

EXECUTIVE SUMMARY

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INTRODUCTION

The proposed action evaluated within this Final Staff Assessment (FSA)/Draft Environmental Impact Statement (DEIS) is the construction and operation of the Ivanpah Solar Electric Generating System (ISEGS) project, a proposed solar-thermal electricity generation facility located on public lands managed by the Bureau of Land Management (BLM) in San Bernardino County, California. The FSA/DEIS represents a joint environmental review document developed by the California Energy Commission (Energy Commission) and BLM to evaluate potential impacts associated with the proposed action. The DEIS also functions as the environmental evaluation of a proposed amendment to BLM's California Desert Conservation Area (CDCA) Plan, which would identify the ISEGS project within the Plan.

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC, which are subsidiaries of BrightSource Energy, Inc. (applicant or BrightSource Energy), filed an Application for Certification (AFC) (07-AFC-5) for the proposed Ivanpah Solar Electric Generating System (ISEGS). The proposed ISEGS project and related facilities are under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification. As the proposed project would be located on public land, BrightSource Energy has also filed an application to BLM for a land use Right-of-Way pursuant to the Federal Land Policy and Management Act (FLPMA). Under FLPMA Title V (Rights-of-Way), the Secretary of Interior is authorized to grant rights-of-way for the purpose of allowing systems for generation, transmission, and distribution of electric energy. BrightSource Energy has also applied to the U.S. Department of Energy (DOE) for a loan guarantee pursuant to Title XVII of the EPAct. The application for a loan guarantee for Ivanpah 1 was made in November 2008, and the application for Ivanpah 2 and 3 was made in February 2009. BrightSource Energy has also applied to the U.S. Treasury Department for Payments for Specified Energy Property in Lieu of Tax Credits under §1603 of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5). This program offers a grant (in lieu of investment tax credit) to receive funding for 30% of the total capital cost at such time as a project achieves commercial operation (currently applies to projects that begin construction by December 31, 2010 and begin commercial operation before January 1, 2017).

This FSA/DEIS examines engineering, environmental, public health and safety aspects of the proposed project, based on the information provided by the applicant and other sources available at the time the FSA/DEIS was prepared. The FSA/DEIS contains analyses similar to those normally contained in an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA), as well as analyses required as part of an EIS prepared under the National Environmental Policy Act (NEPA).

When considering a project for licensing, the Energy Commission is the lead state agency under CEQA, and its process is functionally equivalent to the preparation of an

EIR. Similarly, BLM is the lead agency for the NEPA review of the proposed Right-of-Way and associated CDCA Plan Amendment. In August, 2007, the CEC and BLM California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of staff efforts, share staff expertise and information, promote intergovernmental coordination, and facilitate public review. Under the guidelines of the MOU, the Energy Commission developed the Preliminary Staff Assessment (PSA), which was published on December 9, 2008. The PSA was available for a 30-day public comment period. This document represents the Energy Commission's FSA, as well as the BLM's DEIS.

In support of its certification process, the Energy Commission staff has the responsibility to complete an independent assessment of the project's engineering design and its potential effects on the environment, the public's health and safety, and whether the project conforms with all applicable laws, ordinances, regulations and standards (LORS). The staff also recommends measures to mitigate potential significant adverse environmental effects and conditions of certification for construction, operation and eventual closure of the project, if approved by the Energy Commission. This FSA is not the decision document for these proceedings nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local/state/federal legal requirements. The FSA/DEIS will serve as staff's testimony in evidentiary hearings to be held by the Committee of two Commissioners who are overseeing this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by staff, the applicant, all parties, government agencies, and the public prior to proposing its decision. The Energy Commission will make a final decision, including findings, after the Committee's publication of its proposed decision.

In support of its Right-of-Way and CDCA Plan Amendment processes, the BLM has the responsibility to evaluate the environmental impacts of the proposed action, the No Action alternative, and other alternative actions that may meet the purpose and need for the proposed project. The FSA/DEIS is available for a 90-day public comment period. Following completion of that period, BLM will review and develop responses to comments provided by the public and other agencies. The responses to the comments, and other information identified during this period, will be incorporated into a Final EIS (FEIS), which will make a recommendation regarding the preferred alternative. A Notice of Availability (NOA) of the FEIS will be published when the FEIS becomes available for public review. The FEIS will be available for public review for 30-days before the BLM issues a Record of Decision (ROD). The decision regarding the ROW grant is appealable to the Interior Board of Land Appeals upon issuance of the ROD.

PROJECT LOCATION AND DESCRIPTION

The applicant has proposed to locate the ISEGS project in the Mojave Desert, near the Nevada border in San Bernardino County, California, on land administered by the Bureau of Land Management (BLM). The proposed project site is located 4.5 miles southwest of Primm, Nevada and 0.5 mile west of the Primm Valley Golf Club which is

located just west of the Ivanpah Dry Lake. Access to site is from the Yates Well Road Interchange on I-15 via Colosseum Road.

The proposed ISEGS project is a solar concentrating thermal power plant, which is comprised of fields of heliostat mirrors focusing solar energy on boilers located on centralized power towers. Each mirror will track the sun throughout the day and reflect the solar energy to the receiver boiler. In each plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheats steam from the solar reheater. The solar field and power generation equipment would be put into operation each morning after sunrise and insolation build-up, and shut down in the evening when insolation drops. Electricity would be produced by each plant's solar receiver boiler and the steam turbine generator.

The applicant proposes to develop the ISEGS project in three phases which are designed to generate a total of 400 MW of electricity. The first two phases of the project, Ivanpah 1 and 2, are designed to provide 100 MW of electricity and would occupy approximately 914 acres and 921 acres respectively; the 200 MW phase, Ivanpah 3, would require occupy approximately 1,836 acres. All three phases would be share an administration building, an operation and maintenance building, and substation which would be located in between Ivanpah 1 and 2 requiring an additional area of approximately 25 acres. Linear facilities, including re-routing of Colosseum Road, and natural gas, water, and transmission lines would require an additional 56 acres. Another 321 acres is needed for construction staging activities. ISEGS total project footprint amounts to approximately 4,073 acres (approximately 6.4 square miles).

SOLAR POWER PLANT EQUIPMENT AND FACILITIES

HELIOSTATS

Each heliostat would be configured with two mirrors hung in the portrait position. Each mirror would be 7.2 feet high by 10.5 feet wide, providing a reflective surface of 75.6 square feet (7.04 m²) per mirror or 14.08 m² per heliostat (See **Project Description Figure 4 – Double Mirror Heliostat**). The heliostats would be connected with communication cables strung aboveground between each heliostat. The communications cables would transmit signals from a computer-programmed aiming control system that would direct the movement of each heliostat to track the movement of the sun (CH2ML2009f). The number of heliostats described under the Optimized Project Design (55,000 each for Ivanpah 1 and 2, and 104,000 for Ivanpah 3) represents the maximum number of heliostats that would be constructed; however, all of them may not be constructed.

SOLAR POWER TOWERS

The site design would include one power tower for each Ivanpah 1 and 2 and five towers within Ivanpah 3, with heights of 459 feet each. The central power tower of Ivanpah 3 would include the power block with one steam turbine-generator (STG) supplied superheated steam by the five power tower boilers. Steam from the four quadrant solar power tower boilers would be conveyed by above-ground pipeline.

Each solar power tower would be a metal structure designed specifically to support the boiler and efficiently move high-quality steam through a STG at its base. The power tower support structure would be about 120 meters high (approximately 393 feet). The receiving boiler (which sits on top of the support structure) would be 20 meters tall (approximately 66 feet) including the added height for upper steam drum and protective ceramic insulation panels (See **Project Description Figure 5 – Power Block and Power Tower Elevations**). Additionally, a Federal Aviation Administration (FAA)-required lighting and a lightning pole would extend above the top of the towers approximately 10 feet. The height of the power towers allows heliostats from significant distances to accurately reflect sunlight to the receiving boiler. The receiving boiler is a traditional high-efficiency boiler positioned on top of the power tower. The boiler converts the concentrated energy of the sun reflected from the heliostats into superheated steam. The boiler's tubes are coated with a material that maximizes energy absorbance. The boiler has steam generation, superheating, and reheating sections and is designed to generate superheated steam at a pressure of 160 bars and a temperature of 550 degrees Celsius (°C).

POWER BLOCK

Each solar power plant (Ivanpah 1, 2 and 3) would have a power block located in the approximate center of the power plant area. The power block would include a solar power tower, a receiver boiler, a steam turbine-generator (STG) set, air-cooled condensers, and other auxiliary systems. Each of the three solar-thermal plants would include the following equipment and facilities in their power block:

- natural gas-fired start-up boiler;
- the air emission control system for the combustion of natural gas in the start-up boiler;
- steam turbine generator;
- air-cooled condenser;
- auxiliary equipment (feed water heaters, a de-aerator, an emergency diesel generator, diesel fire pump, etc.);
- a raw water tank with a 250,000 gallon capacity, to supply water for plant use and fire fighting; and a
- water treatment system.

