

C.13 – VISUAL RESOURCES

Testimony of William Kanemoto, Alan Lindsley, and James Jewell

C.13.1 SUMMARY OF CONCLUSIONS

California Energy Commission staff (hereafter referred to as Staff) have analyzed visual resource-related information pertaining to the proposed Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) and conclude that both the proposed project and Avoidance of Donated Lands Alternative would substantially degrade the existing visual character and quality of the site and its surroundings, resulting in potentially significant impacts to motorists on Highway Interstate 40 and National Trails Highway/Route 66. With staff-recommended mitigation measures, these impacts could be greatly reduced, but would remain significant and unavoidable. The Bureau of Land Management (BLM) is in the process of establishing visual resource management classifications for the proposed project and surrounding areas.

Staff concludes that under the proposed project, the character and quality of some views from foreground and near-middle-ground areas of the Cady Mountains Wilderness Study Area would be adversely affected, but the overall effect on views from the Cady Mountains Wilderness Study Area is considered to be less-than-significant.

Impacts of the Reduced Acreage Alternative would be substantially less than the proposed project. Based on further analysis and in light of additional information available to staff since publication of the SA/DEIS, impacts under this alternative are considered to remain significant.

The anticipated visual impacts of both the Calico Solar Project and the reduced acreage alternative, in combination with past and foreseeable future local projects in the immediate project viewshed, and past and foreseeable future region-wide projects in the southern California desert, are considered cumulatively considerable, potentially significant, and unavoidable.

C.13.2 INTRODUCTION

The following analysis evaluates potential visual impacts of the Calico Solar Project; its consistency with applicable Laws, Ordinances, Regulations and Standards (LORS); and the California Environmental Quality Act (CEQA).

In order to provide a consistent framework for the analysis, a standard visual assessment methodology developed by the California Energy Commission (Energy Commission) staff and applied to numerous siting cases in the past was employed in this study. A description of this methodology is provided in **Appendix VR-1**. The BLM and the Energy Commission have agreed that this methodology is the most appropriate for this site, as described in Section C.13.3.

As noted above, the project has been evaluated for conformance with applicable LORS. Adopted expressions of local public policy pertaining to visual resources are also given great weight in determining levels of viewer concern. In accordance with staff's procedure, conditions of certification are proposed as needed to reduce potentially

significant impacts to less than significant levels, and to ensure LORS conformance, if feasible.

C.13.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant visual resources impact generated by a project, Energy Commission staff reviews the project using the CEQA Guidelines Appendix G Environmental Checklist pertaining to “Aesthetics.” The checklist questions include the following:

- A. Would the project have a substantial adverse effect on a scenic vista?
- B. Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?
- C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, staff evaluates potential impacts in relation to standard criteria described in detail in Appendix VR-1. Staff evaluates both the existing visible physical environmental setting, and the anticipated visual change introduced by the proposed project to the view, from representative, fixed vantage points called “Key Observation Points” (KOPs). KOPs are selected to be representative of the most characteristic and most critical viewing groups and locations from which the project would be seen. The likelihood of a visual impact exceeding Criterion C. of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the susceptibility of the setting to impact as a result of its existing characteristics (reflected in its current level of visual quality, the potential visibility of the project, and the sensitivity to scenic values of its viewers); and the degree of visual change anticipated as a result of the project. These two factors are summarized respectively as *visual sensitivity* (of the setting and viewers), and *visual change* (due to the project) in the discussions below. Briefly, KOPs with high sensitivity (due to outstanding scenic quality, high levels of viewer concern, etc.) that experience high levels of visual change from a project are more likely to experience adverse impacts.

The National Environmental Policy Act (NEPA) requires that the federal government use “all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings” (42 U.S. Code 4331[b][2]).

Typically, U.S. Bureau of Land Management (BLM) evaluates visual effects of actions with the use of its Visual Resource Management (VRM) system. In this methodology BLM conducts inventories, delineating landscape units and assigning one of four visual resource inventory classes reflecting the existing scenic quality, viewer sensitivity, and distance zone to areas under its jurisdiction. These inventories are then used to assign

visual resource *management* (VRM) classes to these lands. However, in the case of the area managed under the California Desert Conservation Area (CDCA) Plan (including this project), VRM classes were not assigned under that management plan. In some areas, VR inventories have been conducted within portions of the CDCA, and Interim VRM Classes have been assigned by BLM to some portions.

However, in the case of the Calico Solar Project site, no current visual inventories by BLM are available, and no Interim VRM Classes have been assigned. The BLM is currently in the process of beginning visual inventories of areas within the CDCA that have not yet been inventoried, including this site. However, the results of those studies are not anticipated within the time frame of this project application, and delineations of scenic quality rating units or visual resource inventory classes are not available. Therefore, it was agreed by Energy Commission and BLM that this analysis would be conducted using the Energy Commission's standard visual assessment methodology.

In staff's professional opinion, despite certain differences in approach and emphasis between the two methodologies, the assessment framework and impact thresholds of the Energy Commission method used in this study are substantially consistent with those typically applied by BLM under its own procedures. Staff thus considers that the conclusions of this analysis are substantially equivalent to those that would be reached by applying BLM-specific methods of visual assessment.

Staff also reviews federal, state, and local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents (e.g., General Plan, zoning ordinance).

Please refer to **Appendix VR-1** for a complete description of staff's visual resources evaluation criteria.

C.13.4 PROPOSED PROJECT

C.13.4.1 SETTING AND EXISTING CONDITIONS

Regional Landscape

The originally proposed Calico Solar Project site comprised approximately 8,230 acres (12.8 square miles) of BLM land in San Bernardino County. In order to avoid environmental resources, the proposed project was reduced to approximately 6,215 acres, eliminating a northern portion of the site. The site is roughly 37 miles east of the town of Barstow and 17 miles east of Newberry Springs. It is adjacent to the north side of Interstate 40 (I-40) and near the historic Route 66/National Trails Highway that generally parallels I-40 on the south in this area. The site is on BLM-administered land and is largely bounded by BLM-administered land, although private tracts abut some portions of the site and a BNSF Railroad line traverses the site.

The 84,400-acre Cady Mountain Wilderness Study Area borders the site on the north and the Pisgah Area of Critical Environmental Concern (ACEC) is adjacent to the site's eastern/southeastern boundary. The Kelso Dunes Wilderness and Bristol Mountains

Wilderness are approximately 10 miles east of the site. Much of the Cady Mountain WSA and all of the Pisgah ACEC would be within in the Mojave Trails National Monument proposed as part of the proposed 2010 California Desert Protection Act legislation. The proposed monument would extend from the site's east boundary to near Needles. I-40 forms the southern boundary of the site. Three miles south of I-40 is the northern boundary of a closed live-fire training area on Twentynine Palms Marine Corps Base. Also south of I-40 and immediately southwest of the project site is the Ord-Rodman Desert Wildlife Management Area (DWMA). The Rodman Mountains Wilderness is 3 miles distant, also to the southwest. The west side of the site is bounded by undesignated BLM-administered land. **Visual Resources Figure 1, Project Setting**, depicts the project site in its immediate regional context in relation to these various protected areas.

The site lies within the east-west trending Mojave Valley, a broad desert valley resting between the Cady and Bristol Mountains to the north and northeast and the Bullion, Lava Bed, Rodman, and Newberry Mountains to the south and southwest. The valley floor ranges from approximately 1,800-feet to 2,200-feet in elevation; the mountains rise to between 3,000-feet and 4,400-feet in elevation.

Native vegetation cover of the region consists of sparse, low-growing green-to-tan Mojave creosote bush scrub typical of the western Mojave Desert.

Project Site

Visual Resources Figures 2a, b, and c, Character Photos of Project Area, depict views of the Calico Solar Project site and vicinity (AFC, Figures 5.13-3, -4, -5). (All figures referred to in the text may be found at the end of this section.)

The project site comprises approximately 6,215 acres of public land administered by the BLM. It does not include any private land. Although not part of the project, three adjacent tracts of private land are each surrounded on three sides by the proposed project. The most prominent man-made features at or near the site are I-40, which abuts the site on the south, and the BNSF Railroad traversing the site. These features, though evident, remain visually subordinate to the vast open expanse of the site and surroundings.

The site occupies a band of *bajadas*, or alluvial fans typical of the Mojave Desert landscape, which slope gently but noticeably southward toward the railroad and highway, from the feet of the prominently visible Cady Mountains immediately north of the site. The site is largely undisturbed and is currently managed by BLM as Multiple-Use Class (MUC) M (Moderate Use), except for a very small portion along the northern boundary of the project, which is classified as MUC Class L (Limited Use).

No communities lie within the project viewshed, which extends 5 miles from the site boundaries. The nearest rural residence is located about 2 miles east of the site.

Project Visual Setting: Viewshed, and KOPs

Project Viewshed

A feature of this desert landscape is the potential for large projects to be seen over great distances where even slightly elevated viewpoints exist, due to the large open areas of level topography and absence of intervening landscape features and screening vegetation. However, as illustrated in **Visual Resources Figure 3**, Project Viewshed, which presents a computer-generated GIS viewshed map depicting areas from which the site would be visible, the project is situated within a broadly enclosed viewshed defined by the Cady Mountains to the west, north, and east, and by Pisgah Crater, Sunshine Peak, and the Lava Bed and Rodman Mountains to the south and southwest. The site is thus largely visually isolated from the Mojave Valley to the west by topography and distance, and from the Broadwell Valley to the east by topography (SES 2008a). The project would be visible from locations throughout this contained viewshed. Intermittent views of the site extend up to 4 miles north into the Cady Mountains, and in general the project would be visible from various locations falling within a 5-mile radius, with the exception of mountainous areas to the north and east where terrain encloses views near the site boundary. As indicated in the figure, visibility within the Cady Mountains WSA is spotty and fragmented, due to rough, irregular terrain.

KOPs: Visual Quality, Viewer Concern, and Viewer Exposure

Visual Resources Figure 4 depicts Key Observation Points (KOPs) as well as locations from which photographs were taken to depict the general character of the site and vicinity. KOPs are used in the Energy Commission visual analysis method as the basis for evaluating potential project impacts, and represent the key sensitive viewer groups and viewing locations likely to be affected by the project.

In the Energy Commission assessment approach, KOPs are rated according to the visual quality of their setting, and an assessment of their level of viewer concern and viewer exposure. Those three primary attributes are summarized in a KOP's *overall visual sensitivity* rating, which reflects an assessment of the overall susceptibility to visual impact of the viewer group/receptors it represents. These sensitivity ratings serve as the environmental baseline against which potential project impacts, measured in terms of level of *visual change*, are evaluated.

KOPs used in this study include those used in the project AFC, which were selected for the AFC in consultation with Energy Commission staff. To minimize confusion, the numbering of viewpoints used in the AFC has been retained in this analysis.

In the following discussion, distance zone terminology is used in the context of the Energy Commission method, as follows: 'foreground' is used generically to refer to viewing distances under ½-mile; 'middle-ground' to distances between ½ and 5 miles; 'near middle-ground' refers to that portion of middle-ground under roughly one mile; and 'background' to distances over 5 miles.

KOP photos are selected to represent key sensitive viewer groups who would potentially be affected by the project. Project simulations are then imposed on these views to illustrate how the same view would appear with the project in place. In the

discussion that follows, the reader is referred to these 'before project' photos. The figure numbers referring to each KOP below thus appear out of sequence, but may be found along with all other figures, at the end of this section. In each case, the designation "a" after the figure number indicates the existing (before project) view from a KOP, while the second image is a simulation of the future condition, should the project be constructed as proposed.

KOP 1 is from a point along Route 66 looking generally northeast into the site across I-40. KOP 2 is a view looking south into the site, from an elevated position just inside the Cady Mountain WSA. KOP 3 is a view looking northwest toward the site from the vicinity of the nearest residence to the project. KOP 4 is a view north into the site from where the BNSF Railroad crosses under an existing electric transmission line about 800 feet from the eastern edge of the site. KOP 5 is a view from I-40 eastbound, looking east-northeast across westbound I-40 into the site.

Route 66/I-40 - KOP 1

KOP 1 is taken from Route 66 (National Old Trails Highway), which parallels I-40 slightly to the south in this segment. Despite its name, this portion of old Route 66 does not have Scenic Byway or other officially designated status. It is maintained by the County and is a remnant of the original National Old Trails Highway established in the early 20th century between Maryland and California. It remains the focus of efforts to preserve and maintain it by groups interested in its historic status and associated historic features. I-40 is an eligible state scenic highway but has not been officially designated. It receives relatively high levels of traffic (15,600 vehicles per day) (AFC 5.13-5) (SES 2008a). The KOP is fairly representative of motorists on both of these roadways, though it differs from typical views from I-40 in that the project is seen from Route 66 at a greater distance. **Visual Resources Figure 8a** depicts the existing view from KOP 1. The project would begin beyond I-40, seen in the foreground, directly across the median from this vantage point. As depicted in this photograph, views of the site from Route 66 would generally have I-40 and low-voltage utility lines in the immediate foreground. The landscape beyond is relatively featureless, characterized by large expanses of gently sloping fan or *bajada* topography, dissected by intermittent seasonal washes. Land cover is low-growing, nondescript bush scrub (primarily Mojave Desert creosote bush scrub) that is naturally sparse, lending a brown to green hue to the lighter tan colored soil surface. Beyond the highway and middle-ground bajada, the Cady Mountains, a Wilderness Study Area, dominate the background.

Visual Quality: Visual quality of this landscape is considered moderate. Although some visually compromising elements (including the highway, low-voltage utility lines, the BNSF rail line, and disturbance from a pipeline right-of-way) are present, these remain visually subordinate and the bajadas comprising the project site, descending from the intact and visually vivid Cady Mountains nearby, appear predominantly undisturbed and intact. The typical bajada landscape is common in the region and relatively featureless, but provides a characteristic and fairly undisturbed foreground to the rugged nearby mountains.

Viewer Concern: Viewer concern is considered moderately high; the focus of many Route 66/Historic Trails Highway users would be on the historic nature of this roadway and the encompassing landscape through which earlier travelers would have

experienced. In this context, the integrity of the view would be of high importance. Similarly, the I-40's state-eligible scenic status contributes to a higher level of viewer concern.

Viewer Exposure: Viewer exposure is high. Views of the site, which adjoins I-40, are unobstructed. The sloping of the site's fan topography, which ranges from 1,800 feet in elevation in the southern portion of the project site to approximately 2,200 feet in elevation in the northern portion of the project site, is oriented to the highway, increasing its overall exposure.

Overall visual sensitivity was thus considered to be moderately high.

Cady Mountains WSA – KOP 2

Visual Resources **Figure 9a** depicts the existing view from KOP 2 looking south across the project area. It provides a view of the project site from within the Cady Mountains WSA, as viewed from approximately 1,500 feet from the northern boundary of the site and somewhat elevated above the site. The WSA occupies the high ground above the project site on the north. The immediate foreground is dominated by sparse vegetation, cobbles, and the smaller landforms on the lower slopes of the Cady Mountains. Views of level open desert terrain characterized by light tan colored soils and sparse scrub vegetation occupy the visual middle-ground. The BNSF Railroad, approximately 3 miles away, and I-40, which is approximately 5 miles distant, create linear elements crossing the middle-ground, but are visually subordinate in the broad landscape. The ridges of the Rodman and Lava Bed Mountains are 12 to 14 miles away and dominate the background.

Visual Quality: While man-made intrusions and ground disturbance remain visually subordinate within the relatively intact natural landscape, landforms and vegetation of the site lack exceptional vividness. Visual quality is enhanced by the high skyline of the Lava Bed and Ordman Mountains in the distance and the panoramic views of the valley floor, with Pisgah Crater and unusual, contrasting lava features visible in the middleground. The visual foreground from this area, though not depicted in this particular view, would also be characterized by visually interesting contrasting patterns of rugged outcrops and ridges, and alluvial washes. Visual quality from this KOP was characterized as moderately high.

