

VISUAL RESOURCES

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SUMMARY OF CONCLUSIONS

BLM and Energy Commission staff (hereafter jointly referred to as staff) have analyzed visual resource-related information pertaining to the proposed Ivanpah Solar Electric Generating System (ISEGS) and conclude that the proposed project would result in a substantial adverse impact to existing scenic resource values as seen from several Key Observation Points in the Ivanpah Valley and Clark Mountains, including:

- The Primm Valley Golf Course;
- Middle-ground-distance viewpoints on Highway I-15;
- Viewpoints in the Mojave National Preserve on the east face of Clark Mountain; and
- Viewpoints in the Stateline Wilderness Area, including the Umberci Mine and vicinity.

Staff also concludes that the visual analysis and resulting findings, obtained using the CEC staff methods typically used in Staff Assessment visual analysis, were essentially consistent with findings that would be obtained under the BLM visual impact assessment methods.

Staff concludes that these visual impacts would be significant in terms of the four criteria of CEQA Appendix G, and in terms of the context and intensity of the effects in general. Regarding the latter, the context of the project is one directly adjoining a national park and two designated wilderness areas, and a land-sailing site of regional or greater importance. Intensity of potential effects involve the unique scenic characteristics of the local landscape as indicated by the national park and wilderness designations of portions of the project viewshed; concerns expressed by public commentors to date; a degree of uncertainty as to the level of discomfort or disability glare from the solar tower receivers; and concern over cumulative visual effects of renewable projects on the CDCA and Mojave Desert as a whole.

Staff found that with recommended conditions of certification, potentially significant visual impacts at the Primm Valley Golf Course (KOPs 1 and 2) could be mitigated to less than significant levels in the long term. However, staff has concluded that potentially significant visual impacts at the other locations cited above could not be mitigated to less than significant levels and would thus result in significant and unavoidable impacts.

Because the project has the potential to result in exposure of aircraft pilots, motorists, and hikers to solar radiation reflected from project heliostats and/or power tower receivers, **Traffic and Transportation** Conditions of Certification **TRANS-3** and **TRANS-4** are recommended to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. Staff also concludes that the solar receiver units atop the solar power towers would generate conspicuously bright levels of glare for foreground viewers. Staff, however, concludes that with these measures, remaining glare, while not representing a hazard, could

represent a visually dominant feature as seen from the viewpoints named above. Remaining glare could alter the character of views of Clark Mountain from the valley floor, affecting the public's ability to enjoy those views, though not preventing them.

In addition, staff concludes that the project would not conform with applicable goals and policies of the San Bernardino County General Plan Conservation and Open Space Elements as follows:

- Conservation Element Goal D/CO 1, calling for preservation of scenic vistas in the County.
- Open Space Element Goal OS 5, and Policy OS 5.2, which require projects to be visually compatible with the scenic qualities of designated County scenic routes. Highway I-15 in the project vicinity is a County-designated scenic route.

Finally, staff concludes that the project in combination with foreseeable future projects could have significant unavoidable cumulative visual impacts of two kinds:

1. Cumulative impacts within the immediate project viewshed, essentially comprising foreseeable future projects in the Ivanpah Valley; and
2. Cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Mojave Desert.

As stated, staff concludes that the project would have significant unavoidable adverse impacts in both a direct and cumulative context. However, if the Energy Commission approves the project, staff recommends that all of staff's proposed conditions of certification be adopted in order to minimize impacts to the greatest feasible extent. Conditions of Certification referred to herein serve the purpose of both the Energy Commission's Conditions of Certification for purposes of CEQA and BLM's Mitigation Measures for purposes of NEPA.

INTRODUCTION

The following analysis evaluates potential visual impacts of the Ivanpah Solar Electric Generating System (ISEGS); its consistency with applicable Laws, Ordinances, Regulations and Standards (LORS); and conformance with applicable guidelines of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

In order to provide a consistent framework for the analysis, a standard visual assessment methodology developed by CEC 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**.

As noted above, the project is 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.

VISUAL RESOURCES Table 2
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
National Environmental Policy Act (NEPA)	Under the National Environmental Policy Act (NEPA), it is the responsibility of the federal government to “use all practicable means to ensure all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings (42 USC 4331(b)2). “
Federal Land Policy and Management Act of 1976 (FLPMA)	<p>FLPMA is the enabling legislation establishing the Bureau of Land Management’s responsibilities for lands under its jurisdiction.</p> <p>Section 102 (a) of the 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 (sic) values....”</p>
California Desert Conservation Area (CDCA) Plan	<p>The ISEGS project is located within the California Desert Conservation Area Plan, which is the BLM Resource Management Plan applicable to the project site (USDOI, 1980, as amended). The CDCA Plan did not include Visual Resource Management (VRM) inventory or management classes. However, BLM developed updated Visual Resource Inventory (VRI) mapping in 2008 (USDOI, 2008).</p> <p>The ISEGS site is classified in the CDCA Plan</p>

	<p>as Multiple-Use Class (MUC) L (Limited Use). Multiple-Use Class L, the most restrictive under the plan, “protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.”</p> <p>The CDCA Plan includes a table (Table 1) which illustrates the types of allowable land uses by MUC Class. The table specifically includes Electrical Power Generation Facilities including Wind/Solar facilities. Guidance provided under this section allows for the authorization of such facilities within MUC Class L lands in compliance with NEPA requirements.</p>
<p>Northern and Eastern Mojave CDCA Plan Amendments (NEMO), 2002</p>	<p>The NEMO plan amendments to the CDCA Plan did not directly affect visual resource management. Among the elements of the NEMO plan amendments was designation of approved motorized vehicle trails, including several such trails within the ISEGS site.</p> <p>According to the NEMO Routes Designation EA, “the off-road vehicle experience of traveling historic routes provides an educational and scenic experience of the natural wonders of a harsh desert region and the elements that the pioneers and founders of the historical route had to endure.” (USDOl, 2004).</p> <p>The East Mojave Heritage Trail, a 650-mile trail identified in the NEMO Proposed Route Designation Plan Amendment as a major historical trail of scenic, historic, and Native American values, is one such designated trail within the Ivanpah Valley. However, it does not cross the ISEGS site and would not be affected by the project (Murray, Tel. Con. 9/23/08).).</p>
<p>National Historic Preservation Act (NHPA)</p>	<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 “</p>

	<p>... setting ... (or) feeling ...” in a way that affects the property’s eligibility for listing, may result in a substantial adverse effect. “Examples of adverse effects ... include ...</p> <p>Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features “ (36 CFR Part 800.5)</p>
State	
State Scenic Highway Program	<p>The California State Department of Transportation (Caltrans) identifies a state system of eligible and designated scenic highways which, if designated, are subject to various controls intended to preserve their scenic quality (Ca. Streets and Highways Code, Sections 260 through 263). Highway I-15 within the project viewshed is not listed as an eligible State Scenic Highway.</p>
Local	
County of San Bernardino General Plan	<p>Various policies of the Conservation and Open Space Elements of the San Bernardino County General Plan refer to the protection of scenic resources in the project area, as described in detail in Visual Resources Table 3. In particular, Open Space Policies 5.1 through 5.3 provide protection to designated County scenic routes. Highway I-15 in the Ivanpah Valley is a designated County scenic route.</p>
Night Sky Protection Ordinance Ord. 3900 (San Bernardino County Code 87.0921)	<p>Ordinance intended “to encourage effective, non-detrimental lighting; to maintain night-time safety, utility, security and productivity; and to encourage lighting practices and systems which will minimize light pollution, glare and light trespass, conserve energy and resources and curtail the degradation of the night time visual environment “</p>

SETTING

REGIONAL LANDSCAPE SETTING

The proposed project landscape is part of the Great Basin section of Fenneman's Basin and Range physiographic province, a vast desert area of the western U.S. extending from eastern Oregon to western Texas, characterized by periodic mountain ranges separated by desert plain (Fenneman, 1931). It is also located within the Mojave Desert, and is immediately north and east of the northernmost portions of the Mojave National Preserve. Locally, the site is situated within the Ivanpah Valley, notable for the level playa or dry lakebed of Ivanpah Lake. Steeply rising, barren slopes and ridges of the Clark, Spring, and Ivanpah Mountains to the south, west, and north, and the Lucy Gray, McCullough, and New York Mountains to the east, define the Ivanpah Valley in the project vicinity, creating an enclosed viewshed. While the project portion of the Ivanpah Valley is visually relatively intact, it is located roughly 30 miles south of the City of Las Vegas, within a visual corridor along Highway I-15 that becomes increasingly urbanized and less scenically intact as one progresses northward. Thus, in a regional context, the site is located at the outer edge of urban influence of the City of Las Vegas metropolitan area. I-15 adjacent to the project site is the principal travel route for visitors to Las Vegas from southern California.

PROJECT SITE

VISUAL RESOURCES Figure 1, Views of the Project Site, depicts views of the Ivanpah Valley from the vicinity of the proposed project site.

The ISEGS site comprises approximately four square miles west of Highway I-15 and the northern half of the Ivanpah Lake dry lakebed. The site occupies a moderately sloping alluvial fan or bajada that descends eastward from the foot of the Clark Mountains and Mojave National Preserve (MNP) immediately to the west. Visual exposure to viewers on I-15, due both to proximity and slope orientation, is thus high. This portion of the Ivanpah Valley, defined at the north by a pass between the Clark and Lucy Gray Mountains at Primm, Nevada, is scenically relatively intact, as depicted in **VISUAL RESOURCES Figure 1**. The Bighorn Electric Generating Station, the town of Primm at the north end of the valley, the Primm Golf Course, existing high-voltage power lines, several unpaved vehicular trails and Highway I-15 intrude on the valley's scenic intactness but overall these features are very subordinate visually, and the landscape appears predominantly undisturbed. The proposed site is located immediately to the west of the Primm Golf Course, a slightly elevated site whose irrigated landscaping and perimeter berm-slopes contrast conspicuously with the surrounding natural landscape for viewers in its vicinity. The project site also surrounds an isolated, 416 -foot tall rock formation that serves as a prominent landmark within a radius of several miles and represents a striking scenic feature of the valley.

Land cover on the site consists primarily of Mojave Creosote Bush Scrub, including areas of small, young Joshua Trees. Surface disturbance is relatively minimal and inconspicuous overall, including unpaved vehicular trails and access roads. The ground surface is largely a medium tan color, further darkened in appearance by the relatively uniform scrub groundcover. With the exception of the vivid rock formation at the center

of the site, its bajada/scrub landscape is relatively common throughout the Mojave Desert landscape. The prominent and highly scenic adjacent scenery of slopes, ridges and peak of Clark Mountain, however, lend the project viewshed as a whole a higher degree of scenic interest and value. Similarly, the contrast between perfectly flat dry lakebed and steep, tall, nearby mountain slopes within a narrow enclosed valley lend the landscape a distinctive character with strong visual unity.

