely to be conveyed to the existing principal wash channels, and the additional sediment could contribute to clogging of culverts at road crossings.

Gen-Tie Line A-1

Groundwater

Water would be needed for dust control during decommissioning, with the effects of decommissioning the transmission lines on groundwater supplies similar to or less than those described for construction, since the primary requirement for water in the construction phase is for dust control on access roads, and little or no alteration of the access roads would be needed during decommissioning.

Surface Water and Drainage

Decommissioning of the transmission lines and access roads would have little impact on surface drainage since there would be no significant ground disturbance. If no longer maintained, the access roads would gradually become eroded as the land surface reverts to pre-construction conditions. It is possible that the access roads would continue to be maintained, however, for other purposes.

Water Quality

No impacts are expected on surface water or ground water quality for the same reasons discussed above under construction impacts.

Flooding

Potential for flooding impacts would depend on the details of the decommissioning project. For example, if access roads are not removed, then flooding might occur at culverts unless the culverts are maintained.

Red Bluff Substation A

Groundwater

Only small amounts of water would be required to control dust during decommissioning of Red Bluff Substation A. Therefore, impacts on groundwater supply are expected to be negligible, similar to those expected during construction.

Surface Water and Drainage

Decommissioning Red Bluff Substation A may or may not involve removal of channel protection structures installed to re-route storm drainage around the substation site. If not maintained, the altered channels would probably be attacked by erosion during intermittent large runoff events as the channel attempts to reestablish its preconstruction flow path.

Water Quality

As discussed above, surface and groundwater quality impacts are expected to be similar to those described for construction.

Flooding

Decommissioning could result in locally increased flooding potential at culverts along the access roadway, and along the stream channel that was altered in the construction phase, if the culverts or channels become blocked by sediment. Increased erosion may occur on the Substation site while vegetation becomes reestablished. However, since most erosion is caused by overland flow from upstream sources, rather than from direct precipitation, which is very low on the valley floor, and because the Substation site is relatively small, erosion on the surface of the Substation site would probably be relatively minor.

Summary of Decommissioning Impacts

The impacts of decommissioning would depend on the details of the decommissioning project, but can be discussed qualitatively and in general terms. Effects of decommissioning on water resources would be similar to those described for construction of the Project. The effects would primarily result from erosion of altered and unprotected land surfaces. These effects would be greatest in the SF-B footprint because of removal of solar panels and lack of vegetation on the site, and because of the large land area included in the SF-B site.

Summary of Combined Impacts for Alternative 1

Groundwater

Overall impacts on groundwater hydrology such as drawdown of the water table or changes in basin storage are expected to be minor. It is estimated that groundwater drawdowns of about one foot could occur at the wells closest to the proposed construction well, depending on the properties of the aquifer. The drawdown would be temporary during the approximately two-year construction period, since the long-term water requirement for operation and maintenance are much less than for construction. Drawdowns on the order of one foot would not significantly impact the operation or cost of pumping existing wells. The estimated short-term groundwater demand of about *778 to 828* AFY during construction represents about *24 to 32* percent of the estimated 2,500 to 3,500 AFY surplus inflow to the Chuckwalla Valley Groundwater Basin relative to outflow from the basin. Water levels in the basin would, on average, continue to rise slightly during the construction phase of the Project. By comparison, the operation and maintenance of the Project would require only about 0.2 AFY, which would have no measurable effect on groundwater levels in the basin.

Surface Water and Drainage

Streams are ephemeral in the Study Area, so the primary effect of chemical spills or releases on surface water quality would be to transport chemicals downslope, disperse them over a wider area, and deposit them in shallow soil. A Construction SWPPP would be prepared for the Project during construction and decommissioning, which would address procedures for managing chemicals and avoiding and cleaning up spills. An SPCC Plan would be required during operation and maintenance. These plans will identify specific BMPs to address spills. Implementation of the BMPs will reduce the potential for significant adverse impacts associated with surface water.

Water Quality

The Project is not expected to have any impacts on water quality, with the exception of increased sediment carried by surface water during construction and decommissioning. These impacts are not strictly water quality impacts, because surface flows are intermittent in the study area and runoff typically carries high sediment loads. Since hazardous substances and especially petroleum hydrocarbons would be stored and used in the study area during construction and decommissioning, there is a potential for spills or releases to impact surface water or groundwater. However, the potential for releases would be reduced through compliance with storm water regulations requiring implementation of BMPs, including storage of hazardous materials and petroleum hydrocarbons in secondary containment, and training of employees in the proper management of hazardous substances and cleanup of spills and releases. Although small accidental spills of substances like hydraulic fluid or fuel are common at construction sites, the potential for spills to impact groundwater would be further reduced because of the relatively great depth to groundwater at the site, the nature of the underlying geology, and the low precipitation in the study area.

Flooding

The SF-B site would be graded to fill gullies and remove topographic irregularities, existing vegetation cover would be removed, and the soil would be compacted during construction. Compaction would reduce infiltration potential by lowering the soil permeability. Roads and structures would also reduce the amount of surface area available for infiltration of storm water. Regrading of the site would promote sheet flow (spreading the runoff over a broader area, rather than concentrating it in channels. Without established vegetation cover, runoff velocity and erosion potential would be greater than on the surrounding land.

Flooding is less likely to occur in other areas of the study area, such as along transmission corridors or at the Red Bluff Substation A site. Transmission lines would be above ground and would not impede storm water runoff. Access roads would generally follow the contours of the land, with grading and compaction necessary to allow vehicle access. The natural drainage channels at the Red Bluff Substation A site would be altered to conduct runoff around the site, with armoring of the banks of the channel to reduce erosion potential. The roads and substation cover a relatively small percentage of the overall surface areas and would not reduce infiltration enough to cause a measurable increase in flooding.

Decommissioning the SF-B site would expose a large unvegetated land area to erosion from runoff. Because the land will have been regraded, and the soil disturbed, the desert pavement will also have been removed. After decommissioning, the land surface would be subjected to erosional downcutting especially where the existing principal washed cross the site. Without vegetation and maintenance of the erosion mitigation measures, erosion is likely to be accelerated after decommissioning. Soil may be transported downslope before vegetation has a chance to become established, resulting in sediment accumulation downstream and greater flooding potential there.

Applicant Measures and Mitigation Measures

BMPs would be implemented as part of the Construction Storm Water Pollution Prevention Plan to reduce erosion and to prevent pollutants from being transported by storm water. Among the BMPs that may be implemented to reduce erosion are: phased construction to minimize the area of disturbed soil that is vulnerable to erosion and to avoid areas where runoff concentrates; grubbing and removing vegetation cover only when necessary; scheduling to avoid construction during periods of high runoff potential; contouring and grading to direct storm water into retention basins, to prevent runoff from concentrating, and to direct runon away from sensitive areas; covering or placing berms around stockpiles; designing roads and the onsite transportation plan to avoid areas of the site with higher runoff or flooding potential; constructing bridges across narrow washes; using silt fences and straw bales to slow or direct storm water around high use areas or storage areas.

BMPs to reduce potential for contaminant spills or releases include: *AM-WAT-1* training construction staff in the management of hazardous materials and use of spill control and cleanup equipment; *AM-WAT-2* having a clear chain of command within the organizational structure with responsibility for implementing, monitoring, and correcting BMPs; *AM-WAT-3* covering and containing hazardous materials so that they are not in contact with precipitation or runoff; *AM-WAT-4* storing hazardous materials in one or more central areas, and instituting rules requiring all hazardous materials to be secured at the end of the day; *AM-WAT-5* maintaining good inventory records; storing hazardous liquids and dispensing equipment in secondary containment; *AM-WAT-6* maintaining adequate quantities of spill containment and response equipment at readily accessible points throughout the site; *AM-WAT-7* identifying the worst case and most likely spill scenarios, and providing spill response equipment adequate to respond to these scenarios; *AM-WAT-8* using chemicals presenting the least environmental hazard wherever possible; *AM-WAT-9* storing the smallest quantities of hazardous materials possible on the site; *AM-WAT-10* maintaining site security to reduce vandalism; *AM-WAT-11* requiring all contractors to abide by the program BMPs and to identify any hazardous materials and specific BMPs pertaining to their trade or activity.

The SPCC Plan for the site would address storage of mineral oil contained in transformers. A SPCC Plan is required when 10,000 gallons or more of mineral oil in electrical equipment is contained on site, or when 1,320 gallons of petroleum is stored on the site, although an SPCC Plan can be voluntarily implemented for lesser quantities. The SPCC Plan would address methods and procedures for managing these products, lighting, security, containment requirements, training requirements, staff responsibilities for inspecting storage and dispensing equipment; and equipment and procedures for responding to a spill or release of stored petroleum products.

Among the features that are incorporated into the Project design to address potential impacts on water resources are the measures identified in the Storm Water Hydrology Report for Alternative B (AECOM. 2010b; Appendix G) to reduce flooding and erosion effects associated with the 100-year design runoff event. The modeling results indicate that the most effective measure to reduce runoff depth and velocity would be *AM-WAT-12* decompacting the soil between solar panels to increase infiltration potential.

Additional mitigation measures *shall be employed. These measures include, as warranted*, placing riprap on the site, installing retention ponds *within the Project area but upstream of the solar field* to capture runon, constructing check dams to slow runoff within or at the downstream end of the site, and constructing strip detention basins to retain and slow runoff within the site or at the downstream end of the site.

- *AM-WAT-13 Riprap* increases surface roughness and slows runoff velocities, decreasing sediment transport, and increasing flow depth. Riprap would be used in conjunction with decompaction, as riprap would not mitigate flow or volume.
- *AM-WAT-14 Retention basins* could be located along the upstream western boundary of the Project site to intercept run on storm water flows. The intent of this measure is to reduce overall flow depths, velocities and outflow volume by retaining run-on storm water volume. They would also reduce sediment transport within the Project site.
- *AM-WAT-15 Check dams* can be constructed to address specific post-development hydraulic characteristics that remain after implementation of the decompaction measure. Check dams could be located near the downstream southern boundary of the Project site to intercept run off. Check dams would have an effect on the storm water upstream of each dam because the

storm water would back up behind each dam. Check dams would also reduce flow velocities and would retain sediment.

- *AM-WAT-16 Strip detention basins* would be approximately six inches deep and 70 feet wide, and would be designed to follow the topographic contours of the site, so their lengths would be dependent on the locations of the basins on the site. These detention basins could be located near the downstream southern boundary of the Project site to intercept run off storm water flows. The intent of this measure is to reduce outflow volume by detaining run-off storm water volume, similar to the check dam measures. Strip detention basins would not have an effect on the storm water upstream of each basin but would reduce flow velocities and sediment transport leaving the Project site.

In addition to these Applicant Measures, the following mitigation measures have been applied to the Project, based on public and agency comment, to ensure that potential impacts associated with groundwater pumping are minimized.

MM-WAT-1 Groundwater Wells, Installation. The Applicant proposes to construct new groundwater wells in support of the Project, that would produce water from the Chuckwalla Valley Groundwater Basin (CVGB). The Project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements. Prior to initiation of well construction activities, the Project owner shall submit for review and comment a well construction packet to the County of Riverside and fees normally required for the County's well permit, with copies to the Compliance Project Manager (CPM). The Project shall not construct a well or extract and use groundwater until approval has been issued by the county and the CPM to construct and operate the well. Wells permitted and installed as part of pre-construction field investigations that subsequently are planned for use as Project water supply wells require CPM approval prior to their use to supply water to the Project.

Post-Well Installation. The Project owner shall provide documentation as required under County permit conditions to the CPM that the well has been properly completed. In accordance with California's Water Code Section 13754, the driller of the well shall submit to the Department of Water Resources (DWR) a Well Completion Report for each well installed. The Project owner shall ensure the Well Completion reports are submitted. The Project owner shall ensure compliance with all County water well standards and the County requirements for the life of the wells, and shall provide the CPM with two copies each of all monitoring or other reports required for compliance with the County of Riverside water well standards and operation requirements, as well as any changes made to the operation of the well.

MM-WAT-2 Construction Water Use. The proposed Project's use of groundwater during construction shall not exceed a total of 1,400 AF during the 26-month construction period for the solar farm, 360 AF for the Red Bluff Substation, and 7 AF for the Gen-Tie Line. Before groundwater can be used for construction, the Project owner shall install and maintain metering devices as part of the water supply and distribution system to document Project water use and to monitor and record in gallons per day the total volume of water supplied to the Project from this water source. The metering devices shall be operational for the life of the Project.

MM-WAT-3 Groundwater Level Monitoring, Mitigation, and Reporting. The Project owner shall submit a Groundwater Level Monitoring, Mitigation, and Reporting Plan to the BLM and CPUC for review and approval in advance of construction and before operation of on-site groundwater supply wells. The Groundwater Level Monitoring, Mitigation, and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and Project operation water use. The plan shall establish pre-construction and Project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially impacted existing wells.

