5.13 Visual Resources

5.13.1 Introduction

The Hidden Hills Solar Electric Generating System (HHSEGS) will be located on privately owned land in Inyo County, California, adjacent to the Nevada border. It will comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant will generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 will occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres.

Each solar plant will use heliostats—elevated mirrors guided by a tracking system mounted on a pylon—to focus the sun's rays on a solar receiver steam generator (SRSG) atop a tower near the center of each solar field. The solar power tower technology for the HHSEGS project design incorporates an important technology advancement, the 750-foot-tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre and the design is more efficient overall.

In each solar plant, one Rankine-cycle steam turbine will receive steam from the SRSG (or solar boiler) to generate electricity. The solar field and power generation equipment will start each morning after sunrise and, unless augmented, will shut down in the evening when insolation drops below the level required to keep the turbine online. Each solar plant will include a natural-gas-fired auxiliary boiler, used to augment the solar operation when solar energy diminishes or during transient cloudy conditions, as well as a startup boiler, used during the morning startup cycle, and a nighttime preservation boiler, used to maintain system temperatures overnight. On an annual basis heat input from natural gas will be limited by fuel use and other conditions to less than 10 percent of the heat input from the sun.

To save water in the site's desert environment, each solar plant will use a dry-cooling condenser. Cooling will be provided by air-cooled condensers, supplemented by a partial dry-cooling system for auxiliary equipment cooling. Raw water will be drawn daily from onsite wells located in each power block and at the administration complex. Groundwater will be treated in an onsite treatment system for use as boiler make-up water and to wash the heliostats.

Two distinct transmission options are being considered because of a unique situation concerning Valley Electric Association (VEA). Under the first option, the project would interconnect via a 230-kilovolt (kV) transmission line to a new VEA-owned substation

(Tap Substation) at the intersection of Tecopa Road[1] and Nevada State Route (SR) 160 (the Tecopa/SR 160 Option). The other option is a 500-kV transmission line that interconnects to the electric grid at the Eldorado Substation (the Eldorado Option), in Boulder City, Nevada.

A 12- to 16-inch-diameter natural gas pipeline will be required for the project. It will exit the HHSEGS site at the California-Nevada border and travel on the Nevada side southeast along the state line, then northeast along Tecopa Road until it crosses under SR 160. From this location a 36-inch line will turn southeast and continue approximately 26 miles, following the proposed Eldorado Option transmission line corridor, to intersect with the Kern River Gas Transmission (KRGT) pipeline. A tap station will be constructed at that point to connect it to the KRGT line. The total length of the natural gas pipeline will be approximately 35.3 miles.

The transmission and natural gas pipeline alignments will be located in Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission line (both options) in the vicinity of the Eldorado Substation, which is located within the city limits of Boulder City, Nevada. A detailed environmental impact analysis of the transmission and natural gas pipeline alignments will be prepared by BLM.

This section was prepared following California Energy Commission (CEC) guidelines for preparing visual impact assessments for Applications for Certification (AFC) and is organized into the following sections:

- Section 5.13.1. Introduction
- Section 5.13.2. Laws, Ordinances, Regulations, and Standards
- Section 5.13.3. Affected Environment
- Section 5.13.4. Environmental Analysis
- Section 5.13.5. Cumulative Effects
- Section 5.13.6. Mitigation Measures
- Section 5.13.7. Involved Agencies and Agency Contacts
- Section 5.13.8. Permits Required and Permits Schedule
- Section 5.13.9. References

5.13.2 Laws, Ordinances, Regulations, and Standards

5.13.2.1 Introduction

The project site is located in Inyo County, California, on privately owned land. Accordingly, this section addresses all laws, ordinances, regulations, and standards that apply to a project in Inyo County, California and are relevant to visual resources. These are summarized in Table 5.13-1 and discussed in more detail below.

[1] The road is also called Tecopa Highway and Old Spanish Trail Highway. The names are generally used interchangeably.

TABLE 5.13-1
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

LORS	Requirements/ Applicability	Administering Agency	AFC Section Explaining Conformance
State			
California Scenic Highway Program and System	The purpose of the Program is to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The System includes a list of highways that are either eligible for designation as scenic highways or have been designated as such.	Dennis Cadd Statewide Coordinator Landscape Architecture Program California Department of Transportation 1120 N Street, MS 28 Sacramento, CA 95814 (916) 654-5370	Section 5.13.2.3
Local			
Inyo County General Plan	Comprehensive, long-range plan provides policies and goals to serve as the guide for the physical development of the county.	Inyo County Planning Department P.O. Box L 168 N. Edwards Street Independence, CA 93526 (760) 878-0263	Section 5.13.2.4
Inyo County Code	Establishes in accordance with the General Plan, the regulatory, penal, and administrative ordinances of Inyo County.	Inyo County Planning Department P.O. Box L 168 N. Edwards Street Independence, CA 93526 (760) 878-0263	Section 5.13.2.4

5.13.2.2 State

5.13.2.2.1 California Environmental Quality Act

As discussed in Section 5.13.2.1, the CEC will evaluate HHSEGS's visual impacts in light of the requirements of the California Environmental Quality Act (CEQA).

5.13.2.2.2 California Scenic Highway Program and System

The California Scenic Highway Program was created by the state legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways (California Streets and Highways Code, Sections 260 through 263). The California Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. The project site would not be visible from any designated or eligible scenic highways.

5.13.2.3 Local

In California, the project site would be located on private land in Inyo County. The Inyo County Code and the Inyo County General Plan were examined for provisions that would apply to visual resources aspects of this project and evaluated for conformity. Policies and goals of the Inyo County General Plan (Inyo County, 2001) that are applicable to visual resources were identified in the Conservation and Open Space Element and are summarized

in Table 5.13-2. No Inyo County Code ordinances were found that would be applicable to visual resources aspects of this project.

TABLE 5.13-2
Conformity of HHSEGS with the Inyo County General Plan

Provision	Conformity?
Conservation/Open Space Element	
Goal VIS-1: Preserve and protect resources throughout the County that contribute to a unique visual experience for visitors and quality of life for County residents.	Yes. The project site is not located on lands that are designated as scenic resources in the plan. A recent plan amendment (Inyo County, 2011) has designated the area within which the project site is located as a renewable energy overlay zone in which the development of transmission lines and solar and wind power plants is allowed.
Policy VIS-1.3: Man-made slopes should be treated to reflect natural hillside conditions in the surrounding area.	Not applicable. The project site plans indicate that the project features will be located entirely on flat topography and will create few man-made slopes.
Policy VIS-1.6: The County shall require that all outdoor light fixtures including street lighting, externally illuminated signs, advertising displays, and billboards use low-energy, shielded light fixtures which direct light downward (i.e., lighting shall not emit higher than a horizontal level) and which are fully shielded. Where public safety would not be compromised, the County shall encourage the use of low-pressure sodium lighting for all outdoor light fixtures.	Yes. For any nighttime construction that is necessary, lighting will be used that is limited to meet safety requirements and the needs of the tasks, and will incorporate shielding to direct the lighting onsite to minimize offsite light or glare. For operational lighting, all lights will be fully shielded and directed to the specific areas where the lighting is required. Where consistent with safety and operational needs, low-pressure sodium lamps will be specified. Wherever possible, operational lights will be operated with switches or motion detectors, allowing them to remain unilluminated at most times to further minimize the amount of light potentially visible offsite.

Source: Inyo County, 2001.

A review was also conducted of the Inyo County General Plan Amendment No. 2010-03 dated April 26, 2011, for reference to visual resource conformance (see Table 5.13-3).

TABLE 5.13-3
Conformity of HHSEGS with the Inyo County General Plan Amendment No. 2010-03

Provision	Conformity?
Conservation/Open Space Element	
Policy VIS-1.8: The County shall encourage siting and screening to minimize significant changes to the visual environment from renewable energy development, including minimizing light and glare, to the extent possible.	Yes. The policy is to encourage siting and screening to the extent possible to minimize the project's visual effects. This project was sited close to the dry lake bed near the lowest part of the valley to aid its visual integration into the local landscape. While it is not possible to screen the views of the solar power towers, the heliostat mirrors are relatively short and are not visible from many areas on the Pahrump Valley floor due to the gently undulating nature of the topography. The heliostat arrays would be visible in views from higher elevations, which are distant from the project, the visual effects would be attenuated. The Applicant will reduce glare from the project by controlling the orientation of the mirrors by utilizing a computer-programmed aiming control system that directs the motion of the heliostat mirrors to track the movement of the sun, which will then direct solar energy to the receiver solar power towers.

Source: Inyo County, 2001.

5.13.3 Affected Environment

5.13.3.1 Setting

5.13.3.1.1 Regional Setting

The project site is located in Inyo County, California, along the California-Nevada border in the Pahrump Valley. The Pahrump Valley is characterized by an expansive arid landscape, long-distance views, and rugged mountains (Figure 5.13-1). The Pahrump Valley is a broad, northwest-to-southeast-trending desert valley bounded by the Nopah Range and the Last Chance Range to the west, the Kingston Range and the North Mesquite Mountains to the south, and the Spring Mountains to the east. Vegetation is typical of the Mojave Desert province and is characterized by creosote bush, spiny menodora, Nevada ephedra, Mojave yucca, western honey mesquite, and various cacti.

The project surroundings are relatively remote, approximately 45 miles west of Las Vegas and approximately 20 miles east of Death Valley National Park. The community of Pahrump, located approximately 18 miles to the north, is the only sizable developed area in the Pahrump Valley. Pahrump had an estimated population of 36,441 as of July 1, 2010 (US Census, 2011). Immediately adjacent to the project site is a small cluster of residences and rural structures in an area known as Charleston View. The area of most concentrated development in Charleston View occupies 0.2 square miles of land along Tecopa Road. As of 1992, the population of Charleston View was 36 with 29 housing units (Inyo County, 2001).

Areas of potential recreational use in the project vicinity include the Stump Springs Area of Critical Environmental Concern (ACEC), Pahrump Valley Wilderness Area, Nopah Range Wilderness Area, and Mount Charleston. In addition, a feature of potential historic interest in the project area is the route of the Old Spanish National Historic Trail. This trail route, two branches of which pass through the Pahrump Valley, is a historic trade route that connected settlements near Santa Fe with settlements near Los Angeles. It was used by American Indians, Spanish, Mexican, and Anglo-American explorers, trappers, prospectors, and immigrants in the 19th century. It is approximately 1,200 miles long and is considered one of the most arduous trade routes established in the United States. In the project area, traces of the trail are only faintly and intermittently visible. Although two trail-related interpretive panels have been put up along Tecopa Road between the California state line and SR 160, the trail itself has not been marked and has not been established as a linear feature that visitors can travel along. On the California side of the state line, the trail route closest to the project site is located on private land, which limits public access to it.

