

# **JOSHUA TREE SOLAR FARM AESTHETIC IMPACTS REPORT**

*Prepared for:*

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## 1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed Joshua Tree Solar Farm Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Joshua Tree Solar Farm, LLC (applicant), for a 115-acre site approximately 3.5 miles northeast of Joshua Tree, California. The Project is located in unincorporated southern San Bernardino County (Figure 1 – Regional Location Map).

For the purposes of the visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and “Project area” refers to those landscapes within 3 miles of the Project site.

## 2.0 PROJECT DESCRIPTION

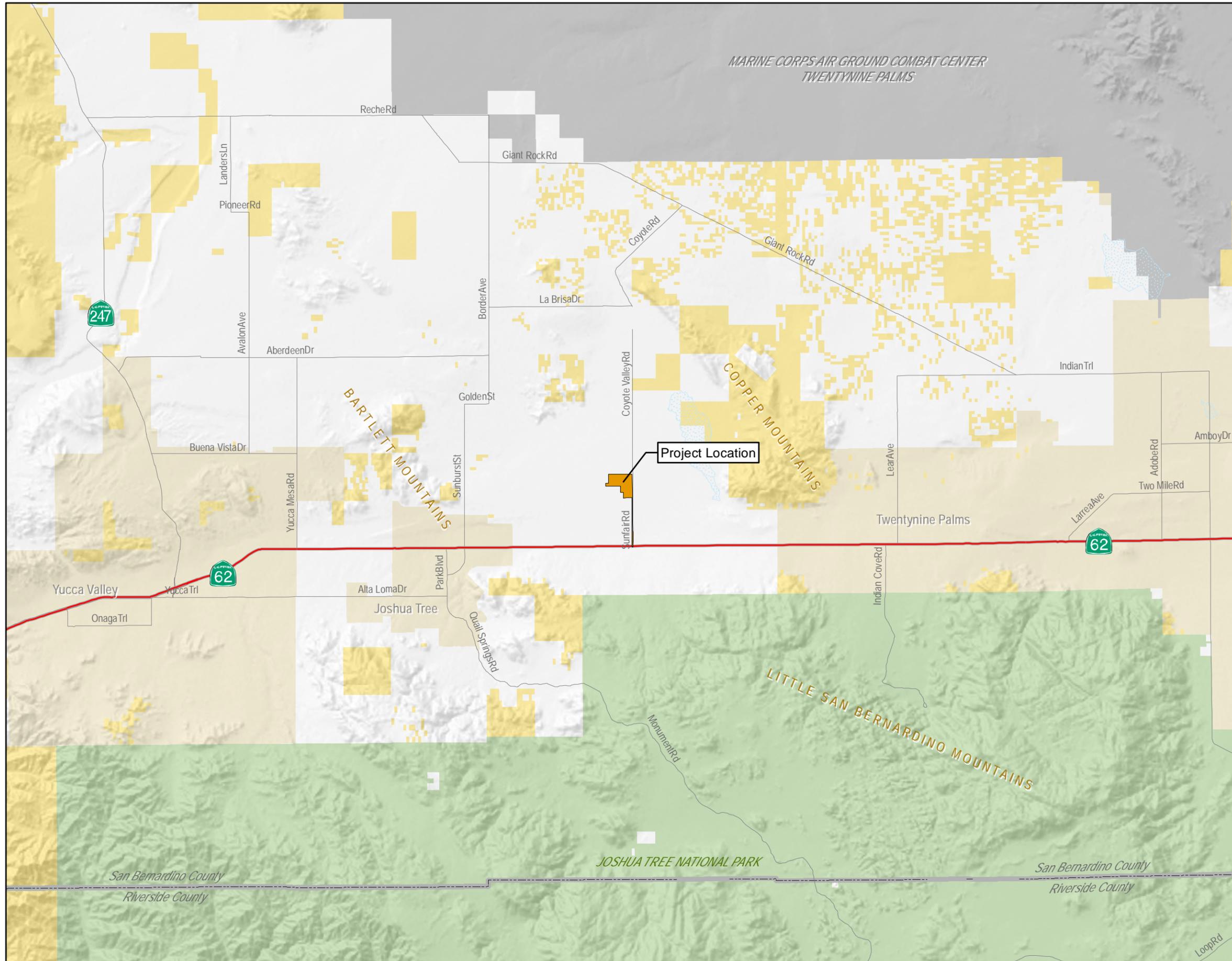
The proposed Project has a generating capacity of 20 megawatts (MW) and is to be located on 115 acres of land that is a recently de-activated private airport (Figure 2 – Vicinity Map). The Project site is located approximately 3.5 miles northeast of the city of Joshua Tree and 1.3 miles north of Twentynine Palms Highway, California in unincorporated southern San Bernardino County. The Project site is bounded by Fourth Street to the north, Sunfair Road to the east, Sunkist Road to the west and Two Mile Road to the south. Hi-Grade Materials Company occupies the parcel adjacent to the southwest border of the Project site.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into direct current power, which is subsequently transformed into alternating current power through an inverter.

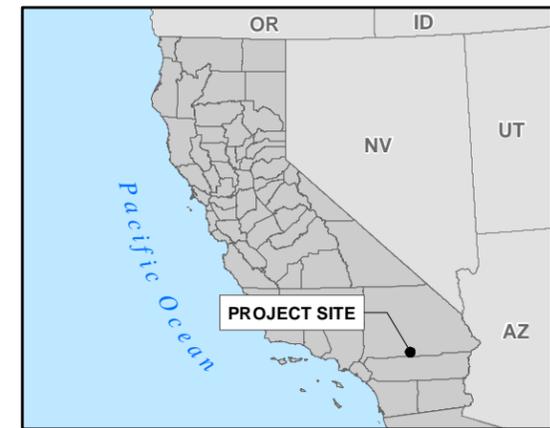
The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on driven pier mounting supports. The Project will be designed for a 30-year life span with an effective service life of 25 years before equipment will need to be overhauled. The Project will consist of the following elements:

- PV modules
- PV module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical alternating current collection system, including switchgear
- Access roads and chain link perimeter security fencing
- Lighting (at the entry gates and switchgear location)

The Project will not require the construction of an onsite operations and maintenance (O&M) facility, but preventative maintenance kits and certain critical spares may be stored onsite. It is anticipated that the Project would require a Conditional Use Permit from San Bernardino County for the construction and operation of this facility.



JOSHUA TREE  
 SOLAR FARM  
 SAN BERNARDINO COUNTY, CA



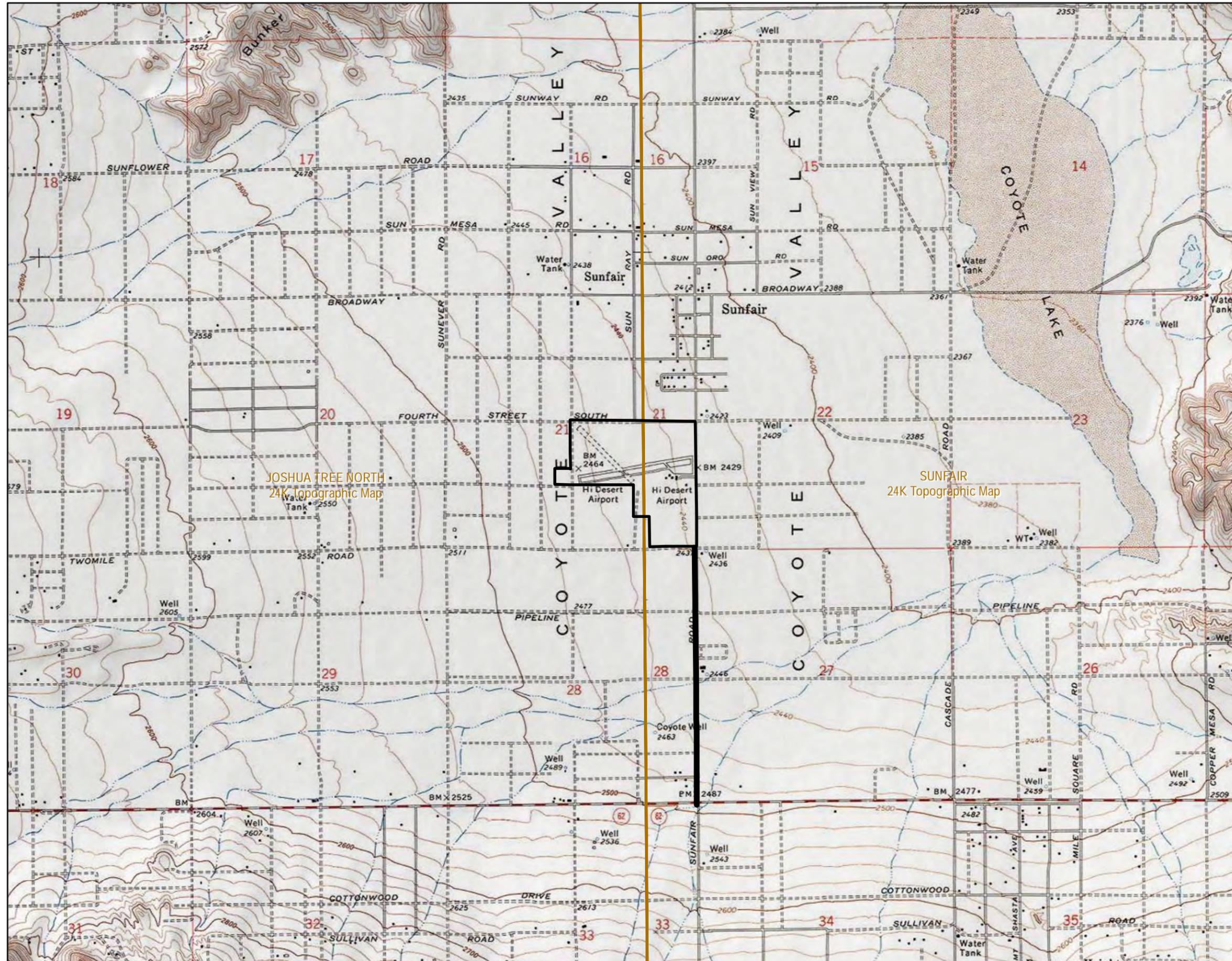
**Legend**

- Project site
- Transportation Features**
- State Highway
- Major Roads
- County Boundary
- Dry Lakes
- Land Jurisdiction**
- Bureau of Land Management
- Military
- National Park Service
- Towns/Places

  
  
 Miles

FIGURE 1  
 REGIONAL LOCATION MAP





# JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



**Legend**

- Project site
- USGS 1:24,000 Quadrangles

0 1,000 2,000 4,000  
Feet

FIGURE 2  
PROJECT VICINITY  
USGS TOPOGRAPHIC MAP

TETRA TECH EC, INC.