Viewer Concern: Viewer concern from this KOP is considered moderately high – wilderness areas generally would be considered to have high sensitivity, but the number of visitors at this distance to the project is believed to be very low.

Viewer Exposure: Viewer exposure at this distance is moderate; while open and unobstructed views are present within the WSA to background distances, as indicated in the viewshed map depicted in **Visual Resources Figure 3**, visibility is intermittent, often obstructed by intervening rock outcrops in the very rough terrain, characterized by highly irregular rocky peaks and ridges separated by lower alluvial washes. In addition, increasing viewing distance diminishes visibility and prominence of the project and the background mountains are a dominant feature in all southward views. Finally, viewer

numbers are believed to be very low because of the remoteness and difficulty of the location, although the area has experienced increasing OHV activity in recent years.

Overall visual sensitivity is considered to be moderately high.

Eastside View – KOP 3

KOP 3 is a view from the nearest residence to the proposed project site. **Visual Resources Figure 10a** depicts the existing view from this location. The project's eastern boundary would be at the existing transmission line visible in the middle-ground at a distance of approximately 1-1/2 mile. This KOP is at approximately the same elevation as much of the project site. As with most of the KOPs, views of level, relatively featureless open desert characterized by light tan colored soils and sparse scrub vegetation occupy the visual foreground and middle-ground. The existing transmission line, visible at a distance of about 1-1/2 miles, detracts from the intactness of the landscape setting, but remains visually subordinate at this distance. Ridges of the westernmost Cady Mountains are visible at a distance of roughly 9 miles; the taller, distant Calico Mountains can be seen on the horizon at background distances of 25 miles or more.

Visual Quality: Visual quality is moderate. The level, open fore- and middle-ground is typified by characteristic non-descript creosote scrub vegetation, with moderate levels of existing visual intrusion by existing transmission lines. The existing power line, an existing electric substation, the BNSF Railroad, and I-40, which are approximately one mile south and west of this point, intrude into views from this location and detract from their intactness. The openness of the landscape, and the background mountain ridges are the principal distinctive features.

Viewer Concern: Viewer concern is considered moderately low due to the absence of other similar viewers. This residence may be the only one within the project viewshed and is not representative of a typical viewer group.

Viewer Exposure: Views within this landscape are open and largely unobstructed; however, viewer exposure to the project is considered moderate. The project would occupy the level middle-ground at a similar elevation as the viewpoint, thereby occupying a narrow portion of the overall field of view due to the oblique viewing angle. This narrow band thus tends to be dominated by the foreground, which has variety in color and texture, and the background ridges, which break the horizon and dominate attention. This moderation of exposure due to oblique viewing angle is somewhat off-set however by the vast horizontal extent of the project from viewpoints at this distance, and high contrast of anticipated mirror brightness under many typical conditions.

Overall visual sensitivity of this KOP is thus considered to be moderate.

BNSF Railroad/I-40 West – KOP 4

Visual Resources Figure 11a depicts the view from the BNSF rail line, looking northwest into the project's eastern boundary at a distance of roughly 800 feet. KOP 4 was included in the AFC analysis because the AMTRAK Southwest Chief route from Los Angeles to Chicago travels on the BNSF rail line through the middle of the project

site. However, the Southwest Chief passenger train travels through the site only at night in both directions. For that reason, train passengers are not considered to be a potentially sensitive viewer group within the project viewshed, and will not be analyzed further in this discussion.

However, KOP 4 closely resembles viewing conditions of I-40 motorists in close proximity to the project boundaries and, particularly, the SunCatcher units, as they could be along much of the I-40 project frontage, and as they would be at the project's eastern boundary a short distance (approximately ½-mile) to the south of this viewpoint. Particularly because the simulation of this viewpoint is very useful in visualizing the potential effects of the project on motorists when seen at close distance, this KOP has been retained in this discussion to address effects on that viewer group.

Because the KOP is being discussed in relation to viewing conditions on I-40, the setting/sensitivity discussion applicable to this KOP is essentially the same as that under KOP 5, below.

Interstate 40 East – KOP 5

KOP 5 is a view northeastward from eastbound I-40 across the opposite lanes of I-40. **Visual Resources Figure 12a** depicts the existing view from KOP 5. The view is similar to that from KOP 1, also facing northeastward. The visual foreground consists of the median of the highway and opposite westbound lanes and the utility poles along the highway.

Visual Quality: Visual quality is moderate. The middleground consists of the relatively intact, sloping bajadas descending from the Cady Mountains, characterized by light tan soils and sparse scrub vegetation. The alignment of the BNSF Railroad forms a relatively inconspicuous linear element across the near-middleground. Hills and ridges of the Cady and Bristol Mountains at middleground distance are vivid features, with interesting patterns of contrast between dark, rugged rock outcrops and ridges against lighter-colored strata and alluvial washes. At this middleground distance, the mountains enclose and dominate the view, strongly enhancing an otherwise fairly featureless landscape, elevating visual quality for eastbound travelers.

Viewer Concern: Viewer concern is considered moderately high, due to an elevated level of concern with scenic values presumed within the CDCA in general, and a relatively high proportion of motorists on I-40 concerned with those scenic values.

Viewer Exposure: Viewer exposure is high; views are predominantly open and unobstructed over an extensive area, and the project site is viewed at foreground and middle-ground distance, with terrain sloping downward toward the viewer along a highway frontage of roughly 4 miles. The view from KOP 5 is of the project site seen at a distance of a little over 1 mile across a privately held tract of land not in the project. Viewer numbers on I-40 are relatively high (15,600 vehicles per day) (cite: AFC 5.13-5).

Overall visual sensitivity of this KOP is thus considered to be moderately high.

C.13.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Significance Criteria

The following regulatory criteria were considered in determining whether a visual impact would be significant.

Federal

Significance under NEPA is defined in terms of a) context and b) intensity. Context means that the significance of an action must be analyzed in several circumstances or situations, such as society, the affected region, affected interests, and locale. Intensity refers to the severity of impact, and includes a variety of factors to be considered (40 CFR 1508.27).

Some of the intensity factors potentially relevant to visual impacts include 'unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands . . . , degree of controversy, degree of uncertainty about possible effects, degree to which an action may establish a precedent for future actions, and potential for cumulatively significant impacts.

State

The CEQA *Guidelines* define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance." (Cal. Code Regs., tit.14, § 15382.) Appendix G of the *Guidelines*, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Local

Energy Commission staff considers any local goals, policies, or designations regarding visual resources. Conflicts with such laws, ordinances, regulations, and standards can constitute significant visual impacts. See the section on Applicable **Laws, Ordinances, Regulations, and Standards (LORS)**.

Project Visual Description

Power Plant

Visual Resources Figure 5 depicts the layout of the two proposed project phases. **Visual Resources Figure 6** depicts architectural elevations of the Calico Solar Project Main Services Complex, (AFC). **Visual Resources Figure 7** depicts elevations of the proposed mirrored solar dish units (Data Response #125) (SES 2009p).

The proposed project includes approximately 34,000, 40-foot solar dish Stirling systems (i.e., SunCatchers) and associated equipment and infrastructure within a fenced boundary, occupying approximately 6,215 acres (roughly 10 square miles) of undeveloped land. Associated proposed facilities on the site include:

- Main Services Complex located generally in the center of the site for administration and maintenance activities, which would include buildings up to 78 feet in height, parking and access roads;
- Staging Area adjacent to the Main Services Complex for use during construction
- Staging Area adjacent to the eastern site boundary, near the existing power line and railroad
- 220 kV Substation located generally in the center of the site, south of the Main Services Complex.

Site Layout

A specific detailed site layout of the SunCatcher units is not provided in the AFC. However, large-scale schematic layouts such as AFC Figure 3-4 suggest that the rows of SunCatchers under Phase 2 could abut the Highway I-40 right-of-way in the western portions of the project. AFC Figure 3-4 also suggests that in the eastern portion of the I-40 frontage, the southernmost SunCatchers would be located immediately north of the existing pipeline right-of-way (SES 2008a).

Construction Staging Area

One construction staging/lay-down area is proposed. The 14-acre laydown area will be provided adjacent to the Main Services Complex.

Site Grading

Site grading would potentially represent a significant visual component of the proposed project during construction. Surface disturbance of the proposed site, as in most desert landscapes of the region, can often result in high contrast between the disturbed area and surroundings, due to high contrast between the disturbed soil color and solar reflection (albedo), and the color and albedo of the existing undisturbed, vegetated surface. Furthermore, effectiveness of revegetation in this arid environment is difficult, of limited effectiveness, and capable of recovery only over a very long-term time frame.

Plant Night Lighting

According to the AFC, night lighting of the Main Services Complex would consist of 400-watt high-pressure sodium lights, with illumination falling to 0.0 foot-candles on the ground a short distance from the facility (AFC, Figure 3-20, -21)(SES 2008a).

Parking and roadway lighting would consist of full cut-off luminaires to minimize night sky light pollution. Preliminary photometric studies provided in the AFC depict illumination from these fixtures falling to 0.0 foot-candles a short distance from each roadway intersection (AFC Figure 3-23) (SES 2008a).

Linear Facilities

- a 1.7-mile 730-MW/220-kV transmission line intended to connect to the existing Southern California Edison (SCE) Pisgah Substation located at the southeast boundary of the project site
- three overhead 34.5 kV collection circuits to convey power to the substation within the project. The height and length of these lines is not described in the AFC, but are visible in some of the AFC visual simulations
- approximately 38 miles of treated roads, approximately 587 miles of unpaved access roads.

Visual Impact Assessment

Staff Discussion of AFC Analysis

Despite various differences in methodology and specific conclusions, staff is in general agreement with the overall conclusions of the applicant's AFC visual analysis. That is, the AFC concluded that potential project visual impacts from KOPs 1, 2, 4, and 5 are potentially significant. The visual impact assessment below provides staff's independent analysis of visual resource impacts, and includes staff comments on the applicant's AFC visual analysis where appropriate. Visual simulations provided in the AFC are utilized to support or complement staff's analysis. The KOP analysis below is staff's own.

Direct Project Impacts

Project Operation Impacts

Impacts of Structures on Key Observation Points

KOP 1 – Route 66/I-40. Visual Resources Figures 8A and 8B.

As described in Section C.13.4.1, above, overall visual sensitivity of this KOP, and much of the viewshed generally, is considered to be moderately high. Overall, existing scenic quality of this landscape is considered moderate. However, viewer concern is considered moderately high; the focus of many Route 66/National Trails Highway users would be on the historic nature of this roadway and the encompassing landscape which earlier travelers would have experienced. Viewer concern is also elevated by the I-40's state eligible scenic highway status. Viewer exposure is high.

Staff also notes that internal project transmission lines, depicted in the other simulations, are not included in the applicant's simulation of KOP 1. These features would add a contrasting vertical visual element that would detract somewhat from the visual unity of the mirror field and contribute to a more industrial overall visual character.

According to information provided in Data Response #124 (SES 2009p), the project condition depicted in the simulation of KOP 1 contradicts the layout indicated in the AFC project description as shown in AFC Figure 3-2 (SES 2008a). It does, however, correspond roughly to the assumption that SunCatchers would be located only north of the existing pipeline right-of-way. As discussed further, below, these differences are critical to the accuracy of both the simulated view, and the impact analyses presented in this study.

Figures 8A and 8B depict a view northward from Route 66 (National Trail Highway), at a foreground distance of less than 1,000 feet to the site. However, as discussed further below, the nearest SunCatcher units depicted in this simulation are located over 1,700 feet away. Staff considers this to be a reasonably representative viewpoint. The range of actual view of the project would extend from foreground, throughout the middle-ground, to the background 5-miles distant. The project would appear very prominent, dominating the view from foreground locations on Route 66 and I-40. From such viewpoints near the project site, the project would strongly dominate the vista.

Project visual contrast would be very strong. Texture and form contrast with the existing landscape of the vast rows of SunCatchers at this distance would be strong, lending a distinctly man-made, industrial character to the location. Color contrast with the existing natural environment would also be strong, and although the field could at times resemble a vast lake surface, reflecting the sky, at other times the mirrors are expected to appear very bright, to the point of representing a strong nuisance or distraction, though not a hazard to navigation. In addition, the long, linear, bright SunCatcher rows, which are oriented perpendicularly to the highway, would rapidly alternate with the darker-colored land between each row, introducing a large-scale flickering effect at the highway frontage that would compound the nuisance and distraction of glare for some viewers. From some viewpoints, the taller buildings of the Main Services Complex (up to 77 feet tall) could be visible in the middle of the site, exhibiting some vertical form and line contrast and attracting attention, although at this distance they appear relatively inconspicuous. Likewise, poles for the electric collection system, though not depicted in the simulation of KOP 1, would be visible throughout the site and introduce vertical and horizontal elements of visual complexity that would detract from the visual unity of the scene and add to the overall industrial character. However, these features generally would be dwarfed by the vast scale and dominance of the SunCatcher fields.

The project would exert extraordinary horizontal scale and spatial dominance, occupying a vast expanse of the landscape along nearly 5 miles of highway frontage, not including the view when approaching the project on the highway. As depicted in the simulation, the overall proportion of the view occupied by the project would be extensive compared to the foreground terrain, background mountains, and sky, due to the sloping terrain and resulting site exposure.

As depicted in the simulation of KOP 1, the project does not physically block scenic views of the Cady Mountains in the distance from viewpoints along the highway. This

feature of the simulation is discussed further, below. Overall visual change to viewers from Route 66 is considered high. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

Impact Significance - In the context of moderately high overall visual sensitivity, the high level of visual change experienced by the majority of Route 66 and I-40 viewers – those within foreground and near-middle-ground distance from the project – would be regarded as significant.

As depicted in the applicant's simulation of KOP 1, the SunCatchers would not physically block scenic views of the Cady Mountains in the distance. Because the SunCatcher units are approximately 38 feet in height, this appears somewhat counter-intuitive. According to information provided in Data Response #124, this phenomenon would occur in large portions of the highway frontage, apparently for two principal reasons: first, Highway I-40 is elevated up to 8 feet above the adjacent plain, and up to 20 feet above the elevation of the nearest simulated SunCatchers, based on assumed siting depicted in the simulations. Elevation of the plain adjoining the highway continues to decline in relation to the highway until the BNSF rail line, over 1 mile from the highway, which generally represents a low point. Second, the simulations depict the site boundary as at least *1,200 feet from the edge of the roadway*, and the nearest SunCatchers set back an additional 500 feet from the site boundary. In the simulation of KOP 1, as depicted in the AFC, the nearest SunCatchers are thus assumed to be at least 1,700 feet from the edge of the roadway and 2,634 feet from the camera viewpoint on Route 66. The drop-off in elevation from the road at that set-back distance apparently accounts for the fact that the SunCatchers do not block views of the mountains behind them, as well as for the diminished visual scale and height of the units within the view, and the fact that the entire field to background distance remains visible Data Response Set 1 Part 2 # 124) (SES 2009p). The siting assumptions depicted in the simulation of KOP 1 and Data Response 124 thus contradict those depicted in AFC Project Description Figure 3-2. They do, however, appear to correspond roughly to the assumption that the project perimeter fencing and SunCatchers would be located *only north of the existing pipeline right-of-way*.