Stump Springs ACEC, 2 miles east of the project site, is an area of BLM-managed land that has been provided with ACEC status to preserve the site of an important watering hole and camp site along the Old Spanish National Historic Trail known as Stump Springs. Despite its name, water was not consistently available at Stump Springs and it did not come up to the ground surface but had to be accessed by digging. At present, no formal management plans have been developed for the Old Spanish National Historic Trail or for the Stump Springs ACEC.

Two national Wilderness Areas have been established in the project vicinity. Pahrump Valley Wilderness Area is located 2 miles south of the project site and the Nopah Range Wilderness Area is located 4 miles to the west. These Wilderness Areas do not permit

motorized vehicles, but allow camping, hiking, horseback riding, and hunting. In the portions of these wilderness areas within the potential project viewshed, there are no staging areas, trails, or other features to attract visitors, and the levels of visitation appear to be extremely low.

The Toiyabe National Forest is located approximately 12 miles east of the project site, on the slopes of the Spring Mountains. Within the Toiyabe National Forest, approximately 20 miles from the project site, is the Spring Mountain National Recreation Area (SMNRA), better known to locals as Mount Charleston. SMNRA contains snow-capped mountains that provide views of the surrounding desert and contain sensitive plant and animal species. SMRNA is just 30 miles from Las Vegas and is a popular destination for off-highway vehicle (OHV) riding, mountain biking, camping, hiking, picnicking, skiing, snowboarding, and sledding.

5.13.3.1.2 Project Setting

The project site consists of approximately 3,277 acres (5.12 square miles) of privately owned lands that have been subdivided, but retain an open appearance, and are covered with vegetation typical of the Mojave Desert province, including Mojave saltbush scrub and Mojave creosote bush scrub. The site and surrounding private lands are characterized by a grid-like pattern of unpaved roads 0.5 mile apart that were cut into the landscape when the area was subdivided in the 1960s with plans for residential development. Additionally, the grid pattern roadways have been maintained over the years and continue to experience vehicular travel. This grid pattern also extends into the area of developed private land to the south and west of the project site.

The project site is roughly triangular in shape and is bounded by the California-Nevada border to the north and east and by the Tecopa Road to the south. The subdivided lands adjacent to the site are also largely undeveloped. However, on the southeastern border of the project site, a 3.5-acre lot contains a group of abandoned trailers and other structures. In addition, there is a cluster of development know as Charleston View that is located on the south side of Tecopa Road, opposite the project site. Most of the developed properties are concentrated in a two-block-wide corridor bounded by Silver Street on the west and which extends from Tecopa Road on the north, seven blocks south to Charity Lane. The development pattern consists of a mixture of wood frame structures and mobile homes. As of 1992, there were 29 residences in Charleston View (Inyo County, 2001). Because many of these residences are not occupied on a full-time basis, this area's permanent population is lower than the number of residences might suggest. Charleston View's roads are unpaved and there is no telephone service other than cellular service. At present, there are no commercial activities in Charleston View. Approximately 0.5 mile from the southeastern boundary of the project site, along Tecopa Road, lies the site of the St. Therese Mission project, for which development activities have recently gotten underway. The St. Therese Mission is a proposed 17.5-acre development that will include two enclosed columbarium buildings, a small chapel, a garden, restaurant, visitor's center, care-takers unit, and a meditation garden (St. Therese Mission, 2011). This project is not being built by an organized church, but is a commercial development and will be marketed as a facility for internments, special celebrations, religious services, and cultural events.

Across the state line in Nevada, the Front Sight Firearms Training Institute and an abandoned airstrip are located on largely undeveloped lands privately owned lands 1.75 miles and 1 mile northeast of the project site, respectively.

In April 2011, Inyo County adopted an amendment to its General Plan that established Renewable Energy Land Use Designation Overlay districts within which development of transmission lines, solar thermal power plants, photovoltaic power plants and wind energy power plants will be considered (Inyo County, 2011). Fifteen of these overlay districts were defined, including a large district referred to as Charleston View that encompasses the HHSEGS site and all of the surrounding private land in the portion of the Pahrump Valley that lies within Inyo County. The boundary of the Charleston View Renewable Energy Land Use Designation Overlay District is indicated on Figure 5.13-1. The adoption of this overlay district for the Charleston View area indicates that the County has made a decision to prioritize energy development in this area.

5.13.3.2 Potential Project Site Visibility and Viewshed Analysis

Prior to conducting field work, CH2M HILL plotted project features on topographic maps using Arc Info GIS. These maps were overlain with the locations of communities, travel routes, preservation areas, historic landmarks, and recreation areas (for example, trails and wilderness areas) to capture all viewpoints of potential concern from which the power plant might have the potential to be visible. Next, a viewshed analysis was prepared using Arc Info GIS. The viewshed analysis took into account the maximum elevations of the power plant features (an assumed solar power tower height of 750 feet) and surrounding topography to identify locations where the project would theoretically be visible via an unobstructed or partial line-of-sight. This analysis considers the extent to which topography would block views of the solar power plant, but does not take into account the potential screening effects of buildings and vegetation. A viewshed radius of 20 miles was assumed for this analysis to identify potential visibility in the area extending from Emigrant Pass to the community of Pahrump (see Figure 5.13-1). Results of this analysis indicate the areas where the solar plant project features have the potential to be visible. Taking into account typical atmospheric conditions in the area, as well as the locations of viewers and travel routes, attention was focused on the portions of the viewshed within 8 miles of the project and surrounding areas. Based on review of the results of the viewshed analysis, viewpoints were identified where the solar plant might be visible from areas of potential concern.

5.13.3.3 Selection of Key Observation Points

Using the viewshed analysis of the HHSEGS site, CH2M HILL staff, in conjunction with representatives of the CEC (Ms. Melissa Mourkas and Mr. David Flores) identified a representative set of key observation points (KOPs) to serve as basis for the analysis of the potential effects that HHSEGS would have on visual resources. These areas were selected to represent a range of views toward the project site from developed areas, recreational use areas, and major travel corridors. The following areas were considered:

- Developed Areas: Pahrump and Charleston View
- ACECs: Stump Springs ACEC
- Recreation Areas: Pahrump Valley Wilderness Area, Nopah Range Wilderness Area, Pahrump Dry Lake
- Historic Trails Routes: Old Spanish National Historic Trail

- Travel Corridors: Tecopa Road, also known as Old Spanish Trail Highway, Nevada SR 160 (also known as Pahrump Highway)

In March and April 2011, CH2M HILL's visual resource specialists visited the candidate locations, photo documented the views toward the project site from them, and recorded the global positioning system (GPS) coordinates of the viewpoints. All photographs were taken with a digital camera with the lens set at a focal length that is the equivalent of a 35-millimeter (mm) camera's 50-mm focal length.

Based on the viewshed analysis, observations made during the field visit, and direction from the CEC (Ms. Melissa Mourkas and Mr. David Flores), six KOPs were selected to represent the range of potential views toward the project site. Section 5.13.3.5 discusses the selected KOPs in detail as part of the affected environment.

5.13.3.4 Existing Conditions Assessment

Assessments of existing visual conditions were made based on professional judgment using the Federal Highway Administration Methodology (discussed in Section 5.13.4.1). Factors taken into consideration in the assessment of the existing conditions include visual quality, viewer concern, visibility, number of viewers, and duration of view. These conditions were then factored into an overall rating of viewer exposure and viewer sensitivity.

5.13.3.4.1 Visual Quality

Visual quality is 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.

5.13.3.4.2 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 are presumed to have a high expectation for views formally designated as a scenic area or travel corridor as well as for views from recreational and residential areas. Travelers on highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concerns and expectations. Viewers are presumed to tend to have low-to-moderate viewer concern when viewing commercial areas. It is presumed that industrial uses typically have the lowest level of viewer concern. Regardless, the level of concern could be lower if the existing landscape contains discordant elements. In addition, it is possible that some areas of lower visual quality and degraded visual character may contain particular views of substantially higher visual quality or interest to the public.

5.13.3.4.3 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, general air quality conditions such as haze, and general weather conditions such as fog.

5.13.3.4.4 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: residents according to the number of residences, motorists according to the number of vehicles, and recreationists based on counts made by agencies like BLM.

5.13.3.4.5 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.

5.13.3.4.6 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; an unobstructed foreground view from a large number of residences represents a high value.

5.13.3.4.7 Visual Sensitivity

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

5.13.3.5 Key Observation Points

5.13.3.5.1 KOP 1 – View from Tecopa Road Southbound

Figure 5.13-2a depicts the existing view from KOP 1, located on Tecopa Road in Nevada, approximately 1.75 miles northeast of the closest portion of the project site. This viewpoint was selected because it represents views seen by southbound motorists on Tecopa Road east of the project site. KOP 1 is located on a topographic rise in the road that provides a better view of the project site than most other segments of the road. Although this location provides the best view toward the project site from Tecopa Road, the view of the surface of the site is blocked by a slight rise in the intervening terrain. However, because the vegetation is low and because there are no intervening structures, the view toward the site area is otherwise unobstructed.

The visual quality of this view is moderately high. The Nopah Range seen in the background of this view creates a topographic backdrop to an expansive desert view. Human-made elements, including an unpaved road and scattered residential development, are subordinate to and blend into the existing natural environment, and as a consequence the view has a high degree of visual cohesiveness. This view is a relatively common view in the region, and does not include any exceptional landmark elements. The land in the foreground of the view (i.e., between Tecopa Road and the project site, which is in the middleground of the view) is managed by BLM and has been assigned a Visual Resource Management (VRM) classification of IV. BLM uses this classification to designate lands on

which major management activities can take place that require major modification of the existing character of the landscape. Thus under the policy decisions the BLM has made in developing the Land Management Plan for this area, a high level of visual change to the characteristic landscape would be permitted in the foreground zone of this view. The area in the middleground of this view on which the project will be developed is privately owned and located in Inyo County, California. A recent amendment to the Inyo County General Plan designated the project site and all of the privately owned land around it as a Renewable Energy Land Use Designation Overlay district (Inyo County, 2011). Because this plan change permits development of transmission lines, solar thermal power plants, photovoltaic power plants, and wind energy power plants within this district, the County has made an implicit policy decision to prioritize the development of energy facilities in this landscape area.