The facility will utilize PV technology on fixed-tilt supports that may include a tracking system. The major components of the proposed Project are described as follows:

## 2.1 Photovoltaic Panels

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed tilt configuration
- Tracking configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue or black, depending on selected modules, the angle of the sun, and brightness of the sky. The modules will be mounted on light gray steel support structures and will be arranged at a fixed angle (i.e., tilted) of 15-25 degrees towards the sun. An alternate mounting system would utilize a single-axis tracking system supported typically by steel posts, with modules rotating along a north-south axis, with a rotational range  $-45^{\circ}$  to  $45^{\circ}$  facing east to west. In both the fixed tilt and tracking configuration, the minimum clearance from the edge of the array to ground level is approximately 24 inches. The highest point of the array will depend on the chosen module and configuration during detailed design and is expected to be approximately 6.5 feet from ground level, with a maximum height of 8 feet above the ground. Modules will be non-reflective and highly absorptive.

Although the preliminary design consists of twenty 1 MW array blocks measuring approximately 462 feet by 391 feet (covering approximately 4.1 acres each), the final dimensions and MW capacity of each block will be determined during detailed design and equipment procurement. Each block will contain rows of PV arrays and one inverter/electrical equipment pad, which will consist of equipment in an enclosure approximately 9-feet tall, with a maximum height of 10.5 feet. A site plan is provided in Appendix A to show the general arrangement of the facility based on preliminary design.

The proposed Project site will be cleared of vegetation and existing buildings, and concrete structures (e.g., hangar aprons, foundations, etc.) will be deconstructed or demolished prior to construction of the PV facilities. Due to previous development activities on the site, the need for site grading will be minimal. Most existing paved areas, such as runways, will be left in place and will allow for various construction activities to occur. These activities will include trenching for installation of gathering lines, installation of support piers, delivery of the PV panel components, and PV panel installation. Disturbance areas will appear as large patches of fine, tan and buff-colored rock and soil. Construction activities may produce visible dust; however, implementation of the fugitive dust plan will mitigate the amount of dust produced during construction.

## 2.2 Generation Line Extension

The power generated by the Project will be collected and routed (underground) to the southeastern corner of the property, the point of interconnection with Southern California Edison (SCE). The generation line extension is provided by SCE and runs south along the west side of Sunfair Road on existing distribution structures to the main tie-in on the south side of Twentynine Palms Highway. It is anticipated that these existing distribution lines will be retrofitted to accommodate the new, dedicated generation line extension; however, it may be necessary to replace the existing poles with new ones. SCE will determine the final design and construct the generation line extension system.

## 2.3 Lighting

Lighting will be installed at the entry gates and the switchgear location. The limited amount of lighting to be installed will be designed to prevent spillover into neighboring properties. There will be operable lighting at each conversion station, but these units will be used as needed and will not typically operate at night. The entry will have fixtures to provide minimal lighting and will have additional on-demand (timer) lighting as needed or required.

## 2.4 Other Infrastructure Elements

A series of access roads will be constructed along the interior perimeter of the proposed Project site and between the solar array blocks. These roads will be characterized by approximately 26, 20 or 16-foot-wide bands of light tan and buff-colored aggregate, depending on the type of road (i.e., fire access, general access, or maintenance, respectively). The proposed Project site will have one access point along Sunfair Road.

The Project site perimeter will be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. Water required for construction activities (i.e., soil conditioning and dust control) will be obtained via a waterline along Sunfair Road. Water truck loading stations will be established onsite and will be fed by the existing waterline. Portable toilets will be provided during construction, but no permanent sanitary facilities will remain onsite.

## 3.0 REGULATORY SETTING

### 3.1 California Environmental Quality Act Compliance

A Conditional Use Permit is required from San Bernardino County for construction and operation of the Project. San Bernardino County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed in unincorporated San Bernardino County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA).

This Aesthetic Impact Study uses guidance provided by San Bernardino County to assess the potential for significant impacts with respect to visual resources. The County utilizes the same questions utilized by the state CEQA guidelines to assess impacts to visual resources and aesthetics:

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

When analyzing these four questions, four response choices are available:

- Potentially Significant Impact
- Less than Significant Impact with Mitigation
- Less than Significant Impact
- No Impact

### 3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the San Bernardino County General Plan, and the Joshua Tree Community Plan.

#### 3.2.1 San Bernardino County General Plan

The San Bernardino County General Plan (San Bernardino County 2007a) includes various elements related to scenic and aesthetic values and the proposed Project.

The General Plan identifies the Open Space Overlay Map which includes delineation of scenic corridors listed in the Open Space Element. According to the current Open Space Overlay Map (San Bernardino County 2007a, amended 2011), the proposed Project area is not located within the Open Space Overlay.

The Conservation Element sets goals and policies for the Desert Region (which includes the Project area):

- Goal D/CO1: Preserve the unique environmental features and natural resources of the Desert Region, including native wildlife, vegetation, water and scenic vistas.
  - D/CO 1.2: Require future land development practices to be compatible with the existing topography and scenic vistas, and protect the natural vegetation.

The Open Space Element sets goals and policies applicable to the entire planning area with respect to scenic resource and scenic routes. Policy OS 5.1 provides criteria for consideration in designation of scenic resources:

- a) A roadway, vista point, or area that provides a vista of undisturbed natural areas.
- b) Includes a unique or unusual feature that comprises an important or dominant portion of the viewshed (the area within the field of view of the observer).
- c) Offers a distant vista that provides relief from less attractive views of nearby features (such as views of mountain backdrops from urban areas).

Policy OS 5.3 identifies Park Blvd/Quail Springs Road from State Route 62 (SR-62) southeast to Joshua Tree National Park, and SR-62 (Twentynine Palms Highway) as scenic routes, defined as a “roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County.” Policy OS 5.3 further applies applicable policies to development on these routes.

- Goal OS 5. The County will maintain and enhance the visual character of scenic routes in the County.
  - Policy OS 5.2: Define the scenic corridor on either side of the designated route, measured from the outside edge of the right-of-way, trail, or path. Development along scenic corridors will be required to demonstrate through visual analysis that proposed improvements are compatible with the scenic qualities present.

### 3.2.2 Joshua Tree Community Plan

The Joshua Tree Community Plan (San Bernardino County 2007b) was developed to guide the future use and development of land within the Joshua Tree Community Plan area, which includes the project and area surrounding the project. The west entrance to Joshua Tree National Park is located in the southeast portion of the Joshua Tree Community Plan area, and the City of Joshua Tree is considered a gateway community for the park. The community plan recognizes the park as a significant natural resource that provides residents and visitors with ample scenic, recreation, economic, and cultural opportunities. Scenic vistas are identified as an important part of community character in the planning area.

The Community Plan identifies two County Scenic Routes; SR-62 (Twentynine Palms Highway), and Park Boulevard/Quail Springs Road. The Community Plan states these county scenic route designations recognize the value of protecting scenic resources for future generations and places restriction on adjacent development.

The Joshua Tree Community Plan identifies a number of goals and policies relevant to scenic resources and the proposed project, identified below.

#### Land Use Element

- Goal JT/LU 1: Retain the existing rural desert character of the community
  - Policy JT/LU 1.3: Development shall be required to maintain, conserve and be complementary to environmentally sensitive areas and elements, including but not limited to: Joshua trees, Mojave yuccas, creosote rings and other protected plants, protected fauna, hillsides, scenic vistas, drainage areas, habitat, and unique geological features.
  - Policy JT/LU 1.4: Reevaluate existing development standards relative to building heights, standards for screening mechanical equipment and storage areas, lot coverage, hillside preservation and locational criteria for mechanical installation and infrastructure facilities to ensure adequate protection of scenic vistas and the rural desert character of the plan area.

#### Circulation and Infrastructure Element

- Goal JT/CI 1: Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the desert landscape and rural character.

- Policy JT/CI 1.3: Preserve the status of Twentynine Palms Highway (SR-62) and Park Boulevard/Quail Springs Road as County scenic routes and ensure protection of their scenic values through the following methods:
  - A. Require compliance with the provisions of the Open Space Overlay...
- Policy JT/CI 1.6: Seek State support and assistance for the designation of Twentynine Palms Highway (SR-62) as an official State Scenic Highway.

### Conservation Element

- Goal JT/CO 1.1: Encourage conservation and protection of native wildlife and vegetation habitats and soils.
  - Policy JT/CO 1.1: Require future land development to be compatible with the existing topography and scenic vistas, and protect the natural vegetation.
- Goal JT/CO 5: Protect and improve the scenic environment adjacent to county-designated scenic routes on Twentynine Palms Highway and Quail Springs Road in Joshua Tree.
  - Policy JT/CO 5.1: Preserve the status of Twentynine Palms Highway (SR-62) and Quail Springs Road as County scenic routes, and ensure protection of their natural feature through the following methods:
    - A. Require compliance with the provisions of the Open Space Overlay.
  - Policy JT/CO 5.4: Screen all outside storage in designated scenic corridors for locations visible from scenic routes.