These discrepancies are relevant to this discussion because staff believes that the visual conditions as seen by motorists on I-40 and Route 66 would differ substantially under the siting assumptions presented in AFC Figure 3-2 and in Data Response #124, respectively. Under the assumptions depicted in AFC Figure 3-2, SunCatchers would be sited south of the pipeline ROW within a short distance of the highway. Under those conditions, the mirror units would not only have considerably greater visual magnitude individually, but would be higher in relation to the roadway and would begin to block views of the mountains in the background. At sufficiently close distance, they could completely enclose northward views from the highway. Closer siting would also exacerbate potential nuisance glare effects on motorists, which would be reduced by distance.

However, with the siting assumptions embodied in the simulation of KOP 1 and depicted in Data Response #124 – i.e., setbacks from the roadway to the nearest SunCatchers of 1,700 feet or more – the potential visual effects to motorists would be substantially reduced when compared to potential effects of the project with a much smaller set-back.

Potential glare effects, visual scale of the units, and potential view blockage would all be substantially reduced. For these reasons, staff endorses the siting assumptions represented in the simulation of KOP 1, and recommends adoption of a similar approach as part of **Condition of Certification VIS-3**.

Mitigation – Staff recommends **Condition of Certification VIS-3, Set-Back of SunCatchers from Highway I-40**, which proposes siting of the SunCatchers to the north of the existing pipeline ROW, with a minimum set-back of the SunCatchers from the highway of 360 feet.

With this measure, as depicted in the simulation, project effects would remain substantial and continue to dominate the landscape. However, they would be considerably less than a project without these set-backs, retaining views of mountains and reducing potential nuisance glare impacts.

In addition, in order to reduce the contrast of non-mirror project features as seen from all off-site viewpoints, **Condition of Certification VIS-1, Surface Treatment of Non-Mirror Project Structures** is recommended.

With these measures, visual contrast and dominance of the project would be considerably reduced. However, visual contrast and dominance of the projects would remain strong, and impacts would remain significant.

Staff discussion of landscape screening measures: In the AFC, the applicant has suggested possible landscape screening measures as a potential mitigation measure to address project visual impacts. Staff has not recommended landscape screening measures, for the following reasons:

- a) the amount of water that would be needed in this desert landscape to make such screening viable would be very substantial, and it is unclear that the resulting screening would represent a visual mitigation commensurate with its high social, monetary, and environmental cost.
- b) any such screening would be nearly as out-of-character with the existing native landscape of the Mojave Desert as the project itself. Although many people may indeed prefer tree rows or other tall vegetation to the view of mechanical devices, the degree of visual change from the native landscape of miles of tall, non-native vegetation would be nearly as high as from the proposed project.

KOP 2 - Cady Mountains WSA. Visual Resources Figures 9A and 9B.

KOP 2 represents a view of the project site from within the Cady Mountains WSA, as viewed from slightly over ¼-mile from the northern boundary of the site, at an elevation of roughly 300 feet above the base of the nearest SunCatchers, and 500 feet above the BNSF rail line visible in the view.

The location of the KOP as indicated in AFC Figure 5.13-2 may be inaccurate, or the accompanying information for the KOP may be inaccurate. According to Figure 5.13.6, the viewpoint faces into a portion of the project area that is 'not a part' (NAP) of the project. In Figure 5.13-14, the simulated view is described as a 'worst-case view.'

However, if the mapped KOP location is correct and the 'notch' in the SunCatcher layout visible toward the center of the simulation represents the southwestern corner of the southern excluded ('not a part of project' (NAP)) area (Section 01, T09N R05E), then far from being a 'worst case' view from the Cady Mountains, this view would represent a 'least case' view, depicting roughly an area of less than two sections of units at a nearest distance of roughly 2.4 miles. The nearest depicted SunCatchers would thus be those at the northern edge of the large NAP area roughly ½ mile north of the BNSF rail line (Section 12). However, if this interpretation is correct, then the KOP location map clearly indicates that a slight rotation to the left from this or a similar nearby viewpoint within the Cady Mountains would potentially reveal an area of over 8 sections of units, at a closest distance of roughly 1,500 feet or .28 mile. Obviously, if this interpretation is correct, the visual effect of such a view (i.e., directed over the totality of the eastern portions of the project from an elevated position) would be dramatically greater than depicted in this simulation.

The simulation from Cady Mountain is accurately representative in one sense. According to the viewshed mapping depicted in **Visual Resources Figure 3**, visibility of the plain below from the south face of Cady Mountain is highly spotty and fragmented, due to the very rough terrain, so that views may often be hidden by intervening rocky topography, while nearby high points would have clear panoramic views.

As represented in the simulation from KOP 2, project contrast at this distance would generally be moderate. Color and texture contrast with the existing landscape at this distance would be strong, lending a conspicuous, distinctly man-made character to the view. Form and line contrast, however, would be relatively weak, blending with the broad horizontal lines of the level terrain.

In general, at this distance the project would exert strong horizontal scale and spatial dominance, occupying a vast extent of the landscape. Due to the viewshed characteristics in the Cady Mountains described above, however, visual dominance would vary considerably, as a function of visual exposure due to terrain. In the most exposed conditions, for example in the areas north of the proposed project area, viewers could overlook a panorama of up to 8 square miles of SunCatchers or 4 times the area depicted in the simulation, with the nearest of these seen at foreground distance. From such viewpoints, project dominance would be very strong, occupying the largest part of the overall view and overshadowing all other elements. In other cases, as in the simulated view, where the preponderance of the project is hidden by terrain, contrast and dominance could be moderate, and the project would appear to be visually co-dominant with the background mountains.

The project would not block scenic views, occupying the visual foreground of the background mountains, although it would block view of the natural valley floor.

Visual change from KOP 2 and similar middle-ground viewpoints would thus range from moderate to strong depending on location and distance. However, according to viewshed mapping, from the majority of locations at distances approaching a mile or more, visual exposure would decline due to intervening terrain, as would visual dominance due to distance. In view of the very scattered and intermittent visibility of the project predicted by viewshed mapping within the one- and 2-mile distance zones, the

relatively low levels of visitation, the small proportion of the WSA that would be affected, and correspondingly limited view durations, overall visual change from the Cady Mountains is considered to be moderate.

Impact Significance - In the context of moderately high overall visual sensitivity, the moderate level of visual change experienced by visitors to Cady Mountains WSA at distances of over roughly one mile would be somewhat adverse. However, in view of the small proportion of the Cady Mountains WSA potentially affected at closer distances, overall impacts to viewers in the WSA are considered to be less than significant.

Mitigation – No mitigation measures are considered necessary at distances of over roughly one mile. No measures are available for nearer viewpoints. Those nearer viewpoints are sufficiently intermittent and represent so small a proportion of the WSA, however, as not to require mitigation.

KOP 3 - Eastside View, Visual Resources Figures 10A and 10B.

KOP 3 represents the view from the nearest residence to the project, situated approximately 1.5 miles to the east of the site. As noted in Section C.13.4.1, above, this viewpoint may be the only residence within the project viewshed and may thus be unique, and not representative of a larger viewer group. It is, however, informative of the appearance of the project at this distance. In staff's opinion, however, the simulation does not accurately convey the level of brightness expected from the face of the mirrors under typical conditions.

As illustrated in the simulation, at this distance the existing SCE 500 kV and 230 kV transmission line towers and poles are evident, though visually subordinate within the view. The line and towers do not intrude into the skyline due to the mountains in the background. The project would begin at the transmission line and extend away from the viewer. However, numerous towers and poles required by the project internal to the site would increase the degree of vertical form and line contrast with the horizontal landscape. The contrast of the combined transmission lines could attract attention and begin to dominate the characteristic landscape. Due to the relatively level grade/elevation relationship between the project and viewpoint, at this distance the project occupies a narrow portion of the overall field of view due to the oblique viewing angle. The reduced dominance due to oblique viewing angle is somewhat off-set however by the vast horizontal extent of the project from viewpoints at this distance, resulting in high spatial dominance; and by high contrast of anticipated mirror brightness under many extended, typical conditions. Although not obstructing views of the distant background, the extensive array of regularly spaced solar units along the project boundary would completely dominate the middle-ground. Accounting for the anticipated brightness of the mirror field for extended periods, and the strong horizontal spatial dominance of the project, overall visual change at this distance would be strong. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

Impact Significance - In the context of moderate overall visual sensitivity from this and similar locations, due to low visual magnitude and very low viewer numbers, the

moderately high level of anticipated visual change of the project is considered adverse but less than significant.

Mitigation – No mitigation measures are considered necessary from KOP 3

*KOP 4 - BNSF Railroad/I-40 West., **Visual Resources Figures 11A and 11B.***

As discussed in Section C.13.4.1, above, Amtrak passengers on the BNSF rail line were determined not to be sensitive receptors. However, KOP 4 is retained to help convey the appearance of the project at foreground distance from similar viewpoints on I-40.

According to the photo location depicted in the AFC, the camera position is very roughly 700 - 800 feet from the project boundary. When compared to other simulations in which the SunCatchers are located at distances of ½ mile or more, the difference in level of impact as a function of distance is apparent. In addition, KOP 4 illustrates the effect of foreground views where grade relationships are relatively level. In such situations, the mirror units are likely to block and enclose views, as suggested by the simulation.

For most of the frontage of the project, I-40 is elevated in relation to the adjoining ground. However, that amount of elevation is not sufficient by itself to prevent the 38-foot-tall mirror units from blocking views and being highly dominant. Based on USGS topographic maps, however, elevations of the adjoining plain northward from the road edge tend to decrease along much of the highway frontage until the point of the BNSF rail line, which generally represents a low point. Thus, as indicated in simulations of KOP 1, above, and KOP 5, below, sufficient set-backs from the highway are a critical factor in reducing the visual height and magnitude of the mirror units, and for preventing view blockage or enclosure from the highway by the mirror units. Consequently, staff recommends **Condition of Certification VIS-3**, which proposes siting of the SunCatchers to the north of the existing pipeline ROW, with a minimum set-back of the SunCatchers from the highway of 500 feet.

*KOP 5 – Interstate 40 Eastbound, **Visual Resources Figures 12A and 12B.***

Staff Comments on Applicant's Simulation: KOP 5 represents near-middleground views of the project by motorists on I-40 eastbound. Because this view looks across foreground that is not a part of the project, it is not fully representative of what a viewer would experience while travelling on I-40, but depicts views along the roughly 1 mile section of excluded highway frontage. The viewpoint appears from the applicant's KOP map to be roughly 1 mile from the site. The simulation of KOP 5 primarily depicts the south-easternmost corner of project Phase 2, covering an area of roughly two sections (square miles).

At this set-back distance, the contrast and dominance of the project is substantially reduced when compared to KOP 1 and, especially, to KOP 4. Similarly, the spatial dominance of the project appears much less than in KOP 1 because the area depicted is considerably smaller. Based solely on this image one could conclude that the project could appear co-dominant with the surrounding landscape.

However, in order to fully understand the visual effect of the project from this or other viewpoints on I-40, it is important to recall that for approximately 5 miles the project fronts on I-40. In addition, the project would be visible for roughly 3 miles to the east of

the project and for roughly 5 miles to the west of the project, particularly during morning and afternoon hours when diffuse reflection could be strongest. (KOP 3 depicts the appearance of the project from a distance of roughly 2 miles). The view in the KOP 5 simulation represents the greatest distance between the highway and the project at any point in the 5 miles of frontage. Over 80% of the frontage on I-40 could be as little as a few yards from the highway right-of-way. Thus, in staff's opinion, a closer approximation of the I-40 experience is provided in KOPs 1 and 4, although as discussed, this would only be true assuming adoption of recommended **Condition of Certification VIS-3**. Without that measure, the project could potentially appear more prominent than depicted in KOP 4 for a considerable portion of the I-40 frontage, because it could be located at a closer distance. Similarly, although spatial dominance of the project in this image appears moderate, a rotation to the left from this same viewpoint would depict a view of most of the 8 square miles of the proposed project behind the BNSF rail line, where the project would extend to its highest elevations at the foot of the Cady Mountains (up to an elevation of approximately 2,200 feet). At that angle, or in views from locations throughout the I-40 frontage directed toward the project, the view would resemble the simulation of KOP 1. Although the simulation is not necessarily inaccurate, staff also understands that the diffuse reflective brightness of the mirror fields could be substantially greater than depicted in this view for a substantial proportion of the day, increasing overall contrast accordingly.

Staff Analysis: For the reasons cited above, staff considers the simulations of KOPs 1 and 4 to be more representative of the I-40 motorist's experience than KOP 5, and together, more representative of the salient aspects of the project's visual characteristics. That is, with sufficient set-backs from the highway, most views from I-40 would resemble KOP 1, exposing the vast area of the mirror fields due to the sloping topography and exhibiting a highly unusual level of character contrast and spatial dominance. Without sufficient set-backs from the highway, the project would resemble the simulation of KOP 4. That is, visual height and magnitude of the individual SunCatcher mirrors would be great, collective diffuse glare could be strong, and there would be a potential for scenic view blockage and enclosure by the tall mirror units. Consequently, staff's analysis of impacts to motorists on I-40 (and Route 66) is as discussed under KOPs 1 and 4. KOP 5 provides useful supplemental understanding of the NAP portion of the highway frontage, but is atypical and does not alter staff's conclusions on the overall project effects to motorists. That is, overall visual change to viewers from Route 66 is considered high. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

Impact Significance: In the context of moderately high overall visual sensitivity, the high level of visual change experienced by the majority of Route 66 and I-40 viewers – those within foreground and near-middle-ground distance from the project – would be regarded as significant.

Glare Impacts

From each of the viewpoints discussed above, diffuse reflected light from the SunCatcher mirrors could potentially represent a substantial component of the project's overall appearance, visual contrast/change, and impact. The contribution of potential glare under most typical conditions was considered in the evaluation of overall project visual change in the impact analysis above. Under most conditions diffuse reflection

would be seen by viewers and appear similar to the reflection of the sky on a lake surface, or at certain times, more intense shimmering glare from brighter diffuse reflection of the sun.

Staff accepts the Applicant's assertion that the SunCatcher mirror reflections would not produce retinal damage. However staff, on the basis of available information including review of the project AFC and a Glint and Glare Study produced by the applicant that included third-party field photometric measurements of the pilot SunCatcher test site in Maricopa, Arizona, believes that from 5% to 6% of the visible spectrum is not redirected to the PCU by the mirrors, and has the potential to make the mirrors appear as very bright objects through diffuse reflection when the mirrors are tracking in normal operational mode. Staff concluded that the bright intrusive glare is a very real hazard to motorists and pilots near the facility. The most prevalent condition that occurs is 'Flash Blindness' or the after-image in the visual field caused by saturation of the rods and cones of the retina.

Based on calculations by staff and others, however, staff concluded that a minimum safe setback distance to minimize potential hazards from flash blindness from the SunCatchers is approximately 223 feet. In order to provide additional margin of error, staff recommends that the minimum setback to public roadways of any SunCatcher be maintained at 360 feet or greater, as specified in recommended Condition of Certification **VIS-3**. In addition, based upon new photometric data obtained subsequent to publication of the Staff Assessment, staff has added a new Condition of Certification **TRANS-9** to address potential reflective glare impacts.

Nighttime light pollution as a result of the project is a concern. The project viewshed is now largely dark at night. The pristine, unlit night sky is an important part of the desert experience for many visitors to remote areas such as this. Unmitigated night lighting of the project could represent an adverse impact to the experience of campers in the nearby WSAs and other visitors to the area at night.

According to the AFC, night lighting of the Main Services Complex would consist of 400-watt high-pressure sodium lights, with illumination falling to 0.0 foot-candles on the ground a short distance from the facility (AFC Figure 3-20, -21)(SES 2008a). Parking and roadway lighting would consist of full cut-off luminaires to minimize night sky light pollution. Preliminary photometric studies provided in the AFC depict illumination from these fixtures falling to 0.0 foot-candles a short distance from each roadway intersection (AFC, Figure 3-23)(SES 2008a).