RELATED EQUIPMENT AND FACILITIES

NATURAL GAS PIPELINE

The solar heat used in the boiler (steam) process would be supplemented by burning natural gas to heat a partial load steam boiler when solar conditions are insufficient. Each power plant within the project would include a small package, natural gas-fired start-up boiler to provide additional heat for plant start-up and during temporary cloud cover. Natural gas would be supplied to the site through a new, proposed six-mile long distribution pipeline ranging from 4 to 6 inches in diameter. From the Kern River Gas Transmission pipeline, the pipeline would extend 0.5 miles south to the northern edge of

Ivanpah 3. The line would then run east along the northern edge, and then south along the eastern edge, of Ivanpah 3 to a metering station near the southeast corner of Ivanpah 3. From there, a supply line would extend northwest into the Ivanpah 3 power block. The main pipeline would continue along the eastern edge of Ivanpah 2 to another metering station at its southeastern corner. Again, a branch supply line will extend northwestwards into the center of the Ivanpah 2 power block. From that station, the pipeline would follow the paved access road from Colosseum Road past the administration/warehouse building to the Ivanpah 1 power block. A new tap metering station of approximately 100 feet by 150 feet in area would be located at the Kern River Gas Transmission Line.

AIR POLLUTION CONTROL

Air pollution emissions from the combustion of natural gas in the start-up boiler would be controlled using best available control technology. Each boiler would be equipped with low-Nitrogen Oxide (NO_x) burners for NO_x control. Carbon Monoxide (CO) would be controlled using good combustion practices such as burner and control adjustment based on oxygen continuous monitoring, operator training and proper maintenance. Particulate and Volatile Organic Compounds (VOC) emissions will be minimized through the use of natural gas as the fuel.

WATER SUPPLY AND DISCHARGE

The facilities would require a water source to support operations, including process water consisting of make-up water for the steam system and wash water for the heliostats, and potable water for domestic water needs. Groundwater would be supplied from one of two wells that would be constructed at the northwest corner of Ivanpah 1, just outside the perimeter fence but within the construction logistics area. Each of the three power blocks would be connected to the groundwater wells by underground water pipelines. The applicant estimates project water consumption would not exceed a maximum of 100 acre-feet per year for all three solar plants combined, which would primarily be used to provide water for washing heliostats (mirrors) and to replace boiler feed water blow-down.

The quality of groundwater would be improved using a treatment system for meeting the requirements of the boiler make-up and mirror wash water. Water treatment equipment would consist of activated carbon filters, de-ionization media, and a mixed-bed polisher. Each power plant would have a 250,000 gallon raw water storage tank. Approximately 100,000 gallons would be usable for plant process needs and 150,000 gallons would be reserved for fire protection. Demineralized water would be stored in a 25,000-gallon demineralized water storage tank. Boiler feedwater make-up water would be stored in another 25,000-gallon tank.

FIRE PROTECTION

The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be the 250,000 gallon raw water storage tank to be located in each power block. Approximately 100,000 gallons would be usable for plant process needs and 150,000 gallons would be reserved for fire protection. All fire protection systems would

be focused on the power blocks, administration/warehouse building, and other areas of active operations. The project would not include any specific facilities to address potential wild fires.

ACCESS ROADS AND MAINTENANCE PATHS

Access to the project site would occur from the Yates Well Road exit from I-15 to Colosseum Road. Colosseum Road, currently a dirt road, would be paved to a 30-foot wide, two lane road for a distance of 1.9 miles from the Primm Valley Golf Club to the facility entrance. Because the current route of Colosseum Road would be incorporated into the Ivanpah 2 plant site, the road would be re-routed around the southern end of Ivanpah 2 before re-joining the current road to the west of the proposed facility.

Within the heliostat fields, maintenance paths would be established concentrically around the power blocks to provide access for heliostat washing and maintenance. The paths would be established between every other row of heliostats. An additional maintenance path would be established on the inside perimeter of the boundary fence. Within each unit, a diagonal dirt road would be established to provide access to the concentric maintenance paths and the power blocks.

Off-road, recreational vehicle trails currently authorized by BLM which run through the proposed project site would be re-located outside of the project boundary fence.

CONSTRUCTION LOGISTICS AREA, SUBSTATION, AND ADMINISTRATIVE COMPLEX

The applicant proposes using a temporary construction logistics area for staging contractor equipment and trailers, assembly yards, storage of materials, equipment laydown and wash area, construction personnel parking, and assembly areas for heliostats. The construction logistics area would be located between Ivanpah 1 and 2 and would comprise approximately 377.5 acres. Following project construction, the majority of the area would undergo site closure, rehabilitation, and revegetation as described in the Draft Closure, Revegetation, and Rehabilitation Plan (CH2ML2009q).

FENCING

The project area would be surrounded by security fence, which would be constructed of 8-foot tall galvanized steel chain-link, with barbed wire at the top as required. The security fence would surround the outer perimeter of each power plant, the substation, and the administrative complex. Tortoise barrier fence would also be installed in accordance with the Recommended Specifications for Desert Tortoise Exclusion Fencing (USFWS 2005). The tortoise fence would consist of 1-inch horizontal by 2-inch vertical galvanized welded wire. The fence would be installed to a depth of 12 inches, and would extend 22 to 24 inches above the ground surface and integrated with the security fence.

In addition to use of the proposed right-of-way area, the applicant proposes some project-related activities to occur outside of the project fence, on land not included within the proposed right-of-way area. These would include inspection and maintenance of the fence, underground utility repairs, maintenance of drainage systems, and possible installation of new stormwater drainage systems. In addition to these activities, a

roadway would need to be maintained outside of the project fence to allow vehicle and equipment access for these activities.

TRANSMISSION SYSTEM INTERCONNECTION AND UPGRADES

The ISEGS project would deliver power from Ivanpah 1, 2 and 3 via three separate 115-kilovolt (kV) transmission generation tie lines to a new Ivanpah substation that would be owned and operated by Southern California Edison and located in the common construction logistics area between Ivanpah 1 and 2. The new Ivanpah substation would be about 850 feet by 850 feet and located on a little over 16 acres. Each of the power plants would have a switchyard with a step-up transformer to increase the 13.8 kV generator output voltage to 115 kV. Each switchyard would connect to SCE's Ivanpah Substation. The existing Eldorado-Baker-Cool Water-Dunn Siding-Mountain Pass 115-kV line would loop in and out through the newly built Ivanpah Substation to interconnect the project to the SCE transmission grid.

In order to accommodate the total anticipated 1,400 MW load generation by ISEGS and five other planned renewable energy generation projects in the region, the California Independent System Operator (California ISO) has identified approximately 36 miles of transmission line within California and Nevada that would need to be upgraded from 115 kV to 220 kV. SCE is in the process of developing a project to upgrade the transmission system, which includes removing the existing 115-kV transmission lines and constructing a new double-circuit 220-kV transmission line between the existing Eldorado Substation in Nevada and the proposed new Ivanpah Substation in California. SCE has filed an application for a Certificate of Public Convenience and Necessity from the California Public Utilities Commission (CPUC) for the transmission line upgrade. They have also filed an application for a ROW from the BLM. The CPUC will serve as the lead agency for CEQA compliance for the approximately five-mile portion of the transmission line work within California. BLM will serve as the lead agency for National Environmental Policy Act compliance.

TELECOMMUNICATIONS FACILITIES

The proposed Ivanpah Substation would also require that new telecommunication infrastructure be installed to provide protective relay circuit and a supervisory control and data acquisition (SCADA) circuit, together with data and telephone services. The telecommunication path from Ivanpah Substation to the local carrier facility interface at Mountain Pass area consists of approximately eight miles of fiber optic cable to be installed overhead on existing poles and through new underground conduits to be constructed in the substation and telecom carrier interface point. The fiber cable would be installed on the existing 12-kV distribution line poles.

PROJECT DESIGN AND MANAGEMENT APPROACH

STORMWATER MANAGEMENT APPROACH

The proposed project site is located on an alluvial fan that acts as an active stormwater conveyance between the Clark Mountain Range to the west and the Ivanpah Dry Lake to the east. The applicant's proposed stormwater design and management system is a Low-Impact Development (LID) design concept which attempts to minimize disruption to

natural stormwater flow pathways. The elements of the applicant's design approach include minimizing the areas of direct removal of vegetation, minimizing the areas of grading and leveling, and minimizing the amount of active management of stormwater in engineered channels, ponds, and culverts.

PROJECT CONSTRUCTION

The applicant anticipates ISEGS construction would be performed in the following order: 1) the Construction Logistics Area; 2) Ivanpah 1 (the southernmost site) and other shared facilities; 3) Ivanpah 2 (the middle site); and 4) Ivanpah 3 (the 200-MW plant on the north). However, it is possible that the order of construction may change. The shared facilities will be constructed in connection with the first plant construction, whether it is Ivanpah 1, 2, or 3. Prior to construction, geotechnical testing, heliostat installation tests, and heliostat load tests would be performed in each of the three units. Construction is planned to take place over approximately 48 months, with the applicant's desire that it could begin during the first quarter of 2010 and be completed during the fourth quarter 2013.