The numbers of people who see this view are very low. Although Tecopa Road is the primary route through this portion of the Pahrump Valley, it carries relatively little traffic. In 2008, the last year for which traffic data are available, the annual average daily traffic count along this segment of Tecopa Road was 210 vehicles a day. This count suggests that the view from KOP 1 would be seen by the occupants of 105 vehicles traveling southbound on Tecopa Road each day.

The small numbers of people traveling southbound along this segment of Tecopa Road would see this view or a more distant version of it for a several mile stretch. Given the high levels of speed observed along this segment of Tecopa Road, the duration of this view would last no longer than a few minutes. It is also important to note that at this KOP, the project site falls outside of the driver's primary cone of vision and thus the project site would not be the focal point of the driver's view.

Because of the view toward the project site from KOP 1 and nearby areas of Tecopa Road would be seen by a very small number of travelers for just a few minutes and because the view does not appear within the driver's primary cone of vision, the level of viewer exposure is moderately low at most. The visual sensitivity of this view is moderate because although the visual quality of the view is moderately high, the level of viewer concern is low to moderate because the view is very common in the region, because public policies have been adopted for the area seen in the foreground and middleground of the view that permit major landscape change, and because the viewers consist entirely of travelers, who are assumed to have no more than a moderate level of visual sensitivity.

5.13.3.5.2 KOP 2 – View from Stump Springs ACEC

Figure 5.13-3a depicts the existing view from KOP 2, located approximately 2.3 miles east of the closest portion of the project site. This viewpoint was selected because it provides a view from within the Stump Springs ACEC at a watering hole and camp site along the route of the Old Spanish National Historic Trail. KOP 2 is accessible by approximately 1.0 mile of unpaved roads from Tecopa Road.

This vantage point provides views of a large expanse of the Pahrump Valley, including views toward the project site. The view from KOP 2 is an unobstructed panoramic view of the relatively natural-appearing landscape of Stump Springs ACEC in the foreground and the Nopah Range in the background. Desert scrub vegetation, typical of the area, dominates the landscape. The project site is located in the far middleground region of this view, but the

site itself is not visible because it is screened by a slight rise in the intervening terrain. The natural elements of this view and absence of encroaching built elements contribute to a high degree of visual quality. The distinguishing elements of this view are the remnants of a former water source made evident by a few scattered stumps and a band of riparian vegetation within the foreground of the view. Although the vegetative features in the foreground are of some special visual interest, on the whole, the view is a relatively common one in the region.

The maps of the BLM's VRM designations in this area indicate that the BLM has assigned a VRM classification of IV to the lands within the ACEC visible in the foreground of the view, and also to the expanse of BLM lands that lies between the ACEC and the project site. The assignment of this VRM classification to this area in the Las Vegas Field Office's Land Management Plan implies that BLM has made a policy decision that a high level of visual change to the characteristic landscape would be acceptable in the foreground and middleground zones of this view. The area further in the distance of this view, and hidden by the slight rise in the foreground, is privately owned land in Inyo County, California, which a recent amendment to the Inyo County General Plan has designated as a Renewable Energy Land Use Designation Overlay District (Inyo County, 2011). Because this plan change permits consideration of development of energy facilities within this district, the County has made an implicit policy decision to prioritize the development of energy facilities in this landscape area

The numbers of people who would see the view from this KOP are likely to be very low. The primary access into the ACEC is from Tecopa Road, where the annual average daily traffic is on the order of 210 vehicles per day. It is reasonable to assume that only a small percentage of those vehicles turn off the main road and onto the unpaved road that leads into the ACEC. Observations made on the site suggest that most of the people who enter the ACEC are there to use the area's network of unpaved roads for riding their OHVs. The presence of shell casings on the ground within this ACEC also suggest that this area is also used by those who visit the desert for target practice. On the nearby segment of Tecopa Road, there are two historical interpretive signs related to the Old Spanish National Historic Trail. One of the signs is near the turnoff to the Stump Springs ACEC, and includes a map indicating the location of Stump Springs and provides an explanation of the role that Stump Springs played as a stop on the trail. However, the road into the Stump Springs ACEC is not marked in any way, and there are no markers, signs, or facilities of any kind in the ACEC that aid in getting to or identifying any trail remnants, the former water hole, or any other features of potential historic or scientific interest. There is no evidence that any substantial percentage of those who visit the Stump Springs ACEC are there because of the area's cultural or scientific values. Viewer concern about the quality of the overall landscape setting in this area is assumed to be low. Those who use the area's roads to drive their OHVs are more likely to be focused on operating their vehicles and negotiating the roads than on the scenery. Those who use the area to discharge their weapons are similarly unlikely to be attending very closely to the area's aesthetic qualities.

Visibility of the project site from KOP 2 is moderate. The area in which the project site is located is in the central portion of the view within the far-middleground, but because of the intervening topographic conditions, the surface of the project site is not visible. The number of viewers at KOP 2 is very low, consisting primarily of OHV enthusiasts, and those who

come to the area to fire their weapons. The duration of view is moderate because although some of the recreationists could be in the area for extended periods of time, the overall landscape setting is unlikely to be the focus of their attention.

Viewer exposure for KOP 2 is low because the small number of viewers, and because the focus of their attention is unlikely to be on the larger landscape for most of the time.

The visual sensitivity of this view is moderate because although the visual quality of the view is high, the level of viewer concern is low to moderate because the view is relatively common in the region, because public policies have been adopted for the area seen in the foreground and middleground of the view that permit major landscape change, and because the viewers consist primarily of OHV and weapons users who are assumed to have a relatively low level of sensitivity to the area's landscape qualities.

5.13.3.5.3 KOP 3 – View from St. Therese Mission Project Site

Figure 5.13-4a depicts the existing view from KOP 3, located 0.5 mile from the project's southeastern border. KOP 3 is located northeast of Charleston View on the north side of Tecopa Road in California. This viewpoint was selected to represent the view from the front of the proposed St. Therese Mission development toward the project site. At present, the site provides direct, unobstructed views across mostly desert landscape toward HHSEGS. As discussed in Section 5.13.3.1.2, St. Therese Mission is a proposed 17.5-acre commercial development that is planned to include two enclosed columbarium buildings, a small chapel, a garden, restaurant, visitor's center, caretaker's unit, and meditation garden.

The visual quality of this view is average. The Nopah Range and foothills are visible to the west-northwest (in the left-central portion of the view). Structures related to Tecopa Road and development of the St. Therese Mission project are visible in the foreground of the view. These structures include utility poles and chain-link fencing. In addition to these elements is a temporary construction trailer, the beginnings of a white wooden rail fence and signage related to the proposed development. At the time this photograph was taken in early April, this was the extent of development at this site. Although these built elements do not encroach on the distant skyline, they contribute to a moderate level of visual discord and average level of intactness against the backdrop of the Nopah Range.

The lands seen as extending from the immediate foreground to the base of the mountains in the background are all privately owned and are under the jurisdiction of Inyo County. In a recent amendment to its General Plan (2011), the county designated all of the land visible in this view up to the base of the mountain as a Renewable Energy Land Use Designation Overlay District. Because this plan change permits consideration of development of energy facilities within this district, the County has made an implicit policy decision to prioritize energy development in this area.

Viewer concern about the visual quality of the view seen from this viewpoint is assumed to be low to moderate. At present, this view is seen mainly by the very small numbers of people traveling westbound on Tecopa Road. Based on the data collected at a point further east along Tecopa Road, it is likely that the average numbers of vehicles heading westbound past this viewpoint in a given day is 105 or fewer. At the time the St. Therese Mission is completed, future viewers will include visitors to this facility. Visibility of the project site from KOP 3 is moderately high. The project site forms the center portion of the view beyond

the St. Therese Mission infrastructure in the foreground. The duration of view from this KOP is low for vehicles traveling on Old Tecopa Road but has the potential to be long for future visitors of the St. Therese Mission in views from the garden and other parts of the facility. However, the proposed plans indicate that views toward the project site from points within the St. Therese Mission complex will be blocked, partially to completely, by buildings and vegetation.

Viewer exposure for KOP 3 is moderate. The project site is, at present, directly visible from the roadway near KOP 3, and the duration is low because this view is seen mainly by motorists. It can be assumed that traffic along this road will increase after the St. Therese Mission is complete. However, the structures and trees that will be part of the St. Therese Mission project development would substantially obstruct views from KOP 3 toward the project site. Visual sensitivity for this view is moderate because of the view's moderate visual quality, moderately high visual concern, and moderate viewer exposure.

5.13.3.5.4 KOP 4 – View from Charleston View

Figure 5.13-5a depicts the existing view from KOP 4, located approximately 0.8 mile south of the project site's southern boundary. This viewpoint was selected to represent the view toward the project site from the most developed area of Charleston View. This area of development extends for approximately 0.25 mile along Tecopa Road and approximately 0.8 mile along Silver Street and the two streets that parallel it to the east. Development within this rural residential area consists of a mixture of wood-framed and mobile home structures. No commercial, institutional, or industrial development is present within the community. Although trees have been planted on some of the developed properties, irrigated landscaping is limited, so the area retains the appearance of a desert subdivision.

KOP 4 is located on the southern boundary of the developed area of Charleston View. At present, it provides a view across the community and the desert landscape with houses and ornamental trees in the foreground. The trees and structures in the foreground partially obstruct views of the middle to background.

The visual quality of this view is average. KOP 4 offers long-range views of the Pahrump Valley and the Spring Mountains, including the snow-capped peak of Mt. Charleston, which adds a distinct element of visual interest in the backdrop of the view. However, the harmony of distant aspects of the view is offset to some degree by the developed nature of the foreground. Foreground elements include a dirt road, residences, fences, and vehicles.

The flat lands seen in this view are all privately owned and are under the jurisdiction of Inyo County. Inyo County recently designated all of the land in Charleston View and the area surrounding it as a Renewable Energy Land Use Designation Overlay District to encourage the development of transmission lines and renewable energy generation facilities.

Viewer concern and the duration of the view are assumed to be high from KOP 4 because the view represents potential views from peoples' homes in Charleston View and from residential access roads. Visibility toward the project site from KOP 4 is moderate. Because of the flat topography and the intervening vegetation, the surface of the project site is not visible. In views toward the project site from many areas within Charleston View the views are obstructed to varying degrees by homes, trees, and other structures. The project site

spans the center-left portion of this view. The number of viewers is very low because of the small size of this rural residential community and the absence of commercial, institutional, or industrial development that would attract nonresidents.