### 3.2.3 San Bernardino County Development Code

The purpose of the San Bernardino County Development Code (Development Code) is to implement the San Bernardino General Plan by classifying and regulating land uses and development within unincorporated San Bernardino County, including conserving and protecting the County's important agricultural, cultural, natural, open space and scenic resources (San Bernardino County 2007d). Chapter 82.19 (Open Space Overlay) of the Development Code includes guidelines and specific development standards required for land uses and development that occur within the various types of open space (e.g. natural resources, scenic resources, and trails) that fall within the Open Space Overlay. The Project and surrounding area are located within unincorporated San Bernardino County, but are not located within the Open Space Overlay. However, according to Policy JT/CO 5.1 (Conservation Element) of the Joshua Tree Community Plan, routes that have been identified as scenic shall comply with provisions of the Open Space Overlay.

The Development Code identifies development criteria within Scenic Areas, including:

- 82.19.040(c) Building and Structure Placement: Structure placement shall be compatible with and shall not detract from the visual setting or obstruct significant views.
- 82.19.040(d) Review Area: Intensive land development proposals, including commercial activities, shall be designed to blend into the natural landscape and maximize visual attributes of the natural vegetation and terrain. The design of development proposals shall also provide for maintenance of a natural open space parallel to and visible from the right-of-way.

- 82.19.040(h) Above Ground Utilities: Utilities shall be constructed and routed underground except in those situations where natural features prevent the underground siting or where safety considerations necessitate above ground construction and routing. Above ground utilities shall be constructed and routed to minimize detrimental effects on the visual setting of the designated area. Where it is practical, above ground utilities shall be screened from view from either the Scenic Highway or the adjacent scenic or recreational resource by existing topography, or by placement of structures.
- 82.19.040(i) Grading: The alteration of the natural topography of the site shall be minimized and shall avoid detrimental effects to the visual setting of the designated area and the existing natural drainage system. Alterations of the natural topography shall be screened from view from either the Scenic Highway or the adjacent scenic or recreational resource by landscaping and plantings which harmonize with the natural landscape of the designated area, and which are capable of surviving with a minimum of maintenance and supplemental water.

## 4.0 VISUAL RESOURCE INVENTORY METHODOLOGY AND RESULTS

### 4.1 Visual Resource Inventory Methodology

The visual resource inventory considered visual resources potentially affected by the construction and operation of the proposed Project. Neither CEQA nor San Bernardino County has existing guidelines for conducting visual resource inventories. Therefore, the visual resource inventory methodology used for this project was based on the Bureau of Land Management's (BLM) Visual Resource Management System because it is a widely accepted and defensible process, even though the project does not occur on or cross lands under the jurisdiction of the BLM. The Project study area was focused within a 3-mile buffer in order to characterize the visual resources for the proposed Project. The 3-mile buffer was based on topographic features (i.e., mountains) surrounding the Project site, assuming most views of the Project site beyond those features would be screened or disseminated by distance of views. To inventory and characterize the affected environment for visual resources, the following visual components were considered: landscape scenery, and sensitive viewers including key observation points (KOPs). These visual components are described below.

#### *Landscape Scenery*

Scenery is the aggregate features that give character to the landscape (BLM Manual 8400). Typically, every landscape comprises varying levels of landform, vegetation, existence of water, color, scarcity, adjacent scenery, and cultural modifications; all of which combine to exhibit landscape character (BLM Manual H-8410-1). Existing conditions were evaluated by means of aerial photography and field reconnaissance (see Section 4.1.1) to determine where modifications have affected natural settings. Existing conditions observed during the inventory processes are described in subsequent sections (Sections 4.1.2 and 4.1.3).

#### *Sensitive Viewers/KOPs*

The term "sensitive viewers" refers to specific user groups associated with various land uses that have a sensitivity to landscape change, and therefore could be adversely affected by the construction and operation of the proposed Project. In this regard, viewing locations are typically associated with travel routes, recreation areas, and residences. KOPs represent a critical or

typical viewpoint within, or along, an identified viewing location and are used to assess visual impacts of a proposed project. The sensitivity rating for each sensitive viewer/KOP is based on the following five criteria; type of use, volume of use, duration of use, concern for aesthetics, formal scenic or historic designations, and special status or designation. Identifying groups of individuals that will be sensitive to visual changes is an important part of the visual assessment process and provides specific locations from which to assess the visual character of the landscape. The selection for KOPs for the Project considered: 1) the most critical viewpoints (i.e., views from communities, residences, or recreational areas); and 2) views from areas identified in county and local planning documents. Potential KOP locations were initially identified during a desk top study which was based on reviews of aerial photographs and planning documents. KOP locations were then refined during observations made during the field reconnaissance (see Section 4.1.1). Descriptions of the KOPs and their associated existing viewing conditions are described in Section 4.2.

#### 4.1.1 Field Visit

In an effort to properly assess the existing visual character of the landscapes in the Project area, a field visit to the Project site and the surrounding Project area was conducted on Thursday June 6, 2012, by Tetra Tech environmental planner Michael DiSano. Photos were taken near the Project site between 11:20 AM and 2:40 PM. The weather was clear and sunny.

During this site visit, the following locales were visited and photographed:

- The proposed Project site
- Locations in representative landscapes in the Project area where the Project may be seen
- Sensitive viewing areas where the Project may be seen
- Scenic areas identified in the San Bernardino County General Plan and the Joshua Tree Community Plan

Sensitive viewing areas can include the following:

- Residential areas
- Community facilities, such as community centers or schools
- Recreational facilities, such as parks, trails, open space areas, fairgrounds, or playgrounds
- Highways or well-traveled roads
- Designated scenic roads/highways

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a “52-mm equivalent lens.” A 52-mm equivalent lens is considered a “normal lens” that most closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and

elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth.

Photo points were captured of the proposed Project site from locations along adjacent roads and intersections near the Project site. Photographs were also taken from scenic roads identified in the San Bernardino County General Plan and the Joshua Tree Community Plan that were in proximity to the Project site, including SR-62 (Twentynine Palms Highway) and Park Boulevard/Quail Springs Road.

Photographs were taken from within Joshua Tree National Park, including the northern park boundary, located approximately 3 miles south of the Project site; and from the Indian Cove entrance station and the Boy Scout trailhead, both located off of Indian Cove Road, approximately 5.5 and 5.75 miles southeast of the Project site, respectively.

Photographs were taken from multiple residential areas throughout the Project area at varying distances from the Project site. Residential areas where photos were taken from included residences adjacent to the Project site (within approximately 800 feet), residences located approximately 1 mile west of the Project site and residences associated with the City of Joshua Tree, located approximately 3 miles southwest of the Project site.

## 4.2 Summary of Inventory Results

### 4.2.1 Landscape Setting/Existing Conditions

The Project is located within the western extents of the Basin and Range Physiographic province in southern California. The Basin and Range province is characterized by its isolated, roughly parallel mountain ranges separated by closed (undrained) desert basins. The mountain ranges often run 50 to 70 miles in length and generally are north to south trending. Mountain ranges within the Basin and Range Province that surround the basin in which the Project lies includes the Bullion (approximately 18 miles northeast of the Project area) and Little San Bernardino (approximately 9 miles southwest of the Project area).

The topographic character within the Project area can be described as relatively flat in the center of the Project area, level to gently rolling terrain dissected by arroyos, leading to low foothills and coarse jagged slopes and irregular peaks associated with the surrounding mountain ranges. There are many washes that meander across the valley plains; however, these streams are dry for the majority of the year. The Project area is situated where the Sonoran and Mojave Deserts come together, and the vegetation character of the area is representative of both deserts. The vegetation community within the valley is shrub-dominated,

and species diversity decreases sharply away from drainages. Creosote bush is the dominant shrub species with other dominant species including bursage and saltbush. Small stands of ocotillo and cholla cactus are seen within the valley landscape as well. In the higher elevations, typically within the surrounding mountains and mountain ranges, vegetation includes pinion pine, mesquite, juniper and Joshua trees (NPS 2012). The Project site itself is relatively flat and with sparse vegetation consisting of native grasses and shrubs.

Cultural modifications that have locally modified the Project setting include development associated with the communities of Joshua Tree and Twentynine Palms. Hi-Grade Materials Company, a ready-mix and sand gravel business, is located on the parcel adjacent to the southwest border of the Project site. Local infrastructure modifications within the Project area include SR-62, high-voltage transmission lines and distribution lines, and a natural gas pipeline. The Marine Corps Air Ground Combat Center is located approximately 11 miles northeast of the Project area.

#### 4.2.2 Project Site

The proposed Project area is located in a basin surrounded by the Copper Mountains to the east and the Bartlett Mountains to the west of the Project, approximately 2 and 3 miles, respectively; and the Joshua Tree National Park, which is comprised of the Quail, Queen, Pinto and Twentynine Palms mountains, located approximately 3 miles south of the Project.

The topographic character of the Project site can be described as relatively flat and ranges in elevation from approximately 2,470 feet above mean sea level (AMS) on the western boundary of the site to 2,430 feet AMS on the northeast corner of the site. A wash traverses a portion of the route for the generation line extension. The site has been previously cleared for development, therefore vegetation communities onsite are sparse and consist primarily of native grasses and shrubs. A few Joshua Trees are located near the existing entrance to the site and vegetation associated with residential landscaping is located around existing buildings. There are several existing buildings onsite that include office facilities and guest accommodations (i.e., rooms, guest house and bunk house). The buildings and concrete pads will be demolished and removed and the asphalt pavement (i.e. parking area and runway) will remain onsite. Land adjacent to the Project site is primarily unmaintained vacant land.

As previously noted, Hi-Grade Materials Company occupies the parcel adjacent to the southwest border of the Project site. There is an existing distribution line located along the west side of Sunfair Road that runs from SR-62 to the southwest corner of the Project site, where it turns west and runs along the Project site's southern boundary to the Hi-Grade Material Company. Above ground facilities associated with a pipeline are adjacent to the northeast corner of the Project site. The closest residences to the Project site are located on the east side of Sunfair Road, north of 4<sup>th</sup> Street, approximately 300 feet northeast of the Project site; and south of 2 Mile Road, approximately 250 feet southeast of the Project site. Other rural residences are located approximately 0.15 mile or more north and east of the Project site and approximately 0.5 mile or more west and south of the Project site (Figure 2 – Vicinity Map/USGS Topographic Map).