Project construction would be performed in accordance with plans and mitigation measures that would assure the project conforms with applicable LORS and would avoid significant adverse impacts. These plans that are to be developed by the applicant, for which some have already been prepared in draft and reviewed by staff to support this environmental analysis, and the necessary mitigation measures, are specified in the Conditions of Certification as appropriate of each technical area of this FSA/DEIS. Of the plans already prepared in draft by the applicant, those that have contributed most significantly to define the proposed plan of development including construction procedures are as follows:

- Draft Contractor Health and Safety Standards (CH2ML 2009g)
- Administrative Draft ISEGS Construction Stormwater Pollution Prevention Plan (CH2ML 2009d)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2ML 2009e)
- Draft Raven Management Plan, ISEGS (CH2ML 2008v)
- Draft Desert Tortoise Translocation/Relocation Plan for ISEGS (CH2ML 2009c)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2ML2009i)
- Draft Biological Assessment for the ISEGS Project (CH2ML 2008u)
- Streambed Alteration Agreement Application (CH2ML 2009j)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2ML 2008o)

FACILITY OPERATION AND MAINTENANCE

The proposed project would be designed for an operational life of 50 years. During this period, project operations would be supported by a variety of operational, maintenance, and monitoring activities. Within the power blocks, operations would include transmission of water and natural gas into the power block, and operation of the natural

gas-fired start-up boiler, the air emission control system for the combustion of natural gas in the start-up boiler, a steam turbine generator, an air-cooled condenser, and auxiliary equipment (feed water heaters, a de-aerator, and an emergency diesel generator, diesel fire pump).

Within the heliostat fields, operations would include routine washing of mirrors on a rotating basis, every two weeks. Washing would utilize water accessed from the groundwater supply wells, following treatment in the water treatment system. Washing would be done using a truck-mounted pressure washer. Maintenance would also include clipping of vegetation that could interfere with mirror movement to a height of 12 – 18 inches, management of weeds as specified in the Applicant's Weed Management Plan (CH2ML2008o), and use of soil binder and weighting agents to minimize dust accumulation on the mirrors and fugitive dust as could occur by wind or vehicle traffic.

WASTE MANAGEMENT

Non-hazardous solid wastes generated during construction would include approximately 280 tons of scrap wood, concrete, steel/metal, paper, glass, scrap metals and plastic waste (BSE2007a, § 5.14.4.1.1). All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a Class III solid waste disposal facility. Hazardous wastes would be recycled to the extent possible and disposed in either a Class I or II waste facility as appropriate. All operational wastes produced at ISEGS would be properly collected, treated (if necessary), and disposed of at either a Class I or II waste facility as appropriate. Wastes include process and sanitary wastewater, nonhazardous waste and hazardous waste, both liquid and solid. A septic system for sanitary wastewater would be located at the administration building/operations and maintenance area, located between Ivanpah 1 and 2. Portable toilets would be placed in the power block areas of each the three solar facilities and pumped by a sanitary service provider. Process wastewater from all equipment, including the boilers and water treatment equipment would be recycled.

HAZARDOUS WASTE MANAGEMENT

Hazardous materials used during facility construction and operations would include paints, epoxies, grease, transformer oil, and caustic electrolytes (battery fluid). Several methods would be used to properly manage and dispose of hazardous materials and wastes. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in large storage tanks, while most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in concrete containment areas.

PROJECT DECOMMISSIONING

Following the operational life, estimated at 50 years, the project owner would perform site closure activities to meet federal and state requirements for the rehabilitation and revegetation of the project site after decommissioning. The procedures to be used for project decommissioning and restoration are defined in the Applicant's Draft Closure, Revegetation, and Rehabilitation Plan (CH2ML2009q). Under this plan, all aboveground structures and facilities would be removed to a depth of three feet below

grade, and removed offsite for recycling or disposal. Concrete, piping, and other materials existing below three feet in depth would be left in place. Areas that had been graded would be restored to original contours. Succulent plant species would be salvaged prior to construction, transplanted into windrows, and maintained for later transplanting following decommissioning. Shrubs and other plant species would be revegetated by the collection of seeds, and re-seeding following decommissioning. Decommissioning would be subject to many of the same environmental protection plans as are required for construction.

PUBLIC AND AGENCY COORDINATION

Both the Energy Commission's CEQA-equivalent process and the BLM's NEPA process provide opportunities for the public and other agencies to participate and consult in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. The following subsections describe the status of these outreach efforts.

Agency Coordination

The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, both the Commission and BLM typically seek comments from and work closely with other regulatory agencies that administer LORS that may be applicable to the proposed project. The following paragraphs describe the agency coordination that has occurred through this joint SA/EIS process.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, USACE reviews proposed projects to determine whether they may impact such resources, and/or be subject to a Section 404 permit. Throughout the FSA/DEIS process, the Energy Commission, BLM, and the applicant have provided information to the USACE to assist them in making a determination regarding their jurisdiction and need for a Section 404 permit. The USACE rendered a final opinion on May 28, 2009 concluding that the project does not affect waters of the U.S., and thus does not require such a permit.

National Park Service

The National Park Service manages the Mojave National Preserve (MNP), which is located near the proposed project area. Because of the proximity of the MNP, the Park Service has been invited to participate in scoping meetings and public workshops, and has been provided the opportunity review and provide comment on the PSA and FSA/DEIS.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may

adversely affect a federally-listed species. The desert tortoise (*Gopherus agassizii*), which occurs in the proposed project area, is a federally-listed threatened species, and therefore formal consultation with the USFWS is required. This consultation has been initiated through the preparation and submittal of a Biological Assessment (BA) which describes the proposed project to the USFWS. Following review of the BA, the USFWS is expected to issue a Biological Opinion (BO) which will specify mitigation measures that must be implemented for the protection of the desert tortoise.

State Water Resources Control Board/Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board (RWQCB) has the authority to protect both surface water and groundwater resources at the proposed project location. Throughout the FSA/DEIS process, the Energy Commission, BLM, and the applicant have invited the RWQCB to participate in public scoping and workshops, and have provided information to assist the agency in evaluating the potential impacts and permitting requirements of the proposed project. The RWQCB has responded by providing comments that have been evaluated and incorporated into the FSA/DEIS analysis. The agency has also made a determination that the proposed project would impact waters of the state, and has specified conditions to satisfy requirements of a dredge and fill permit/waste discharge requirements. These requirements have been included as a recommended Condition of Certification/Mitigation Measure in the **Soil and Water** section.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) has the authority to protect water resources of the state through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The Energy Commission, BLM, and the applicant have provided information to CDFG to assist in their determination of the impacts to streambeds, and identification of permit and mitigation requirements. The applicant filed a Streambed Alteration Agreement with CDFG on June 2, 2009. The requirements of the Streambed Alteration Agreement will be included as a recommended Condition of Certification/Mitigation Measure.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA). On May 22, 2009, the applicant filed an application for authorization for incidental take of the desert tortoise under Section 2081(b) of the CESA. The requirements of the Incidental Take Permit have been included as a recommended Condition of Certification/Mitigation Measure.

County of San Bernardino

On March 18, 2008, the BLM California Desert District entered into an MOU with the County of San Bernardino to coordinate environmental reviews for renewable energy projects on public land within the County. Under this MOU, BLM invites the County to become a cooperating agency for EISs, and provides opportunities for County staff to review and participate in technical discussions and analyses. For the proposed project, the County has elected to become a cooperating agency. BLM continues to provide the County with project-related documentation for their review and evaluation, and the County has provided guidance for protection of groundwater resources which has been incorporated into the **Soil and Water** Section of this document.

Public Coordination

Both the Energy Commission's CEQA-equivalent process and the BLM's NEPA process provide opportunities for public participation in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. For the Energy Commission, this outreach program is primarily facilitated by the Public Adviser's Office (PAO). As part of the coordination of the environmental review process required under the Energy Commission/BLM California Desert District MOU, the agencies have jointly held public meetings and workshops which accomplish the public coordination objectives of both agencies. This is an ongoing process that to date has involved the following efforts.

Libraries

The AFC was sent to the main county libraries in San Bernardino, Barstow, Fresno, and Eureka; the main branches of the San Diego and San Francisco public libraries; the University Research Library at UCLA; the California State Library, and the Energy Commission's library in Sacramento.

Outreach Efforts

The PAO's public outreach is an integral part of the Energy Commission's AFC review process. The PAO reviewed information provided by the applicant and also conducted its own outreach efforts to identify and locate local elected and certain appointed officials, as well as "sensitive receptors" (including schools, community, cultural and health facilities and daycare and senior-care centers, as well as environmental and ethnic organizations). There were not any sensitive receptors identified within a six-mile radius of the proposed site for the project.

Notices for workshops and hearings have been and will continue to be distributed to those agencies, individuals, and businesses that are currently on or request to be placed on the project's mailing list. Notices were distributed for the Informational Hearing and Site Visit, which was conducted on January 4, 2008, in Primm, Nevada. An additional Informational Hearing was held, also in Primm, on January 25, 2008.