PROJECT AREA VISUAL SETTING

Project Viewshed

The *viewshed* or area of potential visual effect (the area within which the project could potentially be seen) is indicated by the reddish-colored area in **VISUAL RESOURCES Figure 2**. The computer-generated viewshed mapping was projected from the top of the proposed solar collectors. The mapping is accurate within the limits of error of the USGS digital elevation model (DEM) topographic map surveys from which it is created. In this landscape, because of the general absence of tall land-cover that could alter the actual viewshed, the topographically-generated viewshed mapping is considered generally accurate. A feature of this desert landscape is the potential for large projects to be seen over great distances where elevated viewpoints exist, due to the large open areas of level topography and absence of intervening landscape features.

Landscape Units and KOPs:

Visual Quality, Viewer Concern, and Viewer Exposure

VISUAL RESOURCES Figure 2, Existing Landscape Setting and Key Observation Points (KOPs), subdivides the project viewshed into broad landscape units and their associated overall visual sensitivity levels, and depicts KOPs used as the basis of the impact analysis. (All figures referred to in the text may be found at the end of this section). These units represent contiguous areas with broadly consistent visual character, quality, viewer sensitivity and visibility. Those attributes are reflected in their overall visual sensitivity ratings, which represent a summary of the existing visual quality, viewer concern, and viewer exposure (site visibility) of each unit. These ratings serve as the environmental baseline against which potential project impacts are evaluated. This figure is generally consistent with a Visual Resource Inventory conducted by BLM in 2008 (BLM inventory classifications are provided in parentheses for informational purposes)(USDOI, 2008a).

In the discussion below, distance zone terminology is used as follows: 'foreground' is used generically to refer to viewing distances under ½-mile; 'middle-ground' to distances between ½ and 4 miles; 'near middle-ground' refers to that portion of middle-ground under roughly one mile; and 'background' to distances over 4 miles.

The three major landscape units depicted are the Ivanpah Valley floor, including the Ivanpah dry lakebed; and the adjoining mountain ranges that define the valley: the Clark Mountains to the north, west, and south; and the Lucy Gray Mountains to the east. The Clark Mountains are divided into two major categories: portions of the Mojave National Preserve under National Park Service (NPS) jurisdiction; and the Stateline and Mesquite Wilderness Areas (WAs), under BLM jurisdiction.

VISUAL RESOURCES Figure 2 also depicts Key Observation Points (KOPs) used as the basis for this analysis. KOPs are used in the Energy Commission visual analysis method to evaluate potential project impacts. These viewpoints represent key sensitive viewer groups and viewing locations likely to be affected by the project. Existing views and simulated views with the proposed project from each KOP may be seen in **VISUAL RESOURCES Figures 6 to 15** at the end of this section. The KOPs below are presented according to landscape unit and key viewer group.

KOPs 1 and 2, representing Primm Golf Course, were presented in the AFC. KOPs 3 and 4, representing worst-case Highway I-15 views, were requested by Energy Commission staff. KOPs 5 through 10, representing sensitive outdoor recreation viewer groups, were identified by BLM staff and requested by BLM and Energy Commission staff.

Ivanpah Valley Viewpoints (KOPs 1 through 8)

The Ivanpah Valley floor has moderate overall visual sensitivity, with moderate existing visual quality, moderately high viewer concern, and high viewer exposure. (This sensitivity rating was generally consistent with BLM's visual inventory rating).

Primm Valley Golf Course: KOPs 1 – 2

The two KOPs from the AFC are both taken from the Primm Valley Golf Course, located on I-15 south of Ivanpah Lake and east of the proposed project site. Viewing distances are 1.5 miles to Ivanpah 2, and under 1.0 mile to Ivanpah 1, respectively. These KOPs represent a developed, outdoor recreational viewpoint with moderate to high use, at middle-ground distance.

I-15 Motorists: KOPs 3 –5

I-15 views are all within the valley and thus considered to have moderate overall sensitivity. Viewer numbers on this segment of highway are extremely high, particularly on Friday evenings and other peak periods, although the recreational destination for the majority of such motorists is Las Vegas rather than the Mojave Desert and the level of concern with scenic quality thus likely to be moderate or low. Viewing distance ranges from background (over four miles) to near- middle-ground (approximately one mile).

KOP 3: I-15 near Yates Well Road. KOP 3 depicts views of the Ivanpah 2 and 3 portions of the project site from I-15 at middle-ground distance (roughly 2 miles).

KOP 4: I-15 near Yates Well Road. KOP 4 depicts views of the Ivanpah 1 portion of the project site from I-15 at middle-ground distance (roughly 1 mile).

KOPs 3 and 4 correspond to two segments of the overall panorama seen from viewpoints in the portion of I-15 nearest to the project. The project, which occupies too wide an angle of view to be captured in a single photograph at this distance, is depicted in these two views to represent the entire angle of view encompassed by Ivanpah 2 and 3 (KOP 3, to the right), and Ivanpah 1 (KOP 4, to the left). These KOPs are approximately one mile from the proposed project at its nearest point (Ivanpah 1).

KOP 5: I-15 at Nipton Road. KOP 5 depicts views of I-15 motorists as they enter the Ivanpah Valley from the south at background distance (roughly 4 miles). This viewpoint demonstrates the high level of visual exposure toward I-15 created by the site's eastward sloping bajada topography, and represents I-15 views at their farthest point from the project site.

Ivanpah Lake: KOPs 6 –7

KOP 6 is taken from the most heavily used access point for wind sailors, on the eastern side of the dry lakebed. KOP 7 is taken from a second, also heavily used wind sailing access point on the west side of the lakebed, west of I-15.

These KOPs represent a natural, outdoor recreational viewpoint with very high use at far middle-ground/background distances of 4 and 3 miles respectively.

Primm: KOP 8

View from parking lot at southern boundary of Primm (roughly 4 miles). Primm is a high-volume visitor destination within middle-ground distance of the project. Although it is included within the larger landscape unit of the valley, viewer exposure and sensitivity from this indoor activity-oriented KOP is considered relatively low, and existing visual quality, dominated by large parking areas and commercial development, is also relatively low. Nevertheless, open and scenic views toward the project site exist from various locations in the southern area of Primm.

Clark Mountains Viewpoints: (KOPs 9 – 10)

Portions of the project viewshed in the Clark Mountain Range, which encloses the valley to the north, west, and south are comprised almost entirely of either the Mojave National Preserve or Stateline and Mesquite BLM Wilderness Areas, as indicated in **VISUAL RESOURCES Figure 2**. The fact that these areas were designated for special status under the Desert Protection Act (DPA) reflects their unusually high scenic and recreational value.

Both the Mojave National Preserve (MNP) and BLM Wilderness Areas (WAs) are regarded as high viewer concern locations due to their special designated status. This fact is amplified by the high visitor numbers reported by the National Park Service in surveys of visitors to the Clark Mountains cited below. This, in combination with the exceptional scenic quality of the mountains in both the MNP and WAs, and the high project visibility from these elevated viewpoints, would result in a high overall sensitivity rating.

KOP 9: Umberci Mine. KOP 9 is a popular hiking destination from Primm and the northern part of the valley, located on the trail to Umberci Mine within the Stateline Wilderness Area.

This KOP represents a sensitive recreational viewpoint at middle-ground distance.

KOP 10: Benson Mine. KOP 10, located in the vicinity of the Benson Mine, is representative of visitors to the MNP using or passing through the east face of Clark Mountain. According to the most recent statistical survey of MNP visitors conducted in

2003 for the National Park Service, an estimated 9% of visitors to the MNP visit the Clark Mountains, 7% use the Clark Mountains as their entry point to the MNP, and 10% use them as their departure point from the Preserve (USDOI, 2004b). The estimated overall number of visitors to the MNP in 2007 was 576,840 (USDOI, 2008b). Based on the visitor survey estimates, the number of annual visitors represented by this KOP (i.e., those visiting Clark Mountain) would thus be approximately 51,915 (9%). Since 10% of visitors to the Preserve were estimated to depart the park from Clark Mountain, and the principal access roads such as Yates Well and Colosseum Road are located in the vicinity of KOP 10 on the east face of Clark Mountain, staff assumes the KOP is reasonably representative of some substantial proportion of these visitors. According to the survey, these visitors include rock climbers, hikers, hunters, and OHV drivers traveling on Yates Well, Colosseum, or other open access roads in the vicinity of the KOP.

This KOP represents an elevated, high sensitivity recreational viewpoint at background distance.

Lucy Gray Mountains

No high-sensitivity recreational destinations or other KOPs were identified in the mountains to the east of the valley. This portion of the viewshed was assigned a moderate level of overall visual sensitivity.

IMPACTS

Ratings of existing visual sensitivity and proposed project contrast, dominance, and view blockage were made on the basis of field observation, photo documentation, and study of applicant-prepared visual simulations and other project information. KOP photos were taken with a 35mm camera and fixed 50mm lens, with a resulting horizontal field of view of approximately 40 degrees. This field of view, sometimes referred to as 'normal', approximates the actual field of view experienced in the field if viewed as a 9.5 inch wide image at a reading distance of about 1 foot.

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 contexts, 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)**.

VISUAL PROJECT DESCRIPTION

Power Plant

VISUAL RESOURCES Figure 3 depicts the layout of the three proposed units. **VISUAL RESOURCES Figure 4** depicts architectural elevations of the Ivanpah 3 power block, based upon the original AFC plan. Components of the other two units would be essentially similar in appearance and heights. **VISUAL RESOURCES Figure 5** depicts elevations of the proposed mirror units.

Solar Power Towers, Receivers, and Mirror Arrays (Heliostats)

The overall area of the three proposed project phases would be approximately 6.4 square miles or 4,073 acres, most of which would be occupied by mirror fields. Under the modified project plan, there would be one power tower each at Ivanpah 1 and 2, and five towers at Ivanpah 3. All proposed towers would have an overall height of approximately 459 feet (140 meters), with an additional 5 to 10 feet of FAA-required lighting. Mirror array units would be approximately 12 feet (4 meters) tall (Data Response Set 1D, #4, CH2ML2008g). Power towers would require day and night FAA strobe lighting.

Other visually prominent structures would include steam turbine generators, air-cooled condensers, water storage tanks, a 16-acre substation, administrative and maintenance facilities, and new transmission lines and towers (described below). Of these the most prominent would be the Ivanpah 1 air-cooled condenser (approximately 92 feet in height) (AFC Figure 2.2-1c); and new transmission towers. (BSE2007a).