However, there is concern that night roadway lighting from tall light standards could be reflected into the SunCatchers in stow position at night, reflecting bright illumination skyward and causing night light pollution.

To avoid this effect and ensure acceptable levels of night lighting performance, including potential impacts from construction lighting, staff has revised Condition of Certification **VIS-2**, Temporary and Permanent Exterior Lighting. .

Indirect Impacts

The proposed Calico project is sited within a limited and largely enclosed viewshed in which there are few other likely sites for solar energy development. In addition, the site is largely surrounded by various protected areas. However, the likelihood of implementation of a renewable energy project immediately to the northwest, adjacent to the Calico Solar Project, seems high if the proposed project is approved. The potential cumulative impacts of the combined projects are discussed under Section C.13.9, below. Potential indirect impacts from proposed 275 MW Early Interconnection and 850 MW Full Build-Out options are discussed below in Section C.13.8.

Closure and Decommissioning Impacts and Mitigation

Permanent closures would require the applicant to submit to the Energy Commission a contingency plan or a decommissioning plan. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

The removal of the existing facility would leave a very prominent visual impact over the entire site due to color contrast created between graded or disturbed soil areas and undisturbed areas in the region of the project site. This color contrast is due particularly to the dark color element contributed by normal scrub vegetation, and the light color of underlying soils in the area. At present, despite some surface disturbance from the railroad and utility rights of way, the site retains a predominantly natural character. However, unlike these rights-of-way, the disturbed area of the site would be highly visible to motorists traveling on I-40 and Route 66. Revegetation of areas in this desert region is difficult, but has been implemented with success in some cases over time. Thus, visual recovery from land disturbance after closure and decommissioning could take place, although only over a long period of time, with implementation of an active and comprehensive revegetation program for the site. With Condition of Certification BIO-10 in the Biological Resources section of this SSA, visual recovery could be accomplished and impacts would be reduced to less-than-significant levels in the long term.

C.13.4.3 CEQA LEVEL OF SIGNIFICANCE AND ADVERSE EFFECTS UNDER NEPA

The BLM is in the process of establishing visual resource management classifications for the proposed project and surrounding areas.

Appendix G of the CEQA Guidelines includes four significance criteria for evaluating aesthetic impacts, as follows:

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, as described above, a higher level of viewer concern for scenic values was associated with the project viewshed as seen from the highway due to the eligible State Scenic Highway status of I-40 and the historic interest of Route 66. Views of the background mountains are the most scenic element of views from the highways in the

project area, and these could potentially be blocked by the project, if the mirror units are sited sufficiently close to the highway. With recommended **Condition of Certification VIS-3**, those views would be preserved, though the foreground would be strongly altered by the vast array of mirror units, strongly attracting attention. With this measure, views would not be blocked, but the project's effect on the quality of those views would be strongly adverse and significant. This alteration of visual quality of the surroundings is discussed further under item C, below.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway I-40 and Route 66, which are not listed as State Scenic Highways. I-40 has been identified as eligible for such a listing. No notable scenic features or resources are present on-site. The project would not directly damage any specific scenic resources located within the project site. Potential effects on scenic quality within the project viewshed in general are discussed under Item C, below.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project would substantially degrade the existing visual character and quality of the site and its surroundings. Under the proposed project, an area of almost 10 square miles, including a roughly 5-mile segment of I-40 and Route 66, would experience a dramatic visual transformation from a predominantly natural desert landscape to one of a highly industrial character. The character and quality of views from these transportation facilities would be strongly affected. In the context of a moderately high level of viewer sensitivity of these affected viewpoints, project impacts are considered significant.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Nuisance glare is a major issue of concern for the Calico Solar Project, primarily for aesthetic and comfort reasons.

Potentially affected receptors would include motorists on the highways; and hikers, climbers and other visitors in Cady Mountains WSA and associated open trails.

Staff conducted an independent review of potential glare impacts based on field data of the SunCatcher test site in Maricopa, Arizona provided by the applicant. With recommended **Condition of Certification VIS- 3** and **TRANS-9**, impacts would be adverse, but could be reduced to less-than-significant levels.

C.13.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage alternative would essentially be a 275 MW solar facility located within the central portion of the proposed 850 MW project. It was developed because it can be constructed. This alternative's boundaries and the revised locations of the

transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 1**.

C.13.5.1 SETTING AND EXISTING CONDITIONS

Regionally, the setting and existing conditions for the Reduced Acreage alternative would not differ substantially from the proposed project. However, the setting at the boundary of the alternative would differ substantially from the proposed project. Under the alternative, substantially fewer solar dishes would be deployed and the project would be farther from the boundary of Cady Mountain WSA and nearby ACECs. It would also be farther from the proposed Mojave Trails National Monument.

C.13.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The reduced area alternative is 31% the size of the proposed project. Under this alternative, the project site would be set back approximately a mile from the highway, substantially reducing the visual prominence of the mirror field. Because both the proximity to the highway and extent of the mirror fields would be greatly reduced, overall visual change due to this alternative would be substantially less than under the proposed project. Coincidentally, the overall appearance would be somewhat similar to the AFC simulation of KOP 5, which depicts the project at a similar distance to the Reduced Acreage Alternative, and depicts a similarly reduced overall scale. With this setback and reduced area, overall visual change could be considered moderate.

Due to the large set-back, nuisance glare in the eyes of approaching motorists would be substantially reduced due to the much lower proportion of the field of view occupied by the mirrors. Motorists approaching on I-40 from the east in the morning could still be subject to bright glare from the front row of solar units on the eastern edge of the site for a considerable distance approaching the site, since the units would be directly ahead of the motorist. However, except for such short-lived events, overall nuisance glare effects would be substantially reduced due to distance. The reduced acreage alternative would not reduce potential glare impacts on train operators, as the railroad would still pass through the site.

C.13.5.3 CEQA LEVEL OF SIGNIFICANCE AND ADVERSE EFFECTS UNDER NEPA

The reduced acreage alternative would set back the project boundary approximately 1 mile from the highway, and in most instances, nearly 2 miles from the Cady Mountains WSA. This would eliminate the foreground impacts as seen from these two locations. Middle-ground impacts would be reduced, as less of the landscape in the middle-ground would be occupied. Likewise, the increased setback of this alternative would eliminate the possibility of obstructing scenic views of the background mountains. Given the moderate level of existing scenic quality of the viewshed, although the level of overall viewer sensitivity of these viewpoints is considered to be moderately high, the moderate level of overall visual change and the greatly reduced level of nuisance glare of the Reduced Acreage Alternative could be considered acceptable, and less-than-significant. The BLM is in the process of establishing visual resource management classifications for the proposed project and surrounding areas.

C.13.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The analysis of the Donated and Acquired Lands Alternative has been moved to Section B.2 (**Alternatives**) of this document.

C.13.7 NO PROJECT / NO ACTION ALTERNATIVE

In the No Project / No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan.

NO PROJECT/NO ACTION ALTERNATIVE #1

No Action on the Calico Solar Project Application and on CDCA Land Use Plan Amendment

In the No Project / No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan.

The results of the No Project / No Action Alternative would be the following:

- The impacts of the proposed project would not occur.
- The land on which the project is proposed may or may not become available to other uses (including another solar project), depending on BLM's actions with respect to the amendment of the California Desert Conservation Area Plan.
- The benefits of the proposed project in reducing greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and 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 new ground disturbance. As a result, no loss or degradation to cultural 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 in other locations.

If this project is not approved, renewable projects would likely be developed on other sites in the California Desert or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are large solar and wind projects proposed on BLM land along the Interstate 40 corridor within a few miles of the Calico Solar Project site. In addition, there are currently over 70 applications for solar projects covering over 650,000 acres pending with BLM in California.

NO PROJECT/NO ACTION ALTERNATIVE #2

No Action on Calico Solar Project and Amend the CDCA Land Use Plan to Make the Area Available for Future Solar Development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM, and 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 project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with a different solar technology. As a result, ground disturbance would result from the construction and operation of the facility providing different solar technology and would likely result in a loss or degradation to cultural resources. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all solar technologies require some grading and ground disturbance. As such, this No Project/No Action Alternative could result in impacts to cultural resources similar to the impacts under the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE #3

No Action on the Calico Solar Project Application and Amend the CDCA Land Use Plan to Make the Area Unavailable for Future Solar Development

Under this alternative, the proposed the Calico Solar Project would not be approved by the Energy Commission and BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar 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 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 corresponding land disturbance. As a result, the cultural resources of the site are not expected to change noticeably from existing conditions and, as such, this No Project/No Action Alternative would not result in impacts to cultural resources. 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.

If this project is not approved, renewable projects would likely be developed on other sites in the California Desert or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are large solar and wind projects proposed on BLM land along the Interstate 40 corridor within a few miles of the Calico Solar Project site. In addition, there are currently over 70 applications for solar projects covering over 650,000 acres pending with BLM in California. If the No Project/No Action Alternative #2 is approved, impacts to visual resources on the project site could still occur as a result of approval of another renewable energy project proposal.

C.13.8 PROJECT-RELATED FUTURE ACTIONS - VISUAL RESOURCES

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison Company (SCE) as a result of the Calico Solar Project. The SCE upgrades are a reasonably foreseeable event if the Calico Solar Project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar Project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios:

- The **275 MW Early Interconnection Option** would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the gen-tie from the Calico Solar Project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE ROWs.
- The **850 MW Full Build-Out Option** would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar Project.

C.13.8.1 ENVIRONMENTAL SETTING

The environmental setting described herein incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

The transmission line construction project as proposed would be an upgrade of an existing transmission line. For approximately 57 miles the transmission line would replace an existing 220 kV line, within the existing ROW area for that line. For the remaining approximately 10 miles of the route, the proposed line would be constructed within a new ROW area in the vicinity of Hesperia.

The visual environment associated with the project area is generally natural and not highly altered from predevelopment conditions; however, there are existing and proposed transmission line and other linear features in the area, including the proposed ROW area. Visual resources in the area of the upgrades have been affected along portions of the routes by past and present actions, including highway/roadway construction, and residential and commercial development. The transmission route would pass through BLM lands and run adjacent to wilderness areas and ACECs, including the Ord-Rodman DWMA. The project area includes broad expanses of Basin and Range topography of the Mohave Desert region, and the ROWs generally traverse between alluvial valley debris flows and rugged mountain ranges. Views are generally expansive through this portion of the project area.

No specific Visual Resource Management (VRM) designations have yet been identified for BLM lands crossed by the SCE upgrades; however, based upon the minimal alterations to the existing environment, it is assumed that most of the lands, especially at the northeastern end would have a Class II or III designation with wilderness areas, ACECs and DWMA classified as Class I. No qualitative evaluations of the project area scenic quality were completed for this study.

C.13.8.2 ENVIRONMENTAL IMPACTS

For the proposed 500 kV route, new duffed galvanized 500 kV LST structures would be installed in the existing and new ROW. Single-circuit LSTs generally range in height between 91 feet and 194 feet. Most of the structure sites would likely require minor to substantial grading and new or re-developed access and spur roads.

The project would require temporary staging areas for equipment and materials storage along the transmission line route. Generally these yards range in size from a few acres to up to approximately 30 acres. Construction of the expanded Pisgah Substation would likely require a temporary laydown area located at or near the existing roadway at the site.

Conductor pulling and tensioning equipment would be located at various sites along the transmission line ROW. Depending on the terrain and the number of angles and dead-end sites, numerous pull sites would likely be needed.

The project would be visible from foreground, middle ground, and distant views from sensitive viewpoints (e.g., highways, residences, trail heads, wilderness areas, and scenic overlooks) located along the proposed ROW. The project would be visible from travelers along I-40 and Highway 66; however, two existing 220 kV transmission lines are currently located within the proposed ROW in these areas. I-40 is currently classified as an eligible state scenic highway, not officially designated (Caltrans 2010). Construction equipment and activities would also be visible to motorists on local roadways and to residents living near the construction activities in Hesperia. Although a BLM visual resource contrast rating analysis has not been completed, due to temporary duration of the project construction, the adverse visual impacts that would occur during construction would not likely be significant. This conclusion assumes that construction areas and the ROW would be restored to their pre-project conditions, as discussed below.

During project operation, the upgrades would include the construction of new permanent spur and access roads to the individual structure sites and Pisgah Substation, which could create permanent visual scars across the undeveloped landscape.

Construction of the 500 kV line would be largely within an existing ROW across undeveloped BLM lands, and would parallel a major existing utility corridor with up to three other existing transmission lines for its length. Because the existing transmission lines and towers are an established part of the setting and the project would include removal of the existing 220 kV line and poles, the adverse visual impacts that would occur due to installation of the new line, and any incremental changes in tower height or design, would likely not be significant. This conclusion assumes that the new wires and towers would incorporate typical measures to mitigate potentially significant adverse visual impacts, such as those listed below.

In locations with no previously existing transmission line corridors, the degree of change may be more evident, particularly if poles or towers are placed in visually sensitive locations, such as near residences, against a skyline, or adjacent to highly traveled roadways. Visual resource contrast rating analysis would be required to be completed for BLM-managed lands and sensitive viewshed locations, such as wilderness areas, crossed by or lying adjacent to the project, to determine the degree of change to visual resources in those areas, particularly in areas where no transmission lines currently exist. Expansion to the Pisgah Substation under both options would be noticeable from travelers along I-40, but for only short periods (e.g., less than 1 minute) and the visual change would be reduced under the 275 MW Early Interconnection which would be within a 270 feet by 100 feet area directly adjacent to the existing substation. Upgrades to the Lugo Substation would occur within the existing footprint and are also not expected to result in significant changes to current conditions.

C.13.8.3 MITIGATION

With the inclusion of mitigation measures similar to those listed below, visual impacts from construction activities related to the upgrades for both options would likely not be significant:

- During project construction, the work site should be kept clean of debris and construction waste. Material and construction storage areas should be selected to minimize views from public roads, trails, and nearby residences.
- For areas where excavated materials would be visible from sensitive viewing locations, excavated materials should be disposed of in a manner that is not visually evident and does not create visual contrasts.
- Maintenance operations work should be conducted in a manner that limits unnecessary scarring or defacing of the natural surroundings to preserve the natural landscape to the extent possible.
- The project owner should revegetate disturbed soil areas to the greatest practical extent. In particular, the area of disturbed soils used for laydown, project construction, and siting of the substation and other ancillary operations and support structures should be revegetated.

The following mitigation measures are associated with the siting and design of the new transmission structures under the 850 MW Full Build-Out option that would help to reduce impacts to visual resources:

- Complete visual resource impact analysis on BLM lands and for other sensitive viewshed locations.
- Attempt to place transmission lines within existing corridors and match tower locations with existing transmission structures.
- Do not place structures against a skyline view or within drainages wherever possible.
- Avoid perpendicular or “straight-line” placement along hillsides wherever possible.
- Non-specular and non-reflective conductors should be used in order to reduce conductor visibility and visual contrast.
- Insulators should be non-reflective and non-refractive.
- Any surface coatings on structures should be applied to new or replacement structures that are visible from sensitive viewing locations with appropriate colors, finishes, and textures to most effectively blend the structures with the visible backdrop landscape. For structures that are visible from more than one sensitive viewing location, if backdrops are substantially different when viewed from different vantage points, the darker color shall be selected, because dark colors tend to blend into landscape backdrops more effectively than lighter colors, which may contrast and produce glare.

C.13.8.4 CONCLUSION

Construction of the SCE upgrades project would require temporary disturbance during construction (i.e., heavy equipment, tensioning, and pull sites). After rehabilitation of temporary construction yards and pulling sites, as required by the suggested mitigation, the portion of the transmission line within the existing corridor would appear largely as it does now, except for the construction of new and permanent spur and access roads, which would permanently scar the fragile desert landscape.