Coincident with the PAO's outreach efforts, BLM solicited interested members of the public and agencies through the NEPA scoping process. BLM published a Notice of Intent to develop the EIS and amend the CDCA Plan in the Federal Register, Vol. 72, No. 214, page 62671, on November 6, 2007. The Energy Commission's January 4, 2008 Informational Hearing also acted as the Public Scoping meetings for the EIS, as required by NEPA. On January 9, 2009, BLM published notice of an extension of the public scoping period, and plans to hold an additional joint public scoping meeting on January 25, 2008.

Throughout the process, the Energy Commission and BLM have held additional joint Issue Resolution workshops which were announced and made available to the public. These workshops were held on June 23, 2008 in Primm, Nevada, and on July 31, 2009 in Sacramento, California. A PSA Workshop was held in Primm, Nevada on January 9, 2009. The Energy Commission has also continued to accept and consider public comments, and has granted petitions to intervene to six interested groups including

Defenders of Wildlife, Sierra Club, Basin and Range Watch, and Center for Biological Diversity (June 2, 2009), California Native Plant Society, and Western Watersheds.

Those agencies and individuals that have provided comments concerning the project have been considered in staff's analysis. This FSA/DEIS provides agencies and the public with an opportunity to review the Energy Commission staff's analysis of the proposed project. Comments received on this FSA/DEIS will be taken into consideration in preparing the subsequent project documents, including the FEIS.

The AFC, the PSA, this FSA/DEIS, and other project documents are located on the Energy Commission's website at <http://www.energy.ca.gov/sitingcases/ivanpah/index.html>.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the USEPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The purpose of the screening analysis is to determine whether a minority or low-income population exists within the potentially affected area of the proposed site. For all siting cases, Energy Commission staff conducts an environmental justice screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in USEPA's National Environmental Policy Act (NEPA) Compliance Analysis" dated April 1998, which defined minority populations as either:

- the minority population of the affected area is greater than 50% of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

California Statute, Section 65040.12 (c) of the Government Code, defines "environmental justice" to mean "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." In light of the progress made by federal environmental agencies on environmental justice, the Energy Commission has examined federal guidelines pursuant to its desire to follow environmental justice principles for the environmental review of this project.

The steps recommended by these guidance documents to assure compliance with the Executive Order are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a

detailed examination of the distribution of impacts on segments of the population. Though the Federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing this environmental justice analysis. Staff has followed each of the above steps for the following 11 sections in the FSA/DEIS: Air Quality, Hazardous Materials, Land Use, Noise, Public Health and Safety, Socioeconomics and Environmental Justice, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management.

According to the Census 2000 data there were 36 people within six miles of the proposed project site which resided within California. With 10 people (27.8 percent) of the total California residents classified as minority (see **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE FIGURE 1**), no census blocks within a six-mile radius of the proposed ISEGS site contain minority populations greater than 50 percent. The 2000 Census block data did not identify any California residents living below the designated poverty level within a six-mile radius of the project site.

No minority communities or low income communities are located within or adjacent to the proposed project areas. The proposed action would not impact distinct Native American cultural practices or result in disproportionately high or adverse human health or environmental effects on minority communities.

STAFF'S ASSESSMENT

Each technical area section of the FSA/DEIS contains a discussion of the project setting, impacts, and where appropriate, mitigation measures and conditions of certification. The FSA/DEIS includes the staff's assessment of:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project closure;
- project alternatives;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation;
- environmental justice for minority and low income populations, when appropriate; and
- proposed mitigation measures/conditions of certification.

SUMMARY OF PROJECT RELATED IMPACTS

The analysis of project-related direct and indirect impacts within this FSA/DEIS shows that, with the exception of Biological Resources and Visual Resources, the ISEGS project's potential impacts would be mitigated to a less than significant level. With respect to Biological Resources, the staff believes that the impact of the project on special-status plant species is a significant cumulative impact that cannot be reduced to less-than-significant levels. With respect to Visual Resources, staff believes the direct impacts to Visual Resources are significant and unmitigable. Staff's analysis has also identified cumulative impacts which are significant and unmitigable in the areas of Biological Resources (i.e. special-status plant species), Land Use, Traffic and Transportation, and Visual Resources. Staff's analysis also shows that the ISEGS project would not comply with all of the applicable laws, ordinances, regulations, and standards (LORS) that pertain to the San Bernardino County General Plan that are considered in the areas of Land Use and Visual Resources.

The following table summarizes the potential environmental impacts and LORS compliance for each technical section. Following the table is a discussion of the conclusions with respect to all resource areas. Please see the appropriate section of this document for more detailed discussions of the environmental settings, impacts, and proposed mitigation measures and Conditions of Certification for each resource area.

Technical Area	Complies with LORS	Direct & Indirect Impacts Fully Mitigated	Cumulative Impacts Fully Mitigated
Air Quality	Yes	Yes	Yes
Biological Resources	Yes	No	No
Cultural Resources and Native American Values	Yes	Yes	Yes
Facility Design	Yes	Yes	Yes
Geology, Paleontology, and Minerals	Yes	Yes	Yes
Hazardous Materials Management	Yes	Yes	Yes
Land Use	No	Yes	No
Livestock Grazing	Yes	Yes	Yes
Noise and Vibration	Yes	Yes	Yes
Public Health and Safety	Yes	Yes	Yes
Power Plant Efficiency	Not Applicable	Not Applicable	Yes
Power Plant Reliability	Not Applicable	Not Applicable	Yes
Recreation	Yes	Yes	Yes
Socioeconomic and Environmental Justice	Yes	Yes	Yes
Soil and Water Resources	Yes	Yes	Yes
Traffic and Transportation	Yes	Yes	No
Transmission Line Safety/Nuisance	Yes	Yes	Yes
Transmission System Engineering	Yes	Yes	Yes
Visual Resources	No	No	No
Waste Management	Yes	Yes	Yes
Wild Horses and Burros	Yes	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes	Yes

AIR QUALITY

With respect to potential impacts on air quality, the Staff has made the following conclusions about the proposed project:

- The project would not have the potential to exceed PSD emission levels during direct source operation and the facility is not considered a major stationary source with potential to cause significant NEPA air quality impacts. However, without adequate fugitive dust mitigation, the project would have the potential to exceed the General Conformity PM10 applicability threshold during construction and operation, and could cause potential localized exceedances of the PM10 NAAQS during construction. This potential exceedance of federal air quality standards would be

considered a direct, adverse significant impact under NEPA. This impact would be less than significant with the proposed construction and operation mitigation measures controlling fugitive dust. Recommended Conditions of Certification **AQ-SC1** through **AQ-SC4**, for construction, and **AQ-SC7**, for operation, will mitigate these potentially significant NEPA impacts.

- The project would comply with applicable District Rules and Regulations, including New Source Review requirements, and staff recommends the inclusion of the Districts FDOC conditions as Conditions of Certification **AQ-1** through **AQ-39** and the addition of staff recommended Condition of Certification **AQ-SC9** to ensure that the emergency engines meet applicable model year emission standards.
- The project's construction activities would likely contribute to significant CEQA adverse PM10 and ozone impacts. Staff recommends **AQ-SC1** to **AQ-SC5** to mitigate the potential impacts.
- The project's operation would not cause new violations of any NO₂, SO₂, PM2.5 or CO ambient air quality standards, and therefore, the project direct operational NO_x, SO_x, PM2.5 and CO emission impacts are not CEQA significant.
- The project's direct and indirect, or secondary emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are likely CEQA significant if unmitigated. Therefore, staff recommends **AQ-SC6** to mitigate the onsite maintenance vehicle emissions and **AQ-SC7** to mitigate the operating fugitive dust emissions to ensure that the potential ozone and PM10 CEQA impacts are mitigated to less than significant over the life of the project.
- Staff recommends **AQ-SC10** to formalize the applicant's stipulation that "Heat input from natural gas will not exceed 5 percent of the heat input from the sun, on an annual basis", which also generally corresponds to the amount of operation included in the applicant's air dispersion modeling impact analysis.
- The project would be consistent with the requirements of SB 1368 and the Emission Performance Standard for greenhouse gases (see **Appendix Air-1**).

BIOLOGY

The Ivanpah Solar Electric Generating System (ISEGS) project would have major impacts to the biological resources of the Ivanpah Valley, substantially affecting many sensitive plant and wildlife species and eliminating a broad expanse of relatively undisturbed Mojave Desert habitat. Approximately 4,073 acres of occupied desert tortoise habitat would be permanently lost and a minimum of 25 desert tortoises would need to be translocated west of the ISEGS project site. These actions would require state and federal endangered species "take" authorization. In addition to direct loss of habitat, the project would fragment and degrade adjacent habitat, and could promote the spread of invasive non-native plants and desert tortoise predators such as ravens. These impacts would directly and adversely affect habitat for a threatened species (the desert tortoise), and would likely be highly controversial. Based on these factors, the proposed project would result in impacts that would be significant with respect to NEPA significance criteria in 40 CFR 1508.27.