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 result in high contrast between the disturbed area and surroundings, due to high contrast between the disturbed soil color and albedo, and the color and albedo of the existing undisturbed, vegetated surface (Data Response Set 2, # 150, CH2ML2008i). Alterations in landform from construction of berms, ponds, and channels could also be visually prominent features of the project.

Plant Night Lighting

Lighting to support plant operation would be required but is not described in detail in the AFC. FAA strobe and other aircraft warning lighting is assumed to be required atop the tall solar receiver towers due to proximity to existing and possible future flight paths.

Linear Facilities

Transmission Lines

Approximately 22,400 feet of new 115-kV generation tie lines and single-pole towers would be introduced within the project boundaries (please refer to **Project Description** of this FSA/DEIS). In addition, approximately 36 miles of existing transmission line within California and Nevada would be upgraded from 115 kV to 220 kV lines to accommodate the additional load of ISEGS and other foreseeable energy projects.

Water Lines

Water would be provided from two wells located adjacent to the northwest corner of Ivanpah 1. Each of the three power blocks would be connected to the groundwater wells by underground water pipelines. (Data Response Set 1D, #4, CH2ML2008g). Potential visual effects would result primarily from color contrast of soil disturbance and vegetation removal for pipeline construction .

Gas Lines

Natural gas would be supplied to the site through a new, proposed six-mile long distribution pipeline ranging from 4 to 6 inches in diameter. From the Kern River Gas Transmission pipeline, the pipeline would extend 0.5 miles south to the northern edge of Ivanpah 3. The ROW area required for this section of the pipeline would be 75 feet wide and 0.5 miles long. The line would then run east along the northern edge, and then south along the eastern edge, of Ivanpah 3 to a metering station near the southeast corner of Ivanpah 3. From there, a supply line would extend northwest into the Ivanpah 3 power block. The main pipeline would continue along the eastern edge of Ivanpah 2 to another metering station at its southeastern corner. Again, a branch supply line will extend northwestwards into the center of the Ivanpah 2 power block. From that station, the pipeline would follow the paved access road from Colosseum Road past the administration/warehouse building to the Ivanpah 1 power block. (Data Response Set 1D, #4, CH2ML2008g). Typical visual effects of new pipeline consist primarily of color contrast between adjoining undisturbed land and pipeline right-of-way due to soil disturbance and vegetation removal, an effect that usually persists for the long term in arid environments

Construction Staging Area

Construction parking and laydown would occur within the units under construction. A 377.5-acre construction logistics area would be located between Ivanpah 1 and 2. After Ivanpah 3 construction is complete, associated fabrication buildings would be removed and the area restored. Upon completion of construction, a 16.1-acre site would be utilized by the new Ivanpah substation and a 8.9 acres for the administration buildings, warehouse and parking facilities (DR Set 1D, # 4, CH2ML2008g).

VISUAL IMPACT ASSESSMENT

Staff Discussion of AFC Analysis

In both the AFC and subsequent data responses, the applicant applied the the BLM Visual Resource Management (VRM) system as the basis of its analysis. However, in both the AFC and subsequent analyses, the applicant incorrectly attributed a Class IV VRM baseline rating to the study area and the two Primm Valley Golf Course KOPs.. In addition, the AFC and subsequent Data Response 1D identified the golf course as having a low (visual) sensitivity level.

There is no basis for identifying the site and surroundings as a VRM Class IV area. VRM Classes are formally assigned by BLM as part of a land use plan or plan amendment. Previously, however, no VRM mapping or assignment had been adopted for the area by BLM. The AFC analysis thus refers to Visual Resource Inventory (VRI) classes. As discussed previously, however, BLM subsequently identified the site as VR Inventory Class III in a formal inventory of the study area. Energy Commission staff's independently-conducted visual inventory also resulted in an evaluation that is consistent with a VRI Class III rating of the area. In general, recreational destinations with high use levels within relatively scenic natural settings such as KOP 1 would not be considered VR Inventory Class IV, the lowest possible rating and one that implies either low viewer sensitivity or low scenic quality, neither of which apply to this site. Viewer sensitivity would generally be considered high due to the recreational activity types and high use numbers present. Similarly, staff disagrees with the applicant's project contrast ratings as described in Data Response 1A # 97-2, as indicated in the analysis of KOPs 3 and 4, below (CH2ML2008a).

A principal disagreement with the AFC analysis by both Energy Commission and BLM staff is the omission of sensitive outdoor recreational KOPs outside of the Primm Valley Golf Course. This omission was addressed in Data Response 2A, # 147 with visual simulations developed by the applicant from KOPs selected by BLM and Energy Commission staff (CH2ML2008i). These KOPs were not analyzed by the applicant in the Data Responses, but are analyzed by staff below.

Direct Impacts

Potential direct impacts of the proposed project are discussed below under the four significance criteria of the CEQA Guidelines Appendix G.

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

Although no designated scenic vistas were identified in the study area, various viewpoints, particularly those in the Clark Mountains within the Mojave Preserve and Stateline Wilderness Area would qualify as such due both to their very high scenic quality and high levels of recreational use. Both representative KOPs within the Clark Mountains, KOPs 9 and 10, would experience substantial adverse visual effects as a result of the proposed project. Panoramic elevated views of the valley would change from a relatively undisturbed desert floor landscape dominated by striking views of the Ivanpah dry lake bed, to an industrial, highly man-altered one dominated by roughly four square miles of mirror-arrays and 459-foot tall solar collector towers topped with brightly lit receiver units, a large graded area, as well as light rays reflected off of ambient atmospheric dust. The mirror fields would display a high degree of visual unity due to their orientation in large-scale circular patterns of high regularity around the collector towers, lending the view a higher level of visual quality than that of many other forms of intensive development. Reflected light rays, when present, would create striking, tent-like patterns, also with high visual unity, which some viewers might consider attractive or interesting. Nevertheless, since the existing intact natural landscape is considered one of the primary attractions for visitors to these mountains, the resulting dramatic alteration of landscape character, particularly as seen from high sensitivity recreational viewpoints in the Clark Mountains, is considered to represent a substantial adverse visual effect. These effects are discussed in further detail below, in the discussion of individual KOPs 9 and 10 under CEQA Criterion C.

View corridors to Clark Mountain from Highway I-15 could be considered to be a scenic vista in light of the County scenic designation of Highway I-15 within the Ivanpah Valley. The project would not substantially obstruct these scenic views due to the low height of the mirror fields, and the relatively large distances between the vertical solar towers. However, very bright levels of glare from the receiver units atop the solar power towers, though not anticipated to be hazardous, would appear in the foreground of views of Clark Mountain, resulting in very strong levels of contrast that could strongly alter the character of these views or make viewing difficult.

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-15, which is not listed as an eligible State Scenic Highway. The proposed project would be located in immediate proximity to a large rock-outcropping that is a prominent landmark for viewers throughout the viewshed to background distances. The project would not damage or intrude into views of this rock outcropping but would dramatically alter its visual setting. No other notable scenic features are present on-site. The project would not directly damage any specific scenic resources located within the project site. Potential effects on scenic resources in general are discussed under CEQA Criterion C, below.

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

Project Operation Impacts

Impacts of Structures on Key Observation Points

Ivanpah Valley – Primm Valley Golf Course

As described above, views from within the valley are considered to have moderate overall visual sensitivity, with moderate existing visual quality, moderately high viewer concern, and high viewer exposure. As noted above, this rating is generally consistent with BLM's characterization of the valley as VRI Class III.

KOP 1 – Looking Southwest from Primm Valley Golf Course toward Ivanpah 1, (roughly 1.5 miles). **VISUAL RESOURCES Figures 6 A and 6B.**

Staff Comments on Applicant's Simulation

Staff notes that the simulation of KOP 1 does not clearly depict the portion of the mirror fields nearest the viewer, which appear in the images as an indistinct area with the same color and texture as the background soils. In fact these would appear as a large field of angular, 12-foot-tall metallic structures with an industrial texture and complex patterns of light and shadow that would accentuate their contrast with the surrounding landscape, lending the facility a distinctly man-made character. Staff understands that this may reflect technical limitations in the visual simulation process. Staff's observation is only made to inform the reader that the simulation may (unavoidably) understate the actual level of contrast that would be experienced by viewers. Color contrast with the surroundings could be strong depending upon the paint color used, but could be minimized for the arrays facing away from the viewer. The far portion of the mirror fields, in which the mirror surfaces themselves are visible, would appear as distinct, angular structures with highly variable surface color and brightness and a dense, industrial texture. **VISUAL RESOURCES Figure 7a**, depicting the Solucar solar thermal project in Seville Spain, illustrates the appearance of these features, including the high color and form contrast of unpainted mirror arrays.

Visible mirror surfaces would not be expected to display visible specular reflection of the sun to the public absent mirror system malfunction. Visible mirror surfaces would display areas of diffuse reflection of sunlight under some conditions. While strongly contrasting with the existing setting, these diffuse reflections have been compared to the sun's reflection on the surface of a lake, and are considered to be a moderate and acceptable level of contrast.

The heated solar receiver units at the top of the power towers would appear brightly lit in daylight. That brightness cannot be accurately depicted in graphic simulations.

VISUAL RESOURCES Figure 7b, c and d, photographs of the Solar One project in Dagget, CA, illustrate the variable appearance of the mirror surfaces, including areas of bright specular or spread glare that occur under certain conditions; the potential for soil color contrast beneath the heliostats due to visibility of the soil surface from elevated

viewpoints, and the role of heliostat shadow in creating visual contrast. Staff was unable to obtain data from the applicant about likely frequency, duration or intensity of the reflected 'light-ray' effect depicted in the simulations. However, **VISUAL RESOURCES Figure 7a** also presents some anecdotal documentary evidence on the appearance of this phenomenon, though not on its frequency or duration. Staff also notes that in the absence of light rays, the project would appear less vivid, both less dominant and more purely utilitarian in character, than depicted in the simulations.

As depicted in **VISUAL RESOURCES Figure 6B**, the project would appear very prominently from this near-middle-ground viewpoint. The 495-foot solar collector towers would introduce strong vertical line and form contrast. This form contrast would be strongly accentuated by the bright illumination of the heated solar collector at the top of each tower, as well as by rays of reflected sunlight when ambient dust particles are present in the surrounding air. The solar collector towers and adjacent air-cooled condenser, as well as the substation and related facilities south of Ivanpah 2, would present a utilitarian, industrial character. The panoramic expanse of mirror arrays would present strong textural contrast with the intact, natural character of the desert floor. Portions of the desert floor below the mirror arrays, where visible, would contrast in hue, brightness and value with surrounding undisturbed soil surfaces, and with the mirror structures themselves. When present, reflected light rays would create a luminous, transparent surface of tent-like form that would to some degree repeat that of the mountain ridgeline, would have a legible form with high unity, and to some observers could be perceived as an interesting and vivid, albeit man-made, sight. At other times in the absence of the light rays, the view of the solar tower and mirror fields would be more purely utilitarian in character, both less dominant and less picturesque. Under sunny conditions, the bright lighting of the solar receiver units would be very conspicuous, and may tend to visually dominate views due to their brightness.