A. Prior to Project Construction

1. *A well reconnaissance shall be conducted to investigate and document the condition of existing water supply wells located within three miles of the Project site, provided that access is granted by the well owners. The reconnaissance shall include sending notices by registered mail to all property owners within a three-mile radius of the Project area. To further establish baseline conditions in the Project area, historic and current local well data available at federal, state, and local agencies (e.g., USGS, DWR, Riverside County) shall be reviewed and used in the documentation of existing groundwater conditions. A minimum of three existing water supply wells shall be identified and accessible for monitoring purposes. If there is an inadequate number of existing wells, new monitoring wells shall be installed by the Project owner, to equal a total of three groundwater monitoring wells, at locations to be approved by the BLM and CPUC.*

2. *Monitor to establish preconstruction conditions. The monitoring plan and network of monitoring wells shall use existing wells in the basin that would satisfy the requirements for the monitoring program. The monitoring network shall be defined by existing available data as the area predicted to show a water level change of one foot or more at the end of construction. The projected area of groundwater drawdown shall be refined on an annual basis during Project construction. If the area predicted to show a water level change of one foot increases, the Project owner will be required to submit a revised monitoring plan with additional monitoring wells (if required).*

3. *Identified additional wells shall be located outside of this area to serve as background monitoring wells. Abandoned wells, or wells no longer in use, that are accessible and provide reliable water level data within the potentially impacted area shall also be included as part of the monitoring network. A site reconnaissance shall be performed to identify wells that could be accessible for monitoring. As access to these wells is available, historical water level, water quality, well construction and well performance information shall be obtained for both pumping and non-pumping conditions.*

4. *Measure groundwater levels from the off-site and on-site wells within the network and background wells to provide initial groundwater levels for pre-Project trend analysis.*

5. *Construct water level maps within the CVGB within three miles of the site from the groundwater data collected before construction. Update trend plots and statistical analyses, as data are available.*

B. During Construction:

1. *Collect water levels from wells within the monitoring network and flows from seeps and/or springs on a quarterly basis throughout the construction period and at the end of the construction period. Perform statistical trend analysis for water levels. Assess the significance of an apparent trend and estimate the magnitude of that trend.*

2. *On a quarterly basis during construction, collect water level measurements from any wells identified in the groundwater monitoring program to evaluate operational influence from the Project. Quarterly operational parameters (pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater use in the CVGB shall be estimated based on available data.*

3. *On an annual basis, perform statistical trend analysis for water level data and comparison to predicted water level declines caused by Project pumping. Analysis of the significance of an apparent trend shall be determined and the magnitude of that trend estimated. Based on the results of the statistical trend analyses and*

comparison to predicted water level declines due to Project pumping, the Project owner shall determine the area where the Project pumping has induced a drawdown in the water supply at a level of five feet or more below the baseline trend.

4. *If water levels have been lowered more than five feet below pre-site operational trends, and monitoring data provided by the Project owner show these water level changes are different from background trends and are caused by Project pumping, then the Project owner shall provide mitigation to the impacted well owner or owners. Mitigation shall be provided to the impacted well owners that experience five feet or more of Project-induced drawdown if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-Project water levels, and the well (private owner's well in question) yield or performance has been significantly affected by Project pumping. The type and extent of mitigation shall be determined by the amount of water level decline induced by the Project, the type of impact, and site-specific well construction and water use characteristics. If an impact is determined to be caused by drawdown from more than one source, the level of mitigation provided shall be proportional to the amount of drawdown induced by the Project relative to other sources. To be eligible, a well owner must provide documentation of the well location and construction, including pump intake depth, and that the well was constructed and usable before Project pumping was initiated. The mitigation of impacts shall be determined as follows:*

   a. *If groundwater monitoring data indicate Project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10 percent or more of the pre-Project average seasonal yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. If with treatment the well yield is incapable of meeting 110 percent of the well owner's maximum daily demand, dry season demand, or annual demand, the well owner should be compensated by reimbursement or well replacement.*

   b. *If Project pumping has lowered water levels to significantly affect well yield so that it can no longer meet its intended purpose, causes the well to go dry, or causes casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well of comparable design and yield (only deeper). The demand for water, which determines the required well yield, shall be determined on a per-well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-Project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 110 percent of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-Project well yield documented by the initial well reconnaissance met or exceeded these yield levels.*

   c. *Pump lowering – In the event that groundwater is lowered as a result of Project pumping to an extent where pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. The Project shall reimburse the impacted well owner for the costs associated with lowering pumps.*

   d. *Deepening of wells – If the groundwater is lowered enough as a result of Project pumping that well screens or pump intakes are exposed, and pump lowering is not an option, such affected wells shall* *be deepened or new wells constructed. The Project owner shall reimburse the impacted well owner for all costs associated with deepening existing wells or constructing new wells.*

5. *Groundwater monitoring required per this mitigation measure shall continue for a minimum of five years after Project construction is complete. At that time, the BLM and CPUC shall evaluate the data and determine if the monitoring program for water level measurements should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the BLM and CPUC.*

6. *If mitigation includes monetary compensation, the Project owner shall provide documentation to the CPM that compensation has been made by March 31 of the year compensation is determined to be required. Within 30 days after compensation is paid, the Project owner shall submit to the CPM documentation that the compensation has been paid.*

7. *During the life of the groundwater monitoring program, the Project owner shall provide to the CPM all monitoring reports, complaints, studies, and other relevant data within 10 days after they have been received by the Project owner.*

MM-WAT-4 Mitigation for the Use of Fencing. Desert tortoise exclusion fencing and security fencing shall be installed around the entire perimeter of the Project site as described in AM-WIL-1. During construction the desert tortoise exclusion fence will be inspected on a daily basis to ensure the integrity of the fence is maintained. During operation of the Project, fence inspections shall occur at least once per month throughout the life of the Project, and within 24 hours after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs shall be completed within two days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing. If fence damage occurs during any time of year when tortoises may be active, the Project owner shall be responsible for monitoring the site of the damaged fence until it is fully repaired, to prevent a desert tortoise from entering the Project area. All incidents of damaged tortoise exclusion fence, including dates of damage and repair; extent of damage, and monitoring summaries (methods and results), shall be reported to the BLM, CPM, CDFG, and USFWS. All wildlife found entrapped or dead in the fence shall be reported to the BLM, CPM, CDFG, and USFWS. Fencing shall be installed with breakaway design features so as not to interfere with or impede storm water or flood flows, or associated sediment loads.

MM-WAT-5 Construction Period Storm Water Quality. As discussed previously, the waterways that would be affected as a result of Project implementation would not be considered jurisdictional waters under the federal Clean Water Act. As a result, no NPDES permits would be required within the Project area during construction or operation. Therefore, a comprehensive construction-period water quality control plan shall be generated, and recommendations of the plan shall be adhered to. The plan shall be completed by the Applicant before Project construction begins and shall include an evaluation of potential for construction-related storm water pollutant loading that could result from Project construction. The plan shall address and implement all of the issues and recommendations of the Storm Water Pollution Prevention Plan (SWPPP). This mitigation measure requires that a SWPPP for Project construction and decommissioning is prepared prior to commencing with either action.

The plan shall evaluate potential for erosion and sedimentation to occur on site and downstream as a result of construction, as well as potential for construction-related releases of fuels, oils, solvents, concrete wash-out, greases, paints, and other potential water quality pollutants to become entrained in storm water, or otherwise result in the degradation of surface water or groundwater quality. The evaluation shall implement specific measures to minimize potential effects on water quality. These measures may include, but would not be limited to, installation of temporary *settling basins, stabilization of disturbed soils, replanting vegetation after disturbance, limitations on construction during wet periods, installation of temporary erosion control devices (fiber rolls, staked straw bales, detention basins, check dams, geofabric, dikes, and temporary revegetation), covering stockpiled loose material during rain events, equipment maintenance to prevent leaks, application of erosion protection to cut and fill slopes, and other BMPs. Sediment shall be retained on site by sediment basins, traps, or other measures. No disturbed surfaces shall be left without erosion control measures in place during the rainy season. Recommendations from the plan shall be applied during construction of all Project-related components.*

MM-WAT-6 Operation Period Storm Water Flows and Quality. As discussed previously, the waterways that would be affected as a result of Project implementation would not be considered jurisdictional waters under the federal Clean Water Act. As a result, no NPDES permits would be required within the Project area during Project construction or operation. Therefore, the following mitigation measure provides for the explicit implementation of an operations period water quality control program to minimize storm water-related discharges of sediment and other pollutants from the Project site during Project operations.

A comprehensive operation-period storm water and flood drainage and water quality control plan shall be completed, and the recommendations of the plan shall be implemented by the Applicant. The plan shall evaluate potential for the Project to exceed storm water discharges during 10-year and 100-year storm events, and shall ensure that the volume of discharge emanating from the Project site during these events is limited to an increase of no more than one percent, in comparison to existing conditions. To meet this condition, storm water shall be retained in on-site storm water retention ponds, infiltration basins, or other storm water control facilities. Channel design for flood control along the Project perimeter shall be sized and designed to minimize scour and disruption to upstream and downstream hydrology, including measures to prevent headcutting, migration of channels, erosion, and downstream sedimentation, under conditions equivalent to a 100-year flood.

The plan shall also evaluate and mitigate relevant potential sources of water quality pollution associated with Project operation. These sources include, but are not limited to, release of sediment, oils, greases, transformer fluid, fuels, paint, trash, pollutants from impervious surfaces (asphalt oils, greases, and brake dust) and other water quality pollutants arising during operation. The plan shall identify operation-period BMPs, including but not limited to implementation of operation period settlement basins, swales, infiltration basins, regularly scheduled maintenance of proposed drainage and flood control facilities to prevent erosion and sedimentation, and storm water quality control BMPs including, but not limited to, regular sweeping of impervious surfaces, equipment maintenance to prevent leaks, replanting native vegetation, and other measures as applicable to minimize potential impacts to storm water quality.

CEQA Significance Determination

Solar Farm Layout B

Construction of Solar Farm Layout B over land that is dissected by a network of washes, and regrading of the site to level by cutting and filling the irregularities of the terrain, could lead to substantial flooding- and erosion-related impacts (criteria WR-3, WR-4, and WR-5). Impacts would be mitigable to less than significant by implementation of Storm Water BMPs, *as required by mitigation measure MM-WAT-5*. These BMPs could include, but are not limited to, scheduling construction for a low-rainfall periods; phasing work to avoid exposing excessive disturbed surface area to erosional forces; decompacting soils between solar arrays to stimulate infiltration, installing rip-rap, constructing retention basins upslope of the site, constructing strip detention basins within the site or at the downstream ends of the site, and constructing check dams to reduce runoff velocity and trap sediment. BMPs will be included in the Construction SWPPP for the Project, *as required by mitigation MM-WAT-5.*

Impacts would be less than significant for criterion WR-2. The highest water use would be during construction, but the impacts of pumping would be small and localized relative to the size of the groundwater basin.

There would be no impacts under criteria WR-1, WR-6, WR-7, WR-8, and WR-9. The Project would obtain all necessary permits and would comply with state, local, and federal laws and regulations. The Project does not lie in a flood plain and does not include any wetlands. If the groundwater does not meet drinking water standards, the water will be labeled as non-potable, and potable water will be supplied from an alternative source, *such as bottled water and/or via a small scale on-site drinking water purification system*.

As discussed in Chapter 3, the Project does not require a WSA for compliance with SB-610. The Project proponent would prepare a Construction SWPPP, *as required by mitigation measure MM-WAT-5.* The Project proponent would obtain well construction permits from Riverside County, and water rights to appropriate groundwater. The Project proponent would obtain building permits, and a permit to install septic systems as needed.

Operation and maintenance impacts would be significant and mitigable to less than significant for criteria WR-3 and WR-4 for much the same reasons as discussed above for the construction phase of the Project. Impacts would be less than significant for criterion WR-2 since a smaller quantity of groundwater would be required for O&M than for construction. There would be no impact under criteria WR-1, WR-5, WR-6, WR-7, WR-8, and WR-9 for the reasons discussed above. Mitigation measure *MM-WAT-6 would be implemented to reduce any operational storm water-related impacts to less than significant.* Measures to address WR-3 could include decompaction of soils between solar arrays, installation of rip-rap, construction of retention basins upslope of the site, construction of strip detention basins within the site or at the downstream ends of the site, and construction of check dams to reduce runoff velocity and trap sediment.

Decommissioning impacts would be similar to the impacts of construction; however, the impacts would depend on the specific components of the decommissioning project, as well as on the environmental and regulatory conditions prevailing at the time of decommissioning. Decommissioning impacts are expected to be significant and mitigable to less than significant for criteria WR-3, WR-4, and WR-5 and less than significant for criterion WR-2. There would be no impact under criteria WR-1, WR-6, WR-7, WR-8, and WR-9. Decommissioning would alter the existing drainage pattern at the time decommissioning is implemented, but the objective of decommissioning would include restoring the site to its prior condition. Mitigation for WR-5 would include implementation of construction storm water BMPs *as required by mitigation measure MM WAT-5.*

Gen-Tie Line A-1

Construction impacts would be less than significant for criteria WR-2, WR-3 and WR-4. There would be no impact under criteria WR-1, WR-5, WR-6, WR-7, WR-8, and WR-9.

Operation and maintenance impacts would be less than significant for criteria WR-2, WR-3 and WR-4. There would be no impact under criteria WR-1, WR-5, WR-6, WR-7, WR-8, and WR-9.