Other special-status wildlife species potentially impacted by the project because of loss of breeding and/or foraging habitat include burrowing owl, loggerhead shrike, Crissal thrasher, golden eagle, and American badger. The project would also affect approximately 2,000 ephemeral drainage segments on the ISEGS site, potentially resulting in direct or indirect impacts to the wildlife functions and values provided by 198 acres of waters of the state.

The ISEGS project site supports a diverse flora including numerous special-status plant species. Eight special-status plant species, only one of which is considered sensitive by the Bureau of Land Management (BLM), would be directly impacted by construction of ISEGS. Energy Commission staff consider impacts to five of these (Mojave milkweed, desert pincushion, nine-awned pappus grass, Parish's club-cholla, and Rusby's desert-mallow) to be significant according to California Environmental Quality Act (CEQA) guidelines because the project would eliminate a substantial portion of their documented occurrences in the state. Depending on the degree of avoidance that the applicant can achieve, Energy Commission staff's proposed avoidance and minimization measures may reduce impacts to three of these species (desert pincushion, nine-awned pappus grass, and Parish's club-cholla) to less-than-significant levels. However, impacts to Mojave milkweed and Rusby's desert-mallow would remain significant in a CEQA context even after implementation of the special-status plant impact avoidance and minimization measures described in Energy Commission staff's proposed conditions of certification.

The BLM and Energy Commission staffs (hereafter jointly referred to as staff unless otherwise noted) have concluded that without mitigation the ISEGS project would be a substantial contributor to the cumulatively significant loss of Ivanpah Valley's biological resources, including the threatened desert tortoise and other special-status species. Impact avoidance and minimization measures described in staff's analysis and included in the conditions of certification would help reduce impacts to sensitive biological resources. However, compensatory measures are necessary to offset project-related losses, and to assure compliance with state and federal laws such as the federal and state endangered species acts and regulations protecting waters of the state. In the case of special-status plants, impacts would remain significant according to CEQA standards despite compensatory mitigation for other biological resources.

Compensatory mitigation for desert tortoise typically involves balancing the acreage of habitat loss with acquisition of lands that would be initially improved, protected and maintained to support healthy populations of desert tortoise. The compensation is achieved by improving the carrying capacity of the acquired acreage (for example, by habitat restoration, fencing, road closures) so that more desert tortoise will survive and reproduce on these lands, thus offsetting over time the decrease in numbers of tortoise resulting from the habitat loss.

To fully offset impacts, the California Endangered Species Act (CESA) requires a full mitigation finding, which usually contemplates a mitigation ratio greater than 1:1 for compensation lands (i.e., acquisition or preservation of one acre of compensation lands for every acre lost). On past energy projects considered by the Energy Commission, the California Department of Fish and Game (CDFG) has required a 3:1 ratio to meet the CESA full mitigation standard for good quality habitat such as that found at the ISEGS

project site. The higher ratio reflects the limits to increases in carrying capacity that can be achieved on the acquired lands, even with implementation of all possible protection and enhancement measures. The BLM applies a 1:1 compensation ratio because they generally pursue desert tortoise recovery goals not through parcel by parcel acquisitions and management, but rather through implementation of region-wide management plans and land use planning as described in the Northern and Eastern Mojave (NEMO) Desert Management Plan (BLM 2002) and the Desert Tortoise Recovery Plan (USFWS 1994).

Energy Commission staff proposes compensation to achieve full mitigation at a 3:1 ratio for loss of desert tortoise habitat and for other CEQA significant impacts for the BrightSource ISEGS project. This compensation ratio is consistent with past Energy Commission projects and with Incidental Take Permits (ITPs) issued by CDFG in the region. The 3:1 ratio has also been proposed by the applicant (Ellison, Schneider & Harris LLP 2009). At least two thirds of the 3:1 mitigation could be achieved by acquisition of no less than 8,146 acres of land in the Mojave Desert providing adequate habitat and capable of increasing the carrying capacity for desert tortoise. The remaining third of the 3:1 compensatory mitigation would be developed in accordance with BLM's desert tortoise mitigation requirements as described in the NEMO. BLM's 1:1 mitigation plan has not yet been finalized, but is likely to include acquisition of private lands within the Desert Wildlife Management Area (DWMA) portion of the Eastern Mojave Recovery Unit and in the Mojave National Preserve, and with additional management and enhancement projects that would benefit the desert tortoise. The specifics of the desert tortoise acquisition and enhancement actions would be developed by BLM in collaboration with Energy Commission staff, CDFG and the U.S. Fish and Wildlife Service (USFWS) in accordance with guidance from desert tortoise recovery plans (USFWS 2004, 2008a).

For the desert tortoise habitat compensation to be biologically effective, and thus mitigate CEQA impacts to desert tortoise to less-than-significant levels, and meet the full mitigation requirements of CESA, the acquired lands must (1) be protected in perpetuity, and (2) a funding mechanism must be established to undertake initial habitat improvements, and to sustain long-term management and habitat enhancement. Funding comes from an endowment provided by the applicant to create enough income to cover annual stewardship costs on the acquired lands, as well as a buffer to offset inflation. Funding for initial habitat improvements is also required for those actions needed immediately upon acquisition of the property to secure it and remove hazards. Energy Commission staff's proposed Condition of Certification **BIO-17** describes the funding security needed for land acquisition and long-term protection and management for the acquired mitigation lands.

Energy Commission staff developed the proposed Condition of Certification **BIO-17** based largely on CDFG recommendations from past Energy Commission projects, but CDFG has not yet provided formal guidance describing their requirements for satisfying CESA in writing other than to convey orally to staff that they would concur with a combined 3:1 mitigation package for desert tortoise for this project. Staff is not making any assumptions as to whether CDFG would agree with the Energy Commission staff's calculation of security costs (acquisition costs, initial habitat improvement, and long-term management endowment). However, based on the July 23, 2009 letter from the BLM to CDFG, staff believes CDFG would concur with including BLM's proposed

mitigation approach as part of the complementary mitigation package to satisfy CESA's full mitigation standard if the provisions described by BLM in that letter were in place (BLM 2009e).

Energy Commission staff have concluded that the 2:1 compensatory mitigation, as described in staff's proposed Condition of Certification **BIO-17**, combined with the BLM 1:1 mitigation described conceptually above, would meet CESA's full mitigation standard pending resolution of the few issues described below. Staff considers the combination of these two mitigation approaches to be a complementary and complete mitigation package that would achieve full mitigation and would satisfy federal and state requirements for mitigating impacts to desert tortoise. However, a few issues need to be resolved before finalizing this complementary BLM-Energy Commission mitigation package:

- In Perpetuity Protection: Mitigation lands must be protected in perpetuity to satisfy Energy Commission and CDFG requirements. For BLM mitigation, acquisition of private lands within the DWMA's and the Mojave National Preserve would satisfy this requirement because the surrounding protective land uses would prevail. As described in the July 23, 2009 letter, BLM would provide some sort of assurances for long-term protection if these lands are to be counted as fulfilling part of CESA's full mitigation standard. To address this issue BLM has recently proposed development of deed restriction language and a Memorandum of Understanding between BLM and CDFG to offer protection to BLM-managed mitigation lands.
- Enhancement Actions: Staff has yet to develop a specific program of enhancement actions other than land acquisition that would fulfill BLM's 1:1 mitigation requirements and CESA's full mitigation standard. Proposed enhancement actions on BLM lands such as fencing and habitat restoration would need to be fully analyzed and disclosed to satisfy NEPA requirements. BLM will collaborate with Energy Commission staff, CDFG and USFWS in the development of the specific desert tortoise enhancement actions.
- Process for Mitigation Compliance: Staff needs to integrate CDFG and BLM mitigation processes and develop a mechanism that provides final selection and acknowledgement of enhancement actions on BLM lands. For land acquisitions, BLM, CDFG and the Energy Commission have well developed and transparent procedures to track expenditures and acquisitions. A similar mechanism is needed to verify fulfillment of enhancement actions such as fencing or habitat restoration on BLM lands. Prior to implementation of the enhancement measures, BLM and Energy Commission staff will work together to develop a process that allows tracking and verification of enhancement actions for desert tortoise.

Energy Commission staff has determined that if these issues are resolved, the proposed land acquisitions and enhancement activities described above would satisfy requirements of the California Endangered Species Act to fully mitigate impacts to desert tortoise. Except for the special-status plant impacts described earlier, this mitigation would also reduce CEQA impacts to less-than-significant levels. Staff anticipates resolution of these outstanding issues by working closely and cooperatively with USFWS, CDFG, and the applicant to finalize a mitigation and enhancement plan that would fully offset impacts to desert tortoises.

CULTURAL RESOURCES

The BLM and Energy Commission staff concludes that the Ivanpah Solar Energy Generating System (ISEGS) project would have no significant direct or indirect impacts on known, NRHP- or CRHR-eligible archaeological, ethnographic, or built-environment resources. Staff also concludes that the implementation of proposed Conditions of Certification **CUL-1** through **CUL-7** and **CUL-10** would reduce to less than significant, direct or indirect impacts to any such resources that are found during the course of the construction, operation, maintenance, closure, or decommissioning of the project. Staff further concludes that without mitigation, the effect of the Ivanpah Solar Energy Generating System (ISEGS) project on the Hoover Dam-to-San Bernardino transmission line, a historically significant built-environment resource, would be cumulatively considerable and would contribute to a significant cumulative effect on the environment. The adoption and implementation of Conditions of Certification **CUL-8** and **CUL-9** (mitigation measures) would render the potential effect of the proposed project on the resource less than cumulatively considerable.