In addition to this strong level of contrast, the project would exhibit strong spatial and scale dominance. The vast scale of the project would be such that it could not be taken in in a single view.

The project would not physically block existing scenic views of Clark Mountain but as noted previously would strongly alter their character due to the brightness of the solar receivers, and would interfere with the ability of viewers to look toward the mountain due to strong levels of discomfort glare. This would represent a moderately strong to strong level of view blockage in the direction of Clark Mountain.

These factors together would result in a strong level of overall visual change. 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, this strong level of visual change would represent a potentially significant impact.

Mitigation – Views of the proposed project from the golf course could be partially or substantially screened by perimeter tree plantings. Substantial tall screening would also tend to block the panoramic natural views of the Clark Mountains that are the location's scenic attraction. Partial screening of the project with low-growing trees or tall shrubs

could screen views of the mirror fields from within the golf course while leaving views of the Clark Mountains intact. In that case the tower and light rays would also remain visible. Screening only quadrants containing views of the project (northwest to southwest) could leave scenic views eastward over Ivanpah Lake and mountains to the east intact. These measures are described in Condition of Certification **VIS- 2**.

Staff recommends that if the project is approved, this measure be required if desired by the golf course owner, with input by the owner as described in **VIS-2**. Potential contrast of the mirror arrays could be reduced considerably by painting the non-mirror surfaces in a non-reflective tan or brown color to blend with the visual background of the surrounding terrain and the slopes of the Clark Mountains, as described in Condition of Certification **VIS-1**.

Residual Impact Significance After Mitigation with Staff-Recommended Measures – With Conditions of Certification **VIS-1** and **VIS- 2**, impacts to viewers at Primm Valley Golf Course could be reduced to a less-than-significant level in the long term. If Condition **VIS-2** is not implemented, impacts would remain significant.

KOP 2 – Looking West from Primm Valley Golf Course toward Ivanpah 1, (roughly 1.5 miles).

VISUAL RESOURCES Figures 8A and 8B.

KOP 1 and *2* represent, in effect, two portions of a single sensitive viewing location, the golf course. The affected field of view at the golf course is too wide to fit into a single photograph; thus two photographs are needed to depict the breadth of the project's effects. Views similar to those represented in *KOPs 1* and *2* would, however, be experienced as a single panoramic view from many locations within the golf course. Therefore staff considers that *KOP 2* is analyzed under the preceding discussion of *KOP 1*, with the same conclusions.

Ivanpah Valley – I-15 Motorists

I-15 views are all located within the valley and have moderate overall visual sensitivity, with moderate existing visual quality, moderately high viewer concern, and high viewer exposure.. Viewer numbers on this segment of highway are extremely high, particularly on Friday evenings and other peak periods, although the recreational destination for the majority of such motorists is Las Vegas rather than the Mojave Desert, thus the level of concern with scenic quality of many motorists is likely to be moderate or low.

KOP 3 – Looking West from I-15 near Yates Well Road (Toward Ivanpah 2 and 3), 2.5 Miles from site (Ivanpah 2). **VISUAL RESOURCES Figures 9 A and 9B.**

KOP 4 – Looking West from I-15 near Yates Well Road (Toward Ivanpah 1), 1 Mile from site. **VISUAL RESOURCES Figures 10A and 10B.**

KOP 3 depicts views of Ivanpah 2 and 3 from I-15, near the Yates Well Road interchange south of the Primm Valley Golf Course, at a distance of roughly 2-1/2 miles from Ivanpah 2.

KOP 4, rotated slightly to the left of KOP 3, depicts views of Ivanpah 1 from the same segment of I-15, near the Yates Well Road interchange south of the Primm Valley Golf Course at a distance of roughly 1 mile from Ivanpah 1.

KOPs 3 and 4 are meant to capture the full panoramic field of view of motorists on I-15 at their closest point to the project. KOP 3 is rotated to capture the view of Ivanpah 2 and 3 in relation to the prominent rock outcropping in their visual foreground. KOP 4 is rotated to the left to capture the view of adjoining Ivanpah 1. However, the two photographs together represent different portions of what would be experienced by viewers as one panoramic view.

As depicted in Figures 9b and 10b, the project would be highly prominent from this near-middle-ground viewpoint. The tall solar collector towers would introduce strong vertical form and line contrast. This form contrast would be strongly amplified by bright illumination of the heated solar receiver at the top of each tower, as well as by light rays of reflected sunlight when ambient dust particles are present in the surrounding air. The mirror arrays would alter the character of the desert floor to a distinctly man-made texture, including the mechanical structures of mirror units closest to the viewer, and the bright, reflective mirror surfaces visible beyond the solar towers. Although the form and line contrast of the mirror arrays would be weak, the textural contrast they would introduce is considered strong due to the vast scale and visual magnitude of the affected area, which is so broad that it could not be seen in one view. Visible areas of disturbed soil between Ivanpah 1 and 2 could contrast sharply in color and brightness with any surrounding undisturbed soil surface.

In addition to this strong level of contrast, the project would exhibit strong spatial and scale dominance. The vast scale of the project would be such that it could not be taken in in a single view.

The project would not physically obstruct existing scenic views of Clark Mountain due to the low height of the mirror fields, and the relatively large distances between the vertical solar power towers. However, the very bright solar receiver units could tend to dominate or even interfere with such views.

The combination of strong contrast, strong spatial and scale dominance, and strong view blockage represent a strong level of overall visual change. The panoramic expanse of man-made texture on the ground plane, together with strong form contrast of 45-story towers and strong color contrast of glowing receivers and mirror surfaces would demand attention, could not be overlooked, and would fundamentally alter the perceived character of the existing landscape from an intact natural to distinctly man-altered setting.

Impact Significance - This strong level of overall visual change would not be compatible with the moderate overall sensitivity level of the Ivanpah Valley as seen by motorists in the visual middle-ground. These effects are thus considered a potentially significant visual impact.

Staff Comment on Contrast Rating of KOPs 3 and 4

Staff concludes that from foreground and near-middle-ground viewpoints on I-15, the project would not be consistent with the moderate overall sensitivity level associated with its existing scenic quality, viewer concern, and viewer exposure. Staff also notes the following:

From a visual assessment point of view, there are two somewhat different aspects of visual impact highlighted by the ISEGS project. The method of assessing visual impact applied in this study is oriented toward the preservation of natural landscapes perceived to be of scenic value, as an implicit goal. Thus, the level of project contrast with the baseline landscape *per se* is the measure of impact, rather than the ultimate level of visual quality with the project. These two measures of visual impact are not the same.

From the perspective of ultimate visual quality, it is worth noting that the proposed project as seen from KOPs 3 and 4 would, in addition to strong overall contrast, also exhibit strong visual unity and simplicity, attributes that are generally associated with positive visual quality. This condition is in contrast to scenes of visual disorder and disunity that are generally equated with low visual quality or 'visual blight.' For example, a mining operation or manufacturing facility might present scenes of strong visual disorder and thus, low visual quality or 'blight.' The proposed project, in comparison, would exhibit moderate visual quality and would likely appear more acceptable than many other forms of intensive urban or industrial development.

Thus, staff notes that within an urban frame of reference not all viewers would find the project disagreeable or unattractive; indeed, many viewers could find the project interesting to view due to its novelty. Overall, it would exhibit moderate visual quality and preserve scenic (though strongly altered) views. Within an urban frame of reference, this level of impact might be considered acceptable. However, within a landscape conservation-oriented frame of reference, the project would represent a substantial change and impairment of a previously intact natural landscape.

Mitigation – No available mitigation measures were identified to fully address the level of contrast of the project. However, if the project is approved, staff recommends Condition of Certification **VIS-1**, Surface Color Treatment of Structures, to minimize structure contrast, especially of the mirror arrays, to the greatest degree feasible.

Residual Impact Significance After Mitigation with Staff-Recommended Measures - No measures were identified by staff to fully address impacts. Impacts would remain significant and unavoidable.

Staff Comments on Applicant's Simulations

As discussed above under KOP 1, staff notes that the simulations of KOPs 3 and 4 do not clearly depict the mirror arrays, which would appear as a large field of angular, 12-foot-tall metallic structures with a distinctly man-made texture in views of Ivanpah 1 due to its proximity to viewers. Staff understands that this may reflect technical limitations in the visual simulation process. Staff's observation is made to inform the reader that the simulation may (unavoidably) understate the actual level of contrast that would be experienced by viewers. The visible mirror surfaces would appear as distinct, angular

structures with highly variable surface color and brightness, including occasional areas of specular glare, and a dense, machinery texture as illustrated in **VISUAL RESOURCES Figure 7a, above**. Again, brightness of solar receivers cannot be reproduced in printed simulations.

KOP 5 - Looking Northwest from I-15 at Nipton Road, 4 Miles from Site. VISUAL RESOURCES Figures 11A and 11B.

KOP 5 depicts views of I-15 motorists at their farthest point from the project site, as they enter the Ivanpah Valley from the south at background distance. This viewpoint demonstrates the relatively high degree of visual exposure toward I-15 created by the site's open, eastward sloping terrain. It is meant to illustrate the I-15 experience at the farthest point from the project, and complement KOPs 3 and 4, which depict the nearest point to the project.

Contrast of the project at this farthest viewpoint on I-15 would be moderate, rapidly increasing to strong contrast as motorists progressed northward. Visual exposure to the site is high until motorists reach the Primm Valley Golf Course, which obstructs highway views to the site.

Project dominance would remain moderate (co-dominant) at this distance. Scale and prominence of the mirror fields would be large but co-dominant within the overall field of view.

View blockage would be moderate from this location. The bright solar receivers would strongly attract attention, but would appear largely to the right (east) of Clark Mountain, the principal object of scenic views.

Overall, the project would exhibit moderate visual change from this and other background distance viewpoints.

Impact Significance – Arguably, the majority of motorists on I-15 are not highly concerned with the scenic quality of the setting. However, the very high number of viewers (up to 40,000 per day) makes it difficult to consider this KOP as having low sensitivity; under BLM guidelines, for example, 40,000 vehicles per year may indicate a high level of viewer sensitivity (USDO, 1987)(H-8410-1). This KOP is analyzed in terms of a moderate overall visual sensitivity rating, including a moderately high level of viewer concern. In addition, the affected segment of I-15 within the project viewshed has been identified by San Bernardino County as a county scenic route, as discussed further under Compliance with Applicable LORS.