Viewer exposure to KOP 4 is moderate because the project would be intermittently visible to a relatively low number of residents within Charleston View. Visual sensitivity for this view is moderately high because of the view's moderate visual quality, high visual concern, and moderate viewer exposure.

5.13.3.5.5 KOP 5 – View from Tecopa Road Eastbound

Figure 5.13-6a depicts the existing view from KOP 5, located approximately 3.8 miles west of the closest portion of the project site. This viewpoint was selected because it provides the first direct unobstructed view of the project site from a public roadway entering into the Pahrump Valley from the west. This view is from a topographic rise located at the transition of the Nopah and Kingston range foothills, gently sloping downward to the Pahrump Valley floor. This view is seen by the small number of motorists using this segment of Tecopa Road. Based on the traffic count data available for a segment of the road located further to the east, it is likely that the average annual daily eastbound traffic on this segment of the road would consist of no more than 105 vehicles per day. This view is also generally representative of views that would be seen by any visitors who might be on the lower slopes of the eastern front of the Nopah Range Wilderness Area.

The visual quality of this view is moderately high. KOP 5 provides a panoramic view of the Pahrump Valley with the Spring Mountains in the background (in the center-right of the view). Aside from the road and associated signs in the foreground, development is visible as a series of small structures and unpaved roads across the middleground of the view. Because the structures appear to be relatively small from this vantage point, they tend to blend into the valley floor and do not obstruct views of the mountains in the background. The unpaved roads are more visible as lighter lines against darker surroundings.

The lands visible in the foreground and middleground of this view are privately owned and, under a recent amendment to the Inyo County General Plan, have been designated as a Renewable Energy Land Use Designation Overlay district (Inyo County, 2011). This designation permits consideration of development of transmission lines, solar thermal power plants, photovoltaic power plants, and wind energy power plants on these lands. Because of this designation, the County has made an implicit policy decision that the priority in this area is energy development.

Viewer concern is assumed to be moderately high in this area because the view represents the first direct view of the Pahrump Valley as one enters it from the west and views seen by the any visitors who might be present in the eastern front of the Nopah Range Wilderness Area. The view is characterized by mostly undeveloped open desert landscape dominated by typical desert vegetation. Because this viewpoint provides unobstructed but somewhat distant views of the project site and surroundings from a topographic rise, visibility of the project site from KOP 5 is moderately high. The number of viewers at this viewpoint is assumed to be low. The duration of this view by motorists is moderate in length because the view from this KOP represents the view at the highest point in the road as Tecopa Road emerges from the Nopah Mountains into the Pahrump Valley.

Viewer exposure for KOP 5 is moderately low because although visibility of the project site is moderately high, the number of viewers is assumed to be low. Visual sensitivity is moderate because viewer exposure is moderately low, visual quality is moderately high, and viewer concern is moderate.

5.13.3.5.6 KOP 6 – View from Pahrump

Figure 5.13-7a depicts the existing view from KOP 6, located approximately 5.5 miles northwest of HHSEGS's northern boundary. This viewpoint was selected to represent the view toward the project site from the southern fringes of the rural residential area of the community of Pahrump. KOP 6 was taken from the closest, least obstructed view toward the project from a location along a publically accessible roadway in this rural residential area. KOP 7 is located along Homestead Road, the main north-south thoroughfare in this area, at the intersection of Thorne Drive. At present, this location provides a direct, unobstructed view across a partially developed desert landscape toward the project site. This viewpoint is from a topographic rise along Homestead Road which overlooks a horizontal strip of rural residential development. This view is seen by motorists and a limited number of local residents.

The visual quality of this view is moderate. As with the other KOPs, the view from KOP 6 is an expansive view of the Pahrump Valley. The Nopah and Kingston ranges in the background and the rural residential development in the foreground play equal roles in the view. Rural residential elements in the view include trees, houses, sheds, fences, and horse stables and pasture. The built elements are visible against the valley floor as it rises in the distance and do not obstruct views of the mountains from KOP 6.

The land in the foreground and middleground of this view is a mix of privately owned land and land managed by the BLM. The BLM land has been assigned a VRM classification of IV, which designates lands on which major management activities can take place that require major modification of the existing character of the landscape. Thus under the policy decisions the BLM has made in developing the Land Management Plan for this area, a high level of visual change to the characteristic landscape would be permitted in the foreground and middleground zones of this view.

Viewer concern is assumed to be moderately high to high in this area. Homestead Road is one of the main north-south thoroughfares transecting the central portion of the rural residential area south of Pahrump. The view from KOP 6 is seen by the few local residents traveling southbound on Homestead Road, likely to nearby residences. Homestead Road terminates approximately 1.3 miles south of this KOP. The majority of viewers near this KOP are assumed to be residents traveling to, or already within, the rural residential area.

Visibility of the project site from KOP 6 is moderately low. The project site is in the right portion of the view within the far-middleground and is partially obstructed by a slight topographic rise of the Pahrump Valley floor. As described previously, this is the closest, least obstructed view toward HHSEGS from the Pahrump area along a publically accessible roadway. The number of viewers from KOP 6 is moderately low, as there are few residences and commercial businesses in the immediate area. The majority of views from KOP 6 would be from motorists passing through this area to nearby residences. The duration of view is low. The project site is within motorists' field of vision at the highest rise in elevation, which is the location of KOP 6, traveling southbound along Homestead Road. Views of the project

site would be partially obstructed as one travels further north or south along Homestead Road because of lower topography and intervening structures and vegetation.

Viewer exposure for KOP 6 is moderately low to low. The project site is partially visible from a limited segment of the roadway near KOP 6 at a topographic rise, and the duration of this view is low. Residents of this area might be expected to have a high level of concern about views from their homes and neighborhoods, but in light of the view's moderate visual quality, and the moderately low to low level of viewer exposure, the overall visual sensitivity of this view is moderate.

5.13.4 Environmental Analysis

5.13.4.1 Analysis Procedures

5.13.4.1.1 Federal Highway Administration Methodology

The method used for analyzing HHSEGS's visual impacts was the process established by the Federal Highway Administration (FHWA) in *Visual Impact Assessment for Highway Projects* (FHWA, 1988). The FHWA invested considerable resources in development, testing, and implementation of this method; as a result, this approach is robust and is now widely used to provide systematic evaluations of visual change. FHWA developed this assessment method in response to requirements of the National Environmental Policy Act (NEPA) that consideration be given to the effects that proposed federal actions or projects are likely to have on the quality of the human environment, including effects on the visual quality.

The FHWA visual quality and aesthetics assessment method used for this analysis addresses the following primary questions:

- What are the visual qualities and characteristics of the existing landscape in the project area?
- What are the potential effects of the project's proposed alternatives on the area's visual quality and aesthetics?
- Who would see the project, and what is their likely level of concern about or reaction to how the project visually fits within the existing landscape?

Applying the FHWA method entails the following six steps:

1. Establish the project's area of visual influence.
2. Determine who has views of and from the project (viewer).
3. Describe and assess the landscape that exists before project construction (affected environment).
4. Assess the response of viewers looking at and from the project, before and after project construction (viewer sensitivity or concern).
5. Determine and evaluate views of the project for before and after project construction (simulations).
6. Describe the potential visible changes to the project area and its surroundings that would result from the project.

The first three steps were conducted for HHSEGS to establish the baseline conditions as viewed from specific locations in the surrounding area. Section 5.13.3, Affected Environment, addresses the area where the proposed project is likely to be visible, the likely viewers and their assumed sensitivity, and existing conditions on and within the vicinity of the project site. The potential changes to the visible landscape resulting from the project are discussed in Section 5.13.4.3, Assessment of Visual Effects.

5.13.4.1.2 Specialized Tools and Vocabulary

The FHWA system uses a generally accepted set of tools and well-defined terminology. The following fundamental terminology is used throughout this analysis.

Views are what can be seen from the project area and what can be seen of the project area from the surrounding neighborhoods and communities. Because it is not possible to depict every view toward the project features, representative views have been selected to represent types of views that are available to the general public. The viewpoints from which these representative views are seen are called KOPs.

Viewshed is the area surrounding a project area from which the project is, or could be, visible to viewers.

Simulations are images depicting views that have been modified by computer modeling to show the proposed project within the existing landscape.

Viewers are people who have views of the project. Viewers are usually discussed in terms of general categories of activities (such as residents, workers, recreationists [park users, boaters, or bicyclists], pedestrians, or motorists [both commuters and leisure travelers]) and are referred to as viewer groups.

Viewer sensitivity (or level of concern) is a combination of the following factors for a specific view:

- How many people have that view and what types of viewers are they?
- How long can they see the view? Residents and recreationists generally have views of long duration while bicyclists and motorists typically have short-duration views.
- What is their likely level of concern about the appearance, aesthetics, and quality of the view? Level of concern is a subjective response that is affected by factors such as the visual character of the surrounding landscape, the activity a viewer is engaged in, and their values, expectations, and interests. Generally, residents and recreationists are considered to be highly sensitive viewers, and local business staff and commuters are considered to be less sensitive.

Low viewer sensitivity exists when there are few viewers who experience a defined view or they are not particularly concerned about the view. High viewer sensitivity exists when there are many viewers who have a view frequently or for a long duration, as well as viewers (many or few), such as those in a residential neighborhood, who are likely to be very aware of and concerned about the view. Viewer sensitivity or level of concern does not imply support for or opposition to a proposed project; it is a neutral term that is an important parameter in assessing visual quality.

Visual character is an impartial description of what the landscape consists of and is defined by the relationships between the existing visible natural and built landscape features. These relationships are considered in terms of dominance, scale, diversity, and continuity. Visual character-defining resources and features include:

- Landforms: types, gradients, and scale
- Vegetation: types, sizes, maturity, and continuity
- Land uses: height, bulk, scale, and architectural detail of associated buildings and ancillary site uses
- Transportation facilities: types, sizes, scale, and directional orientation
- Overhead utility structures and lighting: types, sizes, and scale
- Open space: type (e.g., parks, reserves, greenbelts, and undeveloped land), extent, and continuity
- Viewpoints and views to visual resources
- Water bodies, historic structures, and downtown skylines
- Apparent grain or texture, such as the size and distribution of structures and unbuilt properties or open spaces of the landscape
- Apparent upkeep and maintenance

Viewing distance is the distance between the viewed object and the viewer. The closer the viewer is to a viewed object the more detail can be seen and the greater the potential influence the object has on visual quality. For this analysis, three viewing distances were used. They are (1) foreground (between 0 and 0.5 miles of the viewers), (2) middleground (between 0.5 and 4 miles), and (3) background (beyond 4 miles).[2]

Visual quality is an assessment of the composition of the character-defining features for selected views. Under the FHWA visual quality analysis system, the characteristics are evaluated in terms of vividness, intactness, and unity (which are defined below) and are scored for these characteristics. The scores are then averaged for a total visual quality score between 1 and 7, where a low score represents low visual quality and a higher score represents high visual quality. This assessment asks: Is this particular view common or dramatic? Is it a pleasing composition (a mix of elements that seem to belong together) or not (a mix of elements that either do not belong together or are eyesores and contrast with the other elements in the surroundings)?