Conditions of Certification **CUL-1** through **CUL-7** and **CUL-10** take into account the extensive and thorough field investigations that Bright Source (applicant) undertook for the present analysis and underwrites the recommendation of staff that the applicant be given substantial relief from routine monitoring requirements. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-7** and **CUL-10** ensure that the applicant would be able to respond quickly and effectively to what staff concludes is the highly improbable event that archaeological sites are found on the surface of the project area or buried beneath it during construction-related ground disturbance.

FACILITY DESIGN

The BLM and Energy Commission staff concludes that the design, construction, and eventual closure of the Ivanpah Solar Electric Generating System (ISEGS) project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations, and standards. The staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS. The proposed conditions of certification will ensure that ISEGS is designed and constructed in accordance with applicable engineering LORS. This would be accomplished through design review, plan checking, and field inspections that would be performed by the Chief Building Official (CBO) or other Energy Commission delegate. Staff would audit the CBO to ensure satisfactory performance. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **General Conditions** portion of this document prior to decommissioning, decommissioning procedures would comply with all applicable engineering LORS.

GEOLOGY, PALEONTOLOGY, AND MINERALS

The proposed ISEGS site is located in a moderately active geologic area on the west side of Ivanpah Valley, east of the Clark Mountain Range in the eastern Mojave Desert of Southern California. The main geologic hazards at this site include ground shaking;

liquefaction; settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction, or dynamic compaction; and the presence of expansive clay soils. These potential hazards can be effectively mitigated through facility design by incorporating recommendations contained in a design-level geotechnical report as required by the California Building Code (2007) and Condition of Certification **GEO-1**. Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section, should also mitigate these impacts to a less than significant level.

The proposed project is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site and could potentially be a source of salable resources; however, such materials are present throughout the regional area such that the ISEGS should not have a significant CEQA or NEPA impact on the availability of such resources.

Paleontological resources have been documented within 45 miles of the project, but no significant fossils were found during field explorations on the solar plant sites or near the sub-station and ancillary facilities; however, pack rat middens with plant remains were found in the carbonate bedrock outcrop west of Ivanpah 3. If encountered, potential impacts to paleontological resources contained in these materials due to construction activities will be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification **PAL-1** through **PAL-7**.

The BLM and Energy Commission staff concludes that the potential for significant adverse cumulative impacts to the project from geologic hazards during its design life and to potential geologic, mineralogical, and paleontological resources from the construction, operation, and closure of the proposed project, is not significant with respect to CEQA or NEPA. It is staff's opinion that the ISEGS can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS), and in a manner that both protects environmental quality and assures public safety, to the extent practical. Conditions of Certification referred to herein serve the purpose of both the Energy Commission's Conditions of Certification for purposes of the California Environmental Quality Act (CEQA) and BLM's Mitigation Measures for purposes of the National Environmental Policy Act (NEPA).

HAZARDOUS MATERIALS MANAGEMENT

The BLM and Energy Commission staff concludes that hazardous material use, storage, and transportation would not pose a significant impact with respect to CEQA or NEPA. Staff's analysis also shows that there would be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable LORS. Other proposed conditions of certification address the issues of site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented below, to ensure that the project is designed, constructed, and operated in compliance with applicable LORS, and would protect the public from significant risk of exposure to an accidental release of hazardous materials. If all

mitigation proposed by the applicant and by staff are implemented, the use, storage, and transportation of hazardous materials would not present a significant risk to the public.

Staff concludes that there is insignificant potential for hazardous materials release to have significant impact beyond the facility boundary, and therefore concludes there is also insignificant potential for significant impact to the environment. Staff proposes six conditions of certification, as follows. **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in the AFC, unless there is prior approval by the Energy Commission Compliance Project Manager. **HAZ-2** ensures that local emergency response services are notified of the amounts and locations of hazardous materials at the facility, **HAZ-3** requires the development of a Safety Management Plan that addresses the delivery of all liquid hazardous materials during the construction, commissioning, and operation of the project would further reduce the risk of any accidental release not specifically addressed by the proposed spill prevention mitigation measures, and further prevent the mixing of incompatible materials that could result in the generation of toxic vapors. Site security during both the construction and operation phases is addressed in **HAZ-4** and **HAZ-5**. **HAZ-6** ensures that the applicant complies with all Federal LORS regarding use, management, spills, and reporting of hazardous materials on Federal lands.

LAND USE

The criteria for evaluating Land Use impacts include an assessment of whether a proposed project will conflict with any applicable land use plan. The key land use plan affecting this project is the BLM's California Desert Conservation Area (CDCA) Plan of 1980, as amended (BLM 1980). In the CDCA Plan, the location of the proposed Ivanpah Solar Electric Generating System (ISEGS) facility includes land that is classified as Multiple-Use Class L (Limited Use). The Plan states that solar power facilities may be allowed within Limited Use areas after NEPA requirements are met. This Environmental Impact Statement acts as the mechanism for complying with those NEPA requirements.

Because solar power facilities are an allowable use of the land as it is classified in the CDCA Plan, the proposed action does not conflict with the Plan. However, the Plan also requires that newly proposed power facilities that are not already included within the Plan be added to the Plan through the Plan Amendment process. The ISEGS facility is not currently included within the Plan, and therefore a Plan Amendment is required to include the facility as a recognized element with the Plan. The proposed Plan Amendment, and the corresponding analysis of the proposed Plan Amendment with respect to the analysis requirements contained within Chapter 7 of the Plan, is provided within Section A of this Environmental Impact Statement. The amendment decision would occur after publication of the Final Environmental Impact Statement.

Large portions of the land area for Ivanpah 1, 2, and 3 and the administrative complex/logistics area are located within existing Utility Corridors D and BB. The land area for Ivanpah 3 would cover approximately 60% of the 2-mile width of Corridor D. Although the land area for Ivanpah 1 and 2, and the logistics construction area overlap and would limit much of the available area within Corridor BB, future linear facilities

could still be routed through the portions of Corridor BB that are within the temporary construction logistics area that will only be used during the construction phase of the project.

Impacts of the ISEGS project would combine with impacts of present and reasonably foreseeable projects to result in a contribution to cumulative impacts in the Ivanpah Valley area related to land use which would be significant with respect to CEQA as well as NEPA significance criteria in 40 CFR 1508.27. Impacts of the ISEGS project would also combine with the potential impacts of reasonably foreseeable renewable energy projects in the southern California Mojave desert to result in significant and unmitigable regional cumulative impacts related to land use.

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

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

LIVESTOCK GRAZING

The BLM and Energy Commission staff concludes that the proposed project would not have any significant impacts on the Clark Mountain Allotment, upon which the proposed project would be located. Because the public land at the proposed project location has been used as a grazing allotment, approval of the proposed project would require a modification of the grazing lease and reduction of total permitted Animal Unit Months (AUMs) and acreage based upon forage found on the project footprint. BLM estimates that the total number of AUMs associated with the 4,073 acre project would be 70 AUMs. There are currently 1,428 AUMs leased on the entire Clark Mountain Allotment. Approval of the proposed project would involve fencing of the entire project footprint, thus eliminating any potential use of the 70 AUMs on the project site for grazing during the lifespan of the proposed facility. With respect to National Environmental Policy Act (NEPA) guidelines for significance, these impacts would be adverse in the proposed project area, but would be limited to that area, and would not affect grazing resources in the remainder of the allotment, and thus would not be a significant adverse impact. Speed limits of 10 miles per hour (mph) on unpaved roads and 25 mph on stabilized roads imposed for fugitive dust control as would be required under **Air Quality Conditions of Certification AC-SC3 and AQ-SC7** are expected to be effective in also protecting grazing livestock from vehicle strike. Fencing of project construction areas and of permanent facilities used during operations would also be required as a component of the Construction and Operation Site Security Plans as would be specified

under **Hazardous Materials Conditions of Certification HAZ-4 and HAZ-5** respectively. The speed limit and fencing mitigation measures that would apply during construction and operation on the project site would minimize hazards to cattle when they are grazing near this portion of the allotment and result in a less than significant impact.

Cumulative impacts on this allotment, as well as the overall availability of land for grazing, may result from the combination of this proposed project with other proposed land uses that would require reduction of total permitted AUMs, including other solar energy projects and the proposed DesertXpress rail line. With respect to NEPA, the overall impact of the proposed projects in the area on the Clark Mountain Allotment may be considerable if the proposed Desert Xpress line is constructed and the rail line cuts off livestock access to portions of the allotment. However, the contribution of the proposed ISEGS project to that cumulative impact is relatively small.