Decommissioning impacts would be similar to the impacts of construction; however, the impacts would depend on the specific components of the decommissioning project, as well as on the environmental and regulatory conditions prevailing at the time of decommissioning. Decommissioning impacts are expected to be significant and mitigable to less than significant for criteria WR-3, WR-4, and WR-5 and less than significant for criterion WR-2. There would be no impact under criteria WR-1, WR-6, WR-7, WR-8, and WR-9. Mitigation for WR-5 would include implementation of construction storm water BMPs, *as required by mitigation measure MM-WAT-5.*

Red Bluff Substation A

Construction impacts would be less than significant for criteria WR-3 and WR-4 and less than significant for criteria WR-2. *The highest water use would be during construction, but the impacts of pumping would be small and localized relative to the size of the groundwater basin.* In regard to WR-4, the Red Bluff Substation would require alteration of three existing intermittent storm water channels. The alteration would divert storm runoff to the perimeters of the construction site. The diversion sections would be armored with rip-rap to protect the banks from erosion. Once having passed the substation, the storm discharge can continue along natural drainages. There would be no impact under criteria WR-1, WR-5, WR-6, WR-7, WR-8, and WR-9.

Operation and maintenance impacts would be less than significant for criteria WR-2, WR-3 and WR-4. There would be no impact under criteria WR-1, WR-5, WR-6, WR-7, WR-8, and WR-9.

Decommissioning impacts would be similar to the impacts of construction; however the impacts would depend on the specific components of the decommissioning project, as well as on the environmental and regulatory conditions prevailing at the time of decommissioning. Decommissioning impacts are expected to be significant and mitigable to less than significant for criteria WR-3, WR-4, and WR-5 and less than significant for criterion WR-2. There would be no impact under criteria WR-1, WR-6, WR-7, WR-8, and WR-9. Mitigation for WR-5 would include implementation of construction storm water BMPs*, as required by mitigation measure MM-WAT-5.*

Unavoidable Adverse Effects

No unavoidable significant impacts are expected under Alternative 1.

4.17.4 Alternative 2 – Alternate Action

Construction

Solar Farm Layout B

Impacts for SF-B under Alternative 2 would be the same as those described for SF-B under Alternative 1.

Gen-Tie Line B-2

The total length of GT-B-2 is 10 miles. Construction of this line would require a total of 1,075,000 gallons of water (approximately 3.3 AF), a little more than half of the water that is required for GT-A-1. Water resources impacts from GT-B-2 would be the same or less than the impacts from GT-A-1, because of the shorter length of GT-B-2, and the lower water requirements for construction.

Red Bluff Substation B

The Red Bluff Substation B would be located on approximately *76* acres, just south of I-10, west of Desert Center. Additional Substation-related Project elements for Substation B would require an additional *55* acres, resulting in a total disturbed area of *130* acres. The Substation location is down-slope from the Chuckwalla Mountains, and there is one minor drainage channel that runs northward through the center of this site. Flow from this channel would be redirected around one side of the Substation, and the Substation's southern boundaries would be protected from surface runoff by the installation of a berm designed to direct the flow around both sides of the Substation, similar to the way drainage would be redirected for Red Bluff Substation A. Drainage improvements for Substation B would disturb approximately 20 acres, *more than the 14 acres required for drainage improvements for Substation A*. As with Substation A, construction of Substation B would not substantially alter the existing drainage pattern of the area, and it is not expected to result in substantial erosion or siltation on- or off-site, substantially increase the potential for flooding or the amount of damage that could result from flooding, and would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Summary of Construction Impacts

The impacts from construction of SF-B would be similar to those described for Alternative 1. The differences in impacts on water resources between Alternative 2 and Alternative 1 result primarily from the slightly lower demand for groundwater and the smaller footprints of the transmission line and the substation components. The nature of the impacts from each of these components would be substantially the same as described for Alternative 1, and when the components are taken together, the differences in impact between Alternatives 2 and 1 are probably within the range of uncertainty in the analysis.

Operation and Maintenance

Solar Farm Layout B

The SF-B component of Alternative 2 is identical to that of Alternative 1 and the impacts resulting from operating and maintaining SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from operating and maintaining GT-B-2 would be similar to those discussed under Alternative 1 for GT-A-1. As for GT-A-1, no significant quantity of groundwater would be required for operation and maintenance of GT-B-2. Use of hazardous materials for operation and maintenance of the GT-B-2 would be minimal, and no impacts on surface water or groundwater quality are expected.

The routes of GT-B-2 and GT-A-1 both run adjacent to existing roads for about the same distance, but Gen-Tie Line B-2 lies further upslope on the basin margin than GT-A-1, where erosion processes are more dominant and channels of washes are deeper and farther apart than at lower elevations of GT-A-1. The northern segment of GT-B-1 would be routed up the slope of the alluvial fan on the margin of Big Wash, which discharges on the east slope of the Eagle Mountains. Big Wash, as the name suggests, drains a relatively large watershed through a narrow canyon, creating the potential for flash flooding and high velocity discharges in the area where the transmission line turns south along Eagle Mountain Road. Lower on alluvial fans, such as where GT-A-1 is routed, washes tend to broaden, discharges from the washes tend to dissipate, and sediment deposition is the dominant process. The GT-B-2 route may be subject to more frequent washouts requiring repair or regrading of the access road than for GT-A-1, although the Project itself is not expected to increase flooding potential or alter surface drainage patterns.

Red Bluff Substation B

As with Substation A, Substation B would not substantially alter the existing drainage pattern of the area such that it would result in substantial erosion or siltation on- or off-site, would not substantially increase the potential for flooding or the amount of damage that could result from flooding, and would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The impacts resulting from operating and maintaining Red Bluff Substation B would be similar to those discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

As indicated above for the impacts of construction, the differences in impacts on water resources between operation and maintenance of Alternative 2 relative to Alternative 1 result primarily from the slightly lower demand for groundwater and the smaller footprints of the transmission line and the substation components of Alternative 2. The nature of the impacts from each of these components would be substantially the same as described for Alternative 1, and when the components are taken together, the differences in impact between Alternatives 2 and 1 are probably within the range of uncertainty in the analysis.

Decommissioning

Solar Farm Layout B

The impacts resulting from decommissioning SF-B would be the same as those discussed under Alternative 1.

Gen-Tie Line B-2

The impacts resulting from decommissioning GT-B-2 would be similar to those discussed under Alternative 1, but because the transmission line easement is shorter than for GT-A-1, the water use requirements and other water-related impacts would be slightly less.

Red Bluff Substation B

The impacts resulting from decommissioning Red Bluff Substation B would be similar to those discussed under Alternative 1, but because the footprint of Red Bluff Substation B is smaller than the footprint of Substation A, the water-related impacts would be slightly less.

Summary of Decommissioning Impacts

The impacts resulting from decommissioning under Alternative 2 would be similar to those discussed under Alternative 1, but slightly less, because of the smaller footprints of the transmission line and substation components. Routing GT-B-2 higher on the alluvial fan at Big Wash may require more frequent repairs of the access road because erosion processes are expected to be more active in this area.

Summary of Combined Impacts for Alternative 2

The combined impacts resulting from Alternative 2 would be similar to those discussed under Alternative 1.

Applicant Measures and Mitigation Measures

Applicant Measures and Mitigation Measures to avoid or reduce impacts on water resources for Alternative 2 would be the same as those discussed under Alternative 1.

CEQA Significance Determination

Solar Farm Layout B

The CEQA significance determination for SF-B is the same as that discussed Alternative 1.

Gen-Tie Line B-2

The CEQA significance determination for GT-B-2 is the same as discussed under Alternative 1 for GT-A-1.

Red Bluff Substation B

The CEQA significance determination for Red Bluff Substation B is the same as discussed under Alternative 1 for Red Bluff Substation A.

Unavoidable Adverse Effects

No unavoidable significant impacts are expected under Alternative 2.

4.17.5 Alternative 3 – Reduced Footprint Alternative

Construction

Solar Farm Layout C

The impacts resulting from constructing SF-C in Alternative 3 would be similar to those discussed under Alternative 1, except that the magnitude of the impacts associated with surface water drainage, erosion, and flooding would be less than for SF-B because of the smaller area of SF-C (3,045 acres for SF-C versus *3,912* acres for SF-B). Less groundwater would be required for dust control and other uses during construction of SF-C than for construction of SF-B.

Gen-Tie Line A-2

GT-A-2 would extend for approximately 9.5 miles, almost 3 miles shorter than GT-A-1. Construction of this line would require a total of 2,635,000 gallons of water (approximately 8.1 AF), which is approximately 30 percent more water than Gen-Tie Line A-1 would require. The impacts to water quality and water resources would be similar to those described previously for GT-A-1. GT-A-2 would be routed along an existing road, but lower in elevation on the valley floor than GT-A-1, where erosion is less active and washouts of the access road may be somewhat less frequent. The last segment of the GT-A-2 route climbs up an alluvial fan among several converging washes emanating from the north slope of the Chuckwalla Mountains, but this segment is similar to the last segment of Gen-Tie Line A-1. Neither transmission line is expected to significantly alter surface drainage patterns or increase flooding potential.

Red Bluff Substation A

The impacts resulting from constructing Red Bluff Substation A in Alternative 3 would be the same as those discussed under Alternative 1.

The alternative access road to Substation A (Access Road Sub-Alternative 2) would be from the Corn Springs exit from Interstate I-10 via a 3,200-foot long paved section of the existing Chuckwalla Valley Road heading east along the southern frontage of the freeway. From this point the access would head south along a 300-foot long section of Corn Springs Road, then turn west through roadway improvements to approximately 20,000 feet of the existing dirt pipeline patrol road to the substation site. Due to the potential for surface flooding over a 17,000 foot portion of the gas line patrol road, additional improvements may be necessary to protect the road. Assuming a 40-foot wide land disturbance for the roadway improvements the resulting land disturbance is approximately 21 acres.

Project water demand for construction of this access road would be met by local groundwater, either from nearby existing wells that are located in the Project Study Area or through a new well to be constructed closer to the solar farm, or possibly through another source of water. It is likely that the amount of water needed to construct this access road would be relatively small compared to the perennial groundwater yield within the Chuckwalla Valley Groundwater Basin of 10,000 to 20,000 AFY and therefore the increase in water usage within the basin will not substantially deplete groundwater or interfere with groundwater recharge such that there will be a net deficit in aquifer volume or the water table would be lowered.

Flooding impacts from construction of this access road would be similar to the impacts described for construction of Substation A under Alternative 1. Water quality impacts from Access Road 2 would also be similar to the impacts described for construction of Substation A under Alternative 1.

Summary of Construction Impacts

As for Alternative 1, groundwater usage for construction of Alternative 3 would be within the range of the perennial groundwater yield of the Chuckwalla Groundwater Basin, and therefore would not deplete groundwater supplies. Locally, the effects of pumping on drawdown would be less than under Alternative 1. Construction of this alternative would impact surface water flow patterns, but it would not substantially alter the existing drainage pattern of the area such that it would result in substantial erosion or siltation on- or off-site, would not substantially increase the potential for flooding or the amount of damage that could result from flooding and would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Hazardous material usage for construction of this alternative would be relatively low, consisting mainly of fuel and lubricants, and these materials would be managed in accordance with BMPs. For the same reasons discussed under Alternative 1, no water quality standards or waste discharge requirements would be violated to implement Alternative 3, and there would be no impact on surface or groundwater quality. The Project Study Area is not within a flood hazard zone and is not expected to increase flood potential. Although no storm water modeling was performed specifically to analyze the impacts of SF-C, storm water modeling performed for SF-B demonstrated little or no increase in flood volume downstream of the Project, and the impact would be less for SF-C because of its smaller footprint compared with SF-B.

The impacts resulting from construction under Alternative 3 would be similar in character, but slightly lower in magnitude to those discussed under Alternative 1.

Operation and Maintenance

Solar Farm Layout C

The impacts resulting from operating and maintaining SF-C under Alternative 3 would be similar to those discussed under Alternative 1, except that the magnitude of the impacts associated with surface water drainage, erosion, and flooding would be less than for SF-B because of the smaller footprint of SF-C.

Gen-Tie Line A-2

The impacts resulting from operating and maintaining GT-B-2 under Alternative 3 would be similar to those discussed under Alternative 1, except that because the route is lower on the valley floor, it is expected that less frequent access road repair may be required (see note on Access Road 2, below).

Red Bluff Substation A

The impacts resulting from operating and maintaining Red Bluff Substation A in Alternative 3 would be the same as those discussed under Alternative 1.

As discussed above under construction impacts, Access Road 2 would use approximately 20,000 feet of the existing dirt pipeline patrol road, which is vulnerable to surface flooding over a 17,000 foot portion of the road. This flooding potential could require additional repairs, with resulting additional water use for dust control; however, the overall impact on water resources is expected to be negligible.

Water quality impacts from Access Road 2 would also be negligible for the reasons discussed under Alternative 1.

Summary of Operation and Maintenance Impacts

The impacts resulting from operation and maintenance under Alternative 3 would be similar in character, but generally lower in magnitude to those discussed under Alternative 1.

Decommissioning

Solar Farm Layout C

The impacts resulting from decommissioning SF-C under Alternative 3 would be similar to those discussed under Alternative 1, except that the magnitude of the impacts would be less due to the smaller footprint of SF-C compared to SF-B.

Gen-Tie Line A-2

The impacts resulting from decommissioning GT-A-2 under Alternative 3 are expected to be similar to those that occur during the construction phase, as discussed under Alternative 1, except that slightly more groundwater may be required for dust control during decommissioning of GT-A-2 than for decommissioning of GT-A-1.