### 4.2.3 Sensitive Viewers/KOPs

#### *Travel Routes*

##### Scenic/Historic Routes

Twentynine Palms Highway/SR-62 – This travel route was inventoried as having high sensitivity based on the formal scenic designation by San Bernardino County and the City of Joshua Tree. This travel route provides access between Interstate 10, a major regional transportation corridor located southeast of the Project area, and Arizona State Route 95 located in Parker, Arizona. This route is located approximately 1 mile south of the Project site. Viewers along this route within the Project area would have level to slightly superior, unobstructed views of the Project site in the foreground and middleground distance zones (0-0.5 mile and 0.5-3 miles, respectively). Views of the Project site beyond 3 miles would be partially screened by topography associated with the surrounding mountain ranges and vegetation.

Park Boulevard/Quail Springs Road – This travel route was also inventoried as having high sensitivity based on the formal scenic designation by San Bernardino County and the City of Joshua Tree. This route provides access to Joshua Tree National Park from SR-62, and is located approximately 1 mile southwest of the Project area and approximately 4 miles from the Project Site. Although this route it is located outside of the Project area, due to its scenic designation it has been included in the visual inventory. Views along Park Boulevard/Quail Springs Road would be obstructed by topography, vegetation and cultural modifications associated with the city of Joshua Tree.

##### Local Routes

There are numerous local routes (paved and unpaved) throughout the Project area that provide access primarily to rural residential areas. Within the valley, travelers along these routes typically have open, expansive views due to the level to slightly superior terrain and low vegetation associated with the arid desert landscape. Views from local roads may also have partially obstructed views due to vegetation and development associated with residential areas.

#### *Recreation Areas*

In general, public recreation areas such as national parks are a destination for visitors (viewers), and thus are considered to have a high sensitivity because of the concern for aesthetics and the potential for long viewing durations.

##### National Parks

Joshua Tree National Park – The northern portion of Joshua Tree National Park is within the Project area, and the park's northern boundary is located approximately 3 miles south of the Project site. The majority of designated trails and camping areas within the park are located approximately 6 miles or more south of the Project site and views would be completely screened by topography. The closest designated trail/trailhead and camping area is the Boy Scout Trail and Indian Cove Campground, located approximately 6 and 6.5 miles from the Project site, respectively. Views from the trailhead and campground would be completely obstructed by topography. Dispersed recreation viewers at higher elevations or peaks within the

Joshua Tree National Park would have superior, unscreened views of the Project site from 3 miles or more.

#### Other Recreation Areas

Although there are no other designated parks or open spaces within the Project area, there may be dispersed recreation users associated with Copper Mountain, located approximately 2 miles east of the Project site. Potential viewers would have superior, unobstructed views of the Project site.

#### *Developed Areas and Residences*

Residences were inventoried as high sensitivity because of the long viewing duration, strong concern for aesthetics, and the visual setting of the surrounding landscape. Residential development within the Project area is primarily rural development associated with the city of Joshua Tree and Twentynine Palms.

Generally residences within the valley have open, expansive views due to the level terrain and low vegetation associated with the arid desert landscape. The closest residence is located approximately 300 feet from the northeast corner of the Project site and would have level, unobstructed views of the proposed Project. Residences located within 1 to 2 miles of the Project site would typically have level views of the Project site; however, due to the low profile of project components (i.e., solar panels), views would be partially screened by vegetation associated with the arid desert landscape and vegetation associated with residential landscaping. Residences located closer to the surrounding foothills and mountain ranges (approximately 2 miles or more from the Project site) would typically have superior views of the Project site. Views would range from unobstructed to partially screened by residential development and/or vegetation associated with residential development. Joshua Tree residences located within approximately 3-5 miles to the southwest of the proposed Project would have limited views of it. These residences are associated with superior viewing conditions and development and vegetation associated with the city and residential landscaping, respectively is anticipated to completely screen views of the Project.

## **5.0 VISUAL IMPACT METHODOLOGY AND ANALYSIS**

The purpose of the visual impact assessment is to identify and characterize the level of visual change to the landscape and views from sensitive viewers that would result from the construction and operation of the proposed Project. Modification of the landscape is described in levels of visual contrast, which affects scenic quality and sensitive viewers. The BLM's visual contrast rating process (Handbook 8431-1 Visual Resource Contrast Rating) was used as the basis for reviewing potential impacts to visual resources resulting from the proposed Project, because neither CEQA nor San Bernardino County has existing guidelines for assessing visual resource impacts and the BLM methodology is a widely accepted and defensible process. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed Project will introduce to the existing landscape.

## 5.1 Visual Contrast Rating

The level of project contrast is based upon the level of modification to the existing landscape features. In the context of the Project, existing landscape scenery is defined by the visual characteristics (form, line, color, and texture) associated with the landform (including water), vegetation, and existing facilities within and adjacent to the Project. The visual contrast rating worksheet uses these visual character elements and distance zones (discussed below) to describe the landscape. Descriptions of each visual character element are listed below:

- Form – The shape and mass of landforms or structures
- Line – The edge of shapes or masses, silhouettes, or bands
- Color – The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture – The nature of the surface of landforms, vegetation, or structures

The level of visual contrast introduced by a proposed project is measured by changes in form, line, color, and texture. The greater the difference between these character elements found within the landscape and the proposed Project components, the level of visual contrast becomes more apparent, which typically increases perceived contrast.

As part of the contrast rating process landscapes are subdivided into three distance zones based on relative visibility from sensitive viewers. The three distance zones are foreground (0-0.5 mile), middleground (0.5-3 miles), and background (3 miles or more). Generally, for sensitive viewers who have level views of a project (in which viewers are situated at the same elevation as a proposed project), objects or features that are closer to a viewer's location will appear more detailed and more dominant. As distance from a project increases the perception of visual contrast tends to decrease because a level viewer would typically not see the solar panels due to the low profile of the structures. These components are typically screened by vegetation or blend into the level, flat landscapes such as found in the Project area.

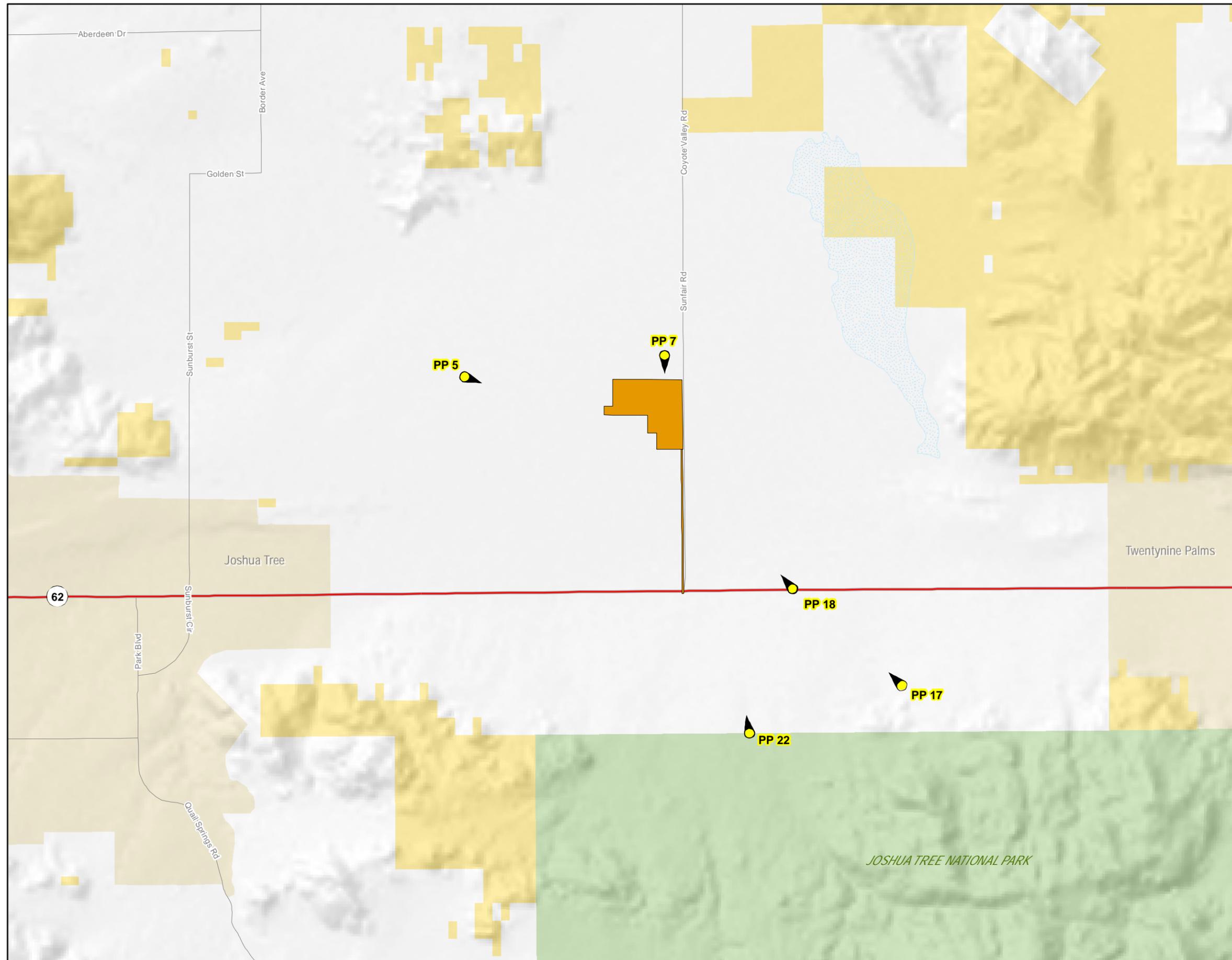
Angle of observation refers to the angle between the viewer's line-of-sight and a project's location. Angles of observation are typically described as inferior (in which viewers are situated at a lower elevation than the proposed project), level (as described above), and superior (in which viewers are situated at a higher elevation than the proposed project). Angle of observation influences the perception of visual contrast. Viewers at higher elevations (superior views) tend to see larger portions of a project. In the context of PV solar projects, from an elevated viewpoint at a distance, viewers would perceive the rectangular outline of the solar field, which would not appear dissimilar from an agricultural field from a certain distance. Individual PV modules and rows of modules may or may not be distinguishable, and the solar field as a whole would appear as gray tones, as the modules will be non-reflective and highly absorptive.