NOISE AND VIBRATION

The BLM and Energy Commission staff conclude that the Ivanpah Solar Electric Generating System (ISEGS) can be built and operated in compliance with all applicable noise and vibration laws, ordinances, regulations, and standards and, if built in accordance with the conditions of certification proposed below, would produce no CEQA or NEPA-significant adverse noise impacts on people within the affected area, either direct, indirect, or cumulative.

PUBLIC HEALTH AND SAFETY

The BLM and Energy Commission staff have analyzed potential public health risks associated with construction and operation of the ISEGS and do not expect any adverse cancer, short-term, or long-term health effects to any members of the public, including low income and minority populations. Therefore, project toxic emissions are not considered to be significant under CEQA or NEPA. Staff also concludes that its analysis of potential health impacts from the proposed ISEGS uses a highly conservative methodology that accounts for impacts to the most sensitive individuals in a given population, including newborns and infants. According to the results of staff's health risk assessment, emissions from the ISEGS would not contribute significantly or cumulatively to morbidity or mortality in any age or ethnic group residing in the project area.

POWER PLANT EFFICIENCY

The Ivanpah Solar Electric Generating System (ISEGS), if constructed and operated as proposed, would generate 400 megawatts (MW) (maximum net output) of electricity. This project would consist of two 100 MW plants (Ivanpah 1 and Ivanpah 2) and one 200 MW plant (Ivanpah 3), employing advanced solar power and modern steam turbine technologies. The ISEGS would use solar energy to generate up to 95 percent of its capacity, and natural gas to generate up to five percent of its capacity.

The project would decrease reliance on fossil fuel, and would increase reliance on renewable energy resources. It would not create significant adverse effects on fossil fuel energy supplies or resources, would not require additional sources of energy supply,

and would not consume fossil fuel energy in a wasteful or inefficient manner. No efficiency standards apply to this project. The BLM and Energy Commission staff concludes that this project would present no significant adverse impacts on fossil fuel energy resources.

The ISEGS, if constructed and operated as proposed would occupy over nine acres per MW of power output, a figure about double that of some other solar power technologies. Employing a less land-intensive solar technology, such as the Compact Linear Fresnel Reflector technology or linear parabolic trough technology, would potentially reduce land-related impacts by approximately 50 percent. However, staff recognizes there is a wide range of environmental issues to analyze to compare the merits and impacts of one technology compared to another. This is done in more detail in the **Alternatives** section of this document. In conclusion, ISEGS would utilize solar energy potential from a site that is currently not being harnessed for power production. Thus from an efficiency perspective, ISEGS would not result in a less efficient utilization of the site's solar energy potential than is occurring currently.

POWER PLANT RELIABILITY

The applicant predicts an equivalent availability factor of 92 to 98 percent, which staff believes is achievable. Based on a review of the proposal, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

RECREATION

The proposed project location itself is not specifically permitted, used, or designated for any recreational activity. The proposed location represents a small portion of the overall area available for recreation in the Mojave Desert, and although the proposed project would require re-direction of access roads to recreation areas, the magnitude of this re-direction is expected to be small. However, the issue of recreational resources is still directly applicable to the proposed project because part of the attraction of the area, historically, has been driven by easy vehicular access to an unspoiled desert viewscape. While the presence of the proposed facility would likely attract some tourists who are interested in unusual and large-scale industrial operations, the impact on the quality of outdoor recreational experience would diminish the experience of campers, hikers, hunters, and other recreational users. These impacts are not expected to be significant as a recreation impact under the primary CEQA thresholds of significance because they do not increase the level of use which could damage recreational facilities, and do not require the construction or expansion of recreational facilities which could impact the environment. Under NEPA and CEQA, the project's direct impacts are not considered significant because ISEGS would not disrupt recreation opportunities, and the project's indirect impacts by itself would not substantially diminish the quality of outdoor recreation experiences.

Staff has proposed Condition of Certification **REC-1** to conform with Public Resources Code §25529 that would require the applicant to establish an area for public use by the development of a Solar / Ecological Interpretive Center within the Construction Logistics Area.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The BLM and Energy Commission staff concludes that the two 100-megawatt (MW) (nominal) solar electric generating plants, known as Ivanpah 1 and 2, and the one 200-MW (nominal) plant, known as Ivanpah 3, referred to collectively as the Ivanpah Solar Electric Generating System (ISEGS), would not result in significant adverse direct or indirect socioeconomic impacts with respect to either CEQA or NEPA. In addition, the ISEGS would not contribute to a cumulative socioeconomic impact on the area's population, employment, housing, police, schools, or hospitals because the proposed project's construction and operation workforce currently resides in the regional or local labor market area and construction would be short term. Gross public benefits from the proposed project include capital costs, construction and operation payroll, and property and sales taxes. Furthermore, the construction and operation of the proposed ISEGS would not result in any disproportionate impacts to low-income or minority populations.

SOIL AND WATER RESOURCES

With the information provided to date, the BLM and Energy Commission staff concludes that no impacts to soil or water resources would result from the construction and operation of the proposed Ivanpah Solar Electric Generating System (ISEGS) project that cannot be mitigated to a less than significant level. Where necessary, staff has proposed mitigation measures to reduce identified impacts to levels that are less than significant. The mitigation measures, as well as specifications for laws, ordinances, regulations and standards (LORS) conformance, are included herein as conditions of certification. Staff's conclusions based on analysis of the information submitted to-date are as follows:

1. The proposed project would be located on an alluvial fan where flash flooding and mass erosion could impact the project. Project-related changes to the alluvial fan hydrology could result in impacts to adjacent land users and the Ivanpah playa. The applicant completed a hydrologic study and modeling of the alluvial fan. Based on this work and subsequent confirmatory and sensitivity modeling conducted by the BLM, scour analyses have been performed to support development of a project design that can withstand flash flood flows with minimal damage to site structures and heliostats. In addition, a Drainage, Erosion, and Sedimentation Control Plan (DESCP) has been developed to mitigate the potential storm water and sediment project-related impacts. However, the calculations and assumptions used to evaluate potential storm water and sedimentation impacts are imprecise and have limitations and uncertainties associated with them. Given the uncertainty associated with the calculations, the magnitude of potential impacts that could occur without applying mitigation measures cannot be determined, and therefore these impacts constitute an unknown risk. The potential impacts could adversely affect habitat for a threatened species (the desert tortoise), as well as recreational use of Ivanpah Playa. Should these impacts occur, they would likely be highly controversial. Based on these factors, the proposed project could result in impacts that would be

significant with respect to NEPA significance criteria in 40 CFR 1508.27. Therefore, Condition of Certification **SOIL&WATER-5** has been developed that defines monitoring, inspection, and damage response requirements, as well as standards and procedures for re-considering the proposed storm water management approach if needed in the future.

2. The proposed project would use an air-cooled condenser for heat rejection and would recycle process wastewater from all plant equipment, including boilers and water treatment equipment, to the extent practicable. Recycling the wastewater would maximize reuse of process water and conserve freshwater. Use of this technology would significantly reduce water use and is consistent with water policy and the constitutional requirement that State water resources be put to beneficial use to the fullest extent possible.
3. Impacts to groundwater supply and quality would be less than significant. In the Ivanpah Valley Groundwater Basin (IVGB), two substantial components of the basin's water balance are groundwater recharge through precipitation and groundwater loss through well pumping. Both precipitation and pumping in the basin will vary over the 50-year life of the proposed project. To ensure that the project's proposed use of groundwater does not significantly impact the beneficial uses and users of the groundwater in the basin, staff believes the applicant should be required to comply with San Bernardino County's Desert Groundwater Management Ordinance. The applicant would thus be required to develop a monitoring program and identify what changes are occurring in basin water levels. Staff believes the monitoring program should also be designed to incorporate data from monitoring of groundwater pumping related to the Primm Valley Golf Club's groundwater use. Substantial changes to groundwater levels caused by the proposed project and other pumping in the basin would be documented by this monitoring and reporting program in accordance with Condition of Certification **SOIL&WATER-6**.

Completion of staff's analysis of the proposed project is subject to the following:

- Satisfactory completion of the heliostat pole installation testing by the applicant to either confirm or update its current installation plans followed by further evaluation by staff of whether there would be any impacts related to the method of construction or failure of the heliostats due to storm water flows.

TRAFFIC AND TRANSPORTATION

The BLM and Energy Commission staff concludes that neither construction nor operation of the project would have a CEQA or NEPA-significant adverse impact on the local or regional road network, except for northbound Interstate 15 (I-15) on Friday afternoons and evenings related primarily to motorists enroute to Las Vegas. Vehicle trips generated during construction and operation of the project would contribute to an adverse direct and cumulative impact, which would be significant with respect to CEQA and NEPA, on northbound I-15 on Fridays between the hours of 12 p.m. and 10 p.m. during construction and operation.

