

# Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

DOI-BLM-CAD008-2008-0030

## Volume I



January 2010

Prepared for:



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# Executive Summary

## Introduction

The following sections summarize the Draft Environmental Impact Statement (DEIS) for Chevron Energy Solutions (CES) Lucerne Valley Solar Project. This information is provided as a convenient synopsis for the public but is not a substitute for review of the complete DEIS. This summary provides a general overview of the proposed Lucerne Valley Solar Project and the BLM's purpose and need; briefly describes the alternatives; and summarizes major impacts for key resources associated with the alternatives.

Chevron Energy Solutions (CES), the Applicant, is proposing to develop a 45-megawatt (MW) solar photovoltaic (PV) plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management (BLM). The site of CES's Proposed Action is located on unincorporated land in the Mojave Desert, approximately eight miles east of Lucerne Valley. Also included in the proposal is an interconnection to an existing Southern California Edison distribution line located north of the site. In addition, CES's proposal includes an amendment to the California Desert Conservation Area (CDCA) Plan that would designate the proposed site as suitable for solar energy generation. The project would not require an amendment to the CDCA Plan to reroute a portion of Zircon Road to allow its continued public use. That decision would be considered plan maintenance.

## Purpose and Need

### BLM's Purpose and Need

The BLM's purpose and need for the Lucerne Valley Solar Project EIS is to respond to CES's application under Title V of the FLPMA (43 USC 1761) for a right-of-way (ROW) grant to construct, operate and decommission a solar generation facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, 43 CFR Part 2800, and other applicable federal laws. BLM's review of CES's application is also consistent with the following laws and directives pertaining to renewable energy resources:

- Sec. 211 of Energy Policy Act of 2005, enacted in August, 2005, which mandated up to 10,000 MW of non-hydropower renewable energy projects on the public lands by 2015.
- Instruction Memorandum 2007-097, dated April 4, 2007, Solar Energy Development Policy establishes BLM policy to ensure the timely and efficient processing of energy ROWs for solar power on the public lands.
- Secretarial Order 3283 Enhancing Renewable Energy Development on the Public Lands, signed January 16, 2009. This order facilitates the Department of the Interior's efforts to achieve the goals established in Sec. 211 of the Energy Policy Act of 2005.
- Secretarial Order 3285 Renewable Energy Development by the Department of the Interior, signed March 11, 2009. The order establishes the development of renewable energy as a priority for the Department of the Interior and establishes a Departmental Task Force on Energy and Climate Change.

The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to CES for the proposed solar project. The decision the BLM will make is whether or not to grant a ROW and if so, under what terms and conditions, and whether to amend the CDCA land use plan in two potential ways.

First, the EIS will be used to consider whether the CDCA Plan should be amended to designate the lands as suitable or unsuitable for solar energy development.

Second, the Applicant's proposal would reroute a portion of Zircon Road, a currently designated route of travel. The purpose of this Proposed Action also includes compliance with 43 Code of Federal Regulations (CFR) Part 8342.1, which establishes criteria to consider when making route designations. The designations should be based on protecting the resources of the public lands, promoting the safety of the public land users, and minimizing the conflicts among the various public land users. The designations also must be in accordance with the following criteria:

- Off-highway vehicle (OHV) areas and trails must be located to minimize the damage to soil, watershed, vegetation, air, or other resources of the public lands and to prevent impairment of wilderness suitability.
- OHV areas and trails must be located to minimize harassment of wildlife or significant disruption of wildlife or wildlife habitats. Special attention must be given to protect endangered or threatened species and their habitats.
- OHV areas and trails must be located to minimize conflict between OHV use and other existing or proposed recreational uses of the same or neighboring public lands and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

OHV areas and trails must not be located in officially designated wilderness areas or primitive areas. OHV areas and trails may be located in natural areas only if the authorized officer determines that vehicle use in such locations would not adversely affect the natural, aesthetic, scenic, or other values for which such areas are established.

### **Public Involvement**

The Notice of Intent for the Lucerne Valley Solar Project EIS was published in the Federal Register on July 23, 2009, initiating a 30-day scoping period. The BLM also held two public scoping meetings near the location of the Proposed Action, as follows:

- Lucerne Valley, California, on July 29, 2009, and
- San Bernardino, California, on July 30, 2009.

The issues evaluated in this EIS are derived from public comments made during the scoping period and summarized in the CES Lucerne Valley Solar Project EIS Scoping Summary Report issued in October 2009 (see Appendix A). The Scoping Summary Report is also posted on the BLM Barstow Field Office Web site at <http://www.blm.gov/ca/st/en/fo/barstow.html>. Comments for the following resource areas were received during scoping from agencies, organizations,

and the public and became the basis for defining issues:

- Air Quality (Including Climate Change)
- Geologic Resources
- Soils
- Hydrology, Water Quality, and Water Resources
- Biological Resources
- Cultural Resources
- Land Use
- Recreational Resources
- Aesthetic/Visual Resources
- Traffic and Transportation
- Hazardous Wastes
- Social and Economic Considerations
- Environmental Justice

## Summary Description of the Proposed Action and Alternatives

As defined by the purpose and need, the BLM is responding to CES's application to lease federal lands administered by the BLM for solar energy production. In doing so, the BLM will adopt one of the alternatives listed below.

Alternatives considered in the DEIS are based on issues identified by the BLM as well as comments received during the public scoping process. The BLM is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and that respond to the purpose and need.

This document provides information to the authorized officer to make the following decisions:

- Should ROW grant be issued? If so, should it be as requested or modified?
- Should the Proposed Action area remain undesignated or be designated as suitable or unsuitable for solar energy development?
- Should Zircon Road be rerouted?

### Alternative 1: No Action / No Plan Amendment

The No Action Alternative assumes that the ROW application is denied; that a Lucerne Valley Solar Plant and associated facilities would not be constructed and operated; and that the CDCA Plan would not be amended. Under this alternative the need would be met; the BLM would make a decision on the ROW application. Although the purpose would not be met through this alternative, it could be met through other applications for other projects on BLM lands. The adoption of Alternative 1 would leave current management practices intact and would be in conformance with the CDCA Plan.

### Alternative 2: No Action with Plan Amendment

Alternative 2 would deny the ROW application, but the CDCA Plan would be amended to classify the project site as either suitable or unsuitable for large-scale solar development. Under this alternative the need for the proposed project would be met, BLM would make a decision on the ROW application. Although the purpose would not be met through this alternative, it could be met through other applications for other projects on BLM lands.

### **Alternative 3: CES's Proposed Action**

The Applicant has applied for a BLM ROW authorization to construct, operate, maintain, and decommission a 45-MW, solar PV power plant and associated facilities on a site located south of Old Woman Springs Road, approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road in Lucerne Valley. The total ROW would span 516 acres and consists of land under the jurisdiction of the BLM in San Bernardino County, California.

The proposed project would be built in two phases. Phase I would be 20 MW, with construction beginning in late 2010. It would interconnect to the existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line located immediately north of the site across Foothill Road and could be built without upgrading the existing line. Phase II would be contingent upon available transmission capacity and future power sales would be constructed once SCE reconductors the existing transmission line.

CES's Proposed Action would require an amendment to the CDCA Plan that would change the designation within the ROW to suitable for solar energy generation. The project would not require an amendment to the CDCA Plan to reroute a portion of Zircon Road south of its current location to permit its continued public use. This decision would be considered plan maintenance.

### **Alternative 4: Modified Site Layout**

In response to comments received during public scoping, the BLM is analyzing an alternative that reduces impacts on visual resources. This alternative would be the same as Alternative 3, with three modifications to reduce environmental impacts:

1. Require a 50-foot setback from Santa Fe Fire Road
2. Use natural vegetation as a screen; and
3. Design site drainage to provide a water source for the vegetative screen if feasible through the Streambed Alteration Agreement.

To reduce the visual impacts, the minimum distance from the edge of Santa Fe Fire Road that the proposed project perimeter fence could be located (or set back) would be increased to 50 feet. The setback would remain unaltered by project construction, so the existing vegetation would serve to screen the project from nearby residents and somewhat for users of Santa Fe Fire Road. Additionally, the area immediately inside the fence line would be used to replant some native vegetation that would otherwise be removed during site preparation activities. Some of the drainage for the graded area would be redirected to flow from the site into the setback, increasing the water available to the setback vegetation and salvaged plants and trees, as well as increasing the success of plant salvage efforts.

Alternative 4 would also require amending the CDCA Plan to change the ROW designation to suitable for solar energy development. A decision for the alignment of Zircon Road would be made as plan maintenance.

### **Alternative 5: Smaller Project Alternative**

This alternative reduces the output of the solar power plant from 45 MW to 30 MW. It would also reduce the size of the developed area from 433 acres to 238 acres (Figure 2-4). This alternative would be developed in two phases. Phase I would be the development of the area east of Santa Fe Fire Road, similar to Phase I under Alternative 3. However, under this alternative, the area

south of the relocated Zircon Road would not be developed. For this alternative 108 acres, as opposed to 180 acres in Alternatives 3 and 4, would be developed. Energy production for Phase I would be approximately 20 MW. Phase II would be the development of the area west of Santa Fe Fire Road, and would be 120 acres and produce 10 MW of energy. Under this alternative, reconductoring of the 33-kV transmission line would not be required.