## 5.2 Photographic Simulations

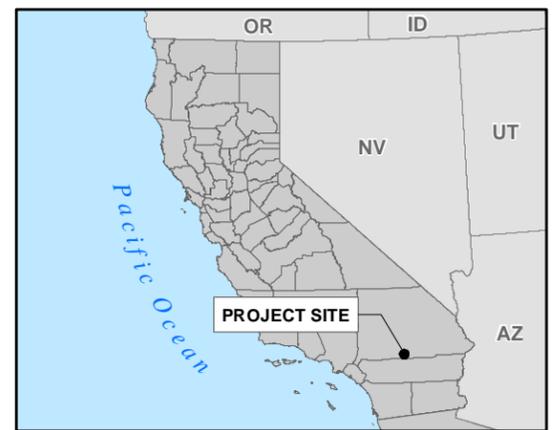
Photographic simulations were created to help visualize the potential impacts to the existing landscape and to aid in the description of the proposed Project components. The simulations helped to compare the level of contrast between the existing landscape and the expected landscape after the proposed Project is implemented. The simulations were created using a combination of Geographic Information Systems and current 3D software to ensure accuracy in the locations of the proposed Project components.

Five photographic simulations were created for this assessment and represent potentially sensitive viewers from travel routes (1 simulation), recreation areas (1 simulation), and residences (3 simulations) within the Project area (Figure 3 – KOP/Simulation Photo Location Map). Photographs of existing conditions and post-construction simulations are illustrated in Appendix B. Photographs were taken from the following locations

- Simulation 1 (Recreation Area): Photograph taken from the northern boundary of the Joshua Tree National Park, off of Baseline Road, west of Lawrence Avenue, approximately 2 miles south of the Project site.
- Simulation 2 (Travel Route): Photograph taken from SR-62, 0.75 miles east of Sunfair Road, approximately 1.25 miles southeast of the Project site.
- Simulation 3 (Residential): Photograph taken from Walpi Drive, approximately 600 feet west of Sunfair Road and approximately 700 feet north of the Project site.
- Simulation 4 (Residential): Photograph taken from Laferny Avenue, north of 4<sup>th</sup> Street, approximately Walpi Drive, approximately 1 mile west of the Project site
- Simulation 5 (Residential): Photograph taken from Mile Square Road, 0.25 mile south of Cottonwood Drive, approximately 2.25 miles southeast of the Project site.



# JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



**Legend**

- Photo Point Location/Direction of View
- Project site
- State Highway
- Major Roads
- County Boundary
- Dry Lakes

**Land Jurisdiction**

- Bureau of Land Management
- Military
- National Park Service
- Towns/Places

0 0.25 0.5 1  
 Miles

**FIGURE 3**  
 KEY OBSERVATION  
 SIMULATION PHOTO POINT  
 LOCATIONS MAP

**Tt** TETRA TECH EC, INC.

### 5.3 Visual Impact Analysis

Using the CEQA checklist criteria presented in Section 3 of this report, the visual impacts from the proposed Project were assessed:

*I (a) Would the project have a substantial adverse effect on a scenic vista?*

***Recommended Rating: LESS THAN SIGNIFICANT***

Of the scenic resources locations identified by San Bernardino County and the City of Joshua Tree, the proposed Project would be visible from areas within the Joshua Tree National Park (Appendix B – Figure 1). Dispersed recreation viewers at higher elevations or peaks within the park would have superior, unobstructed views of the Project site. The layout of the solar fields and non-reflective solar panels create a grayish-blue geometric shape within the landscape. The straight lines created by the Project mimic the flat, level topography of the valley in which the Project is located. In addition, the color created by the solar panels blends with the dull color of the surrounding vegetation, reducing contrast. From the park, the Project would be viewed at a distance of 3 miles or more further reducing contrast. The generation line extension would be visible to viewers; however, existing distribution poles will be retrofitted to accommodate the new line; thus no new vertical elements would be added to the landscape. The generation line extension would also be seen in the context of existing high-voltage transmission lines and distribution lines in the area. Overall, the Project repeats basic elements of form, line and color found in the predominant natural landscape and would not dominate the view of recreation viewers within Joshua Tree National Park.

San Bernardino County and the City of Joshua Tree have both identified Twentynine Palms Highway/SR-62 and Park Boulevard/Quail Springs Road as local scenic routes. Twentynine Palms Highway/SR-62 runs west to east approximately 1 mile south of the Project and is situated at a slightly higher elevation than the Project site. Views of the Project site (i.e. solar fields) from along this route would be partially screened by vegetation and the Project would be seen in the context of existing cultural modifications including an existing transmission line and distribution lines located on the north side of Twentynine Palms Highway, the existing Hi-Grade Materials Company, and other residences and structures (Appendix B – Figure 2). The low profile of the solar fields coupled with the dull color of the solar panels help to blend the facility with the dull colored vegetation of the surrounding landscape, thus reducing contrast. The generation line extension would run from the southeast corner of the Project site, south to Twentynine Palms Highway/SR-62. As previously noted the generation line extension would be retrofitted to an existing distribution line and no new vertical elements would be introduced into the landscape. In addition, the generation line extension would be seen in the context of existing transmission/distribution lines. The Project will not impede views of the valley and surrounding mountain ranges from Twentynine Palms Highway/SR-62. Park Boulevard/Quail Springs Road provides access to Joshua Tree National Park from Twentynine Palms Highway/SR-62, and is located approximately 4 miles from the Project Site. Views of the Project from this roadway would be completely screened by topography associated with Joshua Tree National Park.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was directly adjacent to the facility. At approximately 6.5 feet tall, the PV panels are relatively short, and given their design, which absorbs as much sunlight as possible, the panels will not be highly reflective. From viewing points at approximately the same elevation as the solar facility, it will either be screened by existing vegetation or fade into the flat

landscape and will not dominate the view. From viewing points at higher elevations than the solar facility, the form, line and color created by project components are similar to its surrounding landscape features which help to reduce contrast within the landscape. It is anticipated that the proposed Project will not significantly degrade views from nearby scenic vistas.

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

**Recommended Rating: LESS THAN SIGNIFICANT**

As described in Question I (a), the proposed Project is not located along or in proximity to a state designated scenic highway. The proposed Project will not substantially damage or impact scenic resources such as rock outcropping, unique geologic features or historic buildings, since these resources do not occur on the Project site. Scenic resources such as trees will be impacted as a result of the construction and operation of the Project. However, a majority of the existing trees located on the Project site have been planted as part of the existing development and are not part of the natural vegetation of the arid desert landscape. In addition, there are a few (approximately 4) Joshua Trees located onsite that will be removed, but Joshua Trees are typically found at higher elevations and not within the valley plains surrounding the Project site. Joshua Trees on the proposed Project site are located on either side of the existing entrance drive and appear to be part of the previous development's landscaping, and were not naturally occurring features on the site.

*I (c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?*

**Recommended Rating: LESS THAN SIGNIFICANT**

The existing site is currently a de-activated private airport with an asphalt runway, a cleared unpaved runway and multiple buildings. The remainder of the site is open land typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is scarce and primarily consists of grasses and short shrubs, uniformly distributed across the site. Some vegetation (typically trees) has been added to the Project site and is associated with landscaped areas around existing buildings and structures. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding of the desert landscape.

The Project could impact views for residences located southeast and northeast of the Project site (approximately 250 feet and 300 feet, respectively). The residence to the southeast would have views in the immediate foreground and project components (i.e., solar fields, fencing) would dominate the view where not screened by vegetation. Although there is a cluster of trees around both residences that would intermittently screen views, due to the residences' close proximity to the Project site, project components that are visible to the residence would dominate the view.

Residences located approximately 0.15 mile or more from the Project site would still experience views of the open desert lands after the solar facility is constructed. Due to the low profile of project components (i.e., solar panels) views of the project would be partially to completely screened by low dense vegetation (Appendix B – Figures 3, 4, and 5). In addition, existing vertical elements (e.g., trees associated with existing development and structures) would be

removed; thus opening up views to the surrounding mountain ranges. The generation line extension will be visible to viewers in the surrounding area; however, existing distribution poles will be retrofitted to accommodate the new line; thus no new vertical elements would be added to the landscape. In addition, the generation line extension would be completely backdropped by distant mountain ranges reducing visual contrast. With the exception of residences immediately adjacent to the Project site, the solar facility will not significantly impact views from surrounding residences.

The Project is not out-of-character when considering the context of the larger Project area. Although there are no other existing solar projects within the immediate area, other cultural modifications are common within the landscape surrounding the Project site. Cultural modifications include the Hi-Grade Materials Company, residences and commercial developments associated with the cities of Joshua Tree and Twentynine Palms. In addition, several high-voltage transmission lines and distribution lines have added vertical elements into a relatively flat, level landscape.

Because cultural modifications are common in the vicinity of the Project site and in the larger Project area; and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

*I (d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

**Recommended Rating: LESS THAN SIGNIFICANT**

Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences and roadway lights. Lights associated with the airport (i.e. beacon lights) are no longer in use since the airport has been de-activated.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV panels are designed to absorb sunlight, and the glass panels that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

## 5.4 Conclusions

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

### **Construction Phase:**

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

**Operations Phase:**

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles.