Moderate contrast as depicted in this background-distance view would be compatible with its moderate overall sensitivity and be less than significant. However, as motorists progressed northward, visual exposure of the project would remain high and contrast and dominance would increase to strong levels. Although no intermediate locations on Highway I-15 were simulated, for the greater part of the drive between Nipton Road and Yates Well Road, which occurs within the middle-ground distance zone (under 3 miles), contrast would be considered strong, and impacts potentially significant.

Mitigation – No available mitigation measures were identified to fully address these impacts. However, if the project is approved, staff recommends Condition of Certification VIS-1, surface color treatment of structures to minimize structure contrast to the greatest degree feasible.

Residual Impact Significance After Mitigation with Staff-Recommended Measures – No measures were identified by staff to fully address impacts. Impacts for most of the I-15 exposure within middle-ground (under four miles) distance would thus be significant and unavoidable.

Staff Comments on Applicant's Simulation

Previous comments on the color and texture of the simulated mirror fields also apply in this view. At certain times of day, diffused glare from the mirror surfaces would be prominent, similar to a lake surface in sunlight; at other times it would not, as in this simulation. The color and texture contrast of the nearer portion of the mirror fields would vary greatly depending upon surface treatment. Brightness of solar receivers cannot be reproduced.

Ivanpah Valley – Ivanpah Lakebed

KOP 6 – View of Ivanpah 2 and 3 Looking West Toward Site from Eastern Side of Ivanpah Lake, 4 Miles from Site. **VISUAL RESOURCES Figures 12A and 12B.**

KOP 6 is taken from the most heavily-used access point to the dry lakebed by wind sailors, on the eastern edge of the lakebed at a distance of roughly 4 miles.

Staff Comments on Applicant's Simulation

Staff notes that the framing of the view, by focusing on Ivanpah 2 and 3, necessarily omits Ivanpah 1, which would appear to the left of this view and would be closer and more prominent to viewers.

As depicted in **VISUAL RESOURCES Figure 12b**, because of distance and the relatively oblique vertical angle of view, the mirror arrays would occupy a narrow portion of the field of view, appearing relatively flat from Ivanpah Lake viewpoints. Form, line and color contrast of the mirror fields would thus be relatively weak. The vertical 459-foot towers and bright glow of solar receivers would have greater line and color contrast but would remain moderate and co-dominant with other features in the view. Light rays, when present as depicted in the simulation, would be prominent, but would remain generally subordinate within the overall view. Based on currently available data, project contrast would range from weak to moderate depending on prevalence of light rays and brightness of solar receivers.

Due particularly to the low, oblique viewing angle, project visual scale and spatial dominance would remain subordinate to other prominent components of the view from this location.

The bright power tower receivers would intrude into views of Clark Mountain. However at this distance they are anticipated to have a moderate level of view intrusion.

Overall visual change would thus be moderate under sunny conditions, and weak during cloudy conditions.

Impact Significance – The weak to moderate levels of overall project visual change would be compatible with the moderate overall visual sensitivity of the setting from this viewpoint. Impacts would thus be less than significant.

Mitigation – None required.

*KOP 7 - Looking Southwest Toward Site from Western Side of Ivanpah Lake, 3 Miles from Site. **VISUAL RESOURCES Figures 13A and 13B.***

KOP 7 is taken from a second heavily-used wind sailing access point on the west side of the lakebed west of I-15, and illustrates the nearer range of viewing conditions existing for lakebed visitors.

Staff Comments on Applicant's Simulation

Staff notes that as in KOP 6 above, the framing of the view is oriented to crop out Ivanpah 1, which would appear to the left of this view and in this case would be farther from the viewer than Ivanpah 3, to the right. As in KOPs 1 and 2, 3 and 4, and 6 and 7, the overall horizontal angle of view occupied by the project is too wide to capture in a single photograph.

Similar to KOP 6 the mirror fields would be viewed at a relatively oblique, low angle, reducing their overall prominence in the field of view. The solar receiving towers would be prominent due to the intense brightness of the illuminated solar receivers atop each tower. The overall level of project contrast would range from weak to moderate depending upon prevalence of light rays and brightness of solar receivers. In the presence of light rays as depicted in the simulation, or high levels of receiver illumination, contrast would be moderate.

Both mirror fields and towers would be more visually dominant than at KOP 4 due to greater proximity and correspondingly greater visual magnitude. Based on currently available information on glare, the project structures would be visually co-dominant with other features in the view, including the existing transmission towers.

The bright power tower receivers would intrude into views of Clark Mountain. However at this distance they are anticipated to have a moderate level of view intrusion.

Overall visual change would thus be moderate under sunny conditions, and weak during cloudy conditions.

Impact Significance – The weak to moderate levels of overall project visual change would be compatible with the moderate overall visual sensitivity of the setting from this viewpoint. Impacts would thus be less than significant.

Mitigation – None required.

Ivanpah Valley - Primm

KOP 8 - Looking South from Primm, 4 Miles from Site. **VISUAL RESOURCES Figure 14.**

Primm is a high-volume visitor destination within middle-ground distance of the project, located within the larger moderate sensitivity landscape of the valley. Although scenic views toward the project site exist at the southern edge of Primm and from windows of Whiskey Pete's hotel, overall, viewer exposure and orientation to the project site are considered to be limited. Similarly, viewer concern from this indoor activity-oriented KOP is considered relatively low. Existing visual quality within Primm, dominated by large parking areas and commercial development, is also relatively low. In addition, views toward the project site from this location would be essentially similar to those of KOP 7 (Ivanpah Lake), except from a greater distance (over 4 miles rather than 3 miles). For these reasons Energy Commission staff agreed that a simulation from this location would not be required.

Similar to KOP 7 the mirror fields would be viewed at a relatively oblique vertical angle, reducing their overall prominence in the field of view. The solar receiving towers would be prominent due to the intense brightness of the illuminated solar receivers atop each tower. In the absence of reflected light rays, the project structures would remain visually subordinate to other features in the view, including the existing transmission towers, and their overall level of contrast would be weak to moderate. In the presence of light rays as depicted in the simulation, contrast would be moderate.

Due to the oblique angle of view from this location, visual dominance of the project would remain subordinate to other components of the view.

The bright power tower receivers would intrude into views of Clark Mountain. However at this distance they are anticipated to have a moderate level of view intrusion.

Overall visual change would thus be moderate under sunny conditions, and weak during cloudy conditions.

Impact Significance – The weak to moderate levels of overall project visual change would be compatible with the moderate overall visual sensitivity of the setting from this viewpoint.

Impacts would thus be less than significant.

Mitigation – None required.

Clark Mountains

As described previously, views from within the Clark Mountains are considered to have high overall visual sensitivity, with high existing visual quality, high viewer concern associated with their Desert Protection Act status, and high viewer exposure due to the elevated vista points.

KOP 9 – Looking South from Road to Umberci Mine, 1 Mile from Site. VISUAL RESOURCES Figures 15A and 15B.

KOP 9 is located on the trail to Umberci Mine, a popular hiking destination from Primm and the northern part of the Ivanpah Valley, located within the BLM Stateline Wilderness Area.

Staff Comments on Applicant's Simulation

Again, the simulation is framed to capture a portion of Ivanpah 3, in the foreground, and Ivanpah 2 farther in the distance, necessarily excluding Ivanpah 1, which would appear to the left of the view. The individual 12-foot-tall mirror units are distinguishable in this simulation. To provide a sense of scale, the towers are 459 feet tall. The backs of the mirror units are assumed in the simulation to be painted in a dark color. As discussed above and depicted in **VISUAL RESOURCES Figure 7b**, the appearance of the visible mirror surfaces would vary widely, from dark blue to bright solar diffuse glare, depending upon time and season. The visibility of mirror reflection would be greater from this and other KOPs within the Wilderness Area than from the valley floor due to the elevated viewer position.

As depicted in **VISUAL RESOURCES Figure 15B**, form, line, color and texture contrast of the project structures would all be strong from this viewpoint. Towers would exhibit strong form and line contrast. The mirror fields would exhibit strong texture contrast with the natural ground plane. The glowing solar collectors and visible areas of mirror surface would exhibit strong color contrast against the ground plane and background mountain slopes. In this particular photograph the existing transmission towers and lines are prominent in the foreground. Nevertheless, long, panoramic views of the site and Clark Mountains remain open and highly scenic from this elevated location.

Due both to relative proximity to the project and the elevated viewing angle, the scale and spatial dominance of the project would be high (dominant). As illustrated in the simulation the project would extend over the entire field of view and could not be taken in in a single view. The brightly lit solar receivers would compete with the mountain peaks and ridges for visual dominance.

Similarly, the bright solar receivers would intrude into, and potentially interfere with, scenic views of the Clark Mountains from a moderate to strong degree depending upon brightness of the solar receivers.

Overall project visual change would thus be strong. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

Impact Significance –This strong level of overall project visual change contrast would not be compatible with the moderate overall visual sensitivity of the Ivanpah Valley, nor with the high overall visual sensitivity of the Stateline Wilderness Area in which this viewpoint is located. This level of impact is thus considered to be a significant visual impact.

Mitigation – No available mitigation measures were identified to adequately address these impacts. However, if the project is approved, staff recommends Condition of Certification VIS-1 Color Treatment to minimize contrast of the mirror units to the greatest extent feasible.

Residual Impact Significance After Mitigation with Staff-Recommended Measures - Impacts would remain significant and unavoidable with recommended conditions of certification.

KOP 10 – Looking East from Vicinity of Benson Mine, 4 Miles from Site. VISUAL RESOURCES Figures 16A and 16B.

KOP 10, located in the vicinity of the Benson Mine, is representative of Mojave National Preserve visitors in the Clark Mountains within the project viewshed. Visitors in the vicinity of the KOP include rock climbers, hunters, OHV drivers on Yates Well, Colosseum and other roads, hikers, and campers estimated to total over 50,000 visitors per year (USDOI, 2004b; USDOI 2008b).

As depicted in Figure 16B, even at this distance the project would display a strong level of form, line, color and texture contrast, introducing an element of highly man-made character into a wide portion of the field of view. The mirror fields would vary in their appearance from dark blue to bright diffuse glare as illustrated in **VISUAL RESOURCES Figure 7b**. At certain times the mirror arrays could potentially create strong diffuse or spread glare, particularly in the morning if viewed on axis with the sun, and in late afternoon. Bright receiver glare is anticipated during all sunny periods. Potential glare impacts are discussed further under Glare Impacts, below. As noted previously, the project would exhibit a high degree of visual unity and simplicity that could be perceived as less adverse than many other types of development. The project would exhibit moderate, rather than low, overall visual quality. Nevertheless, the character of the existing intact, natural landscape would be strongly altered over a large area to a man-made character, and the project would exhibit strong contrast.