Red Bluff Substation A

The impacts resulting from decommissioning Red Bluff Substation A under Alternative 3 would be the same as those discussed under Alternative 1.

The impacts on water resources from decommissioning Access Road 2 would depend on the details of the decommissioning project. Restoring Access Road 2 to its previous condition prior to construction, when it was maintained as a gas line patrol road, would probably involve minimal decommissioning, if any.

Summary of Decommissioning Impacts

The impacts resulting from decommissioning under Alternative 3 would be similar in character to those discussed under Alternative 1, except that the overall magnitude of the impacts on erosion, surface water drainage, and flooding would be somewhat less because of the smaller footprint of SF-C, and the slightly reduced groundwater requirement for construction of SF-C, the minor increased groundwater requirement of GT-A-2, and the probably small groundwater requirement of Access Road 2.

Summary of Combined Impacts for Alternative 3

The combined impacts resulting from Alternative 3 would be similar to those discussed under Alternative 1. Most of the impacts would occur during construction and decommissioning of SF-C and lower in magnitude than those under SF-B because the footprint of SF-C is smaller than that of SF-B.

Applicant Measures and Mitigation Measures

The mitigation measures, Project design features, and BMPs used to reduce the potential for significant impacts under Alternative 3 would be the same as those described for Alternative 1.

CEQA Significance Determination

Solar Farm Layout C

The CEQA significance determination for SF-C would be the same as that discussed under Alternative 1.

Gen-Tie Line A-2

The CEQA significance determination for GT-A-2 would be the same as that discussed under Alternative 1.

Red Bluff Substation A

The CEQA significance determination for Red Bluff Substation A would be the same as that discussed under Alternative 1.

Unavoidable Adverse Effects

No unavoidable significant impacts on water resources have been identified.

4.17.6 Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, there would be no additional groundwater pumping, no potential for spills or releases to impact surface water, and flooding would not impact people or structures on the site. The land on which the Project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In the absence of this Project, other renewable energy projects may be constructed to meet state and federal mandates, and those projects could have similar, or other, impacts on water resources.

4.17.7 Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No ***Project*** with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the Project site, and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar energy projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, in the absence of this Project, other (non-solar) projects may be constructed, and those projects may or may not have impacts on water resources.

4.17.8 Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No ***Project*** with Plan Amendment)

Under this alternative, the proposed Desert Sunlight Solar Farm Project would not be approved by the BLM, and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that a solar energy project could be constructed on the Project site with different or greater impacts on water resources.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Construction and operation requirements for solar technologies vary; however, it is expected that all solar technologies require some grading and some infrastructure, and require some amount of water. While it is not possible to assess with any certainty the impacts of another solar project, the impacts on water resources during construction and decommissioning would probably be similar for another project of similar size. Some types of solar facilities consume significantly larger amounts of water for operation and maintenance than the proposed Project, and this could lead to potential impacts on water resources.

4.17.9 Cumulative Impacts

A significant cumulative water resources impact would include a condition in which groundwater withdrawals contributed to a decline in groundwater storage in the basin. A significant cumulative impact would also include a condition in which the Project contributed to degradation of surface or groundwater quality or to increased hazard of flooding affecting the safety of people, or integrity of structures.

Geographic Scope

As discussed in Section 3.17, average annual precipitation in the Chuckwalla Basin is very low (3 to 8 inches per year), and there are no perennial surface water features within the proposed Project site. The area is characterized by dry washes which convey storm water flows during storms. Therefore, the geographic area considered for cumulative flooding, surface water and drainage, and surface water quality impacts is expected to be limited to the proposed Project area. *The cumulative evaluation for groundwater has a larger physical scope, as described below.*

Groundwater

The principal cumulative impact to water resources anticipated from the proposed Project is the potential for substantial depletion of groundwater supplies such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level (CEQA criterion WR-2). The largest impacts on groundwater storage among the fast-track solar projects in the region would occur during construction. The maximum cumulative impact would therefore occur if all of the projects were constructed at once. Lower construction groundwater impacts would occur if implementation of construction were staggered or if nearby projects were not constructed concurrently. Therefore, the magnitude of the cumulative impact could be mitigated to some extent by not permitting all of the projects to begin at the same time.

Referring to the groundwater budget in Table 4.17-1, it can be seen that the Chuckwalla Valley Groundwater Basin receives inflow (groundwater underflow) from the adjacent Pinto Valley and Orocopia Valley Groundwater Basins, recharge from runoff that infiltrates along the range fronts at the valley margins, and additional recharge from various other sources including irrigation return flows, and infiltration of wastewater. Figure 3.17-2 shows the geographic extent of the Chuckwalla Valley Groundwater Basin and the locations of the adjacent basins and ranges.

Most of the groundwater outflow from Chuckwalla Valley is from pumping of wells, but some groundwater flows from Chuckwalla Valley Groundwater Basin to the adjacent Palo Verde Mesa Groundwater Basin.

Groundwater moves from areas of higher groundwater elevation to lower groundwater elevation. Groundwater elevations in Chuckwalla Valley range from about 500 feet above sea level (amsl) in the western part of the basin, where the proposed Project is located, to about 270 feet amsl at the eastern edge of the basin, near its boundary with Palo Verde Mesa Basin. Regional groundwater elevations are lowest on the eastern side of Palo Verde Mesa Basin. Groundwater elevations on the western side of the Palo Verde Valley, near the boundary with the Palo Verde Mesa Basin are about 240 feet amsl.

The Colorado River flows south through the Palo Verde Valley, and water is diverted from the Colorado River to irrigate lands in both the Palo Verde Valley and in Palo Verde Mesa. Irrigation is probably the principal source of recharge to the Palo Verde Valley aquifer. Groundwater returns to the Colorado River at the southern end of the Palo Verde Valley.

Recent estimates of the water budget for the Chuckwalla Valley Basin (Table 4.17-1) suggest that storage in the Chuckwalla Valley Basin is currently increasing, because total inflows to the basin exceed outflows. As a result, groundwater levels on average in the Chuckwalla Valley Groundwater Basin must be rising. Although average groundwater levels in the basin will rise if net groundwater inflow exceeds outflow, local conditions can vary markedly.

The sustainable yield, or the amount of water that can be withdrawn over the long-term without reducing the amount in storage, depends in part on the amount of inflow from and outflow to adjacent basins, which may or may not be dependable or stable over the long term. Referring to Table 4.17-1, it can be seen that inflow from the adjacent Orocopia Valley and Pinto Valley Basins is roughly equivalent to the net increase in groundwater storage in the Chuckwalla Basin. If inflow from basins adjacent to the Chuckwalla Basin were reduced, then the sustainable yield of the Chuckwalla Basin would be reduced and both the quantity and quality of the groundwater stored in the basin would depend on a mixture of recharge from runoff from the adjacent mountain ranges and recharge from irrigation return flows and other wastewater sources. *Potential cumulative effects on groundwater resources are discussed below.*

Surface Water and Drainage

The geographic scope of cumulative impacts on surface water and drainage is much more localized than for groundwater. Surface water flows in the region are generally intermittent and depend on the timing, intensity, and duration of precipitation and runoff. Surface water and drainage effects also tend to occur downslope or downstream of a project. Upstream projects can alter surface water conditions downstream, but the reverse is not as likely.

Water Quality

Cumulative water quality impacts are expected mainly in relation to groundwater quality. Spills or releases of contaminants are likely to have localized and temporary impacts on surface water quality in the Project region, whereas regional groundwater quality could be affected by the combined effects of multiple projects.

Flooding

Impacts on flooding tend to result from localized conditions, and cumulative impacts on flooding are likely to propagate from upstream to downstream in a watershed. The geographic scope of flooding impacts is therefore limited to the watersheds containing the Project components.

Past, Present and Reasonably Foreseeable Future Projects

Prior to development, groundwater levels in the Chuckwalla Valley Groundwater Basin were generally higher than they are now. Agricultural use during the late 1970s and 1980s caused groundwater levels to decline by as much as 130 feet in some areas of the basin, such as east of Desert Center (Eagle Crest Energy Company 2008). In the late 1980s, groundwater levels began to rise in response to reduced groundwater extraction for irrigation, and have reportedly nearly recovered to levels that existed prior to the 1970s.

Current projects near the proposed Project site include the Chuckwalla Valley and Ironwood Prisons and the Eagle Mountain Pumping Plant. The impacts on groundwater resources within the basin are already captured in the current estimates of groundwater withdrawals from the basin presented in Table 4.17-1.

A list of foreseeable projects near the proposed Project site is presented in Tables 3.18-1 to 3.18-3. The geographic extent of impacts to water resources is the extent of the Chuckwalla Valley groundwater basin and Palo Verde Mesa Basin, which are shown in Figure 3.17-2.

Cumulative Impact Analysis

The impacts of the proposed Project on water resources are expected to be localized, minor, and temporary (mainly occurring during construction), and are not expected to significantly contribute to cumulative impacts in the Chuckwalla Valley Basin.

As indicated in Table 4.17-1, current groundwater extraction from the Chuckwalla Valley Groundwater Basin is slightly more than 10,000 AFY and inflow to the Chuckwalla Basin currently exceeds outflow by approximately 2,500 to 3,500 AFY. As long as inflow exceeds outflow, groundwater levels are expected, on average, to continue to rise in the Chuckwalla Valley Groundwater Basin, although conditions may vary locally in response to pumping and recharge. In general, higher groundwater elevations in the Chuckwalla Valley would likely contribute to increased outflow to the adjacent Palo Verde Mesa Valley Basin. Outflow to the Palo Verde Mesa Valley Basin is currently estimated to be about 400 AFY, which is roughly equivalent to the annual rate of evaporation from Palen Dry Lake.

Three of the foreseeable projects that are within this geographic extent account for 85 percent of the long-term water demand (see Table 4.17-3):

- Eagle Mountain Pumped Storage Project
- Palen Solar Power Project
- Genesis Solar Energy Project

Table 4.17-3 presents the groundwater demand for both construction and operation and maintenance of the major foreseeable projects and the proposed Project. Note that the construction demand is presented in *total* AF, because the annual demand may vary. The average annual demand, in AFY, can be readily calculated by dividing the total construction demand (in AF) by the duration of the construction project (in years), and would total approximately 10,000 AFY for two years, if all of the projects were under construction simultaneously. Demand would decrease as construction of each of the projects was completed, eventually falling to the long-term operation and maintenance requirement of the combined projects.

Table 4.17-3
Summary of Groundwater Usage *in the Chuckwalla Valley Groundwater Basin* for Cumulative Project Impacts

Project Name	Map ID(1)	Construction Water Use (AF)	Construction Duration (years)	Average Annual Construction Water Use (AFY)	O&M Water Use (AFY)
Devers-Palo Verde 2 Transmission Line Project	*D*	*12*	*3*	*4*	*0*
Blythe Energy Project Transmission Line	*10*	*8*	*2*	*4*	*0*
Desert Southwest Transmission Line	*F*	*1.2*	*2*	*0.6*	
Eagle Mountain Pumped Storage Project	*H*	*32,000*	*4*	*8,000*	*1,628*
Palen Solar Power Project	*I*	*1,278*	*3*	*426*	*300*
Genesis Solar Energy Project	*M*	*2,600*	*3*	*867*	*1,644*
McCoy Soleil Project	*L*	*unk*	*unk*	*unk*	*600*
Chuckwalla Solar I	*N*	*60*	*3*	*20*	*40*
Desert Quartzite	*R*	*27*	*3*	*9*	*3.8*
Paradise Valley "New Town" Develop-ment	*W*	*unk*	*unk*	*unk*	*0*
Desert Sunlight Solar Farm		*1,400*	*2.2*	*650*	*0.2*
Totals		***37,386***		***9,981***	***4,216***

Notes: (1) Map ID refers to the locations shown on Figure 3.18-2.

The data in Table 4.17-3 indicate that construction water needs exceed long term operations and maintenance water needs for these projects. As noted above, current groundwater usage in the Chuckwalla Valley groundwater basin is slightly greater *than 10,000* AFY, and the basin has an estimated sustainable yield of 2,500 to 3,500 AFY. During the mid 1980s, when up to 21,000 AFY of groundwater was withdrawn from the basin, water levels declined by up to 130 feet in some areas. When groundwater pumping for irrigation was reduced, water levels quickly recovered.

If *the proposed Project* and all of the foreseeable projects are implemented, additional short-term groundwater withdrawals from the Chuckwalla Valley Groundwater Basin would be on the order of 8,000 to 10,000 AFY for several years, depending on the actual start and duration of construction. This amount of withdrawal would probably result in declining groundwater levels basin-wide during the construction period and possibly substantial local declines in water levels. The short-term cumulative impacts on groundwater storage in the basin would be cumulatively considerable because the proposed cumulative withdrawals would exceed the sustainable yield of the basin although, as can be seen in Table 4.17-3, the cumulative impacts would be dominated by the withdrawals for the Eagle Mountain Pumped Storage Project. *The proposed Project would represent less than 10 percent of the projected cumulative water use (approximately 8 percent), and therefore would not considerably contribute to short-term cumulatively significant impacts.*

By comparison, increased demand by residential water users and associated commercial services would be minor. It is estimated that the average household in California will use about 0.3 AFY by 2011, including both indoor and outdoor use (ConSol 2010). Actual water consumption in the Chuckwalla Basin may be lower if water use for landscaping is lower than average.