The SCE upgrades would have the potential to cause adverse long-term visual impacts, such as through the use of reflective conductors and/or insulators that would make existing or new structures more dominant in the existing viewshed, and through the construction of new and larger structures. However, project design features and feasible mitigation measures would be available that would ensure that visual impacts of the project would be reduced. With use of non-specular conductors and non-reflective and non-refractive insulators, potential long-term impacts associated with this activity would be reduced as well.

Because the upgrades would be in a largely undeveloped area on BLM land, would parallel an existing utility corridor or be on/within existing facilities, and would include removal of the existing line, it is expected that visual impacts would be reduced to less than significant along most of the line, but a BLM visual resource contrast rating analysis is required to confirm the analysis. In addition, a portion of the 500 kV transmission line route under the 850 MW Full Build-Out would be within a new 500 kV ROW. Even if the upgrades work complies with all applicable laws, ordinances, regulations and standards (LORS), absent a viewshed analysis from sensitive viewpoints, this Staff Assessment/EIS conservatively concludes that the SCE upgrades may create significant and unmitigable impacts to visual resources due to the construction of 10 miles of new ROW from the Mojave River to the Lugo Substation.

C.13.9 CUMULATIVE IMPACTS

C.13.9.1 GEOGRAPHIC EXTENT

Cumulative impacts could occur if implementation of the Calico Solar Project would combine with those of other local or regional projects. The Calico Solar Project is potentially associated with two types of cumulative impact:

1. cumulative impacts within the immediate project viewshed, essentially comprising foreseeable future projects in the Mojave Desert area of San Bernardino County;
2. cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Desert, or other broad basin of the project's affected landscape type. The widest applicable basin of cumulative effect would include all of the southern California Desert landscapes extending into neighboring states.

Local Projects (Project Viewshed)

Calico Solar Project and Past Projects

Past and present projects occurring in the viewshed of the proposed project site and affecting its existing visual quality include recreational activities managed by the BLM, SCE transmission lines, the Pisgah substation, utility lines, and the I-40 and Route 66 highways.

Calico Solar Project and Foreseeable Future Projects

Past and foreseeable future projects in the vicinity of the Calico Solar Project are depicted in **Cumulative Impacts Figure 3**, and listed in **Cumulative Impacts Table 2**. As discussed in Section C.13.4.1 above analyzing the setting of the proposed project,

the Calico Solar Project is situated within a fairly limited local viewshed, enclosed by nearby mountains. The area within which it could interact with other future projects is thus somewhat limited. Potential projects listed in Figure 3 and Table 3 include the Pisgah-Lugo transmission upgrade described elsewhere in this report, the Pisgah Substation Expansion, the renewable project next in line for the withdrawn SES Solar 3, Oak Creek Wind Energy, and possibly the Power Partners wind project. These are the projects that appear to have the potential to directly interact with the Calico Solar Project visually.

At this level of direct visual interaction, it is difficult to evaluate the cumulative effects of these projects without some further foreseeable project detail, but because staff already finds that the effects of the Calico Solar Project alone would have substantial visual impacts, potential cumulative impacts would also be substantial taken as a whole.

Within the slightly broader Newberry Springs-Ludlow area of potential cumulative effect, the project in combination with foreseeable projects could have the effect of substantially degrading the overall visual quality of a slightly broader segment of Highway I-40. The segment of I-40 west of the Calico Solar Project site however is already considered by staff to be visually compromised by development. The listed projects however have the potential to further degrade a currently intact segment of I-40, which is listed as an eligible State Scenic Highway, from the Calico Solar Project site eastward. This effect could be cumulatively substantial, depending upon the details of the specific projects.

Regional Solar/Renewable Development Projects

Calico Solar Project and Past Regional Projects

The Calico Solar Project is among the first of a large number of existing solar project applications in the CDD. As such, past and present projects have had a negligible region-wide cumulative impact.

Calico Solar Project and Foreseeable Future Projects

The analysis of cumulative impacts is not necessarily restricted to the immediate viewshed of a project, and the need for cumulative analysis over a broad geographic area may often be determined by the affected resource itself. In this case the affected resource is the unique and highly valued landscape type of which the project site forms a small part – the landscape of the Mojave Desert.

The Mojave Desert and California Desert Conservation Area (CDCA) within which the Calico Solar Project is located are a unique and highly valued scenic resource of national importance, as reflected by the presence of three national parks and numerous Wilderness Areas within its boundaries. Cumulative Impacts Table 1 identifies 72 solar projects and 61 wind project applications with a total overall area of over one million acres within the CDCA, which is indicative of the interest in public lands for renewable energy generation at a regional level.

This figure does not include renewable projects within the Nevada and Arizona portions of the Mojave Desert. Of the 61 wind applications in the California Desert District, only five of the applications are for wind development; the remaining proposals are for site

testing and monitoring. BLM's experience is that a small percentage of applications for site testing have resulted in wind development proposals. In regards to the solar applications filed with BLM in California, only approximately 10% of the proponents have prepared acceptable detailed Plans of Development required by BLM to begin a NEPA analysis.

Although it is unlikely that all of the future solar and wind development projects proposed in the region would be constructed, it is reasonable to assume that some of them will be constructed, in light of the state and federal mandates for renewable energy development. With this very high number of renewable energy applications currently filed with BLM, the potential for profound widespread cumulative impacts to scenic resources within the southern California is clear.

These cumulative impacts could include a substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape. In particular, the number of current renewable applications before the BLM and Energy Commission that could potentially be prominently visible from the desert region's major highways is proportionally high, and the proportion of those highways that could be affected is also high. Because these highways are the location from which the vast majority of viewers experience the California desert, this potential effect is of concern to staff. Viewed in the cumulative context of the Southern California desert as a whole, potential visual impacts of renewable energy projects are considered to be cumulatively considerable and potentially significant.

C.13.9.2 CUMULATIVE IMPACT CONCLUSION

The anticipated visual impacts of the Calico Solar Project in combination with past and foreseeable future local projects in the Mohave Desert region, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable, and potentially significant.

C.13.10 COMPLIANCE WITH LORS

Visual Resources Table 3

Project Compliance with Laws, Ordinances, Regulations, and Standards (LORS)

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
Federal		
National Environmental Policy Act (NEPA)	As discussed above, applicable federal requirements for visual impact assessment are enacted through application of the BLM VRM methodology, discussed below.	
Federal Land Policy and Management Act of 1976 (FLPMA)	<p>Section 102 (a) of the Federal Land Policy and Management Act of 1976 (FLPMA) states that “. . . . the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values “</p> <p>Section 103 (c) identifies “scenic values” as one of the resources for which public land should be managed.</p> <p>Section 201 (a) states that “The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including ... scenic values)”</p> <p>Section 505 (a) requires that “Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic values....”</p>	Refer to CDCA discussion, below.

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
California Desert Conservation Area Plan (CDCA Plan)	<p>The CDCA Plan represents the Resource Management Plan (RMP) for the area required under FLPMA. The CDCA Plan did not contain VRM mapping as in most RMPs.</p> <p>The Calico site is classified in the CDCA Plan as Multiple-Use Class (MUC) M (Moderate Use). MUC M lands are managed to provide a wider variety of uses such as mining, grazing, recreation, utilities, and energy development, while conserving desert resources and mitigating damages permitted uses may cause.</p> <p>Under the CDCA Plan Electrical Power Generation Facilities, including Wind/Solar facilities, may be allowed within MUC Class M if NEPA requirements are met.</p>	<p>Consistent. Solar electrical generation plants are specifically allowed for under the MUC Class M Guidelines if NEPA requirements are met.</p> <p>Disclosure of potential visual project effects under NEPA has been conducted through the analysis in this study.</p>
National Historic Preservation Act (NHPA)	<p>Under regulations of the NHPA, visual impacts to a listed or eligible National Register property that may diminish the integrity of the property's "... setting ... (or) feeling" in a way that affects the property's eligibility for listing, may result in a potentially significant adverse effect. "Examples of adverse effects ... include ... : Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features " (36 CFR Part 800.5)</p>	<p>These potential impacts are addressed in the Cultural Resources section of this SA/DEIS.</p>

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
State		
State Scenic Highway Program (CA. Streets and Highways Code, Section 260 et seq.)	The State Scenic Highway Program promotes protection of designated State scenic highways through certification and adoption of local scenic corridor protection programs that conform to requirements of the State program.	Consistent. Interstate 40 within the project viewshed is eligible to be State scenic highway, but has not been designated as such.
Local		
San Bernardino County General Plan (2007) Applicable Conservation Element Goals, Objectives, Programs	<p>CONSERVATION ELEMENT</p> <p><i>GOAL CO 1.</i> The County will maintain to the greatest extent possible natural resources that contribute to the quality of life within the County.</p> <p><i>Policy CO 1.2</i> The preservation of some natural resources requires the establishment of a buffer area between the resource and developed areas. The County will continue the review of the Land Use Designations for unincorporated areas within one mile of any state or federally designated scenic area, national forest, national monument, or similar area, to ensure that sufficiently low development densities and building controls are applied to protect the visual and natural qualities of these areas.</p>	<p>None of the project site is under county jurisdiction; however State and Federal agencies endeavor to conform to local goals, policies, objectives, and ordinances where practicable.</p> <p>County policy is to minimize development density within a mile buffer around designated federal resources in order to preserve visual and natural qualities. The project would not conform to this goal.</p>

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
<p>San Bernardino County General Plan (2007)</p> <p>Applicable Conservation Element Goals, Objectives, Programs (continued)</p>	<p>Policy CO 8.1 Maximize the beneficial effects and minimize the adverse effects associated with the siting of major energy facilities. The County will site energy facilities equitably in order to minimize net energy use and consumption of natural resources, and avoid inappropriately burdening certain communities. Energy planning should conserve energy and reduce peak load demands, reduce natural resource consumption, minimize environmental impacts, and treat local communities fairly.</p> <p>4. The County will consult with electric utilities during the construction of their major transmission line towers to ensure that they are aesthetically compatible with the surrounding environment.</p> <p>8. The County shall consult with electric utilities during the planning construction of their major transmission lines towers to ensure that they are aesthetically compatible with the surrounding environment.</p> <p>OPEN SPACE ELEMENT</p> <p><i>GOAL OS 4.</i> The County will preserve and protect cultural resources throughout the County, including parks, areas of regional significance, and scenic, cultural and historic sites that contribute to a distinctive visual experience</p>	<p>While adverse effects will be minimized to the degree feasible, they still will be adverse and significant.</p> <p>There are no communities within the project vicinity.</p> <p>The project would not be consistent with the goal to preserve and protect scenic sites “that contribute to a distinctive visual experience.”</p>

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
<p>San Bernardino County General Plan (2007)</p> <p>Applicable Conservation Element Goals, Objectives, Programs (continued)</p>	<p><i>GOAL OS 5.</i> The County will maintain and enhance the visual character of scenic routes in the County.</p> <p>Scenic Route: Interstate 40 from Ludlow northeast to Needles. (p. 223)</p> <p><i>LAND USE ELEMENT</i></p> <p><i>GOAL D/LU 1.</i> Maintain land use patterns in the Desert Region that enhance the rural environment and preserve the quality of life of the residents of the region.</p> <p><i>CONSERVATION ELEMENT</i></p> <p><i>GOAL D/CO 3.</i> Preserve the dark night sky as a natural resource in the Desert Region communities.</p> <p>POLICIES</p> <p>D/CO 3.1 Protect the Night Sky by providing information about and enforcing existing ordinances:</p> <p>a. Provide information about the Night Sky ordinance and lighting restrictions with each land use or building permit application.</p> <p>b. Review exterior lighting as part of the design review process.</p> <p>D/CO 3.2 All outdoor lighting, including street lighting, shall be provided in accordance with the Night Sky Protection Ordinance and shall only be provided as necessary to meet safety standards.</p> <p>D/CO 3.3 Allow for desert communities' input on the need for, and placement of, new street lights.</p>	<p>Interstate 40 from Ludlow northeast to Needles is designated by the County as a scenic route. The project site is west of and not visible from this designated section of I-40, therefore the project is consistent with this Goal.</p> <p>Consistent. With recommended Condition of Certification VIS-2, upward illumination would be shielded, and outdoor illumination in general would be minimized.</p> <p>Consistent. Under recommended Condition of Certification VIS-2, the required project lighting plan would be provided to the County for review prior to project construction. Potential for nighttime light pollution would be minimized through shielding, downward-directed lighting, and minimum lighting consistent with safety. Lit areas not occupied on a continuous basis would operate only when the area is occupied. With this condition, the project would conform with these policies.</p>

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
San Bernardino Development Code Chapter 83.07.040 Glare and Outdoor Lighting - Mountain and Desert Regions.	Sets various standards and conditions for external lighting in residential and commercial situations. Exempts facilities on Federal Property	With staff-recommended Condition of Certification VIS-2, the project would meet the standards set in this Chapter of the Code.

C.13.11 NOTEWORTHY PUBLIC BENEFITS

No noteworthy public benefits in the area of visual resources were identified.

C.13.12 FACILITY CLOSURE

Staff has addressed facility closure and decommissioning impacts to Visual Resource under individual headings in Assessment of Impacts and Discussion of Mitigation above.

C.13.13 RESPONSE TO PUBLIC AND AGENCY COMMENTS

Staff received comments from Basin and Range Watch and the applicant on the **Visual Resources** section of the SA/DEIS. Staff's responses are outlined below and have been incorporated in the appropriate areas of this section. Specific Final Environmental Impact Statement (FEIS)-related comments will be responded to by the BLM in the FEIS for this project.

C.13.13.1 PUBLIC COMMENTS

A comment on the SA/DEIS **Visual Resources** section was provided by intervenor Basin and Range Watch.

Comment: Following participation in the April 16, 2010 Workshop in Barstow, Basin and Range Watch would like to submit suggestions for additional Key Observation Points for Visual Resources analysis. A map [included in project docket as TN 56409] is included showing two potential viewpoints from the Rodman Mountains Wilderness southwest of the Project site. The area can be accessed from Interstate 40 by Box Canyon Road.

Response: Simulations were not prepared from the suggested KOPs referred to in the comment. However, staff studied virtual views from similar viewpoints in the Rodman WA using Google Earth as a means to visualize the degree of project visibility that would be expected. The two suggested KOPs are located respectively on bajadas within the WA at a distance of roughly four miles; and on ridges overlooking the valley at a distance of roughly 6 miles, or background distance. Based on those studies, staff concluded that the project could present a moderate level of visual change from both viewpoints, and decline further with increased distance. From bajadas in the WA within

the middle-ground distance zone, a moderate to strong level of visual change, depending upon distance, could be observed despite the oblique vertical viewing angle, partly because of the project site's marked south-facing slope. From background distance in the Rodman Mountains, visual change could be moderate at five to six miles due to increased visibility from the more acute vertical viewing angle, but would decline further with distance. Similar to the Cady Mountains WSA, viewer sensitivity is considered moderately high in the Rodman Mountains WA. As in the Cady Mountains WSA, the anticipated number of viewers would be very low. Unlike the Cady Mountains WSA, the area of project visibility within the Rodman WA would be widespread, and a substantial area of both bajada and mountain ridge landscapes would have unobstructed views of the project. In light of the greater proportion of potentially affected area in the WA, including substantial areas of elevated views, impacts are considered potentially significant.

C.13.13.2 APPLICANT'S COMMENTS

General Comment: The Visual Resources Section of the SA/DEIS includes some of the BLM Visual Resources Management (VRM) methodology, but does not include a complete VRM analysis. The Applicant believes that the SA/DEIS document would be more complete from a NEPA perspective if it built upon the BLM VRM methodology already present in the report by more clearly establishing the interim VRM Class III for the BLM lands within the Project area and utilizing the Visual Contrast Rating system for determining impacts.