This alternative, like Alternative 3 and 4, would require amending the CDCA Plan to change the ROW designation to suitable for solar energy development. The decision for the alignment of Zircon Road would be a planning maintenance decision.

## **Environmental Impacts and Mitigation Measures**

### **Proposed Action and Alternatives**

This document analyzes the environmental issues associated with the construction operation, maintenance, and decommissioning of the Proposed Action and alternatives and the required CDCA Plan amendment. Impacts were analyzed by resource area based on information provided by the Applicant in the initial application and in response to subsequent data requests, field investigations and surveys, public scoping, literature research, and input from federal, state, and local agencies. Environmental effects of constructing, operating, maintaining, and decommissioning the solar facility as proposed (Alternative 3) are summarized below by resource area.

A summary comparison of effects of the alternatives is provided in Table ES-1.

### **Air Quality**

Construction of Phases I and II components would generate air pollutant emissions, such as equipment and vehicle exhaust and fugitive dust. These emissions would include criteria pollutants (VOCs, NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>) and hazardous air pollutants, such as diesel particulate matter (PM). During construction, total annual emissions of PM<sub>10</sub>, if both phases occur in the same year, would be above the California Clean Air Act threshold of 15 tons per year with a value of 16.82 tons per year.

It is expected that potential emission sources resulting from operations and maintenance activities would be mainly related to vehicle traffic on roads, including all-terrain vehicles and water trucks for panel washing. Estimations of operational emissions show that the expected exhaust and fugitive dust emissions would not exceed the thresholds established by the Mojave Desert Air Quality Management District or the federal action applicability criteria for general conformity.

During reclamation, all equipment, buildings, concrete foundations, and driven piles would be removed from the site. This analysis assumes that emissions would be in a magnitude similar to those estimated for construction for Phase I (worst-case scenario from construction). This would result in short-term effects on the projected background conditions of the area, especially in levels of PM.

Greenhouse gas (GHG) emissions would be generated during construction, routine operational activities, maintenance, and decommissioning. CO<sub>2</sub> and CH<sub>4</sub> would be emitted from on-road vehicles and non-road equipment during construction and from vehicles used during routine operational activities. A comparison of the GHG emissions (88.3 MTCO<sub>2</sub>e) to the existing power plant inventory for California (107,243,302 MTCO<sub>2</sub>e) shows that the emissions resulting from

the Proposed Action would be 0.00008 percent. Since the CES's Proposed Action is intended to generate electricity from a renewable source of energy, no increase of consumption of fossil fuels and related combustion emissions are expected. A typical 45-MW fossil fuel fired power plant in California would produce 1,448,330 MTCO<sub>2</sub>e over its 30 year lifespan. Subtracting CES's Proposed Action GHG emissions (88.3 MTCO<sub>2</sub>e) from these avoided emissions also indicates that CES's Proposed Action would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. Only 433 acres of the site (516 acres) would be developed, and of this, only 12.5 acres would be graded. The remaining 420.5 acres would have the vegetation cut, but the soil would not be permanently disturbed. This would result in a loss of 317.5 tons of carbon storage capacity.

## **Noise**

Individual pieces of equipment would generate noise levels in a range from 74 to 89 dBA at 50 feet from the source (Table 4.2-1). The worst case result of composite construction noise is derived by adding the individual equipment noise levels logarithmically, which would result in a maximum level of 97 dBA. In addition, a temporary increase in traffic noise on SR 247 and local roads would occur.

It is estimated that construction activities would produce a short-term, adverse increase over the existing ambient noise levels at the site boundary of the project area (50 feet from the source). In addition, the use of percussive or vibratory equipment during the installation of the solar arrays may produce a short-term groundborne vibration (above 75 VdB) and groundborne noise levels. Due to the location of the closest residence (located less than 0.1 mile from the site), these noise and vibration levels would not be attenuated over distance and reduced to background levels at the closest sensitive receptor (located less than 0.1 mile from the site). Because construction of Phase I would begin in the north and move to the south, disturbance from Phase I construction would result in a short-term, adverse effect to the residence. Implementation of MM NOI-1 would mitigate construction noise impacts during Phase I and Phase II construction.

Other sensitive land uses, such as recreation and special management areas may be affected by a short-term increase of noise levels. Effects on recreational users may be detectable along Santa Fe Fire Road but would be short-term and unlikely to impair the recreational resource.

The relative loudness of transformers depends on the construction design and techniques, as well as the ambient noise levels at a site. During construction, the Phase I equipment would include a total of 10 transformers (one for every two megawatts of power generation) to be enclosed within each photovoltaic power block. The composite noise level from identical sources—which can be predicted based on the final design, location, and technical specifications—would add three dB per identical transformer. However, the closest transformer to the closest receptor is over 500 feet away. Even with the composite noise of 10 transformers in Phase I, the sound level at the closest receptor would not exceed 55 dB. While this would result in a long-term increase in ambient noise levels, it would not be audible to the nearest receptor.

## **Geology, Topography, and Geologic Hazards**

Although the site is located on an alluvial fan whose sediments have the potential for movement during large precipitation events, the project area would be constructed to minimize that potential movement by utilizing the natural on-site drainage. In addition, all excavations associated with the action alternatives would be filled with soil or a post or foundation. It would

not create subterranean void spaces. Therefore, all alternatives would not increase the geologic instability of the area and would not increase the risk of on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. There would be no effect on a unique geologic feature.

There is the potential for damage to project components due to fault rupture, earthquakes, or seismic shaking. However, all project structures would have to comply with applicable earthquake building codes; therefore, earthquake-related damage to structural components of the project area would be minimized and would be confined to the site. However, workers and wildlife potentially could be exposed to earthquake damage at the facility. Flash flood events could result in on-site damage that could represent a hazard to on-site workers or wildlife. It is possible that a major flash flood could result in damage down gradient of the site. Compliance with earthquake building codes and maintaining the natural drainage would minimize potential risk associated with the most likely geologic hazards in the area; however, once these events occur, they can strain or stress the existing infrastructure.

### **Soils**

The site of the project area is ranked in Wind Erodibility Group 2, indicating that the soils are very highly erodible. The area that would be graded would be the Switch Yard (0.003 acres), the operation and maintenance building (0.006 acres), the access road (7 acres), the power line (5 acres), and the parking/laydown area (0.5 acres). Both topsoil and vegetation would be removed and vegetation would not be allowed to re-grow over an approximate 12.5 acre area. Therefore, there would be a strong potential for wind and water erosion over this 12.5 acres. To reduce the potential effects from erosion and topsoil removal, the Applicant would implement their storm water pollution prevention plan (SWPPP) during construction.

The solar arrays would protect the underlying soil from wind erosion and would reduce the energy of precipitation before it hits the ground surface so the potential for erosion would decrease in some areas. However, precipitation would flow off of the panels and would be concentrated at the lower ends of the panels, so this may create gullies at these locations. Although erosion could occur based on the design of the project, it would be a short-term adverse effect, and the site maintenance would restore potential soil lost. Therefore, none of the alternatives would contribute to substantial soil erosion or loss of topsoil in the area during construction.

Due to the lack of protected soils at the site, development of the project area would not affect soils identified for special protection.

### **Water Resources**

The Applicant is conducting flooding models using the Hydrologic Engineering Centers River Analysis System [HEC-RAS] of the United States Army Corps of Engineers; however, the data were not available at the time of publication of this document. This modeling may not be appropriate for modeling flows on alluvial fans because HEC-RAS cannot address all variables that may occur during flash floods. Previous modeling by the Applicant has indicated the major drainage channels could experience high flows during episodic rain events. The available information suggests that flooding is possible in the project area, but the intensity and frequency of these events is not known. Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects.

All action alternatives would increase the area of impermeable surfaces and would decrease the area of infiltration. However, due to the relatively small size of these impermeable surfaces within the larger watershed, the action alternatives would not significantly increase the potential for flooding in the watershed or its subbasins.

The natural flow patterns would be altered at these graded areas, the areas where concrete pads and structures are installed into the ground, and within the solar array field. However, since the primary drainage channels within the site would be left intact and sheet flow would still occur through the remainder of the site, this type of flow pattern alteration would not alter the overall flow pattern for the area.

Groundwater quality would not be altered by the any alternative.

During construction and decommissioning activities, increased erosion could result in a decrease in surface water quality by increasing turbidity (i.e., the clay and silt load in surface water). The Applicant would use siltation prevention measures during construction as well as implement their SWPPP and their Spill Prevention and Response Plan. The alternatives would not degrade the quality of surface waters by increasing erosion, increasing sedimentation, or introducing contaminated waters if the SWPPP and Spill Prevention and Response Plan are properly implemented.