If distributed evenly over the entire 304,000 acres of the Chuckwalla Valley Basin, the cumulative withdrawals from future foreseeable projects (if implemented at the same time) would result in an average decline in water levels of about 0.3 to 0.4 foot per year. However, the actual declines would not be distributed evenly and would be greatest at the extraction wells *for the indicated projects, including the proposed Project*. The decline in groundwater elevations in the western portion of the Chuckwalla Valley can be estimated based on modeling results reported by others. *The two nearest foreseeable future projects in the vicinity of the proposed Project are Eagle Crest Energy and Palen Solar Project.* AECOM (2010d) estimated that a drawdown of less than one foot would occur within a distance of about one mile from the wells used for construction water supply in the proposed Project. By contrast, Eagle Crest Energy (2008) estimated that groundwater drawdown of about six feet would occur at a distance of about one mile from the pumping wells used for its project. Eagle Crest did not specify the location of its extraction wells, but it can be assumed for discussion that the Eagle Mountain Pumped Storage Project wells could be located more than one mile from the construction wells of the proposed Project. Interference between the two wells would therefore be less than the sum of the two drawdowns, or less than seven feet. AECOM (CEC 2010) estimated a groundwater decline of about one foot at a distance of 2.3 miles from the Palen Solar Project. Since the Palen Solar Project is more than 10 miles from the proposed Project, the cumulative drawdown effects of these two projects are not expected to be substantial.

If all of the foreseeable projects are implemented, including the proposed Project, additional short-term groundwater withdrawals from the Chuckwalla Valley Groundwater Basin would be on the order of 8,000 to 10,000 AFY for several years, depending on the actual start and duration of construction. This amount of withdrawal would result in declining groundwater levels basin-wide during the construction period and local declines in water levels. The short-term cumulative impacts on groundwater storage in the basin would be cumulatively considerable because the proposed cumulative withdrawals would exceed the sustainable yield of the basin.

By comparison, increased demand by residential water users and associated commercial services would be minor. It is estimated that the average household in California will use about 0.3 AFY by 2011, including both indoor and outdoor use (ConSol 2010). Actual water consumption in the Chuckwalla Basin may be lower if water use for landscaping is lower than average.

The long-term cumulative impacts on groundwater would be considerably less, but would exceed the estimated current net rate of increase in storage of between 2,500 to 3,500 AFY (Table 4.17-1). Overall, groundwater levels would decline during the initial construction period, and then would continue to decline at a slower rate for the long-term. Because the quantities used in the estimate of the current basin water budget are uncertain, and may vary or fluctuate over time, the rate of long-term decline might be greater or less than estimated. *Overall, the long-term cumulative impacts on groundwater storage in the basin would be cumulatively significant and unavoidable because the proposed cumulative withdrawals would exceed the sustainable yield of the basin. However, the proposed Project would represent less than 0.01 percent of long-term water use in the basin, and would not represent a considerable contribution to long-term cumulatively significant impacts.*

The Colorado River exchanges water with the Palo Verde Mesa Basin, by way of the Palo Verde Valley Basin. The connection between the Palo Verde Mesa Basin and the Chuckwalla Valley Basin is through a narrow gap between the McCoy Mountains and the Mule Mountains. This gap is underlain by a bedrock surface at an elevation of about 320 feet amsl (Eagle Crest Energy Co. 2008). This buried bedrock surface acts as a threshold to the flow of groundwater from the Chuckwalla Valley Basin to the Palo Verde Mesa Basin. Flow to the Palo Verde Mesa Basin would be expected to decline if groundwater levels in the eastern Chuckwalla Valley Basin fall below this threshold elevation. Currently, the groundwater elevation in this boundary area is estimated to be only about 20 to 30 feet above the bedrock surface. It is estimated that only about 400 AFY of groundwater flows across this boundary into the Palo Verde Mesa Basin. Even if groundwater elevations fall significantly so that interbasin flow to the Palo Verde Mesa Basin is cut off, the effect on groundwater levels in the Palo Verde Valley beneath the Colorado River would be negligible, because groundwater recharge in those basins is mainly dependent on recharge from irrigation.

Several factors may moderate or enhance the overall cumulative impact of these projects. Pumping would not be distributed evenly across the basin, for example, and groundwater levels would likely decline more rapidly in some parts of the basin than others. Groundwater elevations at the western (upgradient) end of the basin are currently more than 200 feet higher than at the eastern end. Many of the projects, including the *proposed Project and the* Genesis Solar Project, are located at the eastern end of the basin, or in the western end of the Palo Verde Mesa Valley Basin, and would capture outflow from the Chuckwalla Valley that now flows into the Palo Verde Mesa Valley. Lowering water levels in the eastern Chuckwalla Basin may induce flow into the Chuckwalla Valley Basin from the Palo Verde Mesa. Lowering water levels in the western Chuckwalla Valley Basin may induce additional flows from the adjacent Orocopia Valley and Pinto Valley Basins. By increasing inflow to the Chuckwalla Valley Basin from the adjacent basins, water levels in the Chuckwalla Valley Basin may not decline as much as they otherwise would, but the cumulative effect of lowering water levels would extend to the adjacent basins.

The proposed Project is not expected to contribute to a cumulative surface water and drainage impact because the Project would have little or no impact on surface water and drainage near the Project site. Furthermore, no additional impacts are expected in the same area from other known or foreseeable projects.

The primary impact on groundwater expected from the *past, present, and reasonably* foreseeable projects in the region is to lower groundwater levels. Most basin recharge occurs along the range fronts at the margins of the basin and consists of relatively high-quality water. Groundwater quality tends to decrease to the east, where salts have accumulated in the lower parts of the basin. Groundwater quality is relatively good in the western part of the basin, with dissolved salts generally not exceeding secondary drinking water standards. The proposed Project will have little effect on water quality by itself. However, when combined with the Eagle Mountain Pumping Project, there is some potential for a decline in groundwater quality. The Eagle Mountain Pumping Project *and the Desert Harvest and Palen Solar Energy Projects*, will capture some of the highest-quality groundwater in the basin, representing water that is recharging the basin at the basin margin. The capture of the higher-quality water will result in a slight increase in the percentage contribution of poor-quality recharge to the basin from irrigation return flows and wastewater discharge. This impact will be greatest during the construction phase of the projects and will decrease later. However, the Eagle Mountain Pumped Storage Project would require nearly half of the estimated net basin inflow and would continue to capture a disproportionate amount of the higher-quality basin recharge. *Since the proposed Project is located in the western part of the Chuckwalla Valley basin also, it would contribute to a cumulative reduction in overall water quality. However, since the percentage of overall groundwater recharge represented by lower-quality sources would continue to be small, this reduction would not be a considerable contribution.*

The proposed Project is expected to result in a minor increase in runoff caused by reduced infiltration of storm water because of the effects of soil compaction. The proposed 1,200-acre Eagle Mountain Soleil Project is the only other nearby foreseeable project with a potential to contribute to similar reductions in storm water infiltration. The Desert Lily Soleil Project would involve about one-fourth the land area of the proposed Project and is not upstream or downstream of the proposed Project. *Therefore, the proposed Project would not considerably contribute to cumulative impacts associated with flooding.*

4.18 Other Requirements

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9), the NEPA Guidelines (40 CFR 1502.16), and CEQA Guidelines Section 15126.2 require a discussion of the following for implementation of the proposed Project or one of the action alternatives: the unavoidable adverse effects (NEPA) (known as significant environmental effects which cannot be avoided under CEQA); any irreversible or irretrievable commitments of resources which would be caused by the Project; the relationship between short-term uses and long-term productivity of the environment; and any growth-inducing impacts.

4.18.1 Unavoidable Adverse Effects

The analysis contained in Sections 4.2 through 4.17 indicates that the potential environmental effects from implementation of the proposed Project would cause significant impacts, although most of those can be reduced to a level that is below significant with mitigation measures. However, there are some impacts that cannot be reduced to less than significant and are unavoidable. These are summarized here.

Air Resources

On-site construction activities and construction-related traffic for the proposed Project (either Layout B or C) would produce ozone precursor emissions (reactive organic compounds and nitrogen oxides) and particulate matter emissions (PM_{10} and $PM_{2.5}$) that exceed SCAQMD regional emissions significance thresholds. Mitigation measures would reduce these emissions somewhat, but would not reduce emissions to a level less than the SCAQMD regional emissions significance thresholds. Consequently, construction-related emissions for the proposed Project would be an unavoidable significant air quality impact under all action alternatives (Alternatives 1, 2, and 3).

Cultural Resources

At this point in time, it is unknown if impacts on cultural resources can be satisfactorily mitigated to less than significant. The Programmatic Agreement (PA) and consultations are still in progress, as are NRHP-eligibility evaluations, treatment protocols, and CRHR-eligibility recommendation concurrence. Consultations may raise issues that cannot be resolved through mitigation measures. Prescribed treatments may resolve adverse effects under Section 106, however, given the scale and potential significance of several of the resources identified, impacts under NEPA may remain significant despite Section 106 mitigation measures. As such, the identified impacts of construction, operation, and decommissioning of all action alternatives are considered unavoidable significant impacts.

Visual Resources

Operation and maintenance of Alternatives 1, 2, and 3 would result in long-term significant and unavoidable permanent adverse impacts on scenic vistas, visual character/quality (local setting); artificial light; and local plans, policies, and regulations. Also, operation and maintenance of Alternatives 1, 2, and 3 is incompatible with Riverside County General Plan policies.

Alternatives 1, 2, and 3 would transform the relatively natural desert landscape into a developed site with an industrial facility. The site would no longer be covered with desert vegetation. The openness of the site would be reduced because of the presence of buildings and structures. Even though night lighting would be limited, artificial lighting would be introduced to the area, thereby decreasing nighttime darkness. Because this area is highly valued for its nighttime darkness, additional nighttime light would be visible. There would be a high degree of contrast between the relatively undeveloped valley and the highly developed Project area. The intensity of adverse impacts would be reduced with implementation of mitigation measures described in Section 4.16; however not all impacts would not be reduced to less than significant because the size, composition, style, color, and location of Project components would still be a conspicuous element of the landscape.

4.18.2 Irreversible and Irretrievable Commitments of Resources

NEPA and CEQA require that the discussion in an EIS or EIR include identifying any irreversible or irretrievable commitments of resources that would be caused by the proposal should it be implemented. A resource commitment is considered irreversible when direct and indirect effects from its use limit future use options. Irreversible commitments apply primarily to nonrenewable resources, such as cultural resources and also to those resources that are renewable only over a long period of time such as soil productivity or forest health. A resource commitment is considered irretrievable when the use or consumption of the resource is neither renewable nor recoverable for future use. Irretrievable commitments apply to loss of production or use of natural resources.

As discussed in Section 4.18.1 (Unavoidable Adverse Effects), construction and operation of the proposed Project under Alternatives 1, 2, and 3 would detract from the local setting because the Project would completely transform the relatively natural site into a developed site with an industrial facility. In addition, the Gen-Tie Line and Red Bluff Substation (including the tower at the Desert Center Communications Site) would result in a long-term change to the views in the project area.

Implementation of the proposed Project would require the permanent loss of approximately *4,176* acres of vegetation and habitat. Assuming that the mitigation measures for biological resources required in this EIS are implemented, project-induced loss of vegetation and habitat would be less than significant. Nevertheless, the area needed for the Project would no longer be available for other uses, as might be allowed by the BLM. This is considered an irretrievable commitment of a resource.

All of the cultural resources sites within the permanent disturbance area of the Project would be directly affected, resulting in a loss of information about history and prehistory, and degrading the preservation value of these resources. These sites include sites that contribute to the potential DTC-CAMA Historic District as well as the North Chuckwalla Petroglyph District. As such, the whole of these districts would be similarly affected by the Project. Even with mitigation measures, this is considered an irretrievable commitment of resources.

4.18.3 Relationship Between Short-Term Uses and Long-Term Productivity of the Environment

NEPA also requires consideration of long-term impacts and the effect of foreclosing future options; that is, whether implementation of the proposed Project and its short-term use would sacrifice a resource that might benefit the environment in the long term. Discussion of the relationship between short-term uses of the environment and long-term productivity of the environment associated with implementation of the proposed Project is discussed below.

For purposes of this analysis, short-term refers to the period of time during which the proposed Project is under construction and long-term refers to the period of time after construction during which impacts from the proposed Project may still affect the environment. *Because of the long time period necessary for natural revegetation to occur in the desert, both short-term and long-term impacts are considered permanent for this analysis.*

The alternative Desert Sunlight projects represent a trade-off between direct short term unavoidable adverse criteria pollutant emissions during facility construction and indirect long-term greenhouse gas emission reductions during project operations. Indirect climate change benefits would occur in terms of greenhouse gas emissions avoided by displacing alternative power generation sources (which include fossil fuel combustion sources) with solar energy sources.

Other than the significant and unavoidable impacts described in Section 4.18.1, there would be no permanent loss of the overall productivity of the environment from the implementation of the proposed Project.

