BLM

Bureau of Land Management

SUPPLEMENTAL DRAFT EIS

FOR

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

APRIL 2010

DES-09-46

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Needles Field Office
1303 South U.S. Highway 95
Needles, CA 92363
www.ca.blm.gov/needles

April 13, 2010

In Reply Refer To:
2800
CACA-48668
(CA-690.01)

Dear Reader:

This Supplemental Draft Environmental Impact Statement (SDEIS) for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project is submitted for your review and comment. The SDEIS has been prepared to analyze the potential impacts of two additional Alternatives for the purpose of constructing and operating a solar electric power generating facility as proposed by Solar Partners I, II, IV, and VIII, Limited Liability Corporations formed by BrightSource Energy.

Printed copies of the SDEIS are available for review at the Bureau of Land Management (BLM) office listed below. The SDEIS is also available for review and downloading from the BLM website at: http://www.blm.gov/ca/st/en/fo/needles/nefo_nepa.html.

Needles Field Office
Bureau of Land Management
1303 South U.S. Highway 95
Needles, CA 92363

The DEIS for this project, published on November 9, 2009, analyzed two alternatives in detail: the Proposed Action, and the No Action alternative. Under the proposed action, the BLM would accept the proponent's activities and infrastructure as described in their ROW application and grant ROW access on Federal lands. This alternative proposed that BrightSource Energy would construct and operate a 400 megawatt (MW) solar thermal electric generating facility. The No Action Alternative for this project would mean that the ROW application would be rejected by the BLM and the ROW access to the 4073-acre property would not be granted to BrightSource Energy.

The SDEIS analyzes two additional alternatives to the proposed action; a reduced acreage alternative called the Mitigated Ivanpah 3 Alternative, and a reconfigured alternative called the Modified I-15 Alternative. The facility evaluated in each of these alternatives is a solar thermal electric generating facility with a generating capacity of 370 MW. The Mitigated Ivanpah 3 Alternative would be located entirely within the same property boundaries as the proposed project, but would occupy 3564 acres, a reduction of 12.5 percent. The Modified I-15 Alternative would also occupy 3564 acres, but the arrangement of one of the three power generating units would be reconfigured and placed closer to I-15.

If you wish to submit comments on the SDEIS, we request that you make your comments as specific as possible. Comments are more helpful if they include suggested changes, sources, or methodologies. Comments that contain only opinions or preferences will be considered and included as part of the BLM decisionmaking process, although they will not receive a formal response.

Comments will be accepted for the forty-five (45) days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register. The BLM can best use your comments and resource information if received within the review period. Please send written comments to:

Needles Field Office,
Bureau of Land Management
Attention: George R. Meckfessel,
Planning and Environmental Coordinator
1303 South U.S. Highway 95
Needles, CA 92363

You may also submit comments electronically at the address shown below. Please refer to "Ivanpah SEGS SDEIS Comments" in the subject line.

ca690@ca.blm.gov

Please note that public comments and information submitted including names, street addresses, and e-mail addresses of respondents will be available for public review and disclosure at the Needles Field Office at the address shown above during regular business hours (7:30 a.m. to 4:00 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your address, phone number, e-mail address, or other personal identifying information from public disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such request will be honored to the extent allowed by law. All submissions from organizations or businesses and from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

A copy of this SDEIS has been sent to affected Federal, State, and local government agencies, and to those persons who have indicated that they wish to receive a copy of the SDEIS. Copies of the SDEIS are available for public inspection at the Needles Field Office.

If you have any questions regarding the NEPA process used to prepare the SDEIS or need additional information regarding the project, please contact George R. Meckfessel at (760) 326-7008.

Sincerely,

Raymond C. Lee
Field Manager

ABSTRACT

ENVIRONMENTAL IMPACT STATEMENT

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM PROJECT

(X) Draft ( ) Final

Lead Agency:	The United States Department of the Interior, Bureau of Land Management Needles Field Office
Location:	San Bernardino County, California
Address Comments on this EIS to:	Bureau of Land Management Attention: George Meckfessel, Planning and Environmental Coordinator, 1303 S. Hwy. 95, Needles, CA 92363
or Email: ca690@ca.blm.gov	
Comment Deadline:	45-days from date of Environmental Protection Agency Notice of Availability.