During construction water would be used for dust control and soil compaction. The water use for construction of the first 20-MW phase is estimated at approximately 1.75 million gallons (5.4 acre-feet). The second 25-MW phase is estimated to require approximately 1.25 million gallons of water (4.6 acre-feet). During operation and maintenance, water would be used primarily for panel washing. Although the actual water requirements for operations and maintenance are not known, the estimated amount of water required would be between 10,000 to 20,000 gallons for the first 20-MW installation and 22,500 to 45,000 gallons per year if the entire 45-MW field is built. The water obtained for both construction and operations would be from a permitted off-site source; therefore, it would not decrease the water supply in the project area.

## **Biologic Resources**

### ***Vegetation***

Direct effects to yucca plants (e.g., Joshua trees) during construction would be short-term. These plants would be flagged for salvage and removed. No long-term adverse indirect effects on yucca plants (e.g., due to noise, vibration, dust) would be anticipated. Long-term adverse effects to vegetation would occur as a result of surface disturbing activities associated with construction, such as grading. Grading and grubbing activities would cause the direct loss of approximately 12.5 acres of creosote bush-white bursage, white bursage, desert wash, and/or already disturbed vegetative communities.

Approximately 420 acres of the 516-acre ROW will be mowed, reducing vegetation to between 6 and 12 inches in height, for development of the solar arrays. Re-sprouting at the base of these plants after mowing would likely occur, although the long-term effects to vegetation would depend on the scale, intensity, and duration of the activity. Vegetation that is not directly affected by clearing or mowing could be indirectly affected by shading from the solar panels. This would affect smaller vegetation (less than two feet in height). Overall, the adverse effects could include direct mortality, loss of plant habitat, plant injury, alteration of plant community structure, and community fragmentation, while dust during construction could indirectly decrease plant photosynthesis.

Succulent plants that would potentially be affected by the action alternatives occur in low numbers. Effects to succulent species would be short-term because suitable habitat for this species is present adjacent to the project area. Grading and grubbing activities would disturb soil around the perimeter of the site, thus creating opportunities for non-native invasive weed species to colonize in areas where they had not previously occurred. Invasive weed species could outcompete native plants for such resources as water and space.

### **Wildlife**

Vegetation clearing and grading associated with construction would directly affect wildlife by removal and crushing shrubs and herbaceous vegetation, resulting in loss and fragmentation of cover, breeding, and foraging habitat. Furthermore, these activities and vehicle use could cause direct mortality to wildlife; slower-moving wildlife, such as small mammals, ground nesting birds, and especially reptiles, have a higher risk of mortality.

Noise, vibration, and human activity would likely cause most wildlife species to avoid the project area until the disturbance conditions have concluded. The presence of humans, construction equipment, and dust would cause wildlife to alter foraging and breeding behavior and could cause wildlife to avoid suitable habitat. Once an action alternative is constructed, transmission poles could also pose a direct collision hazard to birds. Most species are expected to reoccupy adjacent habitats following completion of construction activities and recovery of the vegetation.

Wildlife would be indirectly affected because of the presence of the solar farm. Human activities in the project area potentially provide food or other attractants in the form of trash, litter, or water, which could draw unnaturally high numbers of opportunistic predators and scavengers such as the common raven, kit fox, and coyote.

Loss and degradation of habitat would cause wildlife to rely more heavily on habitat in surrounding areas. Competition could cause wildlife to forage for longer periods and/or to have lower overall nutrition. Loss of burrows due to construction, ground vibration, or avoidance behavior would also cause wildlife to search for or dig new burrows. Infrastructure built as part of an action alternative would alter wildlife movement in the area and just outside the boundary of the project area. Fences and transmission poles could also cause increased predation of reptiles, small mammals, and small birds around the site of the project area because raptors would use the infrastructure for perches. Indirect effects on wildlife would occur due to adverse effects on vegetation. Loss of vegetation would indirectly reduce available forage and shelter habitat for wildlife, degrading and fragmenting existing higher quality habitat. Loss of vegetation would also indirectly affect wildlife because many species depend on succulents as a source of water.

The introduction of an artificial water source into the area may provide suitable habitat for the Argentine ant (*Linepithema humile*), an invasive species in California typically associated with water sources. This species often displaces native ant species.

### **Special Status Species**

Clearing and grading activities would directly remove special status plants from the area, would cause temporary and permanent soil disturbance that would impede future use by special status plants, and would denude the area of seed banks for those species. CES's Proposed Action would also remove approximately 12.5 acres of creosote bush-white bursage, white bursage, and/or desert wash communities that are associated with special status plants.

Construction activities, ongoing maintenance, including vegetation clearing, and the frequent use of vehicles on-site during both construction and operations could introduce invasive weeds to the site. Once these weeds become established, they proliferate very quickly and can out-compete native special status plants. The habitat can become monotypical, thereby reducing quality and diversity for wildlife dependent on native habitat.

Le Conte's thrasher, northern harrier, and prairie falcon have been observed on the site and may be adversely affected by an action alternative. Suitable habitat exists on the site for burrowing owl, and this species was observed in the area in the past. If owls are present on the site during construction, they may not be able to move quickly enough to avoid mortality due to collisions with vehicles and equipment or collapse of burrows during clearing and grading. Increased vehicle use on the site during operation and maintenance could also increase collisions and mortality of the burrowing owl on-site.

Desert tortoise are present on-site and would be adversely affected by an action alternative. Effects would be both short- and long-term. Action alternative activities could potentially extend to areas outside the boundary of the project area. For example, the tortoise could be susceptible to mortality from collisions with vehicles entering and leaving the site. A tortoise proof exclusion fence would be installed, under the direction of an Authorized Biologist, around all construction areas prior to the initiation of earth disturbing activities. The fence would be checked at least monthly during construction and operations and maintained when necessary by site operator to ensure its integrity. After fence installation, the authorized biologist would conduct a 100 percent coverage protocol survey for desert tortoises within the construction site. All desert tortoises found would be marked and removed from the enclosure and placed outside the nearest fence in accordance with *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999). Additional desert tortoise protective measures are presented in Section 4.6.4.2.

An action alternative could result in direct or indirect effects on birds protected by the Migratory Bird Treaty Act, including northern harrier, prairie falcon, golden eagle, red-tailed hawk, and any other migratory bird species. If vegetation clearing is conducted during the avian breeding season, active nests could be destroyed. Alteration of foraging behaviors due to on-site disturbances may also cause avoidance of suitable habitat.

### **Cultural Resources**

No cultural resources eligible for inclusion in the National Register of Historic Places (NRHP) are known to occur in the project area, in the proposed locations for temporary access roads, or within a one-mile radius of the site perimeter. Construction of the proposed facility would involve ground disturbance, resulting in potentially adverse effects on previously unidentified surface and subsurface cultural resources, including human remains. Evaluations of sites identified during the BLM Class III inventory (Chambers Group 2009) against NRHP criteria concluded there is no evidence of intact deposits of subsurface cultural material; however, this does not preclude the potential for an unanticipated discovery during construction.

### **Paleontological Resources**

An action alternative has a low potential to affect significant nonrenewable fossil resources because the Quaternary alluvium it would be located on has low paleontologic sensitivity. However, Pleistocene older alluvium and other fossil-bearing rock would have high potential to

contain significant vertebrate fossils. Such sediments may be encountered during subsurface construction activities, resulting in accidental damages to paleontological resources.

### **Lands and Reality**

The site is located on land designated MUC M (moderate), which allows energy generating facilities, including solar development; however, the site would extend 1.4 miles into a three-mile-wide CDCA Plan-designated “contingent” utility corridor (Corridor “S”). The Energy Production and Utility Corridor Element of the CDCA Plan currently allows only linear utilities, such as highways, pipelines, transmission lines, communications lines, and natural gas pipelines, to be sited within the corridor without a plan amendment. As a result, a plan amendment to allow large-scale solar generation that may block the construction of such projects may appear to conflict with the goals of the CDCA Plan. The action alternatives, however, have been sited directly west of rugged terrain, which forms a natural barrier to utility development. Because the cost of building any infrastructure over this terrain would be significantly more expensive than circumventing it, potential developers would be more likely to site linear infrastructure to the north of the project area. Therefore, the Applicant’s analysis of the corridor concluded that sufficient area would remain in the corridor for reasonably foreseeable future utility projects. The action alternatives would, therefore, have no adverse effect on the BLM’s ability to site future utilities within the corridor and would not conflict with either the Energy Production and Utility Corridor Element or the MUC M designation of the CDCA Plan.

### **Special Management Areas**

There would be no effect to Special Management Areas as a result of an action alternative. State Route 247 is a County-designated Scenic Route. Drivers along State Route 247 would have short-term views of the site during construction, operations and maintenance, and reclamation. Impacts to sensitive viewers is evaluated in more detail in Section 4.12.

### **Recreation**

The action alternatives include the realignment of Zircon Road within the site Zircon Road in its present form would remain open until the realignment is completed. Thus, there would be no loss of access. Construction of an action alternative would affect off-site recreational uses through short-term disruption of access from fugitive dust, from clearing and grading, and long-term alteration of the views as seen from recreation areas. Visual effects are discussed in greater detail in Section 4.12.

During construction, portions of Santa Fe Fire Road may be temporarily inaccessible; however, the road would not be completely closed to vehicle traffic during construction. During this time, recreational users attempting to access the San Bernardino National Forest would be able to use Santa Fe Fire Road. The temporary closure of portions of Santa Fe Fire Road during grading and hardening would result in short-term effects on access but long-term beneficial effects on the quality of the road. Closure of Santa Fe Fire Road would not affect any other designated recreational area.