To reduce project impacts on area traffic and to facilitate safety during construction, the applicant has proposed to limit the amount of project-related traffic generated on area

roadways on Friday afternoons. To mitigate the ISEGS impact on area traffic to the extent possible during construction and operation to a less-than-significant level, and in particular on northbound I-15 on Friday afternoons, staff has incorporated the applicant's proposal along with other mitigation into Condition of Certification **TRANS-1**. Staff has determined that, with the implementation of the Traffic Control Plan required by proposed Condition of Certification **TRANS-1**, construction and operation of the ISEGS would not cause a direct significant impact on northbound I-15 on Friday afternoons, but would contribute to a cumulatively considerable significant impact on northbound I-15 on Friday afternoons. Therefore, even with TRANS-1, a significant cumulative impact remains. Condition of Certification **TRANS-2** is recommended to ensure the repair of physical damage to area roadways caused during project construction. Because the project has the potential to result in exposure of aircraft pilots, motorists, and hikers to solar radiation reflected from project heliostats and/or power tower receivers, Conditions of Certification **TRANS-3** and **TRANS-4** are recommended to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. In addition, because the project would place structures greater than 200 feet in height in the vicinity of military flight training routes and air traffic from the proposed Southern Nevada Supplemental Airport, staff has proposed Condition of Certification **TRANS-5** to ensure the project complies with FAA recommendations for lighting of tall structures. Condition of Certification **TRANS-6** which would require notifying the FAA of potential air hazards from turbulence at an altitude of 1,350 feet above the ground surface above the ISEGS site during daylight hours.

TRANSMISSION LINE SAFETY AND NUISANCE

Since U.S. Bureau of Land Management (BLM) and California Energy Commission staff (hereafter jointly referred to as staff) do not expect the proposed transmission lines to pose an aviation hazard according to current FAA criteria, staff does not consider it necessary to recommend location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed ISEGS and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed lines' design and

operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SCE lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a substantial human health hazard.

Since the proposed project line would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would remain in its present route without nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable laws. With implementation of the conditions of certification proposed below, any such impacts would be less than significant with respect to CEQA and NEPA.

TRANSMISSION SYSTEM ENGINEERING

The proposed Ivanpah Solar Electric Generating System (ISEGS or “Project”) outlet lines and termination are acceptable and would comply with all applicable laws, ordinances, regulations, and standards (LORS). The analysis of project transmission lines and equipment, both from the three power plants up to the point of interconnection with the existing transmission network as well as upgrades beyond the interconnection that are attributable to the project, have been evaluated by BLM and Energy Commission staff. The staff recommends the following mitigation measures:

- Mitigation of base case thermal overloads caused by Ivanpah #1 and #2 power plants, would require the replacement of the existing 115/220 kV transformer bank at the Eldorado substation and the upgrade from 115 to 220 kV of a 36 mile long segment of Eldorado-Baker-Cool Water-Dunn Siding-Mountain Pass transmission line between the new Ivanpah and existing Eldorado Substations. Ivanpah #3 would require the addition of a 115/220 kV transformer at the new Ivanpah substation.
- Mitigation of thermal overloads caused by the Ivanpah #3 under N-1 contingency analysis, would require modification of the existing Special Protection System (SPS) to reflect the topology change associated with the additional facility upgrades triggered by the Ivanpah #3 power plant.

VISUAL RESOURCES

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

- The Primm Valley Golf Course;
- Middle-ground-distance viewpoints on Highway I-15;
- Viewpoints in the Mojave National Preserve on the east face of Clark Mountain; and

- Viewpoints in the Stateline Wilderness Area, including the Umberci Mine and vicinity.

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

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

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

Staff also concludes that the proposed ISEGS project, particularly the solar receiver units atop the solar power towers, would generate conspicuously bright levels of glare for most or all viewers. This glare, while not representing a hazard, could represent a strong, visually dominant feature as seen from the viewpoints named above, and could strongly alter the character of views of Clark Mountain from the valley floor, interfering with the public's ability to enjoy those views. Staff concludes solar radiation and light reflected from proposed project heliostats could cause a significant human health and safety hazard to observers in vehicles on adjacent roadways or air traffic flying above the site, and could cause a distraction of drivers on I-15 that would lead to road hazards and to pilots of aircraft flying over the site. Staff has proposed Condition of Certification **TRANS-3** in the **Traffic and Transportation** section to ensure solar radiation and light from the heliostats does not impair the vision of motorists or pilots traveling near the site and that the potential for exposure of observers does not cause a human health and safety hazard.

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

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

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

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

As stated, staff concludes that the project would have significant unavoidable adverse impacts in both a direct and cumulative context. If the Energy Commission approves the project, staff recommends that all of staff's proposed conditions of certification be adopted in order to minimize impacts to the greatest feasible extent.

WASTE MANAGEMENT

BLM and Energy Commission staff concludes that management of the waste generated during construction and operation of the Ivanpah Solar Electric Generating System (ISEGS) would not result in any significant adverse impacts under CEQA or NEPA, and would comply with applicable waste management laws, ordinances, regulations, and standards if the measures proposed in the Application for Certification (AFC) and staff's proposed conditions of certification are implemented.

WILD HORSES AND BURROS

BLM and Energy Commission staff concludes that the proposed project would have no CEQA or NEPA-significant impact on wild horses and burros at the proposed project location. The proposed project location was formerly included within a Herd Management Area (HMA) established by the California Desert Conservation Area Management Plan (CDCA Plan). Although no wild horses are present in this area, burros are present. In the NEMO Plan Amendments, the Appropriate Management Level (AML) for burros in the Clark Mountain HMA was reduced from 44 to 0, and approximately 100 burros were removed from the area in January 2007.

Although burros are known to still exist in the area, BLM plans to remove the remaining individuals. Until that gather is accomplished, the remaining individuals are to be protected from harassment or injury by the provisions of the Wild and Free-Roaming Horses and Burros Act. Increased traffic associated with construction and operation of the proposed project could potentially cause injury or death to individual burros through vehicle strikes. Speed limits of 10 miles per hour (mph) on unpaved roads and 25 mph on stabilized roads imposed for fugitive dust control as would be required under **Air Quality Conditions of Certification AC-SC3 and AQ-SC7** are expected to be effective in protecting the remaining burros from vehicle strike. Individual burros could also be injured or killed if they were to fall into excavations associated with project construction activities. Fencing of project construction areas and of permanent facilities used during operations would also be required as a component of the Construction and Operation Site Security Plans as would be specified under **Hazardous Materials Conditions of Certification HAZ-4 and HAZ-5** respectively. Project construction and operations workers shall be notified of the protection requirements of the Wild and Free-Roaming Horses and Burros Act through training and/or the placement of signs as would be

required under the Worker Environmental Awareness Program specified in **Biological Resources Condition of Certification BIO-6**. Staff believes these recommended mitigation measures would ensure protection of the remaining burro individuals until they are completely removed by BLM.

Cumulative impacts on burros may result from the combination of this proposed project with other current and reasonably foreseeable future land uses, including other solar energy projects. These impacts would result from the reduction of area of the HMAs in which they are managed, as well as potential hazards due to increased traffic. Under NEPA, the cumulative impact would be considered minor because the Northern and Eastern Mojave Desert Management Plan (NEMO Plan) Amendments have established the AML in the vicinity of the proposed project area at zero, meaning BLM is actively involved in removing all burros within the HMA and the area within this project site is a minor forage producing area relative to other locations elsewhere within the HMA

WORKER SAFETY AND FIRE PROTECTION

BLM and Energy Commission staff concludes that, if the applicant for the proposed Ivanpah Solar Electric Generating System (ISEGS) provides project construction safety and health and project operations and maintenance safety and health programs, as required by Conditions of Certification **WORKER SAFETY -1, -2, -3, -4, -5, and -6**, the project would incorporate sufficient measures to both ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards (LORS). These proposed conditions of certification ensure that these programs, proposed by the applicant, will be reviewed by the appropriate agencies before they are implemented. The conditions also require verification that the proposed plans adequately ensure worker safety and fire protection and comply with applicable LORS.

Staff also concludes that the proposed project would not have significant impacts on local fire protection services that would be significant with respect to CEQA or NEPA. The fire risks at the proposed facility do not pose significant added demands on local fire protection services. Staff also concludes that the San Bernardino County Hazmat Team and the San Bernardino County Fire Department (SBCFD) are adequately equipped and staffed to respond to hazardous materials incidents at the proposed facility with an adequate response time, given the remote location of this project (Crawford 2008).

NOTEWORTHY PUBLIC BENEFITS

ISEGS offers the benefit of providing a source of renewable energy augmented with minimal use of natural gas when solar conditions are insufficient. In addition, staff has identified the following public benefits:

1. ISEGS would contribute to meeting goals under California's Renewable Portfolio Standard Program (Senate Bill 1078), which establishes that the state's renewable energy must contribute 20 percent of the supply for meeting total state energy demands by 2010, and which also reduces our dependence on fossil fuels;

2. ISEGS would contribute to meeting the Governor's Executive Order #S-14-08 which establishes that the state's renewable energy must contribute 33 percent of the supply for meeting total state energy demands by 2020;
3. ISEGS would contribute to the state accomplishing its goals for reducing global carbon emissions in accordance with the California Global Warming Solutions Act of 2006 (Assembly Bill 32);
4. ISEGS would provide Socioeconomics public benefits which would include both short term construction-related and long term operational-related increases in local expenditures and payrolls, as well as sales tax revenues.