Visual quality is evaluated and discussed using these terms:

- Vividness is the degree of drama, memorability, or distinctiveness of the landscape components. Overall vividness is an aggregated assessment of landform, vegetation, water features and human-made components in views.

[2] This categorization of distance zones is well-established among visual resource analysis practitioners and has been adopted by the United States Forest Service as part of its Scenery Management System (United States Department of Agriculture Forest Service, 1995)

- Intactness is a measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as in natural settings. High intactness means that the landscape is free of unattractive features and is not broken up by features and elements that are out of place. Low intactness means that visual elements can be seen in a view that are unattractive and/or detract from the quality of the view.
- Unity is the degree of visual coherence and compositional harmony of the landscape considered as a whole. High unity frequently attests to the careful design of individual components and their relationship in the landscape or an undisturbed natural landscape.

5.13.4.1.3 Preparation of Visual Simulations

During the field visit conducted for the project, photographs were taken to document the existing views toward the project site from each of the KOPs. These photographs were taken with a digital camera set to take photos equivalent to those taken with a 35-millimeter (mm) camera using a 50-mm focal length. For each KOP, one or more photos were selected that best represent views from the vantage point toward the project site. In some cases, a single photo was used to represent the existing view and to serve as the basis for developing the simulation of the view with the project in-place. In other cases, where a broader view was required to capture the portion of the view potentially affected by the project, portions of two adjacent photo frames were spliced together to create a panoramic image.

For each view, computer modeling and rendering techniques produced the simulated images. Existing topographic and site data were the basis for developing an initial digital model. Project engineers provided site plans and digital data for the HHSEGS facilities. These were used to create three-dimensional (3-D) digital models of the solar power towers, heliostat arrays, generation equipment, switchyard, and transmission line. These models were then combined with the digital site model to produce a complete computer model of the HHSEGS conceptual site plan.

For each KOP, a viewer location was digitized from topographic maps and scaled aerial photographs, using 5 feet as the assumed viewer eye level. Computer "wire frame" perspective plots were then overlaid on the photographs of the views from the simulation viewpoints to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final visual simulation images that appear in this document were produced from the digital image files using a color printer.

5.13.4.1.4 Federal Highway Administration Methodology Application

The photographs of the existing views were compared with the simulations of the project and assessed using FHWA methodology by three CH2M HILL visual resource specialists. In comparing the preconstruction and postconstruction conditions, FHWA numerical ratings were assigned for vividness, intactness, and unity to arrive at a score for visual quality for each view. Comparison of the rating scores for the existing views with the rating scores for the simulations provided a consistent basis for evaluating the degree of visual change that would occur as a result of implementing the proposed project and provided a foundation for the qualitative assessments of visual conditions and visual change presented in this analysis. The FHWA numerical rating sheets are provided in Appendix 5.13A.

5.13.4.2 Project Appearance

5.13.4.2.1 Solar Plant

The project will consist of two, 270 megawatt (MW) gross (250 MW net) solar thermal electric generating solar plants with shared facilities. The solar plants will consist of heliostat arrays surrounding 750-foot power towers. The heliostat arrays continuously track the sun during daylight hours and transfer the solar energy to the solar receiver, known as a boiler, located on top of each solar power tower. Each heliostat array is composed of two mirrors approximately 12 feet high by 8.53 feet wide with a reflecting surface of 204.7 square feet. Each heliostat array is mounted on a single pylon, along with a computer-programmed aiming control system that directs the motion of the heliostat to track the movement of the sun. The solar field for each plant will consist of approximately 85,000 heliostats. An innovation in the design of this project is the use of solar power towers that, at 750 feet high, are taller than the towers used at previous projects of this type. The use of the taller tower permits the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre, with the net result that more megawatts can be generated and that the amount of land required for the heliostats can be reduced.

The power generated from both solar plants will tie into the utility grid via an onsite switchyard and transmission line corridor. Table 5.13-4 lists major equipment that will be shared by the power facilities and identifies their dimensions.

TABLE 5.13-4
Approximate Dimensions and Colors, Materials, and Finishes of the Major Project Features

Feature	Height (feet)	Length (feet)	Width (feet)	Diameter (feet)	Color	Materials	Finish
Power Tower	620	NA	NA	72	Gray	Concrete	Flat/Untextured
SRSG	130 above solar power tower	NA	NA	102	Black or Glowing Brightly	Metal	Flat/Untextured
Switchyard	36	420	310	NA	Gray & Silver		Flat/Untextured
Steam Turbine Generator Enclosure	52	110	46	NA		Metal	Flat/Untextured
Auxiliary Boilers (ea)	120 (stack)	60	40	N/A			Flat/Untextured
Air-cooled Condenser (ACC)	120	300	220	NA		Metal	Flat/Untextured
Feed Water Heaters Structure	80	66	56	NA		Metal	Flat/Untextured
Plant Services Building	32	202	122	NA		Metal	Flat/Untextured
Water Treatment Equipment Area						Metal	Flat/Untextured
Condensate Tank	Under ACC					Metal	Flat/Untextured

TABLE 5.13-4
Approximate Dimensions and Colors, Materials, and Finishes of the Major Project Features

Feature	Height (feet)	Length (feet)	Width (feet)	Diameter (feet)	Color	Materials	Finish
Condensate Tank/Pump	Under ACC					Metal	Flat/Untextured
Emergency Generator	12	32	12	NA		Metal	Flat/Untextured
Local Control Building	16	100	56	NA		Metal	Flat/Untextured
Generator Step-up Transformer	30	42	24	NA	Dark Gray	Metal	Flat/Untextured
Unit Auxiliary Transformer	14	12	14	NA	Dark Gray	Metal	Flat/Untextured
SUS Transformer	14	12	14	NA	Dark Gray	Metal	Flat/Untextured
Raw Water/Fire Water Tank	30	NA	NA	40		Metal	Flat/Untextured
Raw Water Forwarding Pumps (ea)	4	6	4	NA		Metal	Flat/Untextured
Demineralized Water Forwarding Pumps	4	6	4	NA		Metal	Flat/Untextured
HQ Demineralized Water Tanks	26	NA	NA	26		Metal	Flat/Untextured
IQ Demineralized Water Tanks	21	NA	NA	25		Metal	Flat/Untextured
230-kV Generation Tie Line (poles)	100	8	28	NA	Rusted Finish	Metal	Flat/Untextured

The HHSEGS common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, which will include parking and be landscaped. The complex will occupy about 4.8 acres and will be served by power from the local 33-kV distribution system and water from onsite wells. During the construction period, the parking areas, construction trailers, a tire cleaning station, heliostat assembly buildings, and other construction support facilities will be located in the 180-acre area on the west side of the project site.

The project site is expected disturb approximately 3,277 acres in an area that is mostly, but not entirely, undeveloped desert landscape. Table 5.13-5 lists the acreage of the disturbance for each major project feature.

TABLE 5.13-5
Area of Disturbance for HHSEGS Major Project Features

Feature	Area (Acres)
Solar Plant 1 (northern unit)	1,483
Solar Plant 2 (southern unit)	1,510
Common Area	103
Temporary Construction and Laydown Area	180

5.13.4.2.2 Cooling and Water Vapor Plumes

The steam that will be used to operate the turbines will be cooled using air-cooled condensers, which employ a cooling method that does not generate the visible steam plumes like those produced by conventional cooling towers. As a consequence, HHSEGS will not be a source of large visible water vapor plumes.

5.13.4.2.3 Lighting and Potential Solar Collector and Heliostat Reflectivity

To meet HHSEGS's operational, safety, and security needs, outdoor lighting will be installed at a number of locations on the site. Lighting will include exterior lighting at the power blocks, operations and maintenance building, switchyard, and gas metering station. All exterior lighting will comply with International Dark-Skies standards, and will be hooded to prevent light from shining up into the sky, and shielded and directed to aim it at the places where it is needed to prevent light from spilling off the site. Low-pressure sodium lamps and fixtures of a non-glare type will be specified.

During HHSEGS's operating period, each heliostat will be cleaned on a 2-week cycle by cleaning crews that will be deployed on a nightly basis. The cleaning operations will require the use of portable lights. These lights will be relatively few in number and will be directed at the small segments of the heliostat arrays being cleaned at any given time. The portable lighting units will be designed to create the minimal light required meet both task needs and safety requirements. In addition, these units will be designed to shield the lights to prevent light from being directed upward into the night sky or horizontally where it would create glare or increases in ambient light conditions.

To comply with Federal Aviation Administration (FAA) requirements, aviation safety lighting will be installed on the solar power towers. This lighting will consist of flashing white strobe lights that will be installed at the tops of the towers and at three levels on the tower shafts. Because of the large diameter of the towers, four lights will be installed at each level. These lights will be operated both at night and during the day.

When the project is operating, the heliostats will reflect the sun's rays onto the solar boilers, also known as SRSGs, which will occupy the top 130 feet of each solar power tower. During these times, the boilers will absorb 95 percent of the light that reaches them, and 5 percent will be reflected. During the solar plant's operational hours, the 5 percent of the light that is not absorbed will be visible reflecting off of the surfaces of the solar boilers. The perceived brightness of objects is measured in terms of retinal irradiance, which is a measure of the intensity of the light reaching the retina. Retinal irradiance is expressed as the number of

watts per square meter (W/m^2). The retinal irradiance of the sun is 80,000 W/m^2. Studies have established that the maximal permissible exposure (MPE) to retinal irradiance that can be tolerated by the human eye is 10,000 W/m^2 for momentary exposure and 1,000 W/m^2 for continuous exposure (Sliney and Freasier, 1973). The levels of retinal irradiance that will be created by the project's solar boilers have been calculated to be 68 W/m^2 in views from the north, and 53 W/m^2 in views from the south. These are the maximal values that would be present at the moment of peak reflectivity on bright, cloudless days. On overcast days, these levels of brightness would be lower.