### **Visual Resources**

During the construction period, construction activities and materials, equipment, trucks, and parked vehicles could be visible on the site and thus temporarily change the existing visual environment. Construction activities would be conducted in a manner that would minimize

(visible) dust emissions. Therefore, visual changes associated with construction period activities at the site would be short-term.

An action alternative likely would create a fairly substantial visual contrast, particularly for viewsheds directed toward the backs of the solar panels. Overall impacts are minor based on KOP-specific considerations. According to the BLM interim VRM Class IV management objectives, an action alternative's contribution to visual resources would not be considered significant. The project would be an industrial facility in a lightly populated area, and there would be a noticeable change to the view for residents and visitors. All potentially considered scenic vistas that would have full visibility of the site occur from elevated positions located more than two miles away from where the project contrast would be seen in the foreground-middle ground distance zone, resulting in moderate rather than strong visual contrasts.

The site is not in a designated area of natural beauty or scenic recreational area. However, the County of San Bernardino has designated SR 247 as a scenic route. As mentioned earlier, the State only extends scenic highway eligibility to this roadway. The site is generally unremarkable, with no distinguishing geological features or distinctive vegetation. However, visual resources of the surrounding valley and mountain environment are noticeable with overall views that would be degraded to a degree. The presence of the solar facility would create a moderate contrasting change in the visual quality of the overall landscape.

The solar facility would be visible from an eligible state scenic highway (SR 247) at less than a quarter mile away. Duration of view is short, and the highway is not officially designated by Caltrans but does carry the San Bernardino scenic route status; therefore, an action alternative would not result in an adverse impact from these views.

An action alternative would not result in a major adverse impact upon nighttime views in the area from introducing a new source of light or glare. In sunlight, for viewers looking directly at the solar panels, at a distance or an elevated position, the solar field at its most reflective state would mirror the sky and could appear like a lake at hours of the day when the panels were oriented toward the viewer (e.g., looking from the south with the sun behind the viewer on a sunny afternoon). It would not produce significant glare. At night, the solar collectors would not be visible from the viewpoints identified.

An action alternative would result in increased levels of visual contrast by introducing new permanent above-ground structures into the landscape. However, these changes would not directly conflict with the management objectives associated with the interim VRM Class established for the site. In summary, visual changes associated with operations and maintenance would be long-term.

### **Transportation and Traffic**

Construction of both phases would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and an additional unquantified short-term increase in traffic volume due to delivery of construction equipment and supplies to the site. This increase in traffic volume would occur primarily on SR 247, Foothill Road, and Santa Fe Fire Road as these are the predominant roads that would be used to access the site. Zircon Road and Santa Fe Fire Road may experience short-term effects as these roads are improved. Up to a maximum of 90 additional trips per day would not change the LOS of SR 247, nor would it affect the LOS of I 15, SR 18, or Bear Valley Road. During Phase II the labor force would mirror the labor force discussed for Phase I.

During Phase I, a 33-kV transmission line segment would be constructed across Foothill Road, resulting in short-term effects on Foothill Road as traffic may be stopped periodically while the line is constructed. The original Zircon Road would not be closed until the realignment has been completed. The realignment of Zircon Road would result in long-term, beneficial effects to the quality of the road. During Phase I, the Applicant would improve Santa Fe Fire Road. During grading and hardening, portions of Santa Fe Fire Road may be temporarily inaccessible; however, the road would not be completely closed. The residence located adjacent to the site at the intersection of Foothill Road and South Santa Fe Road would have full access to their home during construction.

### **Human Health and Safety**

If a release of hazardous material were to occur, proper implementation of the Spill Prevention and Response Plan and the SWPPP would limit the area that could be contaminated and ensure that any release is cleaned up in a manner that complies with federal, state, and local regulations. It is unlikely that a hazard to the public or environment would occur as a result of soil disturbance at the site during construction. Disturbance of groundwater is also not expected to occur during site construction because foundations would not be drilled to these depths. During operation, leaks or spills could occur if the transformers at the substations were damaged from a seismic event, fire, or other unforeseen incident. However, leaks would likely be contained within the walls of the substation and the transformers would have biodegradable oil. The solar facility may increase the potential for additional incidents related to fire and fire safety.

### **Social and Economic Conditions**

Construction during both phases would require only a peak labor workforce of 45 workers. Some workers would be local (i.e., permanent residents of San Bernardino County), but it is expected that some would migrate to the work site from outside of the area. There would be no noticeable short-term population effect and no effect on any public service capacities or level of service standards.

Hotels and motels within the immediate vicinity and within commuting distance to the site would receive the benefit of increased occupancy and related spending from temporary workers; therefore, there would be a short-term beneficial effect. The social well-being of LVEDA (and its representatives) would be enhanced because compatible sustainable infrastructure development would be implemented within the Lucerne Valley.

The project footprint would change the historic relationship that these users have with the land but would not necessarily alter it in a detrimental manner. There is a possibility that some positive aspects of social well-being associated with the use and enjoyment of select acreage of wildlife habitat that is taken over by the project footprint could be affected both on a short- and long-term basis.

Project workers and suppliers would experience a positive sense of social well-being as their resources, skills, and goods and services could potentially be mobilized to build, operate, and sustain the solar plant. The utility/wholesale processor would experience a positive sense of social well-being and satisfaction by knowing that they are contributing to California's renewable energy generation portfolio targets for electricity generation and earning profits. The final end use customers would enjoy the social benefit of having a portion of their final demand met from

renewable solar resources. The social benefit relates to a sense of satisfaction that a portion of their final demand is derived from emission-free solar power generation assets.

Assuming that \$20 million of construction phase direct spending (related to wages and purchases of materials and equipment) occurs in San Bernardino County, the initial \$20 million in direct local content expenditures would generate a grand total of \$36.1 million in total output to the region. Indirect effects include the effects occurring along the supporting supply chain as goods and services are purchased from vendors and subcontractors supporting the installation. Induced effects represent the cumulative effects from household spending, reflecting labor earnings from direct and indirect related economic activity. On average, 25 construction and supervisory personnel would be required on-site for approximately eight months to build Phase I, with 45 personnel being required at peak times. During Phase II, this manpower loading would be repeated.

An action alternative would be expected to have a short-term beneficial effect on local jurisdiction tax revenues during the construction of Phases I and II. Operations and maintenance of both phases of an action alternative would be expected to have a long-term beneficial effect on San Bernardino County's public revenues.

### **Environmental Justice**

An action alternative is not expected to have a disproportionately high and adverse human health or environmental effect on minority and low-income populations in the Lucerne Valley.

### **Energy and Minerals**

Access to some prospected or production sites for mineral or energy resources could be inhibited during construction; operations and maintenance; or decommissioning of an action alternative; however, due to the lack of known mineral resources at the site, no effect on mineral or energy resources would occur. In addition, an action alternative would require energy and mineral resources for construction, operations and maintenance, and decommissioning. However, given the expected 30-year lifespan of this renewable energy project, this would not be an adverse effect.

### **Conclusion**

An action alternative would result in short-term and long-term adverse effects (after mitigation) on biological resources. Unavoidable, short-term effects on visual resources would occur during construction and decommissioning. During operations and maintenance, effects on visual resources would be long-term but minor. In addition, moderate, short-term cumulative effects on air quality (PM<sub>10</sub> levels) would occur during construction and decommissioning. Beneficial effects may result on social and economic conditions. Table ES-1 contains a summary of impacts by alternative.

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
<b>4.1 Air Quality</b>	No effects	No effects	<p>During construction, total annual emissions of PM10, if both phases occur in the same year, would be above the CCAA threshold of 15 tons per year with a value of 16.82 tons per year.</p> <p>During reclamation there would be potential short-term increase in air pollutant emissions.</p> <p>During construction, routine operational activities, maintenance, and decommissioning, GHG emissions would be generated. A comparison of the GHG emissions (88.3 MtCO<sub>2e</sub>) to the existing power plant inventory for California (107,243,302 MtCO<sub>2e</sub>) shows that the emissions resulting from the Proposed Action would be 0.00008 percent. A typical 45-MW fossil fuel fired power plant in California would produce 1,448,330 metric tons of carbon dioxide equivalents (MtCO<sub>2e</sub>) over its 30 year lifespan. Subtracting the Proposed Action GHG emissions (88.3 MtCO<sub>2e</sub>) from these avoided emissions also indicates that the Proposed Action would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. This would result in a loss of 317.5 tons of carbon storage capacity.</p>	<p>Effects during Phases I and II under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur using the same vehicles for the same length of time.</p>	<p>During construction, total annual emissions of PM10, if both phases occur in the same year, would be above the CCAA threshold of 15 tons per year with a value of 15.51 tons per year.</p> <p>During construction, routine operational activities, maintenance, and decommissioning, GHG emissions would be generated. A comparison of Alternative 5 GHG emissions (51.5 MtCO<sub>2e</sub>) to the existing power plant inventory for California (107,243,302 MtCO<sub>2e</sub>), not including construction) shows that emissions resulting from Alternative 5 would be are 0.00005 percent. A typical 30-MW fossil fuel fired power in California would produce 965,553 MtCO<sub>2e</sub> over its 30 year lifespan. Subtracting the alternative project GHG emissions (51.5 MtCO<sub>2e</sub>) from these avoided emissions also indicates that Alternative 5 would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. This would result in a loss of 254 tons of carbon storage capacity.</p>
<b>4.2 Noise</b>	No effects	No effects	<p>Individual pieces of equipment would generate noise levels in a range from 74 to 89 dBA at 50 feet from the source</p>	<p>Effects under this alternative would be slightly reduced. Since</p>	<p>Effects under this alternative would be short-term, adverse construction noise, ground-borne vibration, and</p>