4.18.4 Growth-Inducing Effects

Section 15126.2 (d) of the CEQA Guidelines requires the evaluation of economic, population, or housing growth in the surrounding environment with implementation of the proposed Project. Induced growth is growth that exceeds planned growth in the surrounding area and that results from new development that would not have taken place if the proposed Project had not been implemented. CEQA requires a discussion of the ways in which a proposed project may foster economic or population growth, or the construction of additional housing (directly or indirectly) in the surrounding environment. The discussion must also address how a proposed project may remove obstacles to growth, or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if a project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies.

Growth Caused by Direct and Indirect Employment

As discussed in Section 4.13, the majority of the Project construction workforce would be employed by residents of Riverside County. The Solar Farm construction workforce is expected to average approximately 350 to 400 craft workers over the 26-month construction period, with a peak on-site craft workforce of approximately 500 craft workers during Months 5 through 16 of the construction period. In addition to craft workers, an average of 40 management and non-craft employees are expected on site. *Another 10 construction workers on average would be required for the construction of the on-site substation. The peak construction worker employment for this component of the project would occur in Months 6 to 7 when a peak of 30 employees would be needed for the substation construction.*

This equates to an average of *400* to *450* and a peak of *570* total on-site workers for construction of the proposed Project. The construction workforce would be recruited from within Riverside County and elsewhere in the surrounding region as much as practicable.

For the Gen-Tie Line, the workforce is expected to average 25 employees over the 20-month Gen-Tie construction period, with a peak of approximately 60 employees. Employment of construction personnel would be beneficial to local businesses in adjacent communities through increased expenditure of wages for goods and services.

For Red Bluff Substation, a total workforce of 280 would be required for all of the substation components, with an average of 25 personnel on-site each day. The workforce would be contracted or derived from SCE construction crews, and, therefore, would generate minimal additional construction employment when compared to the income and employment region of influence (ROI).

The peak level of employment for construction of these facilities would represent about 0.78 percent of construction employment in Riverside County. Because the number of construction workers required represents such a small portion of the regional available labor force, it is assumed that minimal population in-migration would occur as a result of construction activities associated with the proposed Project. Therefore, notable impacts would not occur to existing population levels or employment distribution within the study area from the proposed Project.

For all project components, employment of construction personnel would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Construction personnel would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy.

Operation and maintenance of the proposed Project would employ between 10 and 15 full-time employees in shifts, which would be a socioeconomic benefit that would not generate population growth in Riverside County beyond the capacity of available housing or public services and facilities. There would be no new operations workforce associated with the Gen-Tie Line. No additional employment would occur for the operation and maintenance of the Red Bluff Substation and its associated components, including the telecom site.

The proposed Project would not involve the development of additional housing or result in direct population growth. There is a slight chance that because the operation and maintenance of the proposed Project would employ between 10 and 15 workers long-term, some economic and population growth could be gained if unemployed workers in the surrounding area were to become employed in the operation and maintenance of the proposed Project or if the 10 to 15 workers were to leave jobs to work at the proposed Project, opening their current jobs to other workers. The small number of permanent employees would not have a significant economic growth-inducing impact on the surrounding environment.

Growth Related to Provision of Additional Electric Power

As described in Chapter 1, the primary purpose and need, and objectives for the proposed Project include:

- The BLM's purpose and need for the Proposed Action is to respond to Sunlight's application under Title V of the FLPMA (43 USC 1761) for a ROW grant to construct, operate, maintain, and decommission a utility-scale 550-MW PV solar energy facility (Solar Farm), Gen-Tie Line, and a 500/220-kV substation on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modifications, or deny issuance of a ROW grant to

Sunlight for the proposed Project and the related assignment of any ROW grant for the substation to SCE. The BLM's actions will also include concurrent consideration of amending the CDCA Plan of 1980, as amended;

- The DOE's purpose and need for agency action is to comply with its mandate under EPAct 2005 by selecting eligible projects that meet the goals of the act;
- Sunlight's fundamental objective for the Project is to construct, operate, maintain and eventually decommission a 550-MW PV energy facility and associated interconnection transmission infrastructure, and to facilitate SCE's construction and operation of a substation in order to provide renewable electric power to California's existing transmission grid to help meet federal and state renewable energy supply and GHG emissions reduction requirements; and
- SCE's primary objectives are to (1) respond to interconnection requests as part of the LGIP from generators in the Desert Center area by constructing a substation to interconnect with the DPV 500-kV transmission line, and (2) provide safe and reliable electrical service consistent with the North American Electric Reliability Corporation (NERC), Federal Energy Regulatory Commission (FERC), CAISO, and SCE's planning design guidelines and criteria.

As such, the Project is not intended to supply power-related to growth for any particular development, either directly or indirectly, and would not result in direct growth-inducing impacts. However, the proposed Project could facilitate growth indirectly through the additional generation of electric power in the Southern California region. By increasing power generation in Southern California, the proposed Project could be considered growth-inducing. However, in general, Southern California and, in particular, Riverside County has experienced rapid population growth over the last 20 years. Growth is expected to continue with or without implementation of the proposed Project. Therefore, implementation of the proposed Project would be in response to anticipated future load growth and would be consistent with current regional planning projections.

CHAPTER 5 – CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

5.1 INTRODUCTION

This section describes the consultation, coordination and public participation activities that are on-going for the proposed Desert Sunlight Solar Farm (DSSF) Project.

5.2 INTERRELATIONSHIPS BETWEEN AGENCIES (OTHER FEDERAL, STATE, LOCAL, NATIVE AMERICAN)

There are a number of formal and informal agreements in place that provide guidance on the relationship between BLM, as Lead Agency on the Environmental Impact Statement (EIS), and other agencies. These agreements are summarized here.

5.2.1 BLM – DOE Memorandum of Understanding

The U.S. Department of Energy (DOE) is a cooperating agency on the EIS pursuant to a Memorandum of Understanding (MOU) between DOE and BLM. DOE will consider Sunlight's application for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EP Act 05), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, Public Law (PL) 111-5 (the "Recovery Act").

5.2.2 BLM – CPUC Memorandum of Understanding

The California Public Utilities Commission (CPUC) has discretionary authority to issue a Permit to Construct (PTC) for SCE's proposed Red Bluff Substation, evaluated herein as a portion of the Project. As allowed by the California Environmental Quality Act (CEQA) Guidelines Section 15221, the CPUC intends to use this EIS to provide the environmental review required for its approval of SCE's PTC application under CEQA once that application is filed. The CPUC and BLM have signed an MOU that defines the relationship of the two agencies, and identifies CPUC as a cooperating agency with the BLM. Following preparation of the EIS by BLM, the CPUC will determine whether the EIS complies with the requirements of CEQA and can, therefore, be used to support its decision on the substation.

5.2.3 BLM – SHPO Programmatic Agreement

The BLM complies with NHPA through a Nationwide Programmatic Agreement (NPA) and, in the state of California, a 2007 State Protocol Agreement. The Protocol Agreement (Protocol) is a modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state. This Protocol allows BLM's cultural resource staff to act on the SHPO's behalf under limited circumstances. BLM may define areas of potential effect (APEs) and the required level of inventory efforts, and make determinations of eligibility and the effects of undertakings without consulting with SHPO.

However, these are general agreements, and in order to provide more specific guidance regarding evaluations, mitigations and Native American consultations under the NHPA Section 106 process, BLM, SHPO and the Consulting Parties are developing a *Memorandum of Agreement (MOA)* for

NHPA compliance. The *MOA* will detail methods to evaluate identified cultural resources for NRHP eligibility and impacts. In addition, appropriate mitigation measures for specific site types will be identified. These measures would be carried out prior to project initiation. Once the *MOA* is signed, compliance with Section 106 of the NHPA will be considered complete. *Execution of the MOA would occur prior to BLM issuing the Record of Decision. A draft of the MOA is included in Appendix K of the FEIS.*

5.2.4 Native American Consultation

The BLM is responsible for consultation with Native American tribes for the purpose of identifying sacred sites and other places of traditional religious and cultural importance, and to incorporate appropriate mitigation measures in the event such sites are located during construction. Consultation with tribes has been initiated and will continue throughout the NEPA and Section 106 compliance processes.

ECORP contacted the Native American Heritage Commission to request a list of tribal contacts for the Project and to determine whether the Native American Heritage Commission's Sacred Lands File included any cultural resources within or near the Project area. Three separate searches of the Sacred Lands File were conducted: in April 2009, January 2010 and March 2010. These searches revealed no sensitive or sacred Native American resources in the vicinity of the Project areas that could be affected by the proposed Project. In addition to ECORP's work, the BLM Palm Springs-South Coast Field Office initiated consultation with federally recognized Indian tribes associated with the Project area through letters dated April 15, 2010 (Kline 2010). These consultations seek to identify issues of concern for the tribes, as well as sacred sites, traditional use areas, or TCPs that may be affected by the Project. At this time, the BLM has not received replies to consultation requests, and no traditional resources or sacred sites have been identified within or near the Project area. The BLM will continue Indian tribal consultations, the results of which will be incorporated into the Memorandum of Agreement for the Project, as discussed above. The fourteen tribes being consulted are Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Chemehuevi Indian Tribe, Colorado River Indian Tribes, Cocopah Tribe, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Morongo Band of Mission Indians, Pauma Band of Luiseño Indians, Ramona Band of Mission Indians, San Manuel Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, and the Twenty-Nine Palms Band of Mission Indians.

5.2.5 Coordination with USFWS and CDFG

The BLM will engage the US Fish and Wildlife Service (USFWS) in the Endangered Species Act (ESA) Section 7 consultation process concurrently with the NEPA review process and will obtain incidental take statement authority, as necessary. Biological surveys for federally-listed species have been conducted for the proposed Project site, including the proposed transmission corridors, and substation locations.

California Endangered Species Act (CESA) review and approval will be required for impacts to State-listed species. Focused biological surveys for sensitive species have been conducted for all potential project areas. The California Department of Fish and Game (CDFG) is expected to complete a Consistency Determination based upon USFWS's Biological Opinion.

5.2.6 Other Agency Coordination

The Applicant is coordinating with other federal agencies, including the US Army Corps of Engineers, regarding potential project approvals and any associated NEPA compliance requirements. The Applicant is also coordinating with state and local agencies, including the California Department of

Transportation, Metropolitan Water District of Southern California, California Regional Water Quality Control Board, South Coast Air Quality Management District, and Riverside County, regarding potential project approvals and any associated CEQA compliance requirements.

5.3 PUBLIC PARTICIPATION SUMMARY

This section describes the opportunities for public review and comment on the EIS. The BLM, DOE, and CPUC rely on the input of the public to help identify key issues, suggest a range of alternatives, comment on the environmental analysis, and suggest appropriate mitigation.

5.3.1 Scoping Process

Scoping Requirements

The BLM authorization of a Right-of-Way (ROW) grant for the Project would require a resource management land use plan amendment (PA) to the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended. The BLM prepared the DEIS to inform the public about the proposed Project and to meet the needs of federal, state, and local permitting agencies considering the Project. Scoping is required by NEPA pursuant to the Council on Environmental Quality (CEQ) (40 CFR 1501.7) regulations. The process ensures that significant issues, alternatives, and impacts are addressed in environmental documents and determines the degree to which these issues and impacts will be analyzed in the EIS.

The scoping process includes the following:

- Publishing the Notice of Intent (NOI) to prepare an EIS.
- Conducting public scoping meetings and agency consultation meetings.
- Documenting all public and agency comments received for the proposed Project in a Scoping Summary Report (Appendix A).

Each of these components is discussed below.

Notice of Intent

In compliance with NEPA, the BLM published an NOI to prepare *an EIS* on January 13, 2010, in the *Federal Register*, Volume 75, Number 8. Publication of the NOI began a 30-day scoping period that ended February 12, 2010. The BLM established a website with Project information describing the various methods for providing public comment on the Project, including an e-mail address where comments could be sent electronically.

Public Scoping Meeting

Notification for a public scoping meeting, to be held on January 28, 2010, was posted on BLM's website and sent via email to the local newspaper, the *Desert Sun*, on January 13, 2010. In addition, notices were sent via certified mail to Responsible and Trustee Agencies under CEQA, all landowners within 300 feet of the project boundary, and other interested parties.

The public scoping meeting was held on January 28, 2010, at the University of California, Riverside's Palm Desert Graduate Center located at 75-080 Frank Sinatra Drive in Palm Desert, California. First Solar Development, Inc., delivered a presentation describing the project. Presentations describing the environmental review process were delivered by members of the BLM. Twenty-two attendees were documented by signing in on a voluntary sign-in sheet.

Fourteen comment letters were received during the scoping comment period that ended on February 12, 2010. Comments were received on the following categories: purpose and need, alternatives development, air resources (air sheds), water resources (surface and groundwater), biological resources (vegetation and wildlife), cultural resources, visual resources, land use and special designations, public health and safety, noise and vibration, recreation, socioeconomics, environmental justice, and cumulative impacts. A summary of these comments is provided in the Scoping Summary Report (Appendix A). *Comments received during the scoping process were addressed in the analysis of impacts in the DEIS.*

Additional Public Outreach Activities

First Solar has engaged in additional public outreach for the Desert Sunlight Project to further promote active public participation in the development plans for the project. These activities include meetings held with individuals and groups that commented on the project, additional workshops held in the local community to provide direct access for the community to ask questions and comment on the project, and discussions with to local, state and federal government officials and meetings to individual groups. Based on the discussions during these activities, First Solar conducted additional environmental studies to help further assess potential environmental effects of the Project, considered additional alternatives to provide a greater range of reasonable alternatives for the project, and adjusted the boundaries for the project alternatives to lessen the potential environmental impacts of the Project. Information collected or developed as a result of these meetings was provided to the BLM and has been incorporated into *the DEIS*.