The heliostats in the solar fields surrounding the two solar power towers will, by intent, be highly reflective. However, the heliostats will be designed and operated in a way that the light they reflect will be directed at the SRSGs, with minimal potential for this light to stray in other directions where it might be seen by and be a potential source of annoyance to viewers in the area surrounding the project site. More specifically, each heliostat will be individually programmed with the location of the solar receiver and will calculate the position of the sun with great precision as it tracks across the sky. The positioning and movement of each heliostat is planned, coordinated, and managed by a central computer that ensures safe operation of the heliostat field, not only in terms of the solar flux reflected onto the SRSG, but also in terms of controlling where the beams are reflected at those times that any particular heliostat is not targeting the solar collector. Each heliostat is equipped with a heliostat controller that is capable of independently positioning the heliostat to aim its reflected beam to a defined (x, y, z) location. The heliostat controller's safety features include a programmed border limitation that checks the aiming points to ensure that they do not fall outside the boundaries of the solar field or substantially above the height of the SRSG.

5.13.4.2.4 Construction Period

HHSEGS will be constructed in approximately 29 months. Completion is targeted for the first quarter of 2015 for Solar Plant 1 and the second quarter of 2015 for Solar Plant 2. The construction laydown and parking area will be located on the western side of the project site beyond the solar fields within a temporary construction area. The construction trailers, a tire cleaning station, and various construction support facilities will also be located in this area. The laydown area will be the location where project components will be delivered and assembled, and will include temporary structures that will be used for heliostat assembly and storage of heliostat components. Access to the laydown area will be from Tecopa Road via the HHSEGS entrance road.

5.13.4.2.5 Vegetation Clearing

The project site is currently covered with typical desert vegetation including Mojave saltbush scrub and Mojave creosote bush scrub. Although clearing and grading will take place as part of project construction, it will be limited. To construct the heliostat array fields, vegetation clearing will occur to allow for equipment access and stormwater management. An approximate 8- to 12-foot-wide linear swath of vegetation along the entire outer edge of the area to be developed will be cleared and grubbed (but not graded except as required for safe passage of vehicles) to create an internal perimeter path for installation of the tortoise exclusion and security fencing.

In areas where general site grading is not required, vegetation clearing will not occur, except for the site maintenance roads, which will be grubbed, bladed, and smoothed. In much of

the area that will be covered with the heliostat arrays, the vegetation will be retained. In these vegetation retention areas, the vegetation will be cut with a mower (if needed) to a height of approximately 12 to 18 inches to allow clearance for heliostat function. Occasional trimming of the vegetation may be required during the operational phase of the project to control plant regrowth that could affect heliostat mirror movement.

Temporary work areas, including laydown areas, will be cleared of vegetation only to the extent necessary and will be restored to preconstruction conditions in compliance with the construction mitigation, monitoring and restoration plan. Several strategies have been adopted as part of the plan, including reducing environmental impacts to vegetation which are outlined below (Section 2.0, Project Description):

- Cutting vegetation to heights that will not interfere with construction and operation of the heliostat fields but not clearing or grading the entire field
- Restricting clearing and grading activities to areas where foundations, drainage facilities, and all-weather roads must be placed
- Taking advantage of the natural permeability of the alluvium at the site by minimizing compaction and decompacting soils where necessary

Limited desert landscaping is anticipated to be planted within the HHSEGS common area, and would be similar to the existing surrounding landscape materials. No additional areas of landscaping have yet been identified.

5.13.4.2.6 Grading

Heavy to medium grading will be performed in the solar power tower, power block, switchyard, administration/maintenance building, and heliostat assembly building areas. Within each of these individual areas, earthwork cuts and fills will be balanced to the extent possible.

5.13.4.2.7 Construction Period Lighting

Project construction activities are planned to occur between 5:00 a.m. and 3:30 p.m., weekdays and Saturdays. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (for example, pouring concrete at night during hot weather or working around time-critical shutdowns and constraints). At times when onsite construction takes place during hours of darkness, portable lighting will be used on an as-needed basis to illuminate the areas where the construction is taking place. This lighting will be the minimum required to meet operational and safety requirements and will be shielded and directed at the areas where it is required to eliminate offsite light spill and illumination of the night sky. During the construction period, lighting will also be required at the onsite laydown area where the heliostat assembly operations will be taking place. Heliostat assembly will occur from 5:00 a.m. to 3:30 p.m. and from 6:00 p.m. to 4:30 a.m. for approximately 18 months of the 29-month construction period. At nighttime, both the heliostat assembly structure and the structure where the heliostat components are stored will have interior illumination. Because these structures are likely to consist of metal frames covered with a fabric or plastic material, the interior lighting will make the structures appear to glow at night.

5.13.4.3 Assessment of Visual Effects

5.13.4.3.1 Solar Plant

KOP 1 – View from Tecopa Road Southbound

Figure 5.13-2 presents a photograph of the existing view toward the project site from Tecopa Road traveling southbound, located approximately 1.75 miles northeast of the closest portion of the project site (Photograph A), and a simulation of the view as it would appear during the project's operational period (Photograph B). Comparison of the existing view with the post-project image indicates that the project would change the character and quality of the view.

From KOP 1, both solar power towers and associated power block facilities would be distinguishable elements across the mostly undeveloped desert landscape of the middleground, which is backdropped by the Nopah Range. The new solar power towers and associated facilities would dominate the middle portion of the view, adding a degree of visual interest. However, project features would also alter the appearance of the mostly undeveloped landscape causing the level of intactness to decrease from high to average, and unity to decrease from high to average/moderately high (see Appendix 5.13A). Overall visual quality would decrease from moderately high/high to average/moderately high from a local highway from which sensitivity is assumed to be moderate for a very low number of motorists traveling through the area.

KOP 2 – View from Stump Springs ACEC

Figure 5.13-3 presents a photograph of the existing view toward the project site from a location near the Old Spanish National Historic Trail watering hole and camp in Stump Springs ACEC, located approximately 2.3 miles east of the closest portion of the project site (Photograph A) and a simulation of the view as it would appear during the project's operational period (Photograph B). Comparison of the images indicates that the project would alter the character and quality of the view.

From KOP 2, both solar power towers would be prominent in the far-middleground of the open desert landscape, which is backed by the Nopah Range. From KOP 2, the solar power towers are mostly visible but their bases and other project infrastructure are blocked by a topographic rise in the foreground. The solar power towers would be distinctive features that would add to the memorability of the view. However, they would be the only built elements visible in an otherwise relatively natural-appearing desert landscape causing intactness to decrease from very high to moderately high. The towers also constitute prominent vertical elements which disrupt the overall composition of horizontal lines created by the surrounding landscape features. Because of their scale within the landscape, the solar power towers decrease the overall unity of the view from high to moderately high (see Appendix 5.13A). Overall visual quality would decrease from high to moderately high in views for a very low number of viewers from the ACEC where the level of visual sensitivity is moderate.

KOP 3 – View from St. Therese Mission Project Site

Figure 5.13-4 presents a photograph of the existing view toward the project site from the site of the St. Therese Mission facility, which is located approximately 0.5 mile south of the closest portion of the project site (Photograph A), and a simulation of the view as it would appear during the project's operational period (Photograph B). Comparison of the images

indicates that the project would somewhat, but not substantially, alter the character and quality of the view.

From KOP 3, the two solar power towers and one power block structure would be visible in the middleground. The towers would be skylined against the distant Nopah Range, disrupting the horizontal lines created by the topography in the background of the view. The addition of the solar power towers to the view increases the level of vividness by a small amount because they make the view somewhat more memorable. However, project features also increase the level of visual clutter by adding another built element that does not relate to the natural landscape, causing intactness to decrease from average to moderately low. Unity of the view decreases from average/moderately high to moderately low/average because the addition of vertical tower elements partially blocks the view of the mountains in the background. They also add a large built element to a predominantly rural, undeveloped landscape. Overall visual quality decreases from average to moderately low/average from the site of a proposed development where visual sensitivity is assumed to be moderate. The solar power towers will introduce energy infrastructure to views from the St Therese Mission site and from the adjacent segment of Tecopa Road, altering the character of a portion of the view, but this visual change is consistent with Inyo County's designation of the entire Charleston View area as a renewable energy overlay zone. It should also be noted that the proposed plans for the St. Therese Mission project entail construction of a complex of structures built around courtyards, and that these structures and the large numbers of trees that are proposed as part of the site's development will partially to fully block views toward the HHSEGS site from the facility's primary outdoor spaces.

KOP 4 – View from Charleston View

Figure 5.13-5 presents a photograph of the existing view toward the project site from the developed area of Charleston View located adjacent to the HHSEGS's southern boundary across Tecopa Road (Photograph A), and a simulation of the view as it would appear during the project's operational period (Photograph B). Comparison of the images indicates that the project would alter the character and quality of the view.

From KOP 4, both solar power towers and one of the power block structures would be highly visible in the central-left portion of the middleground view. Because of their height and proximity, the two solar power towers would visually compete with the ridgeline of the Spring Mountains and disrupt the horizontal lines created by the mountains. The solar power towers and the power block structures would partially block views of the far-middleground and background of the Pahrump Valley and increase the level of visual clutter by adding large built elements that do not relate to the natural landscape. This will cause the level of intactness to decrease from average/moderately high to low/moderately low. The large scale and proximity of the project features to the developed area of Charleston View contributes to a lower level of cohesiveness and degree of unity within the landscape from average/moderately high to low/moderately low (see Appendix 5.13A). It is important to note though that the solar power towers are not in the same part of the view that Mount Charleston, the area's most important landmark feature, is seen. As a consequence, the presence of the solar power towers will not block or otherwise intrude upon the view of Mount Charleston, the area's signature landmark feature for which this rural residential area is named. Although the solar power towers will introduce energy

infrastructure to views from this rural residential area, altering the character of a portion of the view, this visual change is consistent with Inyo County's designation of the entire Charleston View area as a renewable energy overlay zone. Overall visual quality decreases from average/moderately high to moderately low from a residential area where visual sensitivity is assumed to be moderately high.

KOP 5 – View from Tecopa Road Eastbound

Figure 5.13-6 presents a photograph of the existing view toward the HHSEGS site from Tecopa Road traveling eastbound, located approximately 3.8 miles west of the closest portion of the project site (Photograph A), and a simulation of the view as it would appear during the project's operational period (Photograph B). Comparison of the images indicates that the project would somewhat, but not substantially, alter the character and quality of the view.