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			<p>(Table 4.2-1).</p> <p>Due to the location of the closest residence (located less than 0.1 mile from the site), these noise and vibration levels would not be attenuated over distance and reduced to background levels at the closest sensitive receptor (located less than 0.1 mile from the site). Because construction of Phase I would begin in the north and move to the south, disturbance from Phase I construction would result in a short-term, adverse effect to the residence.</p> <p>During construction, the Phase I equipment would include a total of 10 transformers (one for every two megawatts of power generation) to be enclosed within each photovoltaic power block. However, the closest transformer to the closest receptor is over 500 feet away. Even with the composite noise of 10 transformers in Phase I, the sound level at the closest receptor would not exceed 55 dB. While this would result in a long-term increase in ambient noise levels, it would not be audible to the nearest receptor.</p>	<p>Alternative 3 is the same size and the same amounts and types of disturbance would occur, the same amount of noise would be generated, however, since the project would be moved 50 feet further away from the closest sensitive receptor and have a vegetative screen installed, noise effects would be attenuated slightly.</p>	<p>traffic noise similar to the effects under Alternative 3. However, since the construction periods for these phases are shorter under this alternative, effects would be for a shorter time period.</p>

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
<b>4.4 Geology, Topography, &amp; Geologic Hazards</b>	No effects	No effects	<p>The Proposed Action would not increase the geologic instability of the area and would not increase the risk of on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. There would be no effect on a unique geologic feature.</p> <p>Flash flood events could result in on-site damage that could represent a hazard. It is possible that a major flash flood could result in damage down gradient of the site.</p> <p>Compliance with earthquake building codes and maintaining the natural drainage would minimize potential risk associated with the most likely geologic hazards; however, once these events occur, they can strain or stress the existing infrastructure.</p>	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur.	Effects under this alternative would be the similar as those identified under Alternative 3. The difference in the area graded (10 acres) and developed (238 acres) would be reduced, but the type, intensity, and duration of the effects would be similar.
<b>4.4 Soils</b>	No effects	No effects	<p>Both topsoil and vegetation would be removed and vegetation would not be allowed to re-grow over an approximate 12.5 acre area. Therefore, there would a strong potential for wind and water erosion over this 12.5 acres.</p> <p>The Proposed Action would not contribute to substantial soil erosion or loss of topsoil in the area during construction.</p> <p>Due to the lack of protected soils at the site, development of the Proposed Action would not affect soils identified for special</p>	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur.	Effects would be the similar, but less than those identified for Alternative 3. Only 10 acres would be graded as opposed to 12.5 acres; therefore, fewer acres of topsoil would be removed. Since the alternative would decrease the number of structures, specifically concrete pads and post, and the area over which erosion would occur and topsoil removed would be less than Alternative 3, then the effects from this alternative would be similar but less than those for Alternative 3.

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.5 Water Resources	No effects	No effects	<p>protection.</p> <p>The Applicant is conducting flooding models using the Hydrologic Engineering Centers River Analysis System [HEC-RAS] of the USACOE; however, the data were not available at the time of publication of this document. Previous modeling by the Applicant has indicated the major drainage channels could experience high flows during episodic rain events. The available information suggests that flooding is possible in the Proposed Action area, but the intensity and frequency of these events is not known. Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects.</p> <p>The flow pattern alteration would not alter the overall flow pattern for the area.</p> <p>Groundwater quality would not be altered by the Proposed Action.</p> <p>The Proposed Action would not degrade the quality of surface waters by increasing erosion, increasing sedimentation, or introducing contaminated waters.</p> <p>The water obtained for both construction and operations would be from a permitted off-site source; therefore, it would not decrease the water supply in the Proposed Action area.</p>	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur and the same amount of water would be used.	Effects would be similar to those identified for Alternative 3. However, because only 238 acres would be developed and solar arrays would be located on approximately 228 acres, this alternative would slightly reduce the area graded to approximately 10 acres and decrease the area where infiltration would not occur.

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.6 Biological Resources	No effect	No effect	<p>Direct effects to yucca plants during construction would be short-term. Grading and grubbing activities would cause the direct loss of approximately 12.5 acres of creosote bush-white bursage, white bursage, desert wash, and/or already disturbed vegetative communities.</p> <p>Approximately 420 acres of the 516-acre ROW will be mowed, reducing vegetation to between 6 and 12 inches in height, for development of the solar arrays. The long-term effects to vegetation would depend on the scale, intensity, and duration of the activity.</p> <p>Grading and grubbing activities could create opportunities for non-native invasive weed species to colonize in areas where they had not previously occurred.</p> <p>Construction could directly affect wildlife by loss and fragmentation of cover, breeding, and foraging habitat. These activities and vehicle use could cause direct mortality to wildlife.</p> <p>Human activity would likely cause most wildlife species to avoid the Proposed Action area until the disturbance conditions have concluded. Transmission poles could also pose a direct collision hazard to birds. Human activities could potentially provide food or other</p>	<p>Effects would be similar to those described for Alternative 3.</p> <p>Alternative 4 would involve the same initial effect on native communities; however, the corridor along Santa Fe Fire Road would provide an opportunity for some native vegetation to be salvaged from the construction site and transplanted.</p> <p>Similarly, Alternative 4 would involve the same initial effect on native plant species except Joshua trees could be replanted along the corridor. Invasive species could likely be increased, as with Alternative 3, due to mechanically disturbed soil and habitat.</p> <p>Alternative 4 would have effects similar to those described for Alternative 3. Although Alternative 4 would provide increased habitat for wildlife, water and foraging opportunities could draw wildlife into an</p>	<p>Under Alternative 5, construction and operations and maintenance activities would cause similar direct and indirect effects as described under Alternative 3. However, this alternative would reduce the area of disturbance and, therefore, reduce the amount of vegetation that would be removed compared to Alternative 3.</p> <p>Only 238 acres would be developed with solar arrays. This alternative would reduce the loss of wildlife habitat.</p> <p>Only 238 acres would be developed with solar arrays. This alternative would reduce the potential effects to special status species compared to Alternative 3.</p>

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			<p>attractants which could draw unnaturally high numbers of opportunistic predators and scavengers.</p> <p>Loss of burrows due to construction could also cause wildlife to search for or dig new burrows. Infrastructure development could alter wildlife movement in the area and just outside the boundary of the Proposed Action. Fences and transmission poles could also cause increased predation wildlife because raptors could use the infrastructure for perches. Loss of vegetation could indirectly reduce available forage and shelter, degrading and fragmenting existing higher quality habitat.</p> <p>The introduction of an artificial water source into the project area may provide suitable habitat for the Argentine ant, an invasive species in California.</p> <p>Clearing and grading activities would directly remove special status plants from the area. Construction activities, ongoing maintenance, including vegetation clearing, and the frequent use of vehicles on-site could introduce invasive weeds to the site. Le Conte's thrasher, northern harrier, and prairie falcon have been observed on the site and may be adversely affected by the Proposed Action. If owls are present on the site during construction, they may not be able</p>	<p>area of greater traffic and risk for mortality.</p> <p>Alternative 4 would have similar effects on special status species as those described for Alternative 3. Although Alternative 4 could provide increased habitat for wildlife, water and foraging opportunities could draw wildlife into an area of greater traffic and risk for mortality. This would be particularly relevant for desert tortoise, nesting and foraging birds, and foraging raptors.</p>	

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			<p>to move quickly enough to avoid mortality due to collisions with vehicles and equipment. Vehicle use on the site during operation and maintenance could also increase collisions and mortality of the burrowing owl.</p> <p>Desert tortoise are present on-site and could be adversely affected by the Proposed Action. Effects would be both short- and long-term. The Proposed Action could result in direct or indirect effects on birds protected by the Migratory Bird Treaty Act, including northern harrier, prairie falcon, golden eagle, red-tailed hawk, and any other migratory bird species.</p>		
<b>4.7 Cultural Resources</b>	No effects	No effects	No cultural resources eligible for inclusion in the NRHP are known to occur in the Proposed Action area.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects to cultural resources resulting from this alternative would be similar to those identified under Alternative 3.
<b>4.8 Paleontological Resources</b>	No effects	No effects	The Proposed Action has a low potential to affect significant nonrenewable fossil resources.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects to paleontological resources resulting from this alternative would be similar to those identified under Alternative 3.
<b>4.9 Land Use and Realty</b>	No effects	No effects	The Proposed Action would, have no adverse effect on the BLM's ability to site future utilities within the corridor and would not conflict with either the Energy Production and Utility Corridor Element or the MUC M designation of the CDCA Plan.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects under this alternative would be the same as those identified under Alternative 3.