From such elevated viewpoints in the surrounding mountains, the mirror arrays would become a dominant feature in views of the valley, strongly altering a large portion of the field of view.

The project would tend to dominate, but not physically obstruct, scenic views of the valley as seen from high elevations in the mountains. The solar receivers could potentially interfere with the ability to see such views due to strong nuisance glare.

Overall, project visual change would thus be strong. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

Impact Significance – This strong level of contrast would not be compatible with the moderate overall sensitivity of the Ivanpah Valley in its current condition. Implementation of the project would represent a substantial decline in scenic quality of views by MNP visitors. This level of impact is thus considered a significant visual impact.

Mitigation – No available mitigation measures were identified to fully address these impacts. However, if the project is approved, staff recommends the following Conditions of Certification:

In order to minimize the degree of color contrast of the mirror structures, staff recommends Condition of Certification VIS-1, Surface Treatment of Structures. In order to minimize color contrast of disturbed soil areas, staff recommends Condition of Certification VIS-3, Revegetation of Disturbed Soil Areas. The primary area requiring revegetation would be the large area to be used for construction laydown, and siting of a substation and other operation and support structures, located between Ivanpah 1 and 2. However, other structures including soil berms, shall also require revegetation where soil disturbance is expected to occur.

Residual Impact Significance After Mitigation with Staff-Recommended Measures – Recommended Condition of Certification VIS-1 would reduce the potential contrast of the non-mirror portions of the heliostat units. Recommended Condition of Certification VIS-3 would reduce the area and level of high contrast from soil disturbance over the long term. However, the larger impact of strong visual contrast and dominance of the mirror arrays, towers and solar receivers could not be mitigated. Impacts would thus remain significant and unavoidable.

Project Construction Impacts

Construction parking and laydown would occur within the units under construction. A 120-acre construction logistics area would be located between Ivanpah 1 and 2, including fabrication buildings. After Ivanpah 3 construction is complete, associated fabrication buildings would be removed and the area restored. In addition, a 257-acre area would be reserved for temporary construction use, and for the permanent substation site. Project construction is estimated to last for 48 months (Data Response Set 1D, # 4)(CH2ML2008g).

During construction, grading of the project phases would result in a very large area of disturbed soil surface, resulting in high color, line and texture contrast that would be prominent from the highway and elevated KOPs. The potential overall affected area of the three proposed project phases would be approximately 4 square miles or 3,613 acres. The majority of this area would eventually be transformed into mirror fields, with visual effects analyzed elsewhere in this report. The 120-acre construction area, and any graded or disturbed portions of the 257 acres used for temporary construction activities, however, could continue to have long-term adverse visual impacts. Graded areas could also result in adverse visual effects due to fugitive dust.

Nighttime construction lighting, without adequate mitigation, could result in light pollution affecting the Mojave National Preserve.

These effects together and individually could represent strong visual changes to affected KOPs on I-15 and in the Clark Mountains.

Impact Significance – Anticipated strong visual changes from construction would be incompatible with the moderate overall visual sensitivity of the Ivanpah Valley, as

experienced from affected viewpoints on the highway, and the high overall visual sensitivity of viewpoints in the Clark Mountains, and would last for a period of several years. They thus represent a potentially significant adverse impact.

Mitigation – To address potential long-term impacts of site grading, staff recommends Condition of Certification BIO-14, as specified for specifically visual concerns in Condition of Certification VIS-3, Revegetation of Disturbed Soil Surfaces. To address potential light pollution impacts, staff recommends Condition of Certification VIS-4, Night Lighting Measures. Impacts from fugitive dust have been addressed in **Air Quality** Conditions of Certification **AQ-SC3**, **AQ-SC4**, and **AQ-SC7** and **Soil and Water** Condition of Certification **SOIL&WATER-1**, and could be reduced to less than significant levels with implementation of these recommended conditions of certification.

Residual Impact Significance After Mitigation with Staff-Recommended Measures –

Because of the climatic constraints on successful re-vegetation in this region, it is anticipated that the impacts of disturbed areas of the site could remain substantial for the duration of project construction. However, the majority of grading effects would be replaced by the effects of the project itself, which would obscure the disturbed soil surface in all but the area between Ivanpah 1 and 2. This remaining exposed area of disturbance would contribute to the significant overall contrast of the project in the long term but in itself would occupy a small portion of the view. This residual impact of grading would be less than significant in the long term.

With recommended Condition of Certification **VIS-4**, Temporary and Permanent Exterior Lighting Measures, light pollution effects from nighttime construction lighting could be reduced to less than significant levels. Impacts from fugitive dust have been addressed elsewhere in this PSA and could be reduced to less than significant levels with recommended conditions of certification.

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

Glare is a major issue of concern for the ISEGS project, not only for aesthetic reasons, but for navigation and safety reasons due to the proximity of Highway I-15, and to aircraft flight paths associated with both existing facilities and with the anticipated future Southern Nevada Supplemental Airport to be located a short distance north of the project near Jean, Nevada. Potentially affected receptors would include aircraft, motorists on I-15; hikers, climbers and other visitors in the Clark Mountains; and off-road vehicle (ORV) motorists, wind sailors, hikers and others in the valley.

Staff conducted an independent review of potential glare impacts based on available project data. The results of this review are summarized in detail in the **Traffic and Transportation** section of this FSA/DEIS. Conclusions on potential glare impacts in this visual analysis are based on that review.

In response to staff Data Requests 89 and 90, the applicant provided a series of data responses dealing with safety of reflected mirror array light beams, including

calculations of beam intensity and safety, intensity of light from the solar receiver units on top of the power towers, and receiver glare safety calculations (DR Set 1, # 89 – 90) (CH2ML2008a).

According to the applicant's data responses, the likelihood of hazard to aircraft from mirror reflection is negligible. Potential hazards or annoyance of mirror reflection to motorists or outdoor recreationists was not directly addressed.

According to Data Response DR 90-1, the potential hazard to motorists on I-15 of glare from the heated solar receiving units atop the towers would also be negligible.

However, a third-party expert review commissioned by the Clark County Department of Aviation (CCDOA) concluded that 'glare from the heliostat mirrors could be a significant hazard to air navigation (ASRC, 2009). CCDOA strongly urged the Energy Commission to study the issue of potential glare on aircraft in more detail (Clark Cty, 2009).

Subsequent to publication of the PSA, staff requested additional project data related in particular to possible glare impacts from the solar receiver units atop the power towers. Staff has also conducted additional analysis of the potential health and safety hazards or potential for distraction from both the heliostats and power tower receivers as provided in the **Traffic and Transportation** section of this document. Staff's subsequent independent analysis concludes solar radiation and light reflected from proposed project heliostats could cause a significant human health and safety hazard to observers in vehicles on adjacent roadways or air traffic flying above the site, and could cause a distraction of drivers on I-15 that would lead to road hazards and to pilots of aircraft flying over the site. Staff has proposed Condition of Certification **TRANS-3** to ensure solar radiation and light from the heliostats does not impair the vision of motorists or pilots traveling near the site and that the potential for exposure of observers does not cause a human health and safety hazard.

Staff also concludes that solar radiation and light reflected from proposed project power tower receivers is not expected to pose a significant human safety or hazard to navigation of vehicles on adjacent roadways or air traffic flying above the site, but could potentially cause a distraction of drivers on I-15 that would lead to road hazards. Staff has proposed Condition of Certification **TRANS-4** to ensure glare from power tower receivers does not impair the view of motorists or pilots traveling near the site and that the potential for exposure of observers to light reflected from the power tower receivers is minimized to the maximum extent possible.

With Condition **TRANS-4**, the anticipated level of nuisance from glare of the solar receiving units, however, could remain conspicuous. This level of glare could be dominant and could detract from the public's ability to enjoy views of Clark Mountain from the valley floor. The glare would alter the character of those views, but would not prevent them.

In addition to safety and aesthetic impacts from the mirror arrays and solar receivers, concern was expressed in EIS scoping over potential nighttime light pollution impacts of construction or other project night lighting (NPCA, 2008a). According to comments of the National Parks Conservation Association, the Mojave National Preserve contains

some of the most pristine night sky views in the continental United States, and new artificial lighting may represent a deterioration of that resource. These concerns have been addressed in recommended Condition of Certification **VIS 5**, Temporary and Permanent Exterior Lighting Measures. With these measures, shielding of all project lighting, including construction lighting, to prevent upward-directed illumination would be required. However, FAA-required aircraft safety lighting, which is anticipated to include bright strobe lighting atop the 7 project towers, could not be shielded to prevent upwardly directed light. Staff is not aware of specific thresholds by which a significant light pollution impact may be defined. However, it was assumed in this study that with adequate control of all other project lighting, the 7 new aircraft safety lights would not likely constitute a significant impact.

Indirect Impacts

By substantially lowering the prevailing visual quality of its local viewshed, the Ivanpah Valley, the project could have the indirect effect of encouraging additional subsequent development of similar character. Because the relatively intact existing landscape would appear highly compromised after introduction of the ISEGS, the incremental additional impact of other future projects could appear to be less significant than if they were occurring in the current landscape without ISEGS.

Closure and Decommissioning Impacts and Mitigation

After the end of the project's useful life, it would be decommissioned as described in the Applicant's Draft Closure, Revegetation, and Rehabilitation Plan (CH2ML2009q). The facility would be removed to a depth of three feet below grade, original contours restored, and the site revegetated. However, the removal of the existing facility would leave a very prominent visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. In addition, revegetation of areas in this desert region are difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time.

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.

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

- The impacts of the proposed project would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, potentially including another solar project.
- Numerous foreseeable locally cumulative projects were identified within the Ivanpah Valley that may not, individually or cumulatively, conform with guidelines for use under the applicable Multiple Use Class L under the CDCA Plan. These projects have the potential to cause cumulatively considerable impacts to visual resources within the Ivanpah Valley.

If this project is not approved, renewable projects would likely be developed on other sites in the Mojave Desert and elsewhere.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). This concept is very similar to that of NEPA, which states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7).

There is the potential for substantial future development in the Ivanpah Valley area and throughout the southern California Mojave desert region. Analysis of cumulative impacts is based on data provided in the following maps and tables which are contained in the Cumulative Scenario section.

- Cumulative Impacts Figure 1, Regional Renewable Applications VISUAL RESOURCES 5.12-26 December 2008
- Cumulative Impacts Figure 2, Regional Renewable Applications (Detail)
- Cumulative Impacts Figure 3, Ivanpah Valley Existing and Future/Foreseeable Projects
- Cumulative Impacts Table 1, Regional Renewable Energy Projects
- Cumulative Impacts Table 2, Existing Development in the Ivanpah Valley
- Cumulative Impacts Table 3, Future Foreseeable Projects in the Ivanpah Valley Area.