From KOP 5, the solar power towers, power block structures, and heliostat fields are visible across the mostly undeveloped desert landscape of the far-middleground and background on the left side of the view. Although project features add a new element to the landscape, their presence would not dominate the view in terms of scale because of their distance from KOP 5 and the vastness of the surroundings. Project features add a small degree of visual interest to the left-center side of the view, but they also decrease the intactness by adding a visually discordant element to an otherwise relatively natural-appearing landscape. Intactness decreases from moderately high to average/moderately high and visual unity from moderately high/high to average/moderately high (see Appendix 5.13A). Overall visual quality would slightly decrease from moderately high to average/moderately high in views from this highway from which views are assumed to be of moderate sensitivity.

KOP 6 – View from Pahrump Rural Residential

Figure 5.13-7 presents a photograph of the existing view toward the HHSEGS site from the southern fringes of the rural residential area that extends south of Pahrump. (Photograph A), and a simulation of the view as it would appear during the project's operational period (Photograph B). This viewpoint is located approximately 5.5 miles to the northwest of the project site's northern boundary. Comparison of the images indicates that the project would somewhat, but not substantially, alter the character and quality of the view.

From KOP 6, the solar power towers would be partially visible in the right side of the view behind the rise in the Pahrump Valley floor within the middleground. One tower is skylined, while the other is nearly skylined. However, because of their relatively small size from this distance and the fact that they would be partially hidden, they would not dominate the view or substantially alter the form of the horizon or distant ridgeline. The solar power towers would be located in what is currently a partially developed part of the view; however, their presence would be less prominent than the rural residential development in the far-foreground and middleground. The solar power towers would cause the intactness to decrease slightly from average to moderately low/average, and unity to decrease from average to moderately low/average (see Appendix 5.13A). Overall visual quality decreases from moderately low/average to moderately low from a rural residential area where visual sensitivity is assumed to be moderate.

5.13.4.3.2 Transmission Line and Pipelines

The project's transmission line and pipeline will be located primarily on BLM-managed land within Nye and Clark counties, Nevada, and will be analyzed in a supplemental document.

5.13.4.3.3 Water Vapor Plumes

Because the steam that will be used to operate the turbines will be cooled using air-cooled condensers, HHSEGS will not generate large visible water vapor plumes.

5.13.4.3.4 Light and Reflectivity Impacts

At present, the project area is relatively dark at night. There are no lights on the project site itself or along the adjacent segment of Tecopa Road. However, there is outdoor lighting associated with the residences clustered in the developed portion of Charleston View opposite the HHSEGS site, and at scattered locations in the valley to the west. In addition, from the higher-elevation viewpoints, lighting is visible in the developed area to the north that extends southward from the community of Pahrump. Because the outdoor lighting that will be installed at the two power blocks, the project switchyard, gas metering stations, and administration building will be the minimum required for operations and safety, and will be used only as needed, it will create a relatively small and intermittent lighting footprint. The lighting associated with the power blocks is not likely to be visible from Tecopa Road or Charleston View because of the distance of the facilities from these areas (the southern power block is 0.5 mile from Tecopa Road, and the northern power block is 1.70 miles from the highway) and because the heliostat arrays will block views from these areas. The effects of the limited lighting at the onsite switchyard and administration building on views from the surrounding area will be minimal. The effect of this lighting will be attenuated because of the distance of the lighted facilities from offsite viewing areas—these facilities will be a minimum of 0.5 mile from the Tecopa Road at its closest point, and 0.6 mile from the closest residence in Charleston View. The effects of this lighting will also be limited to some degree by the screening provided by the intervening desert vegetation and in views from portions of Charleston View and Tecopa Road to the south and west by the screening created by the heliostat arrays.

The FAA-required aviation safety lighting will be readily visible in views from the surrounding area. It will introduce points of flashing white light into what is now a completely dark sky that does not currently include similar aviation warning lights. Observations of similar aviation warning lights on other facilities indicate that these lights will appear as very small points of light that will not illuminate any of the surrounding landscape and that that will appear as minor elements in the night sky.

During the daytime, the glowing SRSGs on the top segments of the two solar power towers will be readily visible, and are likely to attract viewer attention because of their brightness. However, it is important to underscore that their level of brightness is extremely low when compared to the brightness of the sun (53-68 W/m^2 for the solar boiler vs. 80,000 W/m^2 for the sun), and that the brightness levels are a tiny fraction of the levels established for maximum permissible exposure (10,000 W/m^2 for momentary exposure and 1,000 W/m^2 for continuous exposure).

From ground-level locations outside the project site, only the back sides of the heliostats will be visible, and these will appear to be non-reflective. At elevated viewpoints in the project area from which the surfaces of the heliostat arrays will be visible, some areas of the arrays

will been seen as having bright surfaces. Although the bright surfaces will be visible, these portions of the heliostat arrays will not be a source of glare that affects the viewers because all of the reflected light will be directed at the SRSGs on top of the solar power towers.

5.13.4.3.5 Construction Period Impacts

Visual impacts created during the construction period will be temporary and therefore not substantial. Construction will last approximately 29 months. During the construction period, construction materials, construction equipment, and vehicles will be visible on site. The construction laydown area will be located on the western side of the project site beyond the solar fields. Construction activities will be conducted in a manner that will reduce dust generation to acceptable limits. The common area surfaces will be stabilized with a layer of crushed stone in heavily trafficked areas to further maximize dust suppression. To the limited extent that nighttime construction operations will be taking place in open areas on the site, the lighting used will be restricted to that needed to illuminate the working area and will be shielded and directed to minimize any impact on the night sky and to minimize its visibility offsite and eliminate any potential offsite glare or impact on ambient lighting conditions in the surrounding area. Because heliostat assembly operations will occur during both daytime and nighttime hours, the interior illumination of the heliostat assembly structure and the structure where the heliostat components will be stored will cause these structures to appear to glow at night. However, the visual importance of these glowing structures will be minimized by their location more than 1 mile from Tecopa Road at its closest point, and over 1.6 miles from the closest residence. In addition, because of the flat terrain, the views of these structures from these areas will be screened to a large degree by the intervening desert vegetation.

5.13.4.4 Impact Significance

5.13.4.4.1 State

This section provides a discussion of the significance of the project's visual effects pursuant to CEQA. The assessment of these impacts has been structured by applying the criteria set forth in Appendix G of the CEQA Guidelines. 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." (14 CCR 15382) The four questions related to aesthetics that are posed for lead agencies and the answers to them are:

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

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

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

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

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

No. This question does not apply to the project because no scenic vistas occur in the vicinity.

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

No. There are no state scenic highways in the vicinity of the project site. Inyo County contains three officially designated state scenic highways which include U.S. 395, SR 168, and SR 190. The closest officially designated scenic highway, SR 190, is located over 80 miles to the northwest and does not offer views of the project site.

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

No (with mitigation).

The visual changes brought about by the project would have a less than significant effect on the views seen from KOPs 1, 2, 3, 5, and 6 when the levels of change to the visual character and quality of the views are evaluated in light of the small numbers of viewers, the moderate levels of sensitivity, and the fact that the visual changes are consistent with Inyo County's designation of the project site and surrounding area as a Renewable Energy Land Use Designation Overlay District

The project has the potential to change the existing character and visual quality of the view seen from Charleston View (KOP 4) to the degree that these changes could constitute a potentially significant impact given the moderately high sensitivity of the viewers. From Charleston View, project infrastructure would be readily visible, and due to their height and proximity, the solar power towers would dominate views toward the north and would extend above the ridgeline of the Spring Mountains. The presence of the project infrastructure would add to the clutter in the views and would change the character of the background views, making the area feel less remote and more developed. With application of the mitigation measures specified below, the impacts to the views from Charleston View can be reduced to a level that is less than significant.

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

No (with mitigation).

The lighting required at the plant facilities and for heliostat washing operations will be limited, highly shielded and directed, and, to a large degree, will be screened by the heliostats and other intervening features. As a consequence, its impact will be less than significant.

The aviation safety lighting required by the FAA would not adversely affect nighttime views in the area. These lights will be very small and would not create glare or have any effect on ambient lighting conditions in the surrounding area. Observations of similar lights on other tall facilities establishes that these lights will appear as tiny points of light that although visible, will be a very small part of the overall night sky view and will not attract substantial attention or dominate the view of the night sky.

Because the light reflected from the heliostat arrays will be directed at the solar collectors, the heliostats will not create glare effects that would be experienced by viewers in the surrounding area. As a consequence, the heliostats will not be the source of significant glare impacts.

The light reflected from the solar boilers would introduce two areas of glowing light in the daytime sky. These areas of glow would represent new elements in the daytime sky that would be seen by residents in Charleston View, travelers on Tecopa Road and the small numbers of visitors at Stump Springs, and residents in the rural residential area south of Pahrump. Although these two areas of glow in the sky will be detectable elements in the view, the levels of glow will be relatively low and will not dominate the views of the surrounding landscape. Given the moderate level of visual sensitivity of most of the KOP views in the project area, the presence of these areas of glow associated with the solar boilers will not constitute a significant visual impact. The exception is in views from KOP 4, the Charleston View residential area, where the level of visual sensitivity is moderately high for that area's residential viewers. To the extent that residents of the Charleston View residential area will see the glow emanating from the solar boilers while on their properties or when traveling the roads in their subdivision, some may evaluate the points of glow as a visual intrusion. With implementation of the mitigation measures specified below, this impact will be reduced to a level that is less than significant.

The lighting that will be required during HHSEGS's construction phase will not constitute a significant impact. The construction period will be short in duration (lasting no more than 29 months) and, when nighttime construction lighting is required, it will be the minimum needed to meet operational needs and safety regulations and will be shielded and directed to where it is needed to avoid offsite light and glare impacts and to prevent light from being directed up into the night sky.

5.13.5 Cumulative Effects

HHSEGS would contribute to cumulative impacts on visual resources in the Pahrump Valley to the extent that it would increase the amount of visible development and incrementally contribute to a loss of rural and natural character. To assess cumulative impacts, the visual impacts of the project must be considered in conjunction with those of nearby existing and reasonably foreseeable future projects.