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

<b>Resource Area</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 (No Action w/ Plan Amendment)</b>	<b>Alternative 3 (Proposed Action)</b>	<b>Alternative 4 (Modified Site Layout)</b>	<b>Alternative 5 Smaller Project Alternative</b>
<b>4.10 Special Management Areas</b>	No effects	No effects	No effect to Special Management Areas (SMAs) as a result of the Proposed Action. State Route 247 is a County-designated Scenic Route. Drivers along State Route 247 would have short-term views of the Proposed Action site during construction, operations and maintenance, and reclamation. Impacts to sensitive viewers is evaluated in more detail in Section 4.6.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects under this alternative would be the same as those associated with the Proposed Action (Alternative 3).
<b>4.11 Recreation</b>	No effects	No effects	Construction of the Proposed Action would affect off-site recreational uses through short term disruption of access from fugitive dust from clearing and grading and long term alteration of the views as seen from recreation areas; however, visual effects are discussed in greater detail in Section 4.12.  The temporary closure of portions of Santa Fe Fire Road during grading and hardening would result in short-term effects on access but long-term beneficial effects on the quality of the road.	Effects under this alternative would be the same as those identified under Alternative 3.	The effects to recreation would be the same under this alternative from construction, operations and maintenance, and decommissioning as those identified in alternative 3.
<b>4.12 Visual Resources</b>	No effects	No effects	During the construction period, construction activities and materials, equipment, trucks, and parked vehicles all could be visible on the proposed project site and thus temporarily change the existing visual environment. Construction activities would be conducted in a manner that would minimize (visible) dust emissions. Therefore, visual changes associated with construction period activities at the proposed project site	Under this alternative, recreationists traveling the Santa Fe Fire Road en route to Blackhawk Canyon would see shielded views of the proposed project which would reduce the visual effect of the Proposed Action. All other viewpoints would have the same	Visual effects during construction of Phase I and II would be similar to effects under Alternative 3. However, since the construction periods for these phases are shorter under this alternative, effects would be for a shorter time period. Since a smaller amount of area is being developed and the amount of energy being produced is less, the facility itself would be smaller and be less of a

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

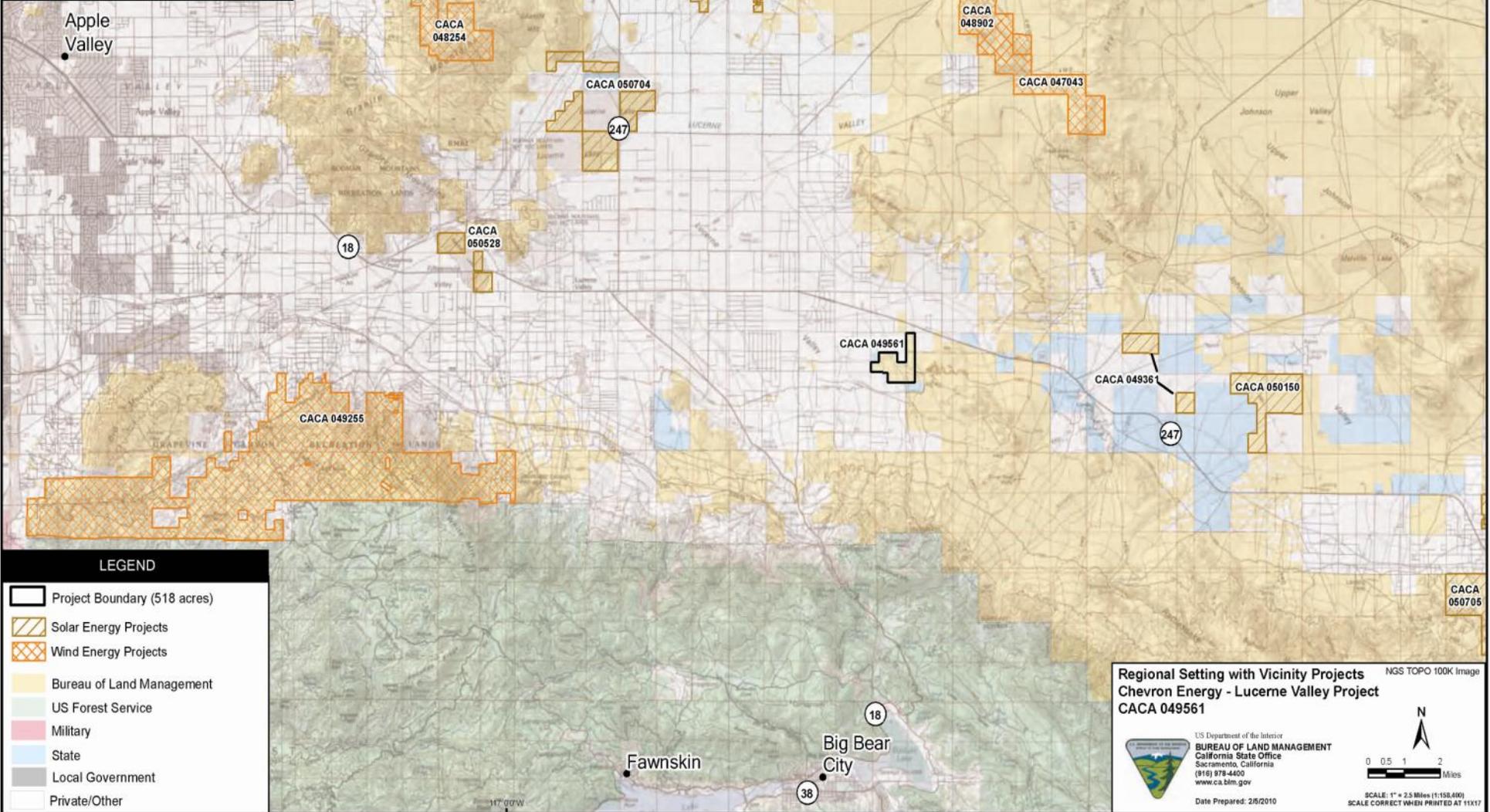
Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			<p>would be short-term.</p> <p>The proposed project would result in increased levels of visual contrast by introducing new permanent above-ground structures into the landscape. However, these changes would not directly conflict with the management objectives associated with the interim VRM class established for the proposed project site. In summary, visual changes associated with operations and maintenance would be long-term.</p>	<p>views as Alternative 3 and the effects on visual resources would be the same during Phases I and II.</p>	<p>contrast to the surrounding area. Visual changes associated with operations and maintenance would be long-term, however, they would be less than that experienced under Alternative 3.</p>
4.14 Transportation	No effects	No effects	<p>Construction of both phases of the project would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and an additional unquantified short-term increase in traffic volume. Up to a maximum of 90 additional trips per day would not change the LOS of SR 247, nor would it affect the LOS of I 15, SR 18, or Bear Valley Road. During Phase II the labor force would mirror the labor force discussed for Phase I.</p>	<p>Effects under this alternative would be the same as those identified under Alternative 3.</p>	<p>Implementation of this alternative would result in similar effects to traffic volume as Alternative 3. The number of trips from workers and construction equipment as well as the delivery of supplies at the peak of construction would be the same as under Alternative 3; however, the effect would be for a shorter period since the construction phases under this alternative are shorter than the construction phases under Alternative 3.</p> <p>The effects to Foothill Road, Santa Fe Fire Road, and Zircon Road would be the same. There would be short-term traffic disruptions due to oversize loads. However, since this alternative is smaller than Alternative 3, this disruption would be for a shorter period of time.</p>

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

Resource Area	Alternative 1 (No Action)	Alternative 2 (No Action w/ Plan Amendment)	Alternative 3 (Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
<b>4.14 Human Health and Safety/Hazardous Materials</b>	No effects	No effects	It is unlikely that a hazard to the public or environment would occur as a result of soil disturbance at the site during construction of the Proposed Action. Disturbance of groundwater is also not expected to occur during site construction because foundations would not be drilled to these depths. Leaks would likely be contained within the walls of the substation and the transformers would have biodegradable oil. The solar facility may increase the potential for additional incidents related to fire and fire safety.	The effects and related mitigation measures would be the same for this alternative as those for Alternative 3.	Because the footprint is smaller and the construction period shorter for this alternative, the likelihood of potential small spills would be reduced proportionately; however, the types of effects and related mitigation measures would be the same for this alternative as those for Alternative 3.
<b>4.15 Social and Economic Conditions</b>	No effects	No effects	Assuming that \$20 million of construction phase direct spending (related to wages and purchases of materials and equipment) occurs in San Bernardino County, the initial \$20 million in direct local content expenditures would generate a grand total of \$36.1 million in total output to the region. Indirect effects include the effects occurring along the supporting supply chain as goods and services are purchased from vendors and subcontractors supporting the installation. Induced effects represent the cumulative effects from household spending, reflecting labor earnings from direct and indirect related economic activity. On average, 25 construction and supervisory personnel would be required on-site for approximately eight months to build Phase I, with 45 personnel being required at peak times. During Phase II, this manpower loading would be repeated.	Effects during Phases I and II under this alternative would be similar to Alternative 3.	Effects during Phases I and II under this alternative would be similar to Alternative 3

**Table ES-1 Comparison Summary of Effects of Proposed Action and Alternatives**

<b>Resource Area</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 (No Action w/ Plan Amendment)</b>	<b>Alternative 3 (Proposed Action)</b>	<b>Alternative 4 (Modified Site Layout)</b>	<b>Alternative 5 Smaller Project Alternative</b>
<b>4.16 Environmental Justice</b>	No effects	No effects	The Proposed Action is not expected to have a disproportionately high and adverse human health or environmental effect on minority and low-income populations in the Lucerne Valley.	Effects under this alternative would be similar to Alternative 3.	Effects under this alternative would be similar to Alternative 3
<b>4.17 Energy and Minerals</b>	No effects	No effects	No effect on mineral or energy resources would occur. The Proposed Action would require energy and mineral resources for construction, operations and maintenance, and decommissioning. However, given the expected 30-year lifespan of this renewable energy project, this would not be an adverse effect.	Effects under this alternative would be similar to Alternative 3	Effects under this alternative would be similar to Alternative 3.