The analysis in this section first defines the geographic area over which cumulative impacts to visual resources could occur. The cumulative impact analysis itself describes the potential for cumulative impacts to occur as a result of implementation of the ISEGS project along with the listed local and regional projects.

GEOGRAPHIC EXTENT

Cumulative impacts could occur if implementation of the ISEGS project would combine with those of other local or regional projects. The ISEGS 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 Ivanpah Valley; and
2. cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Mojave Desert, or other broad basin of the project's affected landscape type. The widest applicable basin of cumulative effect would

include all of the Mojave Desert landscape type, including southeastern California, southern Nevada, and western Arizona.

Local Projects (Ivanpah Valley)

ISEGS and Past Projects

Past and present projects in the Ivanpah Valley were analyzed in the main staff assessment evaluation of the existing project setting. To summarize the conclusions of that analysis briefly, the existing Ivanpah Valley setting, though the site of existing development, is considered to be predominantly intact scenically, and was assigned a moderate overall level of visual sensitivity. Cumulative effects of past projects in combination with ISEGS is thus as described in the main staff assessment analysis, above.

Past projects that have resulted in similar impacts in this area include the existing railroad track, the Primm Valley Golf Course, a transmission line, the I-15 freeway, the Bighorn electric generating station, Chevron-Texaco evaporation pond and commercial development in Primm, NV.

ISEGS and Foreseeable Future Projects

Cumulative Impacts Table 3, lists foreseeable future projects within the Ivanpah Valley. All of the projects listed in Cumulative Impacts Table 3, with the exception of the mixed-use development near Jean, Nevada, and the two wind energy projects on Mountain Pass, would lie within the viewshed of the ISEGS project. The Ivanpah Airport would be located at a sufficiently great distance as to have limited visual interaction with the ISEGS project. On the other hand, the ISEGS, GEN 3, and Nextlight Primm solar projects, along with the existing Bighorn Generating Station, proposed Ivanpah Energy Project, and City of Primm, would simultaneously be visible within middle-ground distance to I-15 motorists, and also be cumulatively dominant from viewpoints in the Clark Mountains, including KOP 10, within the Mojave National Preserve. This cumulative effect would be substantially more adverse than the significant impacts of the ISEGS project alone, or the future projects without ISEGS, both from I-15 and from the Preserve.

For I-15 motorists the cumulative effect of the existing Primm Valley Golf Course together with the ISEGS, I-15 Widening, Port of Entry, and Desert Xpress projects would be substantially adverse, converting the majority of the western highway frontage within the valley to a more urbanized, developed foreground view with potential to intrude into scenic westward highway views of the Clark Mountains. Staff does not have detailed plans of the Port of Entry Project. However, if it is of a scale and character similar to other like facilities staff is familiar with, that project could be of considerable scale and visual effect, including not only the port structures themselves, but a large area of additional lanes and other paving, numerous trucks, and bright night lighting. Regarding the Desert Xpress project, although the specific technology that would be utilized is not known by staff, the most common High Speed Rail technologies in current use require continuous above-ground catenary power lines that are highly urban in character, similar to light rail systems, as well as continuous safety fencing and other ancillary project features. If a final alignment paralleling the edge of I-15 were to be

selected, these continuous vertical and linear features could intrude into the foreground of views of Clark Mountain as seen from the highway. Additional lane widening of I-15 proposed by Caltrans would add incrementally to these urbanizing influences, by increasing the dominance of the highway itself. Other foreseeable projects include the proposed natural gas-fired combined cycle Ivanpah Energy Center Project, which would be prominent from the highway; and most importantly, two additional solar projects, which like ISEGS would be extensive in area, adding substantially to the amount of development in the valley as seen from I-15 and the Clark Mountains. These projects, taken together, would result in a marked transformation of the existing Ivanpah Valley landscape into a more urbanized visual setting, particularly as seen by I-15 motorists in the northern portion of the valley in the vicinity of the ISEGS project. In addition, there would be some likelihood of cumulative light pollution impacts due to an accumulation of night-time light sources, including the ISEGS aircraft lighting, Port of Entry and new and existing power plant lighting.

The anticipated impacts of the ISEGS project in combination with foreseeable future local projects in the Ivanpah Valley are thus considered cumulatively considerable and potentially significant.

Regional Solar/Renewable Development Projects

ISEGS and Past Regional Projects

The ISEGS 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.

ISEGS 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 ISEGS 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 66 solar projects and 63 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.

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 CDCA 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 Mojave Desert landscape. Viewed in the cumulative context of the Southern California Mojave Desert

as a whole, potential visual impacts of renewable energy projects are thus considered to be cumulatively considerable and potentially significant.

Cumulative Impact Conclusion

The anticipated visual impacts of the ISEGS project in combination with past and foreseeable future local projects in the Ivanpah Valley, and past and foreseeable future region-wide projects in the southern California Mojave Desert are thus considered cumulatively considerable, significant, and unavoidable.

COMPLIANCE WITH APPLICABLE 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>	Refer to CDCA discussion, below.

	<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>	
<p>California Desert Conservation Area Plan (CDCA Plan)</p>	<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. VR Inventory mapping was prepared prior to this project by BLM.</p> <p>The ISEGS site is classified in the CDCA Plan as Multiple-Use Class (MUC) L (Limited Use). Multiple-Use Class L, the most restrictive under the plan, “protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.</p> <p>Under the CDCA Plan Electrical Power Generation Facilities, including Wind/Solar facilities, may be allowed within MUC Class L if NEPA requirements are met.</p>	<p>Consistent. Solar electrical generation plants are specifically allowed for under the MUC Class L 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>
<p>Northern and Eastern Mojave (NEMO) Plan Amendments</p>	<p>The NEMO plan amendments to the CDCA Plan did not directly affect visual resource management. The NEMO identified visual impacts to viewers on historic routes.</p>	<p>Consistent with stated visual concerns. The East Mojave Heritage Trail would not be significantly affected.</p>

	However, the only identified historic trail in the vicinity, the East Mojave Heritage Trail, would not be impacted by the ISEGS project (Murray, Tel. Con. 9/23/08).	
National Historic Preservation Act (NHPA)	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)	Potentially eligible pre-historic and historic sites were identified by Energy Commission staff within the viewshed of the ISEGS project, and may potentially be affected by visual effects of the project. These potential impacts are addressed in the Cultural Resources section of this FSA/DEIS.
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 with requirements of the State program.	Consistent. Highway I-15 within the project viewshed is not an eligible or designated State scenic highway.
LOCAL		
County of San Bernardino General Plan Applicable Conservation Element Goals, Objectives, Programs	GOAL D/CO 1. Preserve the unique environmental features and natural resources of the Desert Region, including native wildlife, vegetation, water and scenic vistas. POLICIES D/CO 1.2 Require future land development practices to be compatible with the existing	Inconsistent. The proposed project would intrude into scenic vistas in the Clark Mountains and would require removal of approximately 4 square miles of vegetation. Inconsistent. The project would not be compatible with existing scenic vistas, and would not

	<p>topography and scenic vistas, and protect the natural vegetation.</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>substantially protect the natural vegetation.</p> <p>Likely consistent with recommended Condition of Certification VIS-4, which would require conformance with Night Sky Protection Ordinance.</p>
<p>Applicable Open Space Element Goals, Objectives, Programs</p>	<p>GOAL OS 5. The County will maintain and enhance the visual character of scenic routes in the County.</p> <p>POLICIES</p> <p>OS 5.1 Features meeting the following criteria will be considered for designation as scenic resources:</p> <ul style="list-style-type: none"> a. A roadway, vista point, or area that provides a vista of undisturbed natural areas. b. Includes a unique or unusual feature that comprises an important or dominant portion of the viewshed (the area within the field of view of the observer). c. Offers a distant vista that provides relief from less attractive views of nearby features (such as views of mountain backdrops from urban areas). <p>OS 5.2 Define the scenic corridor on either side of the designated route, measured from the outside edge of the right-of-way, trail, or path. Development along scenic corridors will be required to demonstrate through visual</p>	<p>I-15 in the project viewshed is designated as a County scenic highway (Policy OS 5.3)</p> <p>Inconsistent. The project would not maintain or enhance the visual character of the views on I-15 within its viewshed.</p> <p>Inconsistent. Visual analysis of the project concluded that the proposed project would not retain the existing scenic qualities of the viewshed.</p>

	<p>analysis that proposed improvements are compatible with the scenic qualities present.</p> <p>OS 5.3 The County desires to retain the scenic character of visually important roadways throughout the County. A “scenic route” is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. Therefore, the County designates the following routes as scenic highways and applies all applicable policies to development on these routes (see Figures 2-4A through 2-4C of the Circulation and Infrastructure Background Report):</p> <p>(MULTIPLE REGIONS):</p> <p><i>c. Interstate 15 from the junction with Interstate 215 northeast to the Nevada state line, excepting those areas within the Barstow Planning Area and the community of Baker where there is commercial /industrial development; those portions within the Yermo area from Ghost Town Road to the East Yermo Road overcrossing on the south side only and from First Street to the East Yermo Road overcrossing on the north side; and all incorporated areas.</i></p>	
Night Sky Protection Ordinance	Commercial and industrial outdoor lighting must be fully shielded, “so that no light is	Consistent with recommended Condition of Certification VIS-4.

Ord. 3900 (San Bernardino County Code 87.0921)	emitted above the horizontal plane do not direct light or light trespass onto adjacent propertyor to any member of the public who may be traveling on adjacent roadways”	FAA aircraft lighting could not be shielded.
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NOTEWORTHY PUBLIC BENEFITS

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

RESPONSE TO AGENCY AND PUBLIC COMMENTS

The following commentors submitted letter comments on the PSA, dated as indicated:

Tasha LaDoux (Letter dated January 30, 2009)(PUB2009d):

Comment 1: Comment raises concern over impacts of light pollution.

This subject is addressed in the PSA on page 5.12-26 and in the FSA/DEIS under the discussion of potential project glare effects, CEQA Criterion d. Night lighting of this project is relatively minimal, and potential light pollution effects of both temporary and permanent exterior lighting are addressed in Condition of Certification **VIS-4**.

Wilderness Society and NRDC comments on visual resources (Letter dated January 23, 2009)(WS2009a):

1. The commentors recommend that CEC and BLM consider whether the benefits of the ISEGS project outweigh the visual and other effects.
2. The commentors urge the CEC and BLM to consider the desert-wide cumulative visual and other impacts from renewable energy and transmission projects.
3. The commentors urge the CEC and BLM to avoid permitting solar projects on lands in VRM Classes I and II, and that they be systematically prioritized for siting on already impaired landscapes.