**6.0 REFERENCES**

National Park Service (NPS). 2012. A Desert Park – Joshua Tree. Retrieved from <http://www.nps.gov/jotr/planyourvisit/desertpark.htm#>. Accessed June 29, 2012

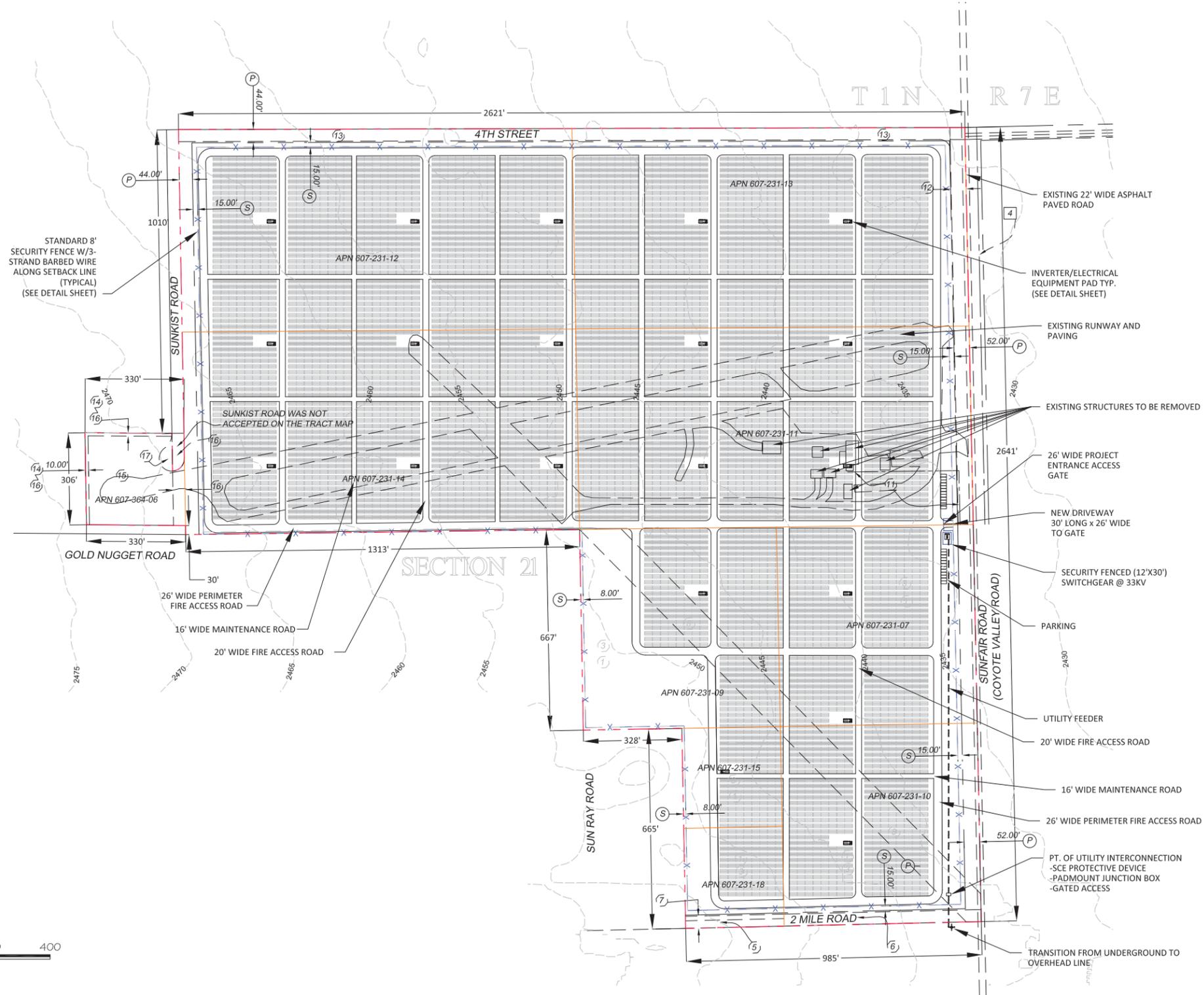
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San Bernardino County. 2007c. *San Bernardino County Land Use Plan General Plan Open Space Element Map*. Available online at: <http://cms.sbcounty.gov/Portals/5/Planning/Zoning&overlay%20maps/OpenSpaceCountywide.pdf>. Accessed June 6, 2012.

San Bernardino County. (2007d). *County of San Bernardino 2007 Development Code* (Amended 2012). Available online at: <http://www.sbcounty.gov/Uploads/lus/DevelopmentCode/DC.pdf>. Accessed June 29, 2012.

**APPENDIX A**  
**SITE PLAN**

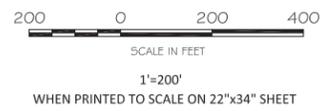


**LEGEND**

- (P) PROPOSED OFFER OF DEDICATION FOR PUBLIC ROAD
- (S) PROPOSED FENCE SETBACK PER COUNTY ORDINANCE 84.29.50 (a) & (b)
- - - - - EXISTING EASEMENT LINE
- - - - - PROPOSED OFFER OF DEDICATION LINE
- - - - - FENCE SETBACK LINE PER COUNTY ORDINANCE 84.29.50 (a) & (b)
- X - X - PROPOSED FENCE
- - - - - PROPERTY LINE
- - - - - PARCEL LINE

**EASEMENT LEGEND & NOTES**

- EASEMENTS ITEMS PER P.T.R. 126743694-X49
- 1 RESERVATIONS IN PATENT- WAITING FOR CORRECT DOC.
  - 2 CENTERLINE CALIFORNIA ELECTRIC POWER EASEMENT PER 2306/OR/302 (NO WIDTH GIVEN)
  - 3 CENTERLINE CALIFORNIA ELECTRIC POWER EASEMENT PER 2389/OR/242 (NO WIDTH GIVEN)
  - 4 CENTERLINE CALIFORNIA WATER & TELEPHONE EASEMENT PER 5157/OR/421 (NO WIDTH GIVEN)
  - 5 10' WIDE GENERAL TELEPHONE EASEMENT PER 8787/OR/1086
  - 6-7 40' WIDE PUBLIC ROAD PER 91-295474 O.R. ( OFFERED PER 9516/OR/1325) AND PRIVATE ROAD EASEMENT PER 9516/OR/1323
  - 8 10' SO. CAL. EDISON EASEMENT PER 90-243568 O.R.
- EASEMENTS ITEMS PER P.T.R. 126743693-X49
- 1 RIGHTS OF PUBLIC IN ANY PORTION LYING WITHIN ROAD, STREET, OR HIGHWAY
  - 2 RESERVATIONS IN PATENT- UNPLOTTABLE
  - 3 OPERATION & MAINTENANCE OF RR; RIGHT OF WAY FOR COUNTY ROADS; RIGHT TO USE WATER RISING UPON LAND. RESERVED ON PAGE 357 OF 498/DJ/299
  - 4 17' INGRESS/EGRESS & ROAD EASEMENT PER 6492/OR/732
  - 5 25' GENERAL TELEPHONE EASEMENT PER 7663/OR/411
  - 6 40' PUBLIC ROAD EASEMENT PER 92-251092 O.R. (OFFERED PER 82-029702 O.R.)
  - 7 40' PUBLIC ROAD EASEMENT PER 92-113701 O.R. (OFFERED PER 72/PM/40-41)
  - 8 AIRPORT RUNWAY EXPANSION EASEMENT PER 93-094839 O.R.
  - 9 RIGHTS OF THE PUBLIC OVER ANY PORTION LYING WITHIN A ROAD/HIGHWAY
  - 10 CENTERLINE CALIFORNIA ELECTRIC POWER EASEMENT PER 2389/OR/268 (NO WIDTH GIVEN)
  - 11 APPRX. CENTERLINE 6' WIDE SO. CA. EDISON EASEMENT PER 8026/OR/962 (DOC. HAS HAND WRITTEN NOTES)
  - 12 50' PUBLIC ROAD EASEMENT PER 8061/OR/921
  - 13 50' PUBLIC ROAD EASEMENT PER 2003-0555328
  - 14 PUE PER 78/MB/71-72
  - 15 CC&R'S PER 5236/OR/439: BUILDING RESTRICTIONS ( DOCUMENT STATES THAT THE PLANNING COMMISSION CAN RE-ZONE)
  - 16 ELECTRIC POWER EASEMENT PER 5271/OR/415
  - 17 PUBLIC ROAD EASEMENT PER 1998-0283419
- OTHER ITEMS LISTED: WATER RIGHTS, CLAIMS TO WATER; RIGHTS OF PARTIES IN POSSESSION, IF ANY



C-01

P:\499-RR-JOSHUA TREE PROJECT\CAD\DESIGN SET\C-01 SITE-UT-A.DWG 11/13/2012 2:42:10 PM PLOT/UPDATE

EXHIBIT PREPARER:

APPLICANT:  
**JOSHUA TREE SOLAR FARM, LLC**  
 700 LOUISIANA ST. #33  
 HOUSTON, TX 77002  
 (925) 285-2510

SOLAR PV SYSTEM SUMMARY:  
 20MW AC SOLAR  
 PHOTOVOLTAIC GENERATION  
 SYSTEM

PROJECT NAME:  
 JOSHUA TREE SOLAR FARM

PROJECT ADDRESS:  
 5500 SUNFAIR ROAD.  
 JOSHUA TREE, CA 92252

**SITE PLAN  
 JOSHUA TREE SOLAR FARM  
 JOSHUA TREE  
 SAN BERNARDINO COUNTY, CALIFORNIA**

A	7/6/12	INITIAL SUBMITTAL		JD	WG
DATE		REVISION		SUBMIT BY	APPROV'D BY
<i>NOT ISSUED FOR CONSTRUCTION</i>					

**APPENDIX B**  
**SIMULATIONS**

## APPENDIX B SIMULATIONS

Figure 1:



**Existing Condition (PP22)** – View north from Base Line Road at the northern boundary of the Joshua Tree National Park toward the Project area.



**Simulation (PP22)** – The Project would be seen from a superior viewing position from approximately 1.8 miles south of the Project site. The low-profile and muted gray color of the solar panels helps to blend the facility into the surrounding landscape.

Figure 2:



Existing Condition (PP18) – View northwest from westbound Twentynine Palms Highway (SR-62) toward the Project area.



Simulation (PP18) – The Project would be seen from a level viewing position from approximately one mile south of the Project site. The low-profile of the solar panels would not block views of distant mountain ranges and the muted gray color of the solar panels helps to blend the facility in with the surrounding landscape.

Figure 3:



Existing Condition (PP7) – View south from residence on Walpi Drive toward the Project area and Joshua Tree National Park.