**LEGEND**

- Project Boundary (518 acres)
- Solar Energy Projects
- Wind Energy Projects
- Bureau of Land Management
- US Forest Service
- Military
- State
- Local Government
- Private/Other

**Regional Setting with Vicinity Projects**  
**Chevron Energy - Lucerne Valley Project**  
**CACA 049561**

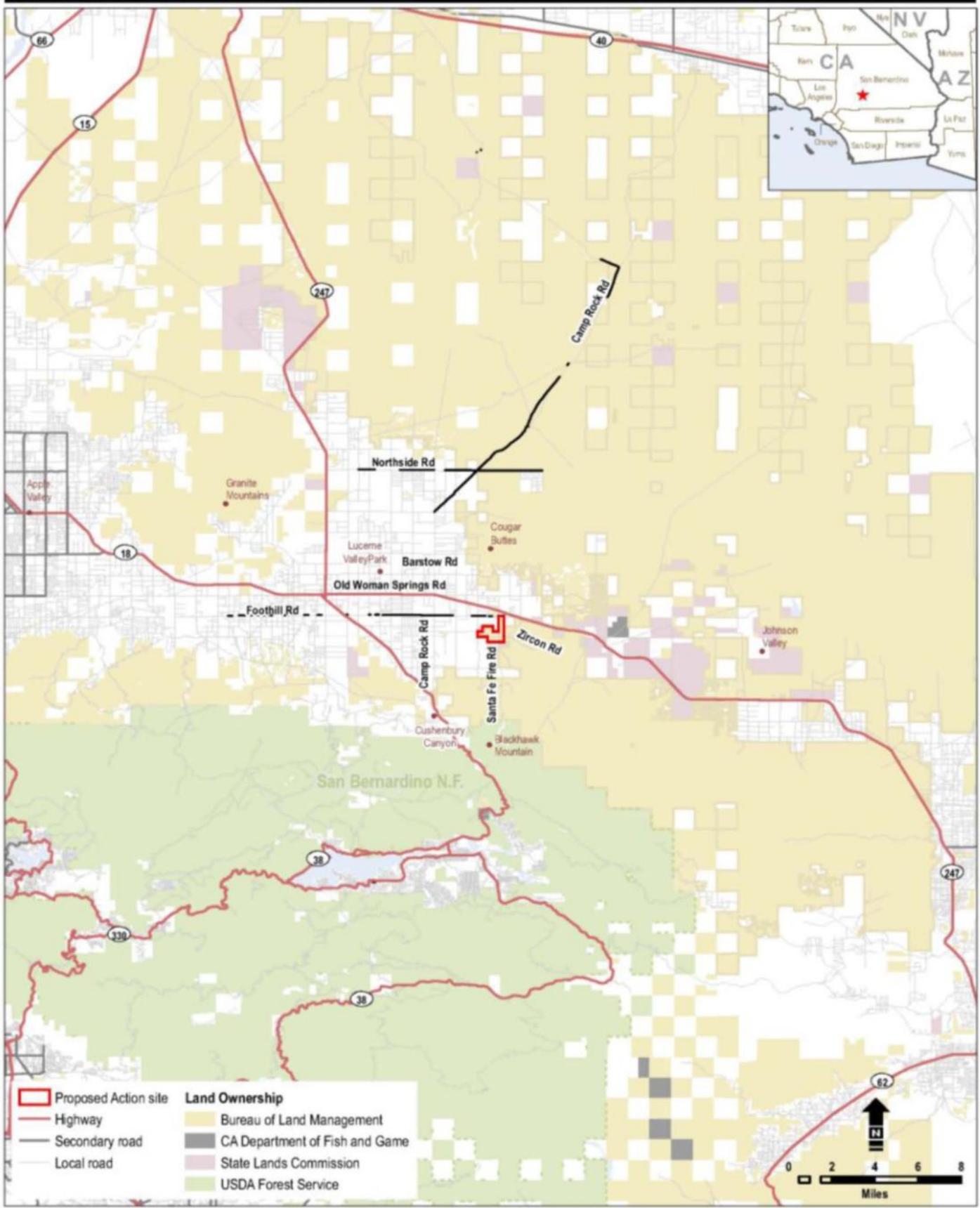
US Department of the Interior  
**BUREAU OF LAND MANAGEMENT**  
 California State Office  
 Sacramento, California  
 (916) 978-4400  
 www.ca.blm.gov

Date Prepared: 2/5/2010

NGS TOPO 100K Image

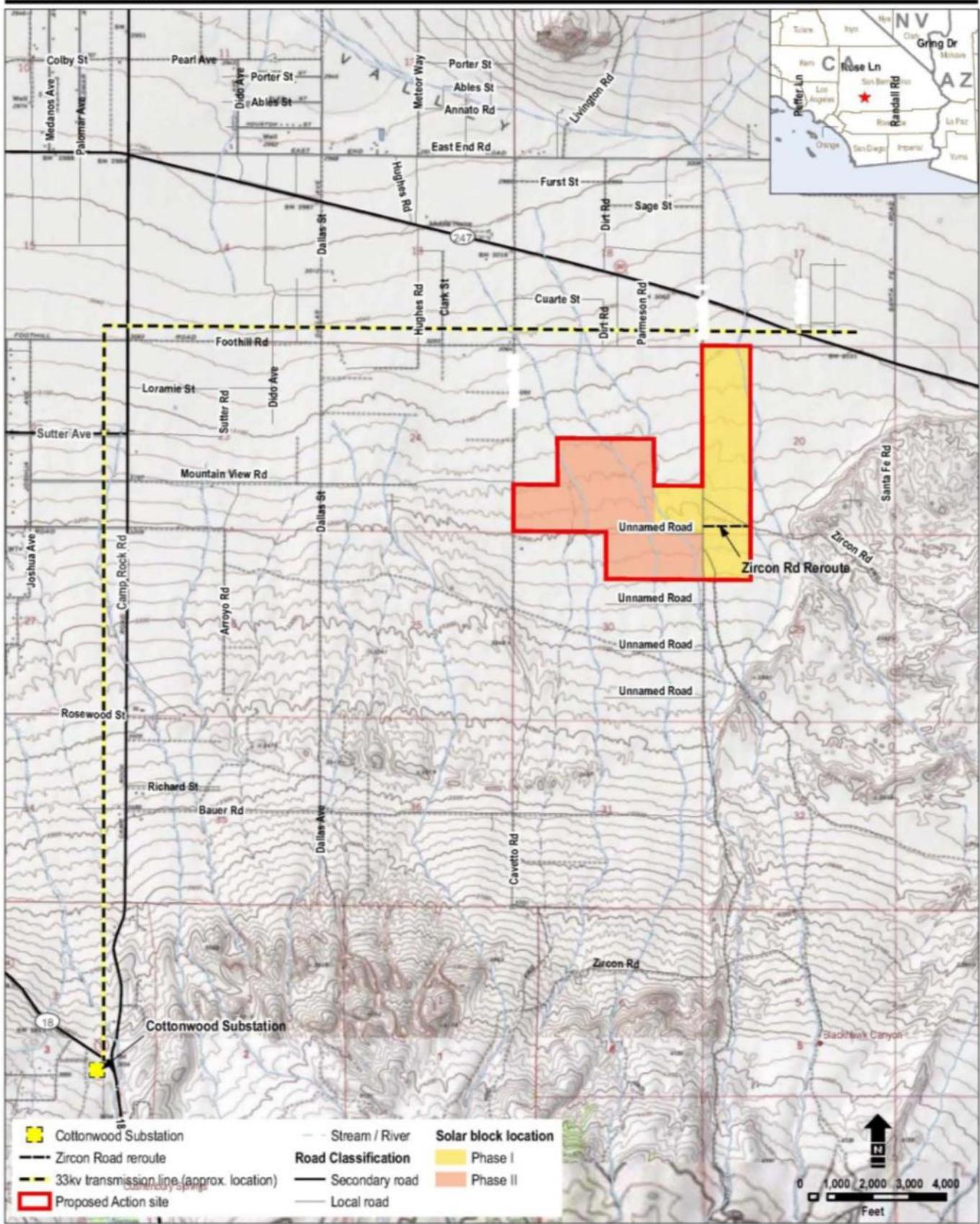
0 0.5 1 2 Miles

SCALE: 1" = 2.5 Miles (1:158,400)  
 SCALE CORRECT WHEN PRINTED AT 11X17



Base Map Source: Cal-Atlas 2009; ESRI 2009; USGS 1993; California Interagency Watershed Mapping Committee 1999