The immediate project vicinity is currently a relatively undeveloped area. Development is limited to the Charleston View where there is a cluster of development that occupies 0.2 square miles, and an unpaved road grid that was cut into the surrounding desert when the Wiley Ranch was subdivided in the 1960s. HHSEGS, which would occupy 5.1 square miles of this subdivided ranch land and would contain two solar power towers that are approximately 750 feet tall, would appear larger than the existing development in terms of both its vertical and horizontal scales. The only reasonably foreseeable project in the immediate project vicinity is the St. Therese Mission project, which would be 0.5 mile southeast of the project site and consist of a 17.5-acre commercial columbarium development featuring a chapel, meditation garden, columbarium, visitor's center, restaurant, outdoor garden, and onsite caretaker home. This project will be located immediately adjacent to the Tecopa Road where it will be readily visible to all travelers on the highway, as well as residents of Charleston View. It will have the effect of creating a highly developed node within the highway corridor that would contribute to a small reduction of the area's overall rural, natural-appearing character for a very low number of viewers.

5.13.6 Mitigation Measures

The following mitigation measures will be implemented to reduce the visual impacts associated with HHSEGS to a level that is less than significant:

1. Ground disturbance and soil erosion will be minimized by avoiding steep slopes and by minimizing the amount of construction and ground clearing needed for roads and staging areas. Dust suppression techniques will be employed to minimize impacts of vehicular and pedestrian traffic, construction, and wind on exposed surface soils.

2. A lighting plan that minimizes the project's nighttime light impacts will be developed and submitted to the CEC for review. Provisions included in this plan will include installation of nighttime lighting only in areas where it is required for operations or safety, use of the lowest levels of lighting consistent with operational needs and safety regulations, use of light fixtures that are hooded to direct light only to the areas where it is needed and to prevent light from spilling off of the site or up into the sky, and use of switches and motion detectors to assure that lighting is turned on only when required.

3. A color treatment plan to blend the project facilities into the existing setting will be developed in consultation with Inyo County and the CEC.

4. A landscape plan will be developed for the project setback area along Tecopa Road. In the portion of the setback area directly north of the Charleston View residential area, this plan will include the use of a mix of tall growing trees to provide partial screening of views toward the solar power towers from the residential area, and lower growing shrubs to screen views into the site from Tecopa Road. The plant species selected for this area will emphasize species with low water needs that are aesthetically compatible with the landscape setting. In the remainder of the setback area along Tecopa Road, the emphasis will be on use of native shrubs with low water requirements that are planted in an informal, naturalistic pattern to provide partial screening of views into the project site. The landscape plan will be submitted to Inyo County and the CEC for review.

5. To reduce and compensate for the changes to the views toward the project site seen from Charleston View (KOP 4), two measures will be implemented:

    a. The Applicant will make provisions for a one-time program to plant trees on the properties of any Charleston View residents who indicate an interest in having them. The intent is to plant the trees in locations that will screen views looking toward the solar power towers from the residences on the property and from the property's primary outdoor living areas. The Applicant's professional arborist will identify a set of species that are well adapted to local conditions, and which have characteristics that provide effective screening of views. The Applicant's arborist will work with residents to select up to eight trees from this set of species, and will assist the residents in identifying appropriate locations for their installation. The Applicant will take responsibility for purchasing and installing the trees, which will be up to 10 gallons in size. Once installed, irrigation and maintenance of the trees will be the responsibility of the property owner.

    b. To compensate for the visual clutter the solar power towers will add to a portion of the view from Charleston View, the Applicant assist with a one-time cleanup

program within the Charleston View rural residential subdivision. This cleanup program will entail the Applicant making provisions to assist property owners with cleanup of their properties by providing free hauling and disposal of unwanted debris and vehicles.

5.13.7 Involved Agencies and Agency Contacts

Agency contacts related to visual resources are presented in Table 5.13-6.

TABLE 5.13-6
Agency Contacts for Visual Resources

Issue	Agency	Contact
Scenic highway issues	California Department of Transportation	Dennis Cadd Statewide Coordinator Landscape Architecture Program California Department of Transportation 1120 N Street, MS 28 Sacramento, CA 95814 (916) -654-5370 Email: dennis_cadd@dot.ca.gov

5.13.8 Permits Required and Permit Schedule

No permits of exclusive relevance to visual resources are required for the project. The required approval of the grading plan and issuance of the construction, grading, and encroachment permits are discussed in Section 5.6, Land Use.

5.13.9 References

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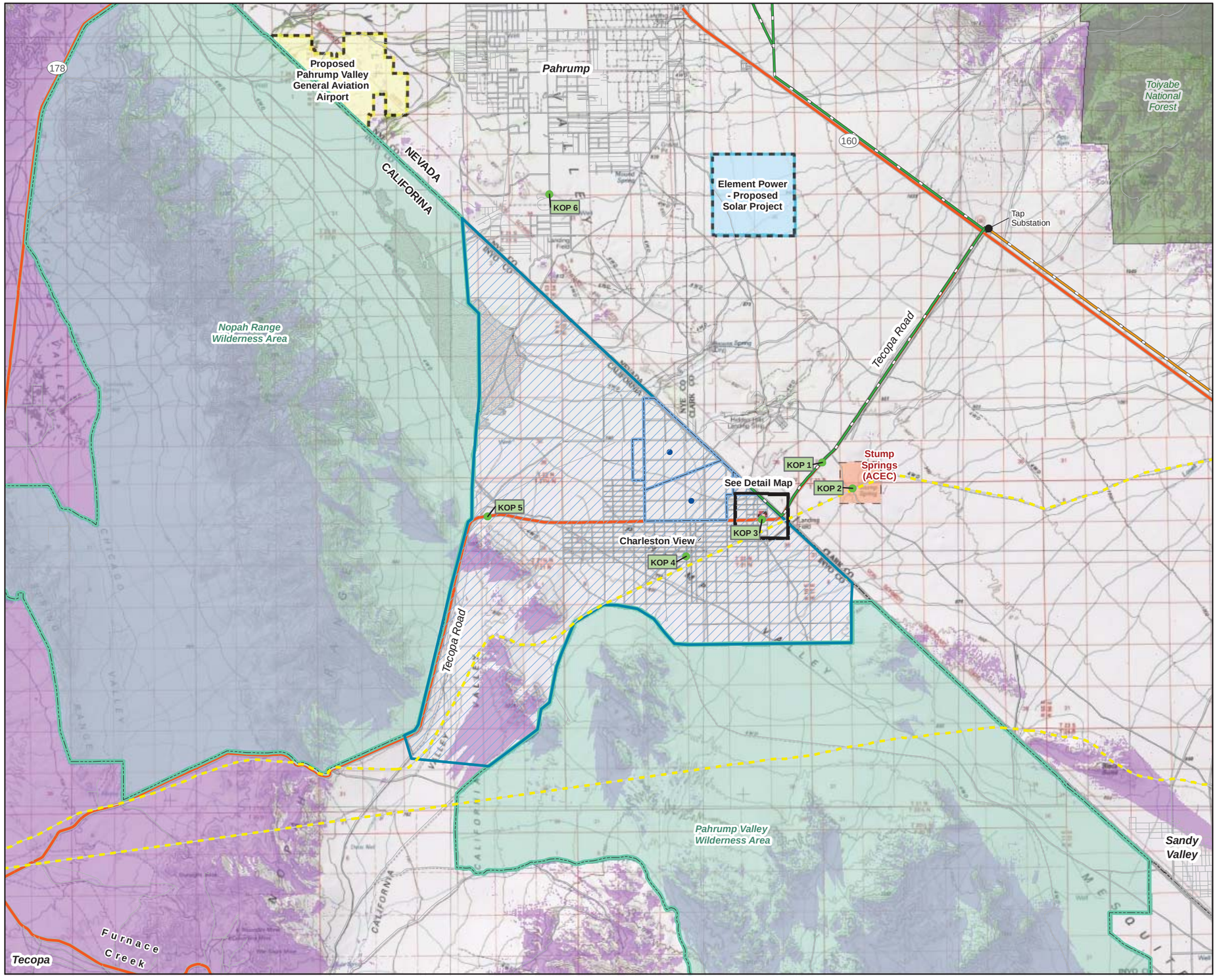

LEGEND

- HHSEGS Boundary
- Solar Power Tower
- Substation
- Key Observation Point
- Charleston View Renewable Overlay District
- Old Spanish National Historic Trail
- BLM Areas of Critical Environmental Concern
- Wilderness Areas

Viewshed Analysis Results

- Not Visible - Line of Sight Blocked by Terrain
- Proposed 230kV Transmission Line
- Proposed 500kV Transmission Line
- State Boundary
- Major Road
- Local Road

Notes:
* Old Spanish Highway data obtained from the National Historic Trails department of the National Park Service. Data accuracy is based on a scale of 1:100,000 or smaller.

Detail Map

N

0 1 2 3
Miles

Figure 5.13-1
Landscape Context and KOP Locations
Hidden Hills Solar Electric Generating System

CH2MHILL

A. KOP-1. Existing view toward the project site from Tecopa Road traveling southbound, 1.75 miles northeast of the project site.

B. KOP-1. Simulated view toward the project site from Tecopa Road traveling southbound, 1.75 miles northeast of the project site.

FIGURE 5.13-2
KOP-1. View from Tecopa Road Southbound
Hidden Hills Solar Electric Generating System

A. KOP-2: Existing view toward the project site from the Tecopa Road crossing at Stump Springs ACEC.

B. KOP-2: Simulated view toward the project site from the Tecopa Road crossing at Stump Springs ACEC.

FIGURE 5.13-3
KOP-2. View from Tecopa Road crossing at Stump Springs ACEC
Hidden Hills Solar Electric Generating System

A. KOP-3: Existing view toward the project site from the front of the proposed St. Therese Mission project.

B. KOP-3: Simulated view toward the project site from the front of the proposed St. Therese Mission project.

FIGURE 5.13-4
KOP-3. View from the Proposed St. Therese Mission
Hidden Hills Solar Electric Generating System

A. KOP-4: Existing view toward the project site from the rural residential community of Charleston View (aka Calvada Springs).

B. KOP-4: Simulated view toward the project site from the rural residential community of Charleston View (aka Calvada Springs).

FIGURE 5.13-5
KOP-4. View from Charleston View
Hidden Hills Solar Electric Generating System

A. KOP-5: Existing view toward the project site from Tecopa Road traveling eastbound, 3.8 miles west of the project site.

B. KOP-5: Simulated view toward the project site from Tecopa Road traveling eastbound, 3.8 miles west of the project site.

FIGURE 5.13-6
KOP-5. View from Tecopa Road Eastbound
Hidden Hills Solar Electric Generating System

A. KOP-6: Existing view toward the project site from the rural residential area closest to the project site within the community of Pahrump.

B. KOP-6: Simulated view toward the project site from the rural residential area closest to the project site within the community of Pahrump.

FIGURE 5.13-7

KOP-6. View from Pahrump

Hidden Hills Solar Electric Generating System