Response: The comment refers to interim VRM (IVRM) Classes in the study area, however no IVRM Classes currently exist, and no Visual Resource Inventory (VRI) mapping by BLM existed at the time of this analysis. BLM is currently in the process of conducting VRI and VRM mapping of the California Desert District, but that study has not yet been completed. Consequently, as stated on page C.13.3, above, it was agreed between BLM and CEC staff that the customary CEC analysis method would be used for this study.

Comment: On page C.13-1, C.13-22 and 23 of the SA/DEIS, staff states "Impacts of the Reduced Acreage Alternative would be substantially less than the Proposed Project and the Avoidance of Donated Lands Alternative under NEPA, and are considered less-than-significant under CEQA."

In the assessment of the Reduced Acreage Alternative, staff makes the case that the impacts to visual resources associated with the Reduced Acreage Alternative would amount to less-than-significant impacts. Staff makes this determination based on the smaller size of the alternative. "Regionally, the setting and existing conditions for the Reduced Acreage alternative would not differ substantially from the proposed project. However, the setting at the boundary of the alternative would differ substantially from the proposed project. Under the alternative, substantially fewer solar dishes would be deployed and the project would be farther from the boundary of Cady Mountain WSA and nearby ACECs."

The analysis does not follow the same logic as the analysis of the Project, because the analysis of the Project considers the majority of sensitive viewers to be located along

the transportation routes to the south of the project, not within the WSA and/or nearby ACECs. The majority of impacts associated with the project as analyzed through use of the KOPs are from the I-40, Route 66 and BNSF Railway. Analysis of KOPs 1, 4 and 5 all produced a finding of significant. These KOPs represent views from the I-40 and railway. According to the assessment, views from I-40, the Railway and Route 66 would not be appreciably different. Staff states: "It would not be appreciably different for viewers on I-40, which would remain the southern boundary of the project." Staff states: "The Reduced Acreage alternative would not reduce potential glare impacts on train operators, as the railroad would still pass through the site."

If the impacts to the I-40 and the railway would not be "appreciably" different, then it is not the case that impacts to these areas could be reduced to less than significant. Because impacts to the WSA were analyzed in discussion of KOP 2, and were found to be less than significant for the Project, then a change to these views should not amount to a change in the overall significance level of visual impacts originating with the reduced acreage alternative when impacts to the more sensitive viewing areas remain similar.

The Applicant disagrees that impacts to visual resources caused by the Reduced Acreage Alternative should be considered less than significant. This alternative still involves the use of over 2,000 acres of desert land that will be immediately visible to the majority of highly sensitive viewers in the area. The development of the Reduced Acreage alternative would still amount to a visually dominant industrial feature and a high degree of change to the views experienced from KOPs 1, 4 and 5. Therefore, the Reduced Acreage Alternative would also cause significant adverse impacts to visual resources.

The Applicant recommends that the finding be changed to significant impact for the Reduced Acreage Alternative.

Response: The statement quoted by the applicant that the alternative ' would not be appreciably different for viewers on I-40, which would remain the southern boundary of the project' was erroneous, and has been deleted from this report.

The conclusions of the analysis of impacts of this alternative were based in part on the AFC simulation of KOP 5, which depicts the project at a similar distance to the Reduced Acreage Alternative, and depicts a similarly reduced overall scale. Based on the level of contrast and visual change depicted in that view of the project at this setback distance, staff concluded that overall visual change would be moderately high. Based on further study since publication of the SA, and particularly in light of substantial new information and better understanding regarding the glare characteristics of the SunCatchers, staff concurs with the applicant that the Reduced Acreage Alternative could be considered significant by many observers. That conclusion would be even more applicable if Condition VIS-1 becomes infeasible for the backs of the SunCatcher mirrors. Staff therefore concludes that impacts of this alternative would remain significant.

Comment: On page C.13-39 of the SA/DEIS, staff proposes Condition **VIS-1**.

The Applicant requests that the condition apply to all permanent structures, *except* for SunCatchers. While the Applicant is currently investigating the feasibility of painting the backs of the SunCatcher mirror facets a color that would minimize visual intrusion, the backs of the mirror facets are currently proposed to be painted white. Any color darker than white retains more heat and could therefore be problematic. There are many surfaces on the SunCatchers that cannot be painted due to slip critical features in which the structure requires friction that could be compromised by paint, the temperatures they would reach in the production of energy, and pre-fabrication galvanization that precludes a top-coat.

Response: Applicant indicates that Condition **VIS-1** would be infeasible as applied to SunCatchers, but states that other colors are being investigated. If light colors that would blend with the background landscape are feasible, their use on the backs of mirrors is strongly recommended. If colors other than white are not feasible, staff notes that overall impacts of the project would be substantially increased due to increased brightness and contrast. The ultimate conclusion, that impacts would be significant, would remain the same.

Comment: On page C.13-34 of the SA/DEIS, staff proposes a verification for Condition **VIS-2** requiring “At least 90 days prior to ordering any permanent exterior lighting or temporary construction lighting, the project owner shall contact BLM’s Authorized Officer and the CPM to discuss the documentation required in the lighting mitigation plan.”

The Applicant requests that verification of the condition be changed from 90 days prior to 30 days prior.

Response: The change from 90 days prior to 30 days is acceptable to staff and has been reflected in the verification.

Comment: On page C.13-34 of the SA/DEIS, Staff proposes Condition **VIS-3**.

According to the Revised Calico Project Layout Figure, submitted on March 8, 2010, the project is already in compliance with this condition. All SunCatchers will be located north of the existing pipeline right-of-way and at least 500 feet from Interstate 40.

Response: Comment is noted.

Comment: On page C.13-42 of the SA/DEIS, Staff proposes Condition **VIS-4**.

The construction laydown area is located adjacent to the Main Services Complex and not adjacent to I-40 (Proposed Project-Figure 2). The Applicant anticipates that SunCatchers will eventually be installed on the construction laydown area, and revegetation of the area would therefore not be appropriate. The Applicant requests the following text revision:

“In order to minimize the visual prominence of the proposed staging area adjoining I-40 to motorists, the project owner shall provide opaque screening of the site as seen from the highway, and a set-back from the roadway of at least 250 feet. ~~In addition, the project owner shall provide a~~

~~re-vegetation plan describing how the staging site will be restored following construction. The plan shall call for beginning of restoration of the site within the shortest feasible time following completion of construction."~~

Response: Condition **VIS-4** was recommended in relation to originally-proposed laydown sites adjoining the highway. With the removal of the laydown areas adjacent to the public roadways, staff has deleted Condition of Certification **VIS-4**.

C.13.14 PROPOSED CONDITIONS OF CERTIFICATION

SURFACE TREATMENT OF NON-MIRROR PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat all non-mirror surfaces of all project structures and buildings visible to the public such that a) their colors minimize visual intrusion and contrast by blending with the existing tan and brown color of the surrounding landscape; 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-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. This measure shall include coloring of security fencing with vinyl or other non-reflective coating; or with slats or similar semi-opaque, non-reflective material, to blend to the greatest feasible extent with the background soil.

The project owner shall submit for CPM review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

- A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;
- B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;
- C. One set of color brochures or color chips showing each proposed color and finish;
- D. A specific schedule for completion of the treatment; and
- E. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to San Bernardino County for review and comment. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the same key observation points identified in (d) above. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a) the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-2 To the extent feasible and consistent with safety and security considerations, the project owner shall design and install all temporary and permanent exterior lighting so that:

- a) lighting does not cause excessive reflected glare;
- b) lighting does not illuminate the nighttime sky;
- c) mounting heights and locations of all lighting fixtures, including roadway lighting, will not allow light to fall on the mirror surfaces of the SunCatchers in the stowed position,
- d) illumination of the project and its immediate vicinity is minimized as to times of use and extent, and;
- e) lighting on the exhaust stacks shall be the minimum needed to satisfy safety and security concerns.

Permanent night lighting shall comply with all applicable standards, practices, and regulations including, and specifically, the following Illuminating Engineering Society documents:

- RP-33-99 Lighting for Exterior Environments
- DG-13-99 Outdoor Lighting
- TM-10-00 Addressing Obtrusive Light (Urban Sky Glow and Light Trespass) in Conjunction with Roadway Lighting
- TM-15-07 Luminaire Classification System for Outdoor Luminaires

Verification: At least 90 days prior to ordering any exterior lighting, the project owner shall contact the CPM to show compliance with all of the above requirements. This shall include, but not be limited to, final lighting plans,

fixture and control schedules, fixture and control cut sheets and specifications, a photometric plan showing vertical and horizontal footcandles at all property lines to a height of 20 feet, and the proposed time clock schedule.

Prior to construction and prior to commercial operation, the project owner shall notify the CPM that the installation of the temporary and permanent lighting has been completed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days after receiving the notification the project owner shall implement the modifications and notify the CPM when the modifications are completed and ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form as specified in the Compliance General Conditions, including a proposal to resolve the complaint, and a schedule for implementation of the proposed resolution. The project owner shall notify the CPM within 48 hours after completing the resolution of the complaint. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days and included in the Annual Report.

SETBACK OF SUNCATCHERS FROM HIGHWAY I-40

VIS-3 To reduce the visual dominance and glare effects of the SunCatchers to motorists on Highway I-40, the applicant shall set back the nearest units to the area north of the existing pipeline right-of-way, and at a minimum distance of 360 feet from the edge of the roadway, whichever is greater.

Verification: At least 90 days prior to start of construction, the project owner shall present to BLM's Authorized Officer and the CPM a revised plan depicting how the proposed SunCatchers will be set back from the highway. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

The project owner shall not begin construction until receiving CPM approval of the revised plan.

C.13.15 CONCLUSIONS

The proposed project would substantially degrade the existing visual character and quality of the site and its surroundings. Under the proposed project, an area of almost 10 square miles, including approximately 5 miles of frontage on I-40, would experience a dramatic visual transformation from a predominantly natural desert landscape to one of a highly industrial character, strongly affecting motorists on the highway. Given the moderately high level of viewer sensitivity of these affected viewpoints, project impacts are considered significant. With staff-recommended mitigation measures, these impacts could be greatly reduced, but would remain significant and unavoidable.

Under the proposed project, the character and quality of some views from foreground and near-middle-ground areas of the Cady Mountains WSA would be adversely affected, but the overall effect on views from the Cady Mountains WSA is considered to be less-than-significant.

Impacts of the Reduced Acreage Alternative would be substantially less than the proposed project. Based on further analysis and in light of additional information available to staff since publication of the SA/DEIS, impacts under this alternative are considered to remain significant.

The anticipated visual impacts of the Calico Solar Project and alternatives, in combination with past and foreseeable future local projects in the Mojave Desert region, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

In response to a review of photometric data provided by the applicant, staff believes that diffuse reflection from the SunCatchers could be an intrusive and distracting nuisance to motorists under at least certain conditions, particularly when an entire row of units could be visible in a near-vertical position to approaching motorists at hours near sunrise and sunset. However, with staff-recommended **Condition of Certification VIS-3**, and recommended **Condition of Certification TRANS-9**, potential glare/reflection impacts could be reduced to less-than-significant levels.

C.13.16 REFERENCES

- NPS 2009, 2010 California Desert Protect Act Overview (map), December 21, 2009. http://feinstein.senate.gov/public/index.cfm?FuseAction=NewsRoom.PressReleases&ContentRecord_id=B3A780D4-5056-8059-7606-3936A2F7945F , [Map link in Related Resources menu.] Accessed 1/6/2010.
- NPS 2008, Cady Mountains Proposed Wilderness and Existing Wilderness Study Area (map), June 24, 2008. <http://www.nplnews.com/archives2008.asp> [link in 'Hot Topics'.] Accessed 1/6/2010
- SES 2008a – Stirling Energy Systems/R. Liden (tn: 49181). Application for Certification, dated December 1, 2008. Submitted to CEC/Docket Unit on December 1, 2008.
- SES 2009p – Stirling Energy Systems/C. Champion (tn: 52956). Applicants' Response to Energy Commission & Bureau of Land Management's Data Requests 113-127 of Data Requests Set 1, Part 2, dated August 20, 2009. Submitted to CEC/Docket Unit on August 24, 2009.
- USDOI, 1995. State of California Wilderness Status Map.
- Caltrans (California Department of Transportation), 2006. Scenic Highway Master Plan.
- County of San Bernardino, 2007. General Plan.

VISUAL RESOURCES APPENDIX VR-1

ENERGY COMMISSION VISUAL RESOURCE ANALYSIS EVALUATION CRITERIA

Energy Commission staff conducts a visual resource analysis according to Appendix G, “Environmental Checklist Form—Aesthetics,” California Environmental Quality Act (CEQA). The CEQA analysis requires that commission staff make a determination of impact ranging from “Adverse and Significant” to “Not Significant.”

Staff’s analysis is based on Key Observation Points or KOPs. KOPs are photographs of locations within the project area that are highly visible to the public — for example, travel routes; recreational and residential areas; and bodies of water as well as other scenic and historic resources.

Those photographs are taken to indicate existing conditions without the project and then modified to include a simulation of the project. Consequently, staff has a visual representation of the viewshed before and after a project is introduced and makes its analysis accordingly. Information about that analytical process follows.

Visual Resource Analysis Without Project

When analyzing KOPs of existing conditions without the project, staff considers the following conditions: visual quality, viewer concern, visibility, number of viewers, duration of view. Those conditions are then factored into an overall rating of viewer exposure and viewer sensitivity. Information about each condition and rating follows.

Visual Quality

An expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. Visual quality is rated from *high* to *low*. A high rating is generally reserved for landscapes viewers might describe as picture-perfect.

Landscapes rated high generally are memorable because of the way the components combine in a visual pattern. In addition, those landscapes are free from encroaching elements, thus retaining their visual integrity. Finally, landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. On the contrary, landscapes rated *low* are often dominated by visually discordant human alterations.

Viewer Concern

Viewer concern represents the reaction of a viewer to visible changes in the viewshed — an area of land visible from a fixed vantage point. For example, viewers have a high expectation for views formally designated as a scenic area or travel corridor as well as for recreational and residential areas. Viewers generally expect that those views will be preserved. Travelers on highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concerns and expectations.

However, viewers tend to have low-to-moderate viewer concern when viewing commercial buildings. And industrial uses typically have the lowest viewer concern. Regardless, the level of concern could be lower if the existing landscape contains discordant elements. In addition, some areas of lower visual quality and degraded visual character may contain particular views of substantially higher visual quality or interest to the public.

Visibility

Visibility is a measure of how well an object can be seen. Visibility depends on the angle or direction of views; extent of visual screening; and topographical relationships between the object and existing homes, streets, or parks. In that sense, visibility is determined by considering any and all obstructions that may be in the sightline—trees and other vegetation; buildings; transmission poles or towers; general air quality conditions such as haze; and general weather conditions such as fog.

Number of Viewers

Number of viewers is a measure of the number of viewers per day who would have a view of the proposed project. *Number of viewers* is organized into the following categories: residential according to the number of residences; motorist according to the number of vehicles; and recreationists.

Duration of View

Duration of view is the amount of time to view the site. For example, a high or extended view of a project site is one reached across a distance in 2 minutes or longer. In contrast, a low or brief duration of view is reached in a short amount of time—generally less than 10 seconds.

Viewer Exposure

Viewer exposure is a function of three elements previously listed, *visibility*, *number of viewers*, and *duration of view*. Viewer exposure can range from a *low* to *high*. A partially obscured and brief background view for a few motorists represents a low value; and unobstructed foreground view from a large number of residences represents a high value.