Scoping Summary Report

The BLM produced a scoping report in February 2010, which contained information received during the public scoping comment period. Comments received during the scoping period were grouped into the following three categories:

- Issues or concerns that could be addressed by effects analysis;
- Issues or concerns that could develop an alternative or a better description or qualification of the alternatives; and
- Issues or concerns outside the scope of the EIS.

5.3.2 Draft EIS Circulation and Public Meetings

The BLM published a Notice of Availability (NOA) for public and agency review and comment of the Desert Sunlight Solar Farm Project DEIS on August 27, 2010 in the Federal Register, Volume 75, Number 166. The 90-day comment period ended November 26, 2010. One hundred forty-seven comment letters were received.

During the comment period, three public meetings were held to solicit input from members of the communities and others in the vicinity of the Project. The meetings were held as follows: 1) October 20, 2010 at the University of California-Riverside, Palm Desert Campus, Palm Desert, CA; 2) October 21, 2010 at the Lake Tamarisk Community Center, Desert Center, CA; and 3) November 4, 2010 at the Joshua Tree Community Center, Joshua

Tree, CA. In addition, the public were invited to submit their comments through BLM's web site, by mail, e-mail, or facsimile. Comments on the DEIS were considered and addressed in the Final PA/EIS.

5.3.3 Final EIS and Administrative Remedies

BLM and EPA's Office of Federal Activities will publish NOAs for the FEIS in the Federal Register when the document is ready to be released to the public. The NOA (to be published by EPA in the Federal Register) will initiate a 30-day protest period on the proposed PA to the Director of the BLM in accordance with 43 CFR 1610.5-2.

After any protests have been resolved, BLM may publish an Approved Plan Amendment and a Record of Decision (ROD) on the Project Application. Publication and release of the ROD would serve as public notice of BLM's decision on the Project Application which is appealable in accordance with 43 CFR Part 4.

5.4 PUBLIC COMMENT PROCESS

BLM distributed the DEIS for the DSSF for public and agency review and comment on August 27, 2010. The comment period ended November 26, 2010. In total, 147 comment letters were received from individuals, agencies, and organizations. Table 5-1 provides a list of the comment letters received by a member of the public, agency, or organization, along with an assigned letter number for each comment letter. All comment letters are provided in Appendix M. The responses to comments are provided in Appendix N. Appendix N contains: 1) a list of all individuals, agencies, and organizations that provided written comments on the DEIS; 2) common responses to comments that raised similar issues or environmental concerns; and 3) individual responses to comments.

Table 5-1 is a list of all individuals, agencies, and organizations that provided written comments on the DEIS. As mentioned above, each comment letter was assigned a unique number when it was received.

Table 5-1
Commenter on the Desert Sunlight Solar Power Project
Draft Environmental Impact Statement

Letter Number	Commenter	Letter Available in Appendix M, Page
1	Jeff Randall, Individual	M-5
2	Mary Zeiler, Individual	M-6
3	Supporters of Desert Sunlight Petition	M-7
4	Sign-in Sheet	M-17
5	Ali Baba Farzaneh, Individual	M-23
6	Bob Hargreaves, Individual	M-24
7	Coachella Valley Economic Partnership	M-25
8	Dennis Larney, Individual	M-26
9	Gerald Budlong, Individual	M-27
10	Graeme Donaldson, Individual	M-28
11	Kathy Gottberg, Individual	M-29
12	Larry McLaughlin, Individual	M-30
13	LR Sanders, Individual	M-31
14	Assembly Member V. Manuel Perez	M-32
15	Sign-in Sheet	M-34
16	Anco Blazev, Individual	M-39
17	Dale Jenneskens, Individual	M-42
18	Dan Allen, Individual	M-45
19	Native American Heritage Commission	M-47

Table 5-1 (continued)
Commenter on the Desert Sunlight Solar Power Project
Draft Environmental Impact Statement

Letter Number	Commenter	Letter Available in Appendix M, Page
20	Anco Blazev, Individual	M-52
21	George Hepker, Individual	M-53
22	George Hepker, Individual	M-54
23	Alan Beattie, Individual	M-55
24	Kim Bauer, Individual	M-57
25	Anco Blazev, Individual	M-58
26	Anco Blazev, Individual	M-60
27	Jim Turney, Individual	M-61
28	Cynthia Cox, Individual	M-62
29	Carol Gerratana, Individual	M-65
30	Cindy Zacks, Individual	M-66
31	Mearl A. Rose, Individual	M-68
32	Ramon Alviso Mendoza, Individual	M-71
33	R. Ploss, Individual	M-73
34	Beals Steve, Individual	M-76
35	Betsy Foran, Individual	M-78
36	Debbie Burgett, Individual	M-80
37	Eric Mueller, Individual	M-83
38	Gary Hunt, Individual	M-86
39	Jason Burnham, Individual	M-89
40	Les Starks, Individual	M-92
41	Richard Worthington, Individual	M-94
42	Wendy Hunt, Individual	M-96
43	Jill Giegerich, Individual	M-98
44	Penny Kemp, Individual	M-101
45	Rebecca Bueller, Individual	M-103
46	Vicki Perizzolo, Individual	M-105
47	Barbara Buckland, Individual	M-109
48	Joanne Flory, Individual	M-111
49	Cynthia Anderson, Individual	M-114
50	Virgila Weeks Hawthorne, Individual	M-117
51	Alex Mintzer, Individual	M-118
52	Ernest Goiten, Individual	M-119
53	David Halligan, Individual	M-122
54	Karen Tracy, Individual	M-124
55	C.B Wolf, Individual	M-127
56	State of California, Public Utilities Commission	M-129
57	City of Indian Wells, California	M-237
58	College of the Desert	M-239
59	David Halligan, Individual	M-241
60	Cleona Jenneskens, Individual	M-243
61	Dale Jenneskens, Individual	M-244
62	Geo. Donaldson, Individual	M-245
63	John Beach, Individual	M-246
64	R&M Johnson, Individual	M-248
65	Rick Estes, Individual	M-252
66	Environmental Commons	M-253
67	John Beach, Individual	M-261

Table 5-1 (continued)
Commenter on the Desert Sunlight Solar Power Project
Draft Environmental Impact Statement

Letter Number	Commenter	Letter Available in Appendix M, Page
68	JoAnn Dean, Individual	M-262
69	Ron Brinkley, Individual	M-263
70	Walter Green, Individual	M-279
71	Michael Silvey, Individual	M-280
72	Bruce Ray, Individual	M-281
73	Celia Beauchamp, Individual	M-282
74	John Beach, Individual	M-283
75	National Parks Conservation Association	M-288
76	Shaun Gonzales, Individual	M-295
77	Karen Berry, Individual	M-303
78	Michele Mooney, Individual	M-307
79	William Eskin, Individual	M-308
80	B.E. Singer, Individual	M-310
81	Caltrans District 8	M-311
82	Individual (to remain anonymous)	M-314
83	JVIndividual	M-316
84	La Cuna de Aztlan Sacred Sites Protection Circle	M-317
85	Brendan Hughes, Individual	M-321
86	Diane Mossbager, Individual	M-322
87	Lorenzo Romero, Individual	M-323
88	Marian Livingood, Individual	M-324
89	Raymond Kelso, Individual	M-325
90	Suzanne Ragsdale, Individual	M-326
91	Tex Whitson, Individual	M-327
92	Dennis Morrison, Individual	M-328
93	Defenders of Wildlife, Natural Resources Defense Council, Sierra Club	M-329
94	Jerry Grey, Individual	M-341
95	Janell Harder, Individual	M-342
96	Cynthia Green, Individual	M-343
97	Warren Dean, Individual	M-345
98	Edith Arizmendi, Individual	M-346
99	Gene Oliphant, Individual	M-347
100	Jonathan Levin, Individual	M-348
101	Ken and Pattie Stamp, Individual	M-349
102	Michael Rhoades, Individual	M-350
103	South Coast Air Quality Management District	M-351
104	Center for Biological Diversity	M-357
105	Citizens for the Chuckwalla Valley	M-393
106	U.S. Environmental Protection Agency	M-422
107	First Solar	M-440
108	U.S. Fish and Wildlife Service	M-473
109	Johnney/Timothy Coon/Anderson, Individual	M-479
110	Kevin Emmerich, Individual	M-480
111	Kaiser Ventures LLC	M-515
112	Laura Cunningham, Individual	M-520
113	Mary Zeiler, Individual	M-532
114	National Park Service	M-534
115	Patrick Poole, Individual	M-543

Table 5-1 (continued)
Commenter on the Desert Sunlight Solar Power Project
Draft Environmental Impact Statement

Letter Number	Commenter	Letter Available in Appendix M, Page
116	The Wilderness Society	M-545
117	Victor Stewart, Individual	M-557
118	Western Lands Project	M-558
119	Chris Clarke, Individual	M-562
120	enXco	M-566
121	Jared Fuller, Individual	M-568
122	Western Watersheds Project	M-569
123	Barbara Daddario, Individual	M-577
124	Claudia Sall, Individual	M-578
125	Riverside County Fire Department	M-581
126	Renee Castor, Individual	M-584
127	Southern California Edison	M-587
128	Southern California Edison	M-611
129	Metropolitan Water District of Southern California	M-614
130	Chris Crow, Individual	M-626
131	Paul Smith, Individual	M-627
132	Rebecca Unger, Individual	M-628
133	Southern California Desert Video Astronomers	M-629
134	Tammie Dye, Individual	M-633
135	Richard DeLashmit, Individual	M-634
136	Ken Statler, Individual	M-635
137	Requests to not publish, Individual	M-638
138	Riverside County Planning Department	M-640
139	Diana Millikan, Individual	M-689
140	Lois Donaldson, Individual	M-690
141	Ed and Carol Schlauch, Individual	M-691
142	"We Support Desert Sunlight" petition	M-692
143	Ron Brinkley, Individual	M-697
144	Claudia Sall, Individual	M-706
145	Stephen J Wright, individual	M-711
146	Colorado River Board of California	M-713
147	Department of the Navy	M-718

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BLM personnel from the Palm Springs South Coast Field Office and California Desert District Office involved in the preparation and review of the EIS are listed here.

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The DEIS was prepared by Tetra Tech. Team members are listed below, along with their role in the project and education, as appropriate.

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Steve Hoerber	22	GIS Manager/Analyst	AA, General Education
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Name	Years of Experience	Role/Responsibility	Education
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The FEIS was prepared by ESA. Team members are listed below, along with their role in the project and their education.

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Chris Knopp	*8*	*Technical editor*	*BS, Environmental Science*
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Dylan Duverge	*5*	*Assisted in responding to public and internal comments (visual)*	*BA, Environmental Studies*
Janna Scott	*11*	*Assisted in responding to public and internal comments*	*J.D.*
Jack Hutchison	*30*	*Assisted in responding to public and internal comments (traffic)*	*M.Eng, Transportation Engineering*
Gregg Simmons	*36*	*Assisted in responding to internal comments*	*BS, Forest Management*
Gary Stumpf	*34*	*Assisted in responding to public and internal comments (cultural)*	*MA, Anthropology*
Ted Cordery	*34*	*Assisted in responding to public and internal comments (biology)*	*BS, Wildlife Management, Range Management emphasis*

Name	Years of Experience	Role/Responsibility	Education
Terry O'Sullivan	40	Assisted in responding to public and internal comments (special designations, recreation)	BS, Natural Resource Management
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Eric Schniewind	15	Assisted in responding to public and internal comments (geology and soils)	B.A., Geological Sciences
Nik Carlson	16	Assisted in responding to public and internal comments (socioeconomics)	M.P.P., Public Policy
Jack Gorzeman	30	Project Manager	BS, Landscape Architecture MA, Regional and City Planning
Robert Prohaska	26	Project Director	BS, Geology MS, Environmental Management

5.7 DISTRIBUTION LIST

Federal Agencies:

United States Army Corps of Engineers
United States Fish and Wildlife Service

State and Local Agencies:

Blythe Chamber of Commerce
California Department of Fish and Game
California Department of Parks and Recreation
California Office of Historic Preservation-California Historic Resources Information System
California Public Utilities Commission (CPUC)
California State Historic Preservation Officer (SHPO)
Caltrans District 8
City of Blythe Planning Department
County of Riverside Planning Department
Palo Verde Irrigation District
South Coast Air Quality Management District
State School Lands
State Water Resources Control Board
Water Quality Control Board Colorado River Basin District

Native American Tribes

Agua Caliente Band of Cahuilla Indians
Augustine Band of Cahuilla Mission Indians
Cabazon Band of Mission Indians

Chemehuevi Indian Tribe
Colorado River Indian Tribes
Cocopah Tribe
Fort Mojave Indian Tribe
Fort Yuma Quechan Indian Tribe
Morongo Band of Mission Indians
Pauma Band of Luiseño Indians
Ramona Band of Mission Indians
San Manuel Band of Mission Indians
Torres-Martinez Desert Cahuilla Indians
Twenty-Nine Palms Band of Mission Indians

Other Organizations:

Apostolic Gates of Praise
Combined Resources, Inc.
Fraternal Order of the Eagles
Golden Monkey, Inc.
Loma Linda University, Office of the Provost
Union Steel Company

Individuals:

70 individual property owners

CHAPTER 6—REFERENCES

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CHAPTER 7 – GLOSSARY AND LIST OF ACRONYMS

7.1 GLOSSARY

Air Basin. A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region. A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvial Fan. Fan shaped material of water deposited material.