Figure 1-1  
**General Project Location Map**  
**Lucerne Valley Solar Project**  
 San Bernardino County, California



Base Map Source: Cal-Atlas 2009; ESRI 2009; USGS 1993; California Interagency Watershed Mapping Committee 1999

Figure 2-1  
**Proposed Action Site Map**  
**Lucerne Valley Solar Project**  
 San Bernardino County, California

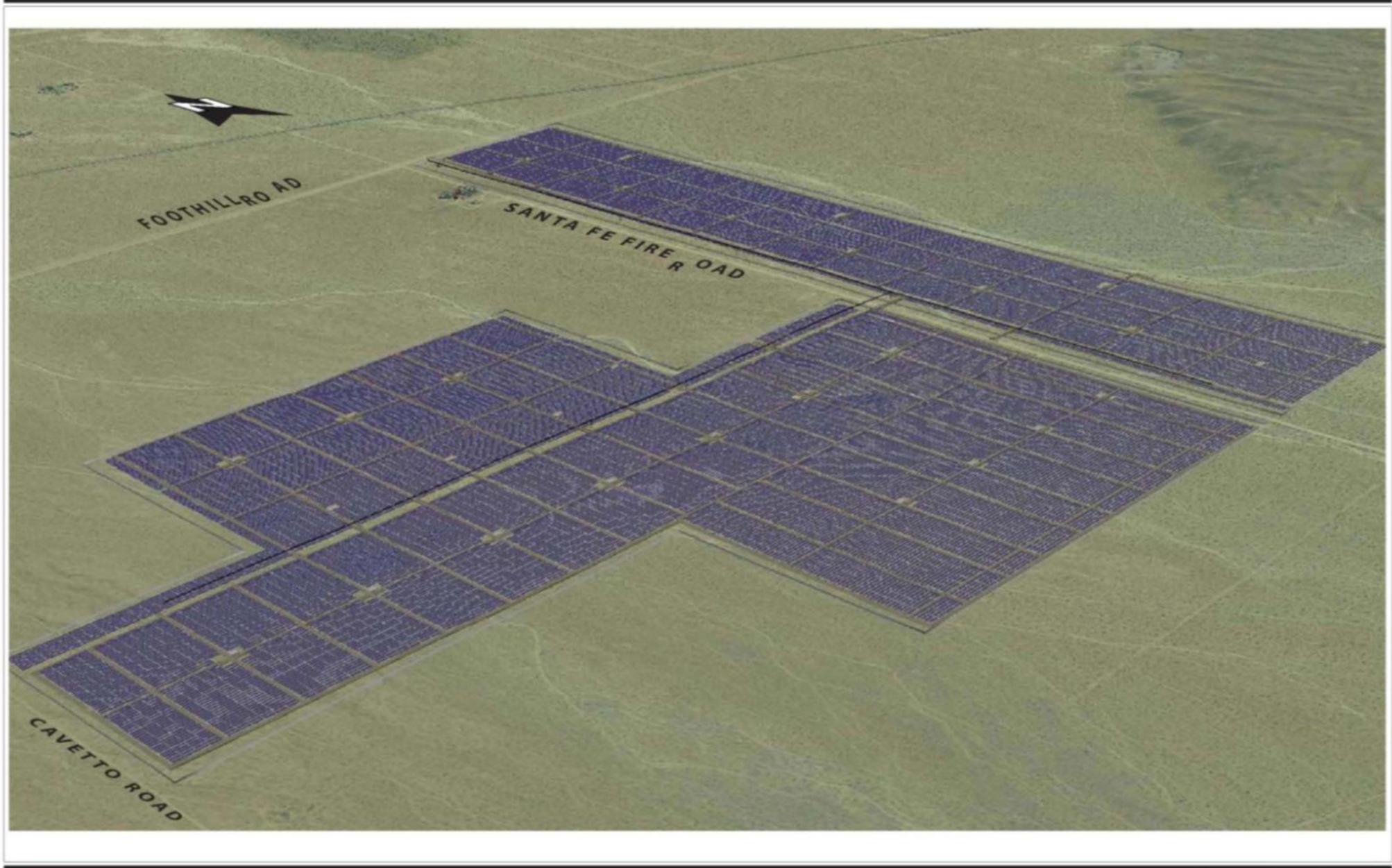
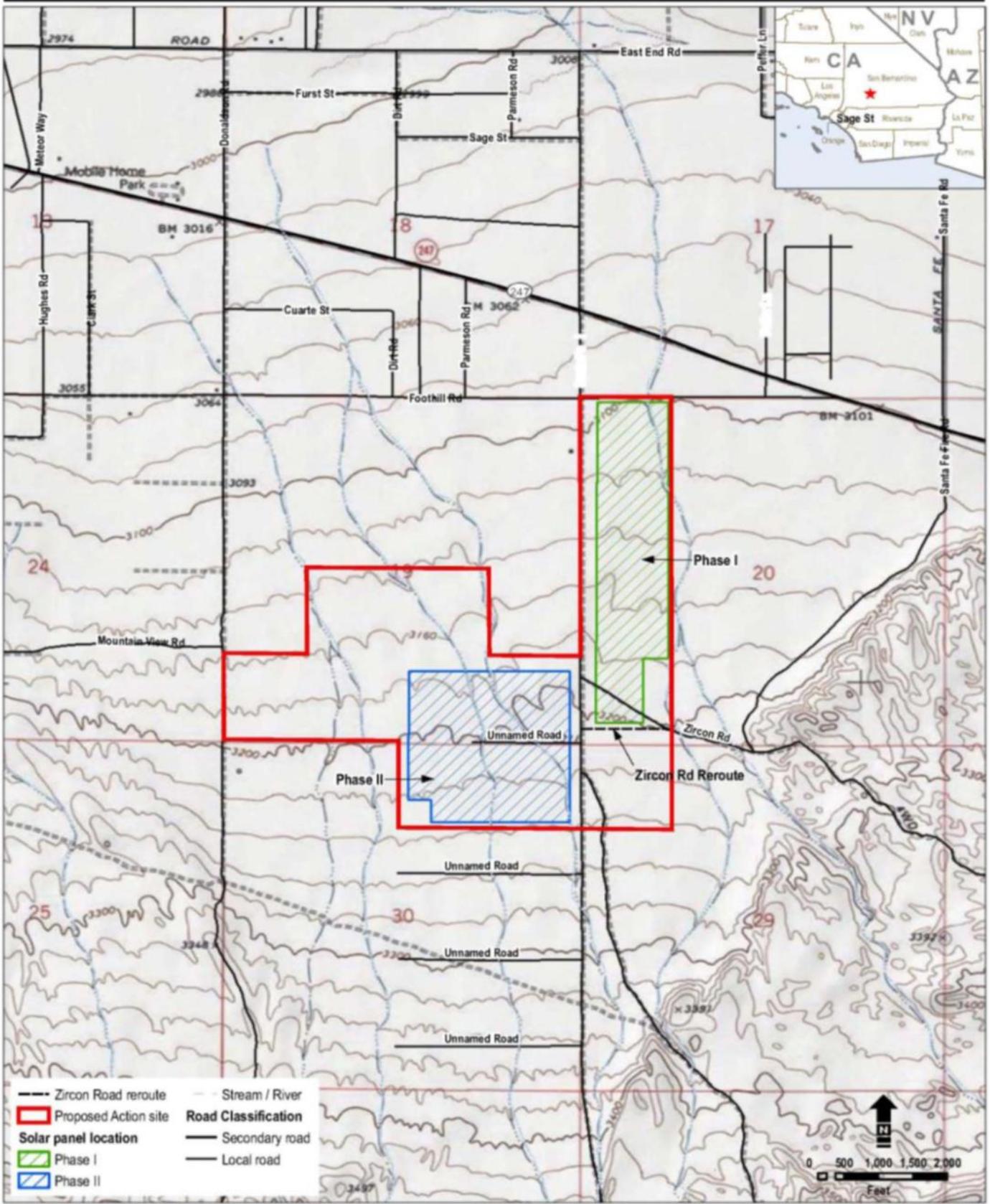


Figure 2-4  
**Simulated Aerial View of Proposed Action**



Base Map Source: CalAtlas 2009; ESRI 2009; USGS 1993; California Interagency Watershed Mapping Committee 1999

Figure 2-5  
**Alternative 5 Site Map**  
**Lucerne Valley Solar Project**  
 San Bernardino County, California