Comments are noted. Both Energy Commission and BLM will weigh in its respective license and ROW permit decisions the potential benefits of the project against the potential environmental impacts, including visual impacts. The desert-wide cumulative visual impacts of the project are discussed in the FSA/DEIS under the Cumulative Impacts discussion in the visual analysis. It is unlikely that any project application could be accepted by BLM on VRM Class I lands, since within the CDCA these would virtually all fall within Desert Protection Act-designated Wilderness Areas or National Park Service lands. Staff strongly concurs with the recommendation that projects not be sited on lands with VR (Inventory) Class II lands, as well as the recommendation to prioritize siting on already impaired or, by implication, VRI Class IV, lands. (There are no

assigned VRM Classes within the CDCA). One important question that cannot be answered at this time is whether sufficient visually impaired (VRI Class IV) lands are available to meet demand for renewable energy applications on BLM lands within the CDCA. Commentors should also note that assigned VR Management (VRM) Classes do not necessarily reflect existing scenic quality of a landscape but, rather, visual objectives for a land unit that are established in relation to other land use objectives.

Clark County Department of Aviation (Letter dated January 23, 2009)(ClarkCty, 2009):

1. Commentor strongly urges Energy Commission to study the issue of potential glare effects on aviation in more detail with respect to both the proposed Southern Nevada Supplemental Airport, and existing Jean Airport.
2. Commentor cites a third-party study of potential project effects on aviation, including glare, commissioned by CCDOA. The study concluded that 'glare from the heliostat mirrors could be a significant hazard to air navigation.' The solar receiver tower was also identified as a possible source of glare to aircraft. Commentor also cites a letter from FAA expressing concern over this issue, received in response to the project NOI.

Following publication of the PSA, staff requested additional needed data of applicant and conducted an independent review of potential project glare impacts based on available information. That independent review is summarized in detail in the **Traffic and Transportation** section of this FSA/DEIS and concludes that there would not be a significant impact to aviation resulting from glare.

Sierra Club (Letter dated January 22, 2009)(SC2009a):

- Commentors express concern with the potential visual effects of ISEGS on views from the Mojave National Preserve.

The commentors concur with staff's conclusions in the PSA. Typically, the National Park Service and CEC would apply a high standard of acceptable impact reflecting the Preserve's special scenic value.

Basin and Range Watch (Letter dated January 31, 2009)(BRW2009a):

- Commentors note that the PSA analysis fails to address how visual impacts of the ISEGS could affect local tourism. Commentors express a negative opinion of the visual effects of the project.

Comments are noted. Staff notes that typically, the focus of analysis under CEQA is on physical changes to the environment. It would be difficult to quantify secondary economic effects of the project's visual effects, although staff recognizes that some such impact could possibly take place. In the **Socioeconomics and Environmental Justice** section of the FSA/DEIS, staff concludes that the proposed ISEGS would not cause a significant adverse direct, indirect, or cumulative impact on population, employment, housing, public finance, local economies, or public services.

CONCLUSIONS AND RECOMMENDATIONS

Staff concludes that the proposed project would result in a substantial adverse impact to existing scenic resource values as seen from several Key Observation Points in the Ivanpah Valley and Clark Mountains, including:

- The Primm Valley Golf Course;
- Middle-ground-distance viewpoints on Highway I-15;
- Viewpoints in the Mojave National Preserve, throughout the east face of Clark; and Mountain
- Viewpoints in the Stateline Wilderness Area, including the Umberci Mine and vicinity.

Moreover, staff concludes that these visual impacts would be significant in terms of the four criteria of CEQA Appendix G, and in terms of the context and intensity of the effects in general. Regarding the latter, the context of the project is one directly adjoining a national park and two designated wilderness areas, and a land-sailing site of regional or greater importance. Intensity of potential effects involve the unique scenic characteristics of the local landscape as indicated by the national park and wilderness designations of portions of the project viewshed; concerns expressed by public commentors to date; a degree of uncertainty as to the level of discomfort or disability glare from the solar tower receivers; and concern over cumulative visual effects of renewable projects on the CDCA and Mojave Desert as a whole.

Staff found that with recommended conditions of certification, potentially significant visual impacts at the Primm Valley Golf Course (KOPs 1 and 2) could be mitigated to less than significant levels in the long term.

However, staff has concluded that potentially significant visual impacts at the other locations cited above could not be mitigated to less than significant levels and would thus result in significant and unavoidable impacts.

Because the project has the potential to result in exposure of aircraft pilots, motorists, and hikers to solar radiation reflected from project heliostats and/or power tower receivers, **Traffic and Transportation** Conditions of Certification **TRANS-3** and **TRANS-4** are recommended to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. Staff also concludes that the solar receiver units atop the solar power towers would generate conspicuously bright levels of glare for foreground viewers. Staff, however, concludes that with these measures, remaining glare, while not representing a hazard, could represent a visually dominant feature as seen from the viewpoints named above. Remaining glare could alter the character of views of Clark Mountain from the valley floor, affecting the public's ability to enjoy those views, though not preventing them.

With these conditions, the anticipated level of nuisance glare of the solar receiving units, however, would remain conspicuous. This remaining level of glare could detract from the public's enjoyment of views of Clark Mountain from the valley floor, but would not prevent such views.

In addition, staff concludes that the project would not conform with applicable goals and policies of the San Bernardino General Plan Conservation and Open Space Elements as follows:

1. Conservation Element Goal D/CO 1, calling for preservation of scenic vistas in the County. Staff found that the project would have adverse effects on scenic vistas.
2. Open Space Element Goal OS 5, calling for the County to maintain and enhance the visual character of scenic routes in the County; and Policy OS 5.2, which states that “Development along scenic corridors will be required to demonstrate through visual analysis that proposed improvements are compatible with the scenic qualities present.” The visual analysis of the project found that it would not be compatible with the scenic qualities present in the viewshed of portions of Highway I-15 designated as a County scenic route.

Additionally, staff concludes that the project in combination with foreseeable future projects could have significant and unavoidable cumulative visual impacts of two kinds:

1. Cumulative impacts within the immediate project viewshed, essentially comprising foreseeable future projects in the Ivanpah Valley; and
2. Cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Mojave Desert.

Finally, staff notes the following:

Staff believes the analysis clearly establishes that the proposed project would represent a substantial change and impairment of a natural landscape that is largely intact. However, it may also be worthwhile to note that within an urban frame of reference, not all viewers would find the project disagreeable or unattractive; indeed, many viewers could find the project interesting to view due to its novelty. Overall, it would exhibit a moderate level of visual quality and would leave scenic views of Clark Mountain unobstructed physically, though strongly impaired by glare. Within an urban frame of reference, where preservation of natural landscapes is not a primary goal, this level of impact might be considered acceptable.

This fact may be relevant within the context of the cumulative impact scenario foreseen within the Ivanpah Valley, since development of any of the proposed renewable energy projects, or a preponderance of other foreseeable projects, would result in such an urbanized setting. If a number of the foreseeable cumulative projects are developed, the Ivanpah Valley landscape would, with or without the ISEGS project, quickly reach a point at which the level of scenic intactness is impaired to a *de facto* VR Class IV, low visual quality and sensitivity condition, becoming an urbanized environment, in apparent conflict with the area’s Multiple-Use Class L status under the CDCA Plan and the County of San Bernardino’s scenic highway policies.

As stated previously, staff concluded that the project would have significant unavoidable adverse impacts. However, if the Commission approves the project, staff recommends that all proposed conditions of certification be adopted in order to minimize impacts to the greatest feasible extent.

MITIGATION MEASURES/PROPOSED CONDITIONS OF CERTIFICATION

The Energy Commission should adopt the following conditions of certification if it approves the project.

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat the 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.

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 BLM's Authorized Officer and the CPM. Subsequent modifications to the treatment plan are prohibited without BLM's Authorized Officer and 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 BLM's Authorized Officer and the CPM for review and approval and simultaneously to San Bernardino County for review and comment. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a plan with the specified revision(s) for review and approval by BLM's Authorized Officer and the CPM before any treatment is applied. Any modifications to the treatment

plan must be submitted to BLM's Authorized Officer and the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify BLM's Authorized Officer and 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.

LANDSCAPE SCREENING OF GOLF COURSE

VIS-2 At the request of, and in consultation with BLM's Authorized Officer, the CPM and the golf course owner, the project owner shall prepare a perimeter landscape screening plan to reduce the visibility of the proposed ISEGS project as seen from the golf course. The intent of the plan shall be to provide screening of the power project, particularly the mirror fields, while retaining as much of the scenic portion of the overall views of Ivanpah Valley and Clark Mountains as feasible. The design approach shall be developed with prior consultation with the golf course owner, and implemented only at the golf course owner's request. The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner for review and comment a preliminary conceptual landscaping plan whose objective is to provide an attractive visual screen to views of the ISEGS project mirror fields. Upon approval by BLM's Authorized Officer and the CPM and golf course owner, the project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner for review and comment a landscaping plan whose proper implementation will satisfy these requirements. The plan shall include:

- A. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction.
- B. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose;
- C. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project;
- D. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project; and

- E. One set each for BLM's Authorized Officer and the CPM of 11"x17" color photo-simulations of the proposed landscaping at five years and twenty years after planting, as viewed from adjoining segments of I-15 .

The plan shall not be implemented until the project owner receives final approval from BLM's Authorized Officer and the CPM.

Verification: The landscaping plan shall be submitted to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner for review and comment at least 90 days prior to installation of the landscaping. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM and simultaneously to the golf course owner a revised plan for review and approval by BLM's Authorized Officer and the CPM.

The planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify BLM's Authorized Officer and the CPM and the golf course owner within seven days after completing installation of the landscaping, that the landscaping is ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.

REVEGETATION OF DISTURBED SOIL AREAS

VIS-3 The project owner shall revegetate disturbed soil areas to the greatest practical extent, as described in Condition of Certification **BIO-14**. In order to address specifically visual concerns, the required Closure, Revegetation and Rehabilitation Plan shall include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the substation and other ancillary operation and support structures.

Verification: Refer to Condition of Certification **BIO-14**.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-4 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan that includes the following:

- A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

- B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;
- C. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- D. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;
- E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and
- F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: 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. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM.

The project owner shall not order any exterior lighting until receiving BLM Authorized Officer and CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that the lighting has been completed and is ready for inspection. If after inspection, BLM's Authorized Officer and the CPM notify the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify BLM's Authorized Officer and the CPM that the modifications have been completed and are ready for inspection.

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

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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 two minutes or longer. In contrast, a low or brief duration of view is reached in a short amount of time—generally less than ten 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 previously 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 absent.¹ 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.