Visual Sensitivity

Visual sensitivity is comprised of three elements previous listed, *visual quality*, *viewer concern*, and *viewer exposure*. Viewer sensitivity tends to be higher for homeowners or people driving for pleasure or engaged in recreational activities and lower for people driving to and from work or as part of their work.

Visual Resource Analysis with Project

Visual resource analyses with photographic simulations of the project involve the elements of contrast, dominance, view blockage, and visual change. Information about each element follows.

Contrast

Contrast concerns the degree to which a project's visual characteristics or elements — form, line, color, and texture — differ from the same visual elements in the existing landscape. The degree of contrast can range from *low* to *high*. A landscape with forms, lines, colors, and textures similar to those of a proposed energy facility is more visually absorbent; that is, more capable of accepting those characteristics than a landscape in which those elements are absent¹. Generally, visual absorption is inversely proportional to visual contrast.

Dominance

Dominance is a measure of (a) the proportion of the total field of view occupied by the field; (b) a feature's apparent size relative to other visible landscape features; and (c) the conspicuousness of the feature due to its location in the view.

A feature's level of dominance is lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (1) near the center of the view; (2) elevated relative to the viewer; or (3) has the sky as a backdrop. As the distance between a viewer and a feature increases, its apparent size decreases; and consequently, its dominance decreases. The level of dominance ranges from *low* to *high*.

View Blockage

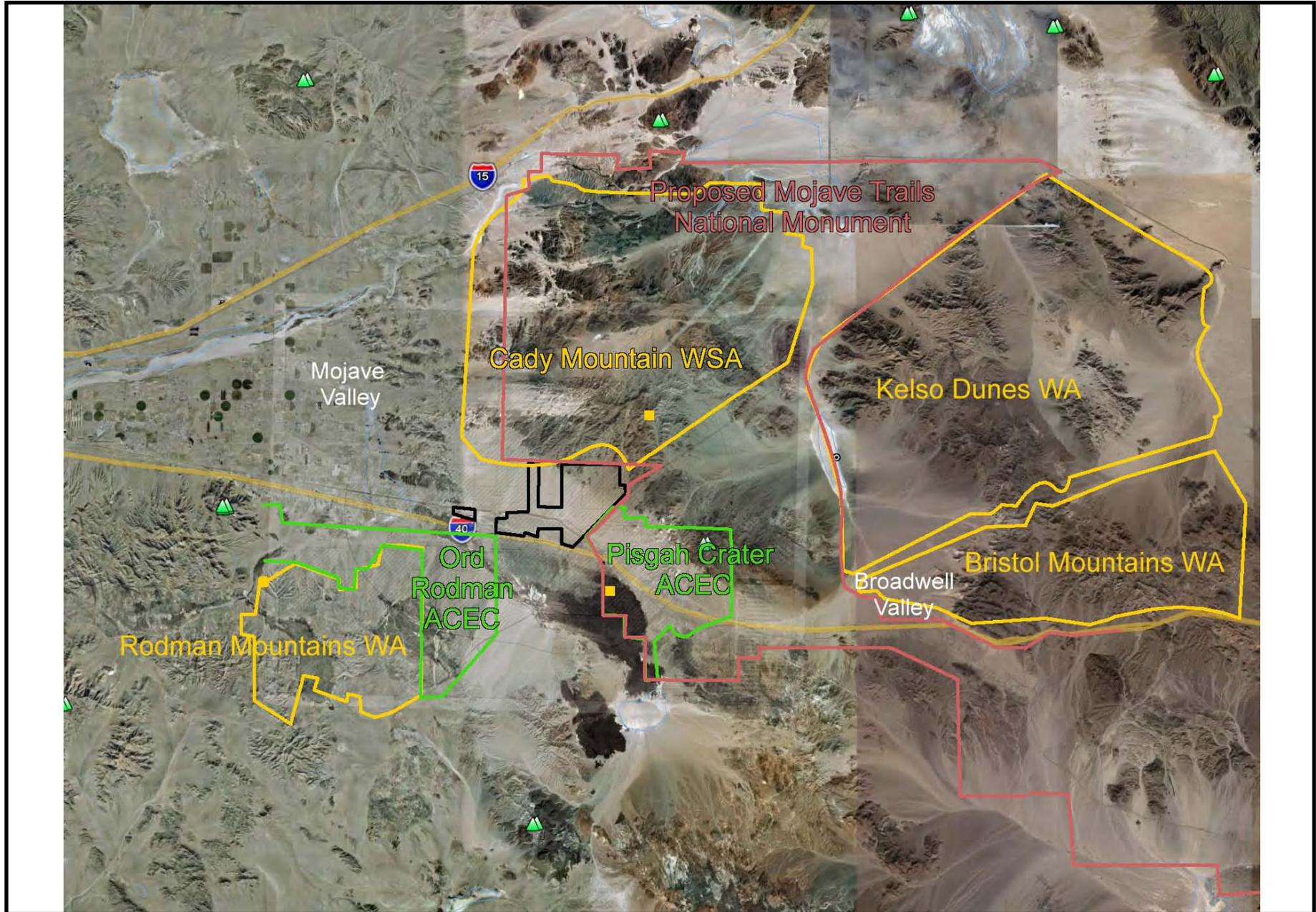
The extent to which any previously visible landscape features are blocked from view constitutes view disruption. The view is also disrupted when the continuity of the view is interrupted. When considering a project's features, higher quality landscape features can be disrupted by lower quality project features, thus resulting in adverse visual impacts. The degree of view disruption can range from *none* to *high*.

Visual Change

Visual change is a function of *contrast*, *dominance*, and *view disruption*. Generally, *contrast* and *dominance* contribute more to the degree of visual change than does *view disruption*.

¹ Typically, the Energy Commission does not consider texture in its visual analyses.

VISUAL RESOURCES - FIGURE 1
Calico Solar Project - Project Setting



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 2A

Calico Solar Project - Character Photos of Project Area

Character Photo Location 1

View of existing transmission lines along eastern boundary of Project site (looking northeast)



Character Photo Location 2

View of existing transmission lines and SCE Pisgah Substation along eastern boundary of Project site (looking south)



VISUAL RESOURCES - FIGURE 2B
Calico Solar Project - Character Photos of Project Area

Character Photo Location 3
View of closest residence to the Project site (approximately 2.0 miles east of site)



Character Photo Location 4
View of BNSF railroad (and train) which bisects the Project site (looking south from midsection of Phase I)



VISUAL RESOURCES - FIGURE 2C
Calico Solar Project - Character Photos of Project Area

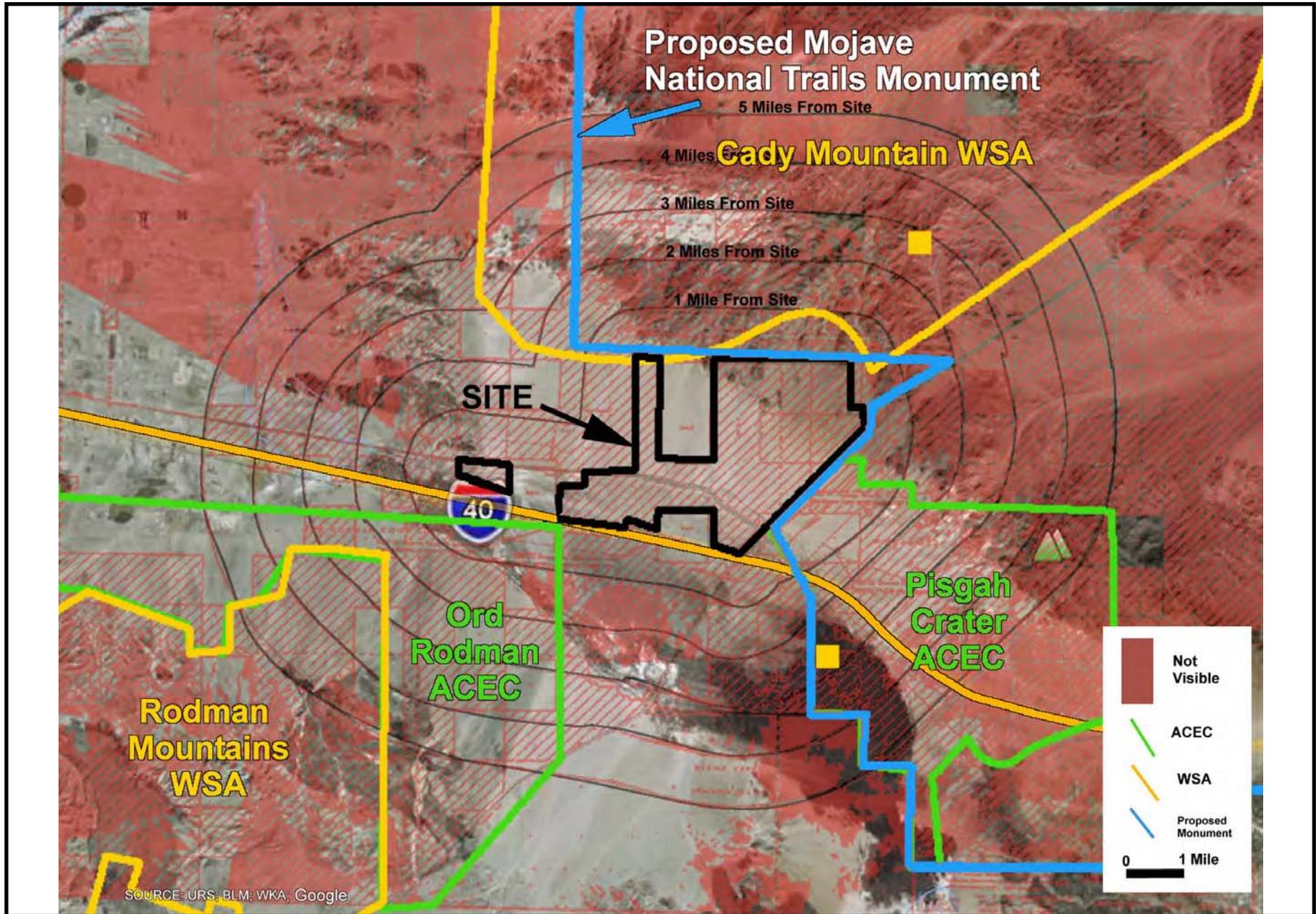
Character Photo Location 5
View of Project site from BNSF Railroad



Character Photo Location 6
View of Project site from Hector Road (approximately 1.5 miles west of site)