Simulation (PP7) – The Project would be seen from a level viewing location from approximately 0.15 mile north of the Project site. The low-profile of the solar panels would not block views of the Joshua Tree National Park. The Project would be partially to mostly screened by vegetation. The muted gray color of the solar panels would help to blend portions of the facility that would be seen in with the surrounding vegetation, minimizing contrast.

Figure 4:



**Existing Condition (PP5)** – View east from residences on Laferry Avenue toward the Project area, Copper Mountain and Joshua Tree National Park.



**Simulation (PP5)** – The Project would be seen from a level viewing location from approximately one mile west of the Project site. The low-profile of the solar panels would not block views of the mountain ranges. The Project would be partially to mostly screened by vegetation. The muted gray color of the solar panels would help to blend portions of the facility that would be seen in with the surrounding vegetation, minimizing contrast.

Figure 5:



**Existing Condition (PP17)** – View northeast from residence on Mile Square Road toward the Project area and Bartlett Mountains.



**Simulation (PP17)** – The Project would be seen from a superior viewing location from approximately 2 miles southeast of the Project site. The low-profile of the solar panels would not block views of the Bartlett Mountains. The Project would introduce geometric form within the landscape, however the muted gray color of the solar panels would help blend the facility with the surrounding vegetation minimizing contrast.

**APPENDIX C**  
**VISUAL CONTRAST RATING WORKSHEETS**



# VISUAL CONTRAST RATING WORKSHEET

## For KOPs on Non-NFS/BLM LANDS

### Section A: Project Information

<b>Project Name</b> Joshua Tree Solar Farm Project	<b>Key Observation Point</b> PP 5	<b>Latitude / Longitude</b> 34 9'25.52"N, 116 16'24.41" W	<b>Notes:</b> View east towards the project from residence on Laferny Ave.
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### Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	Foreground/Middleground (FG/MG): Horizontal, flat, level Background (BG): Gently sloping (bajada) leading to Irregular, domed (mountains)	FG/MG: Small, individual clumps (grass); Low individual irregular/loosely formed (shrubs); Low, individual, rounded and columnar (trees) BG: Indistinct (shrubs); Horizontal strips and irregular patches (trees)	FG/MG: Low, geometric (buildings); Numerous, tall, narrow (distribution poles) BG: Tall, narrow (radio/cell towers)
<b>LINE</b>	FG/MG: Horizontal, straight BG: Undulating, irregular, horizontal (ridgeline); Slightly curved/convex (Copper Mountain); Mountain silhouettes	FG/MG: Low straight line along the horizon; Rounded (trees); Diagonal abut edge (at road); irregular, patches BG: Thin, straight horizontal and diagonal (trees); Indistinct (shrubs)	FG/MG: Low and tall, straight, horizontal and vertical (buildings); Subtle, tall, straight, vertical (distribution poles) BG: Weak, straight, vertical (radio/cell towers)
<b>COLOR</b>	FG/MG: Light tan BG: Light tan, tan, brown	FG/MG: Dull olive green (shrubs), tan (grasses), dark green (trees) BG: Dull, grayish-green (shrubs); Dark green (trees)	FG/MG: White, tan (buildings); Brown (distribution poles) BG: Indistinguishable
<b>TEXTURE</b>	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium, uneven, sparse to dense BG: Fine grain, dense	FG/MG: Fine, simple (buildings); Fine, uniform, ordered (distribution poles) BG: Indistinguishable

### Section C: Proposed Activity Description

**HAS PHOTO SIMULATION BEEN CREATED FOR KOP?**  Yes  No **IF YES, FIGURE NUMBER:** **Figure 4, Appendix B**

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	No change	FG/MG: Vegetation (trees) would be removed, removing rounded forms within the landscape	MG: Individual solar panels are barely discernible. Solar field creates a long, narrow strip that is barely discernible. Removal of buildings removes geometric forms they create
<b>LINE</b>	No change	FG/MG: Vegetation (trees) would be removed, creating more of a linear horizon line	MG: Low, Horizontal, straight, thin band (solar field) is barely discernible; Some geometric (rectangular and square) forms are removed with the removal of existing buildings
<b>COLOR</b>	No change	FG/MG: Vegetation (trees) would be removed, removing some dark green vegetation	MG: Dark gray, matte (solar panels)
<b>TEXTURE</b>	No change	FG/MG: Vegetation (trees) would be removed, removing some of the fine, texture created by them	MG: Fine, simple

### Section D: Contrast Rating

### Section E: Viewer Sensitivity

		FEATURES												VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY	
		LAND/WATER				VEGETATION				STRUCTURES				High	Long	High	High	
ELEMENTS	DEGREE OF CONTRAST	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE					
	FORM				X									X				
	LINE				X									X				
	COLOR				X									X				
	TEXTURE				X									X				
<b>OVERALL LEVEL OF CONTRAST: Low</b>															<b>ADDITIONAL COMMENTS</b> The low-profile of the solar panels does not block background views of Copper Mountain and the Joshua Tree National Park. In addition, the muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast. The Project would be partially to mostly screened by vegetation.			
<b>EVALUATORS NAMES</b> Lori Davidson															<b>DATE</b> July 2, 2012			



# VISUAL CONTRAST RATING WORKSHEET

## FOR KOPs ON Non-NFS/BLM LANDS

### Section A: Project Information

<b>Project Name</b> Joshua Tree Solar Farm Project	<b>Key Observation Point</b> PP 7	<b>Latitude / Longitude</b> 34 9'31.54"N, 116 14'58.02" W	<b>Notes:</b> View south towards the project from residence on Walpi Drive.
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### Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	Foreground/Midground (FG/MG): Horizontal, flat, level Background (BG): Gently sloping (bajada) leading to Irregular, rugged (mountains)	FG/MG: Small, individual clumps of grass; Low individual irregular/loosely formed shrubs; Tall, individual, rounded and conical (trees) BG: Indistinct (shrubs); Horizontal strips and irregular patches (trees)	FG/MG: Low, geometric (buildings); Domed (building); Numerous, tall, narrow (distribution poles); Low, geometric, indistinct (fence) BG: Indistinguishable
<b>LINE</b>	FG/MG: Horizontal, straight BG: Irregular, horizontal (ridgeline)	FG/MG: Low straight line along the horizon; Rounded (trees); irregular, patches BG: Straight horizontal and diagonal edges (along roads and cleared parcels)	FG/MG: Straight, horizontal and vertical (buildings); Curved/convex (building); Subtle, tall, straight, vertical (distribution poles); Low, simple, straight (fence) BG: Indistinguishable
<b>COLOR</b>	FG/MG: Light tan BG: Light tan, tan, brown	FG/MG: Dull olive green, tan (grasses), dark green (trees) BG: Dull, grayish-green (shrubs); Dark green (trees)	FG/MG: Brown, dark brown, reddish-brown, white (buildings); Gray (fence); Dark brown (distribution poles) BG: Indistinguishable
<b>TEXTURE</b>	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium, uneven, sparse BG: Fine grain, dense	FG/MG: Fine, simple (buildings); Fine, uniform, ordered (distribution poles) BG: Indistinguishable

### Section C: Proposed Activity Description

**HAS PHOTO SIMULATION BEEN CREATED FOR KOP?**  Yes  No **IF YES, FIGURE NUMBER:** **Figure 3, Appendix B**

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	No change	FG: Vegetation (trees) would be removed, removing rounded forms within the landscape	FG: Individual solar panel structures are barely discernible. Solar field creates a long, narrow strip. Removal of existing buildings removes the geometric forms they create.
<b>LINE</b>	No change	FG: Vegetation (trees) would be removed, creating more of a linear horizon line	FG: Low, Horizontal, straight, thin band (solar field); Some geometric forms are removed with the removal of existing buildings.
<b>COLOR</b>	No change	FG: Vegetation (trees) would be removed, removing some dark green vegetation	FG: Light and dark gray, matte (solar panels)
<b>TEXTURE</b>	No change	FG: Vegetation (trees) would be removed, removing some of the fine, texture created by them	FG: Fine, simple, uniform, ordered

### Section D: Contrast Rating

### Section E: Viewer Sensitivity

#### FEATURES

VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY
High	Long	High	High

ELEMENTS	DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
FORM				X			X					X	
LINE				X			X					X	
COLOR				X			X					X	
TEXTURE				X			X					X	

**ADDITIONAL COMMENTS**  
The low-profile of the solar panels does not block background views of Joshua Tree National Park. In addition, the muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast. The Project would be partially to mostly screened by vegetation.

**EVALUATORS NAMES**  
Lori Davidson

**DATE**  
July 2, 2012

**OVERALL LEVEL OF CONTRAST:** Low



# VISUAL CONTRAST RATING WORKSHEET

## For KOPs on Non-NFS/BLM LANDS

### Section A: Project Information

<b>Project Name</b> Joshua Tree Solar Farm Project	<b>Key Observation Point</b> PP 17	<b>Latitude / Longitude</b> 34 7'32.85"N, 116 13'14.93" W	<b>Notes:</b> View northwest towards the project from residence on Mile Square Road.
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### Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	Foreground/Middleground (FG/MG): Gently rolling to horizontal, flat, level Background (BG): Low, domed (hills); Irregular, rugged (mountains)	FG/MG: Small, individual clumps (grass); Low individual irregular/loosely formed shrubs; Tall, individual, rounded and columnar (trees); Long, narrow, strip(trees) BG: Indistinguishable	FG/MG: Low, geometric and domed (buildings); Simple, geometric, transparent (fence); Numerous, tall, narrow (distribution poles) BG: Indistinguishable
<b>LINE</b>	FG/MG: Slightly undulating; Horizontal, straight BG: Slightly curved/convex (hills); Undulating, irregular, horizontal (ridgeline); Mountain silhouettes	FG/MG: Rounded (trees); Irregular patches; thin bands; Straight butt edge (against road) BG: Indistinguishable	FG/MG: Straight, horizontal and vertical, angular and rectangular, convex (buildings); Low, straight, uniform (fence); Tall, straight, thin (distribution poles) BG: Indistinguishable
<b>COLOR</b>	FG/MG: Light tan, tan BG: Tan, brown, dark brown	FG/MG: Dull olive green (shrubs), tan (grasses), Green, dark green (trees) BG: Indistinguishable	FG/MG: Tan, brown, white, gray(buildings); Light gray (fence) Dark brown (distribution poles) BG: Indistinguishable
<b>TEXTURE</b>	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium to coarse, uneven, dense BG: Fine grain, dense	FG/MG: Medium (buildings); Fine, uniform, ordered (fence and distribution poles) BG: Indistinguishable