Ambient Air Quality Standards. A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air. Outdoor air in locations accessible to the general public.

Area of Critical Concern (ACEC). An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

Attainment Area. An area that has air quality as good as or better than a national or state ambient air quality standard. An single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

A-Weighted Decibel (dBA). A frequency-weighted decibel scale that approximates the relative sensitivity of human hearing to different frequency bands of audible sound.

Cancer. A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO). A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Carcinogen. A chemical substance or type of radiation that can cause cancer in living organisms.

Clean Water Act (CWA). Provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Climate. A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL). A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Criteria Pollutant. An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat. Habitat designated by the US Fish and Wildlife Service under Section 4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Resources. Locations of human activity, occupation, use, or those of importance to a group. They include expressions of human culture and history in the physical environment, such as archaeological sites, buildings, structures, objects, districts, or other places.

C-Weighted Decibel (dBC). A frequency-weighted decibel scale that correlates well with the physical vibration response of buildings and other structures to airborne sound.

Day-Night Average Sound Level (Ldn). A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

De Minimis Level. A threshold for determining whether various regulatory requirements apply to a particular action or facility. In an air quality context, de minimis thresholds typically are based on emissions, facility size, facility activity levels, or other indicators.

Decibel (dB). A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Desert Pavement. A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Desert Wildlife Management Area (DWMA): areas established in the NECO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Equivalent Average Sound Pressure Level (Leq). The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Ethnohistoric Resources. Areas used by Native Americans following exploration and settlement by non-Native Americans. Sites or artifacts of particular significance to modern Native Americans are often kept secret by those groups to protect the sites from disturbance, looting, overuse, or other defamations.

Fast-track Projects*. Fast-track projects are those where the companies involved have demonstrated to the BLM that they have made sufficient progress to formally start the environmental review and public participation process. These projects are advanced enough in the permitting process that they could potentially meet deadlines for economic stimulus funding under the American Recovery and Reinvestment Act of 2009. The fast-track process is about focusing BLM staff and resources on the most promising renewable energy projects, not about cutting corners, especially when it comes to environmental analyses or opportunities for public participation*

Fossorial. Adapted to digging and life underground.

Geomorphic Setting. Resembling the earth or its shape or configuration of the earth's surface.

Greenhouse Gas. A gaseous compound that absorbs infrared radiation and re-radiates a portion of hat back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

Groundwater Protection Areas and Wellhead Protection. The overall concept behind wellhead protection is to develop a reasonable distance between point sources of pollution and public drinking water wells so that releases from point sources are unlikely to impact groundwater from the well. The California Department of Public Health established the Drinking Water Source Assessment and Protection Program, which guides local agencies in protecting surface water and groundwater that are sources of drinking water.

Habitat. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP). Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz). A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Invasive Species. An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate. Non-linear, isolated archaeological features without associated artifacts.

Maintenance Area. An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Maximum Sound Pressure Level (Lmax). The highest decibel level measured during a stated or implied monitoring period or noise event. The Lmax value recorded by a sound level meter depends on the time factor used for integration of instantaneous sound pressure level measurements. For most modern sound meters, this is 1 second when the instrument is set for the slow sampling rate and 1/8 second when the instrument is set for the fast sampling rate

Memorandum of Understanding. A formal document describing an agreement between parties.

Mutagen. A chemical substance or physical agent that causes a permanent change to the genes of a cell.

National Flood Insurance Program (NFIP). The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing flood hazard boundary maps, flood insurance rate maps, and flood boundary and floodway maps.

National Pollutant Discharge Elimination System (NPDES). The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act.

National Register of Historic Places (NRHP). Administered by the U.S. National Parks Department, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Nationwide Programmatic Agreement (PA). A document that details the terms of a formal, legally binding agreement between one party and other state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

Native Americans. Indigenous peoples of the western hemisphere.

Nitric Oxide (NO). A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2). A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx). A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nonattainment Area. An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

Organic Compounds. Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Ozone (O3). A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth's surface.

Particulate Matter. Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Peak particle velocity. A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Percentile Sound Pressure Level (Lx). The decibel level exceeded x percent of the time during a monitoring episode.

Peroxyacetyl Nitrate (PAN). A toxic organic nitrate compound formed by photochemical reactions in the atmosphere. PAN is a strong respiratory and eye irritant, and a strong necrotic agent affecting plant tissues. Also called peroxyacetic nitric anhydride. A number of similar organic nitrate compounds are formed along with PAN during photochemical smog reactions. In relatively remote rural areas PAN and related organic nitrates, together with nitric acid, are often the dominant atmospheric nitrogen compounds generated by photochemical smog reactions.

pH (parts hydrogen). The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.

PM_{10} (inhalable particulate matter). A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM_{10} is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

$PM_{2.5}$ (fine particulate matter). A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, $PM_{2.5}$ is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor. A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric Resources. Those attributed to Native American groups who occupied the region before contact with Europeans; historic resources are those associated primarily with Europeans and Americans but also include resources of Native Americans following contact.

Protocol Agreement (Protocol). A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Reactive Organic Compounds (ROC). The most technically accurate term for the organic precursors of ozone and other photochemically generated pollutants. The more commonly used term is “reactive organic gases (ROG)”.

Reactive Organic Gases (ROG). Organic compounds emitted into the air which have photochemical reaction rates sufficient to be considered precursors of ozone. Organic compounds which are not considered reactive in the lower atmosphere include methane, ethane, acetone, methyl acetate, carbonic acid, ammonium carbonate, methylene chloride, methyl chloroform, and numerous fully-saturated chloro-flourocarbon compounds. The term “reactive organic compounds” (ROC) would be technically more accurate, since many of the compounds of concern may be present in both gaseous and aerosol states (e.g., as atmospheric aerosols or as liquid films condensed on atmospheric particles in dynamic equilibrium with gas phase vapors). But the acronym ROC is not in common use, and there are far too many acronyms already in use for organic compound emissions.

Riparian. Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Scenic Vista. A distant view of a broad area that is visually or aesthetically pleasing.

Special Status Species. Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Implementation Plan (SIP). Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB). Created in 1967, joint authority of water allocation and water quality protection enables the State Water Board to provide comprehensive protection for California's waters. The mission of the nine Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.

Sulfur Dioxide (SO2). A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

Sulfur Oxides (SOx). A group term meaning the combination of sulfur dioxide and sulfur trioxide; treated as a precursor of sulfur dioxide, sulfate particles, and atmospheric sulfuric acid.

Teratogen. A chemical substance or physical agent that causes birth defects through abnormal development or malformation of a fetus.

Total Maximum Daily Load (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

Toxic. Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties. Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity.

US Secretary of the Interior. The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Vehicle Miles Traveled (VMT). The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Visual character and quality of a site and its surroundings. The combination of visual resources in a specific area that contribute to the overall local setting.

Wetlands. Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wildlife corridor: a strip of land that aids in the movement of species between disconnected areas of their natural habitat.

7.2 LIST OF ACRONYMS

ACEC	Area of Critical Environmental Concerns
AD	After Present or Anno Domino
AF	acre-feet
AFC	Application for Certification
AFY	acre-feet per year
APCD	Air Pollution Control District
APE	area of potential effect
APSA	Aboveground Petroleum Storage Act
AQMD	Air Quality Management District

ASTM	American Society for Testing and Materials
BA	Biological Assessment
BEA	U.S. Bureau of Economic Analysis
BLM	U.S. Department of the Interior, Bureau of Land Management
BMP	best management practices
BO	Biological Opinion
BOE	California Board of Equalization
BP	Before Present
BTU	British thermal units
C-AMA	California-Arizona Maneuver Area
CAL FIRE	California Department of Forestry and Fire Protection
Cal/EMA	California Emergency Management Agency
CalARP	California Accidental Release Program
CADOF	California Department of Finance
CALEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CARB	California Air Resources Board
CASTNET	Clean Air Status and Trends Network
CASTNet	Clean Air Status and Trends Network
CBC	California Building Code
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDD	California Desert District
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CHUs	critical habitat units
CIWMB	California Integrated Waste Management Board
CIWMC	California Interagency Watershed Mapping Committee
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO2e	Carbon Dioxide Equivalents
CPUC	California Public Utilities Commission
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibels
dBA	“A-weighted" decibel scale
dBC	“C -weighted" decibel scale
DCAP	Desert Center Area Plan
DEH	County of Riverside Department of Environmental Health
DOE	Department of Energy
DPR	Department of Pesticide Regulation
DTC	Desert Training Center
DTSC	Department of Toxic Substances Control
DWMAs	Desert Wildlife Management Areas
EIR	Environmental Impact Report
EIS	Environmental Impact Statement

EMF	electromagnetic field
ESA	Endangered Species Act
EO	Executive Orders
EPA	U.S. Environmental Protection Agency
EPS	emission performance standard
ERNS	Emergency Response Notification Systems
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FICUN	Federal Interagency Committee on Urban Noise
FLMP	Federal Land Policy and Management Act
FLPMA	Federal Land Management and Policy Act
FTA	Federal Transit Administration
G	gravity
GHG	greenhouse gas
gpd/ft	gallons per day per foot
Gpm	gallons per minute
HAP	Hazardous Air Pollutant
HKA	Hernandez, Kroone, and Associates
HMP	Habitat Management Plans
HSWA	Hazardous and Solid Waste Act
HTMA	Hazardous Materials Transportation Act
Hz	hertz
I-10	Interstate 10
IBC	International Building Code
ICC	International Code Council
IMPROVE	Inter-agency Monitoring of Protected Environments
IPCC	Intergovernmental Panel on Climate Change
ITA	Indian Trust Asset
IWMB	Integrated Waste Management Board
kV	Kilovolt
kV/m	kilovolts per meter
L10	Noise Level Exceeded 10 Percent of the Time
L50	Noise Level Exceeded 50 Percent of the Time
Ldn	day-night average sound level
Leq	equivalent average sound pressure level
Lmax	maximum noise level
LOS	level of service
LTVA	Midland Long Term Visitor Area
LU	land use
MBTA	Migratory Bird Treaty Act
MDAQMD	Mojave Desert Air Quality Management District
MDN	Mercury Deposition Network
mG	milliGauss
µS/cm	MicroSiemens per Centimeter
MSDS	Material Safety Data Sheets
MWD	Metropolitan Water District of Southern California
Mybp	million years before present
NADP	National Atmospheric Deposition Monitoring Program
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program

NHPA	National Historic Preservation Act
NIPTS	Noise-Induced Permanent Threshold Shift
NOAA	National Oceanic and Atmospheric Administration
NPA	Nationwide Programmatic Agreement
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRFAP	No Further Remedial Action Planned
NRHP	National Register of Historic Places
NSPS	new source performance standards
NSR	new source review
NTN	National Trends Network
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHS	Office of Homeland Security
OHV	off-highway vehicle
OHWM	ordinary high water mark
OPLA	Omnibus Public Lands Management Act
OSHA	Occupational Safety and Health Administration
OS-RUR	General Plan for Open Space-Rural
OWTS	on-site water treatment system
PA	Programmatic Agreement
PFYC	Potential Fossil Yield Classification
PGA	peak ground acceleration
pH	acidity/alkalinity measure scale
PM_{10}	Inhalable particulate matter
$PM_{2.5}$	fine particulate matter
ppm	parts per million by volume
PPV	peak particle velocity (inches per second)
PRC	Public Resources Code
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
PSHA	Probabilistic Seismic Hazard Assessment
Qal	Young Alluvial Deposits or Holocene alluvium
Qaly	Young Alluvial Sheet Wash Deposits
Qfm	Intermediate Alluvial Fan Deposits
Qfo and Qfvo	Older Alluvial Fan Deposits
Qfy	Young Alluvial Fan Deposits
Qoa	Older alluvium
Qs	Holocene sand dunes
Qya	Young Alluvial Stream Deposits
r	distance
RCRA	Resources Conservation and Recovery Act
RECs	Recognizable Environmental Concerns
ROI	region of influence
ROW	right-of-way
RPS	renewable portfolio standards (for power source mixes of electrical power retailers and generators)
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB610	Senate Bill 610
SBCM	San Bernardino County Museum
SCAQMD	South Coast Air Quality Management District

SCE	Southern California Edison
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMAs	special management areas
SPCC	Spill Prevention, Control and Countermeasures
SR	State Route
SSC	species of special concern
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWRR	California Solid Waste Reuse and Recycling Access Act
TCP	traditional cultural property
TMDL	total maximum daily load
TNT	trinitrotoluene
US	United States
USACE	US Army Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USFS	U. S. Forest Service
USFWS	United States Fish and Wildlife Service
USGLO	U.S. General Land Office
USGS	US Geological Survey
UST	underground storage tank
V/m	volts per meter
VMT	vehicle miles traveled
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WA	Wilderness Areas
WHMA	Wildlife Habitat Management Area
WSA	Water Supply Assessment

CHAPTER 8 – INDEX