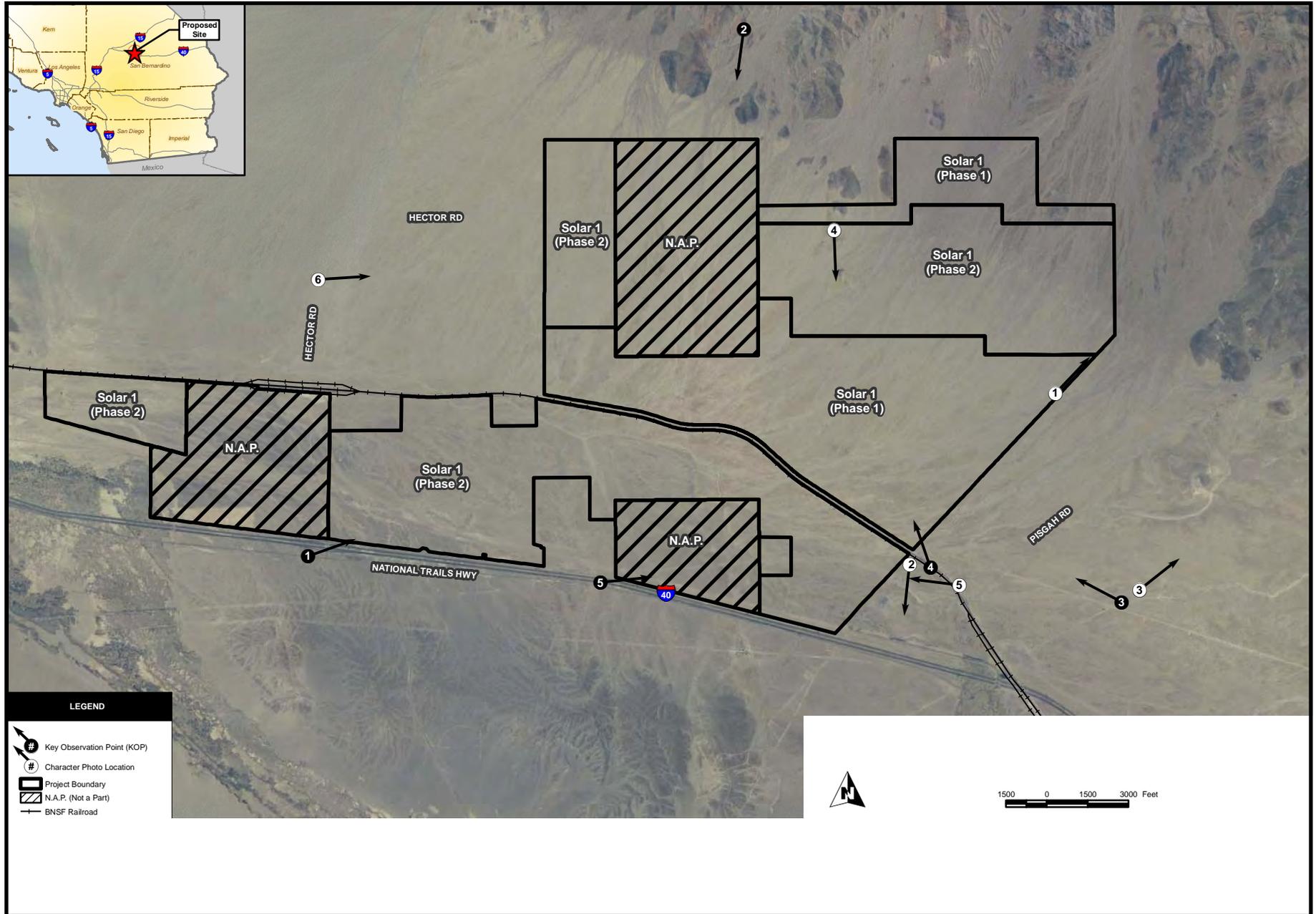


VISUAL RESOURCES - FIGURE 3
 Calico Solar Project - Project Viewshed



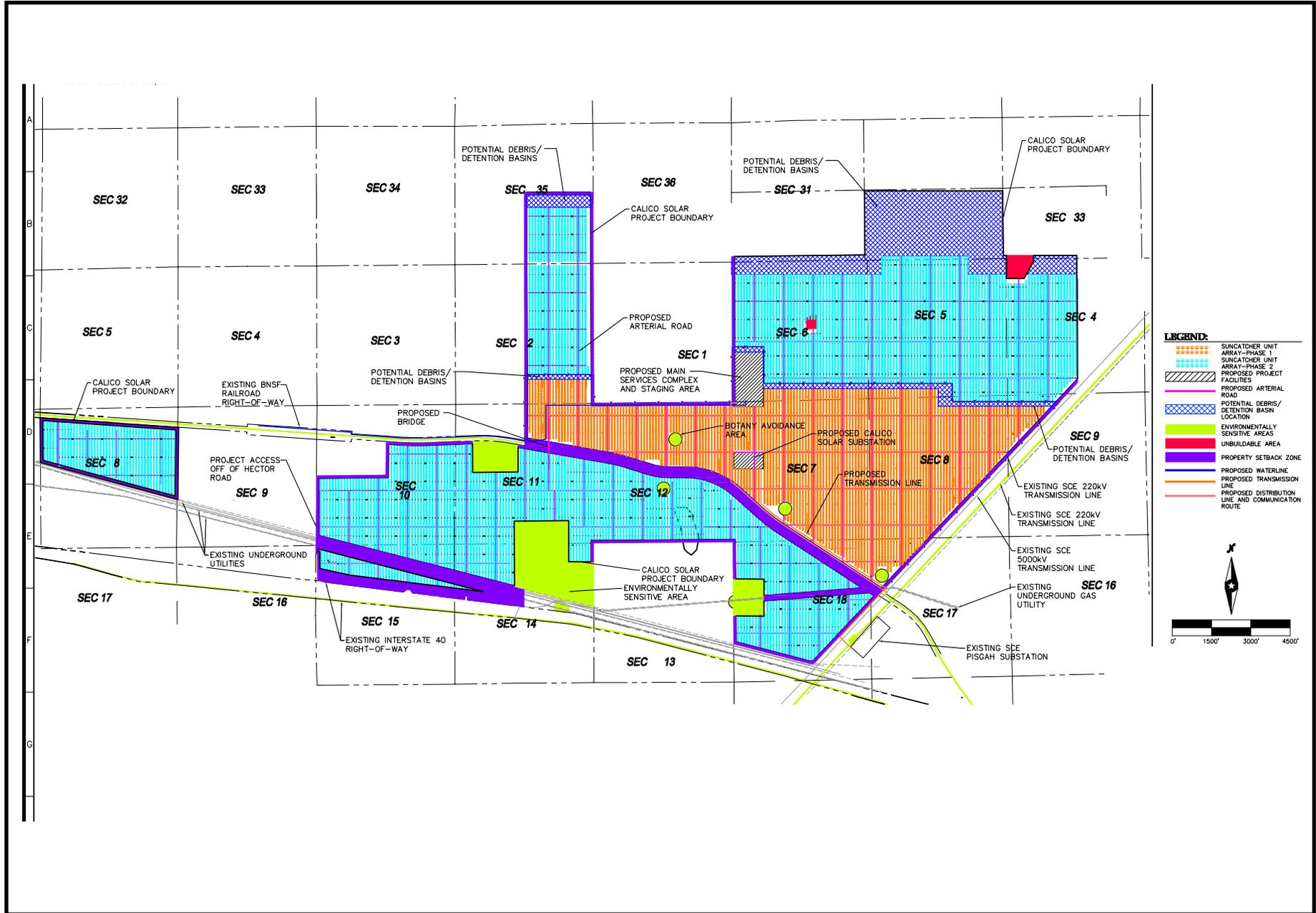
SOURCE: URS; BLM; WKA; Google

VISUAL RESOURCES - FIGURE 4
 Calico Solar Project - Key Observation Points (KOPs)



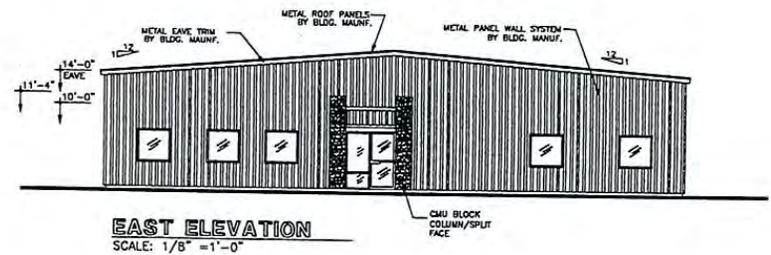
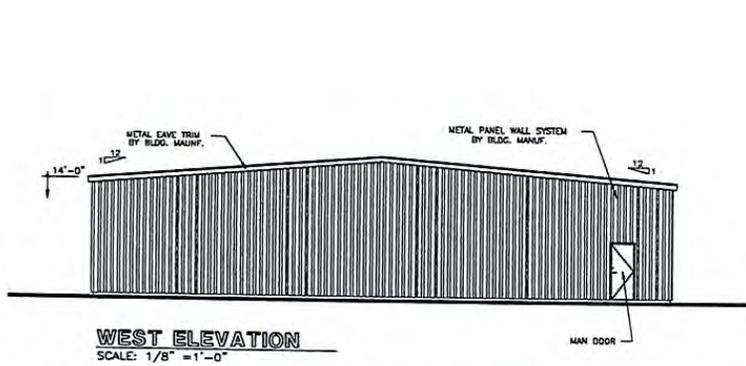
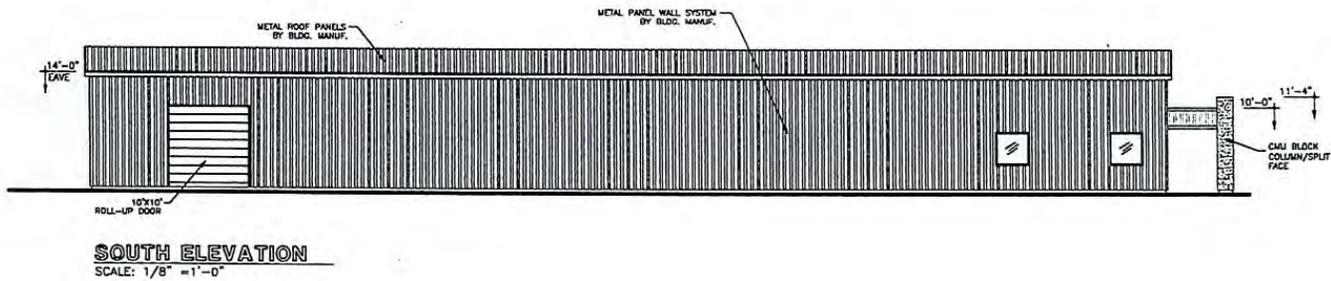
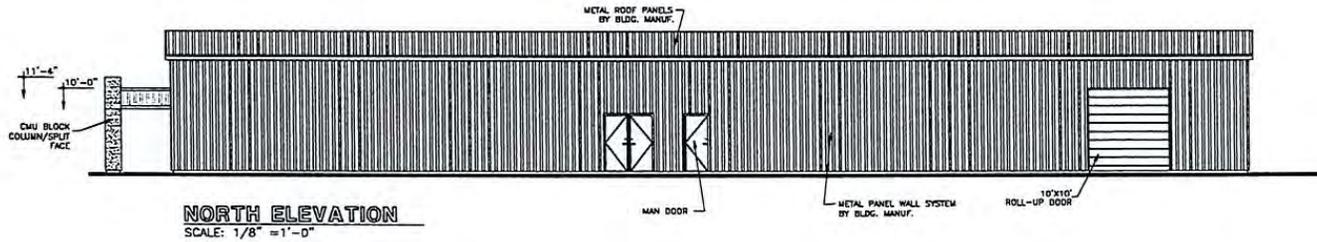
VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 5
Calico Solar Project - Project Layout



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 6
 Calico Solar Project - Elevations of Main Services Complex



PRELIMINARY

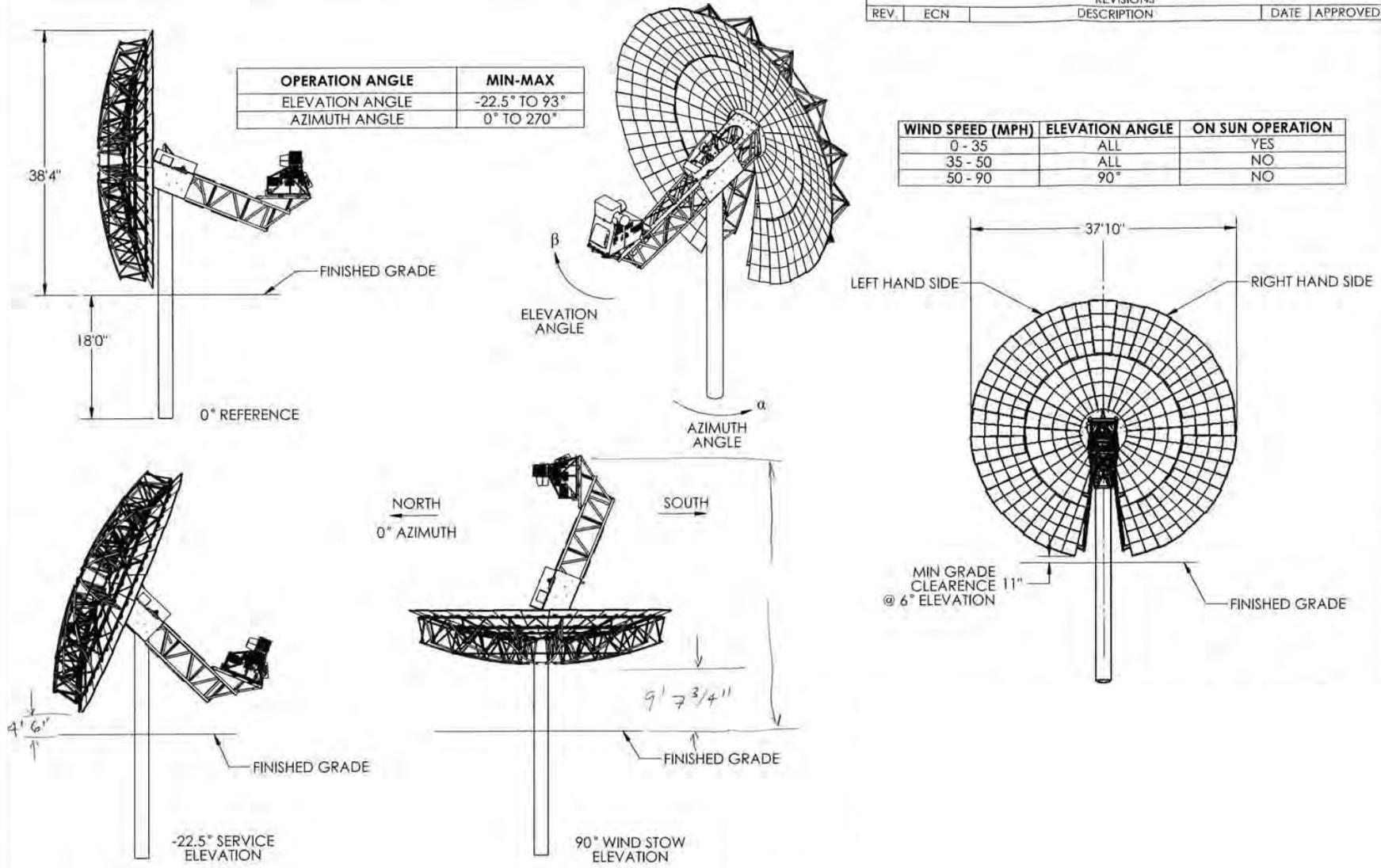
VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 7
 Calico Solar Project - Elevations of Sun Catchers

REV.		ECN		REVISIONS		DATE	APPROVED
				DESCRIPTION			

OPERATION ANGLE	MIN-MAX
ELEVATION ANGLE	-22.5° TO 93°
AZIMUTH ANGLE	0° TO 270°

WIND SPEED (MPH)	ELEVATION ANGLE	ON SUN OPERATION
0 - 35	ALL	YES
35 - 50	ALL	NO
50 - 90	90°	NO



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 8A

Calico Solar Project - Existing View of Project Site from KOP 1 - Route 66/I-40



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 8B

Calico Solar Project - Simulated View of Project Site from KOP 1 - Route 66/I-40



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 9A

Calico Solar Project - Existing View of Project Site from KOP 2 - Cady Mountains WSA



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 9B

Calico Solar Project - Simulated View of Project Site from KOP 2 - Cady Mountains WSA



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 10A

Calico Solar Project - Existing View of Project Site from KOP 3 - Eastside View



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 10B

Calico Solar Project - Simulated View of Project Site from KOP 3 - Eastside View



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 11A

Calico Solar Project - Existing View of Project Site from KOP 4 - BNSF Railroad and I-40 West



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 11B

Calico Solar Project - Simulated View of Project Site from KOP 4 - BNSF Railroad and I-40 West



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 12A

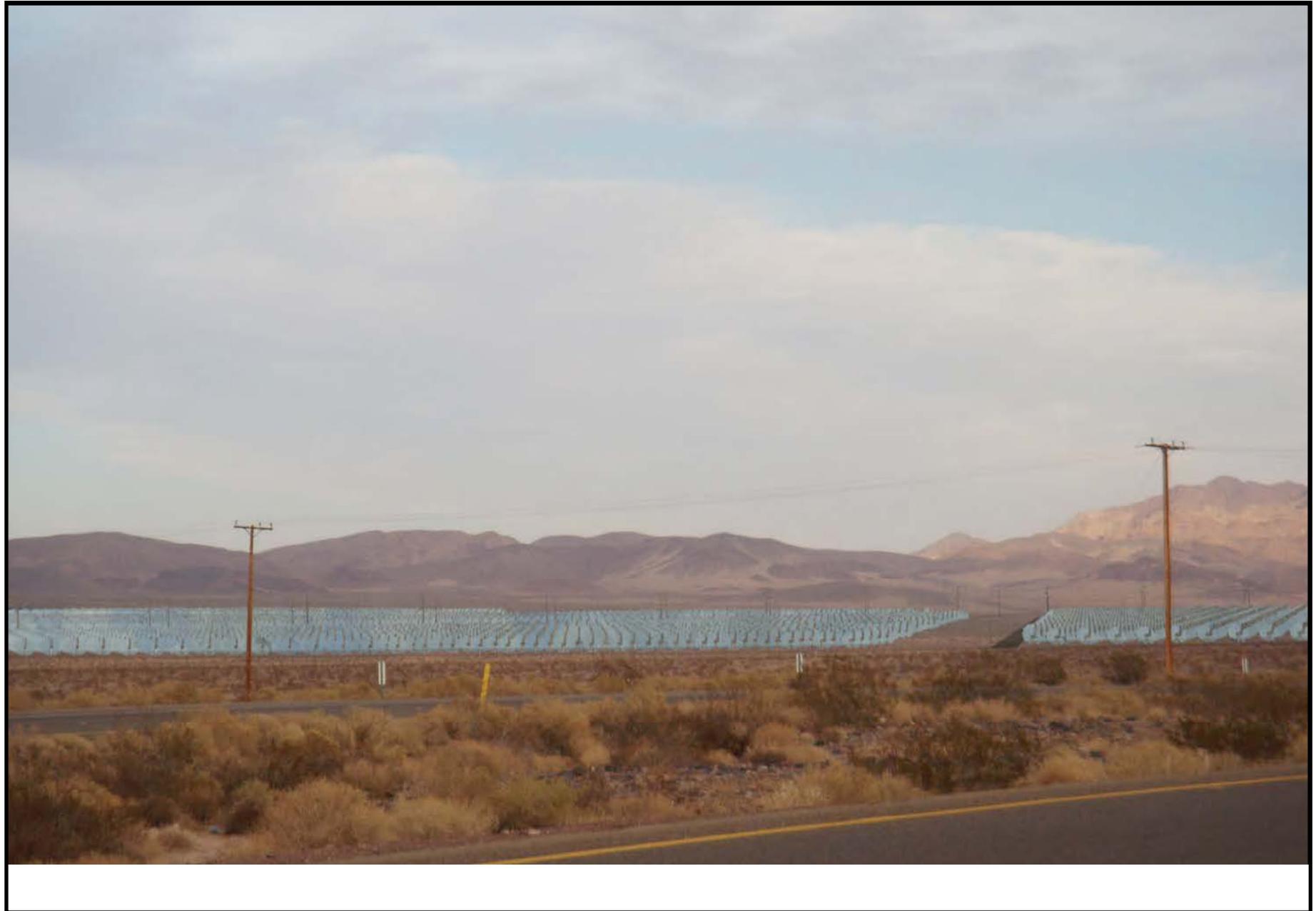
Calico Solar Project - Existing View of Project Site from KOP 5 - Interstate 40 Eastbound



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 12B

Calico Solar Project - Simulated View of Project Site from KOP 5 - Interstate 40 Eastbound



VISUAL RESOURCES