### Section C: Proposed Activity Description

**HAS PHOTO SIMULATION BEEN CREATED FOR KOP?**  Yes  No **IF YES, FIGURE NUMBER:** **Figure 5, Appendix B**

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	No change	MG: Vegetation (trees) would be removed, removing rounded forms within the landscape; Shrubs would be removed creating geometric forms, however changes would not be visible due to project components	MG: Individual solar panels are not discernible. Solar field creates a long, narrow strip; Removal of existing buildings removes geometric forms they create
<b>LINE</b>	No change	MG: Vegetation (trees) would be removed, creating more of a linear horizon line; Shrubs would be removed creating straight horizontal and diagonal lines, however changes would not be visible due to project components	MG: Low, horizontal, straight, thin band (solar field); Some geometric (rectangular and square) forms are removed with the removal of existing buildings
<b>COLOR</b>	No change	MG: Vegetation (trees) would be removed, removing some dark green vegetation; Shrubs would be removed, removing dull olive green vegetation, however changes would not be visible due to project components	MG: Dark gray, matte (solar panels)
<b>TEXTURE</b>	No change	MG: Vegetation (trees/shrubs) would be removed, removing some of the fine texture created by them; Changes created by the removal of shrubs would not be visible due to project components	MG: Fine

### Section D: Contrast Rating

### Section E: Viewer Sensitivity

		FEATURES												VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY					
		LAND/WATER				VEGETATION				STRUCTURES				High	Long	High	High					
ELEMENTS	DEGREE OF CONTRAST	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	<b>ADDITIONAL COMMENTS</b> The low-profile of the solar panels does not block background views of the hills or Bartlett Mountains. In addition, the muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast.								
	FORM				X													X				
	LINE				X													X				
	COLOR				X													X				
	TEXTURE				X													X				
<b>OVERALL LEVEL OF CONTRAST: Low</b>															<b>EVALUATORS NAMES</b> Lori Davidson				<b>DATE</b> July 2, 2012			



# VISUAL CONTRAST RATING WORKSHEET

## For KOPs on Non-NFS/BLM LANDS

### Section A: Project Information

<b>Project Name</b> Joshua Tree Solar Farm Project	<b>Key Observation Point</b> PP 18	<b>Latitude / Longitude</b> 34 8'7.18"N, 116 14'3.11" W	<b>Notes:</b> View northwest towards the project from westbound SR-26/ Twenty-nine Palms Highway
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### Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	Foreground/Midground (FG/MG): Flat, level; Low, rolling (hills); Background (BG): Low, irregular and domed (mountains)	FG/MG: Small, individual clumps (grass); Low individual irregular/loosely formed shrubs; Tall, individual, rounded and conical (trees); Long, narrow, strip (trees) BG: Small, narrow strips; amorphous patches	FG/MG: Low, geometric and cylindrical (buildings); Numerous, tall, narrow (distribution poles) BG: Indistinguishable
<b>LINE</b>	FG/MG: Horizontal, straight BG: Slightly curved/convex, diagonal (hills); Undulating, irregular, horizontal (ridgeline); Mountain silhouettes	FG/MG: Low, horizontal, straight between valley and hills; Rounded, triangular (trees); Irregular patches; thin bands BG: Weak, horizontal thin bands (trees)	FG/MG: Straight, horizontal and vertical, angular and rectangular, convex (buildings); Tall, straight, thin, uniform (distribution poles) BG: Indistinguishable
<b>COLOR</b>	FG/MG: Light tan, tan BG: Tan, brown, dark brown	FG/MG: Dull olive green, green (shrubs), tan (grasses), Green, dark green (trees) BG: Dark green (trees); Muted, grayish-green (shrubs)	FG/MG: Brown, red, white, (buildings); Dark brown (distribution poles) BG: Indistinguishable
<b>TEXTURE</b>	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium grain, even, random, dense BG: Fine grain, dense	FG/MG: Fine to medium (buildings); Fine, uniform, ordered (distribution poles) BG: Indistinguishable

### Section C: Proposed Activity Description

**HAS PHOTO SIMULATION BEEN CREATED FOR KOP?**  Yes  No **IF YES, FIGURE NUMBER:** **Figure 2, Appendix B**

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	No change	MG: Vegetation (trees) would be removed, removing rounded forms within the landscape; Shrubs would be removed creating geometric forms, however changes would not be visible due to project components	MG: Individual solar panels are not discernible. Solar field creates a long, narrow strip; Removal of existing buildings removes geometric forms they create
<b>LINE</b>	No change	MG: Vegetation (trees) would be removed, creating more of a linear horizon line; Shrubs would be removed creating straight horizontal and diagonal lines, however changes would not be visible due to project components	MG: Low, horizontal, straight, thin band (solar field); Some geometric (rectangular and square) forms are removed with the removal of existing buildings
<b>COLOR</b>	No change	MG: Vegetation (trees) would be removed, removing some dark green vegetation; Shrubs would be removed, removing dull olive green vegetation, however changes would not be visible due to project components	MG: Dark gray, matte (solar panels)
<b>TEXTURE</b>	No change	MG: Vegetation (trees/shrubs) would be removed, removing some of the fine, texture created by them; Changes created by the removal of shrubs would not be visible due to project components	MG: Fine

### Section D: Contrast Rating

### Section E: Viewer Sensitivity

FEATURES												VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY			
ELEMENTS	DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES				High	Moderate	Low	High	
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE					
FORM	FORM			X				X				X		ADDITIONAL COMMENTS The low-profile of the solar panels does not block background views of the hills or Bartlett Mountains. In addition, the muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast.  EVALUATORS NAMES Lori Davidson				
LINE	LINE			X				X				X						DATE
COLOR	COLOR			X				X				X						July 3, 2012
TEXTURE	TEXTURE			X				X				X						OVERALL LEVEL OF CONTRAST: Low



# VISUAL CONTRAST RATING WORKSHEET

## For KOPs on Non-NFS/BLM LANDS

### Section A: Project Information

<b>Project Name</b> Joshua Tree Solar Farm Project	<b>Key Observation Point</b> PP 22	<b>Latitude / Longitude</b> 34 7'14.65"N, 116 14'21.62" W	<b>Notes:</b> View north towards the project from the boundary of Joshua Tree National Park
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### Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	Foreground/Midground (FG/MG): Gently rolling and sloped (bajada) to flat, level (valley) Background (BG): Low, irregular (mountains); Domed (hills)	FG/MG: Small, individual clumps (grass); Low individual irregular/loosely formed shrubs and tight formed cactus; Tall, individual, rounded and conical (trees) BG: Small, narrow strips; amorphous patches	FG/MG: Low, geometric and cylindrical (buildings); Tall, narrow (distribution poles); Distribution poles in MG are not discernible BG: Indistinguishable
<b>LINE</b>	FG/MG: Slightly undulating; Horizontal, straight BG: Slightly curved/convex, diagonal (hills); Undulating, irregular, horizontal (ridgeline and peaks); Mountain silhouettes	FG/MG: Low, horizontal, straight between bajada and valley; Low, rounded, irregular and thin bands (trees) BG: Weak, horizontal thin bands (trees)	FG/MG: Straight, horizontal and vertical, angular and rectangular, convex (buildings); Tall, straight, thin (distribution poles) BG: Indistinguishable
<b>COLOR</b>	FG/MG: Light tan, tan BG: Tan, brown, dark brown	FG/MG: Dull olive green, green (shrubs), tan (grasses), Green, dark green (trees); Yellowish-green (cacti) BG: Dark green (trees); Muted, grayish-green (shrubs)	FG/MG: Brown, red, white, gray (buildings); Dark brown (distribution poles) BG: Indistinguishable
<b>TEXTURE</b>	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium grain, even, random, dense BG: Fine grain	FG/MG: Fine to medium (buildings); Fine, uniform, ordered (distribution poles) BG: Indistinguishable

### Section C: Proposed Activity Description

**HAS PHOTO SIMULATION BEEN CREATED FOR KOP?**  Yes  No **IF YES, FIGURE NUMBER:** Figure 1, Appendix B

	LAND / WATER	VEGETATION	STRUCTURES
<b>FORM</b>	No change	MG: Vegetation (trees) would be removed, removing rounded forms within the landscape; Shrubs would be removed creating geometric forms, however changes would not be visible due to project components	MG: Individual solar panels are not discernible. Solar field creates a low, geometric block; Removal of existing buildings removes geometric forms they create
<b>LINE</b>	No change	MG: Vegetation (trees) would be removed, creating more of a linear horizon line; Shrubs would be removed creating straight horizontal and diagonal lines, however changes would not be visible due to project components	MG: Low, horizontal, straight and diagonal (solar field); Some geometric (rectangular and square) forms are removed with the removal of existing buildings
<b>COLOR</b>	No change	MG: Vegetation (trees) would be removed, removing some dark green vegetation; Shrubs would be removed, removing dull olive green vegetation, however changes would not be visible due to project components	MG: Dark gray, matte (solar panels)
<b>TEXTURE</b>	No change	MG: Vegetation (trees) would be removed, removing some of the fine, texture created by them; Changes created by the removal of shrubs would not be visible due to project components	MG: Fine

### Section D: Contrast Rating

### Section E: Viewer Sensitivity

		FEATURES												VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY	
ELEMENTS	DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES				High	Moderate	Low	High	
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE					
	FORM				X				X				X					
	LINE				X				X				X					
	COLOR				X				X				X					
TEXTURE				X				X				X						
<b>ADDITIONAL COMMENTS</b> The low-profile and muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast.																		
												EVALUATORS NAMES			DATE			
												Lori Davidson			July 3, 2012			
OVERALL LEVEL OF CONTRAST: Low																		