The Bureau of Land Management (BLM) has received a proposal from Solar Partners I, II, IV, and VIII, limited liability corporations formed by BrightSource Energy (BrightSource), to construct and operate an approximately 4073-acre solar thermal electric generating facility in San Bernardino County, California. The project would generate up to 400 megawatts (MW) of electricity using solar thermal technology. The project would occupy 4073 acres of federal lands managed by the BLM.

The proposed project would consist of three separate generating facilities, each consisting of a field of heliostats (mirrors) reflecting solar radiation to the top of a 459-foot tall power tower received unit. Heated fluid within the power tower receivers would be used to boil water to generate steam, which would turn a turbine and generate electricity. The permanent ROW required for the heliostat fields and power towers would occupy approximately 3,670 acres. An additional 377 acres would be used to support a Construction Logistics Area, and for shared facilities such as an administration building, maintenance warehouse, substation, and groundwater supply wells. Approximately 24 acres would be used for a natural gas supply pipeline ROW, and for access roads. The proposed project would cause the surface disturbance of approximately 4,073 acres during construction.

Two alternatives were considered in detail in the Draft Environmental Impact Statement (DEIS), which was published on November 9, 2009. These included the proposed project alternative, and the No Action Alternative, as required by the National Environmental Policy Act as a baseline against which other action alternatives can be analyzed. Under the No Action Alternative, the BLM ROW grant to construct and operate the facility would not be authorized. Consequently, the No Action Alternative represents the continuation of the existing conditions.

The Supplemental Draft EIS (SDEIS) analyzes two additional alternatives to the proposed action; a reduced acreage alternative called the Mitigated Ivanpah 3 Alternative, and a reconfigured alternative called the Modified I-15 Alternative. The facility evaluated in each of these alternatives is a solar thermal electric generating facility with a generating capacity of 370 MW. The Mitigated Ivanpah 3 Alternative would be located entirely within the same property boundaries as the proposed project, but would occupy

3564 acres, a reduction of 12.5 percent. The Modified I-15 Alternative would also occupy 3564 acres, but the arrangement of one of the three power generating units would be reconfigured from the northern portion of the facility to the southern portion.

Following the receipt of public comments on the SDEIS, BLM will select a preferred alternative in the Final EIS.

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LIST OF ACRONYMS

AFC	Application for Certification
AML	Appropriate Management Level
ATC	Authority to Construct
AUM	animal unit month
BCC	Birds of Conservation Concern
bhp	brake horsepower
BLM	Bureau of Land Management
BMP	best management practice
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CLA	Construction Logistics Area
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
DEIS	Draft Environmental Impact Statement
EITL	Eldorado-Ivanpah Transmission Line
EMF	Electric and Magnetic Field
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FSA	Final Staff Assessment
HMA	Herd Management Area
I-15	Interstate 15
ISEGS	Ivanpah Solar Electric Generating System
KOP	Key Observation Point
kV	kilovolt
LOS	Level of Service
m^2	square meter
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MMBtu/hr	million British thermal units per hour
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NEMO	Northern and Eastern Mojave
NEPA	National Environmental Policy Act
NOx	nitrogen oxide
NO_2	nitrogen dioxide
NRHP	National Register of Historic Places
OHV	off-highway vehicle

LIST OF ACRONYMS (Continued)

PM	Particulate Matter
PMAP	Particulate Matter Attainment Plan
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
ROW	right-of-way
SCADA	Supervisory Control and Data Acquisition
SCE	Southern California Edison
SDEIS	Supplemental Draft Environmental Impact Statement
SOx	sulfur oxide
SO_2	sulfur dioxide
$\mu g/m^3$	micrograms per cubic meter
USFWS	U.S. Fish and Wildlife Service

1.0 Executive Summary

1.1 DEIS Summary

On November 4, 2009, the Bureau of Land Management (BLM) and California Energy Commission (Energy Commission) staff jointly prepared the Final Staff Assessment (FSA)/Draft Environmental Impact Statement (DEIS) and Draft California Desert Conservation Area (CDCA) Plan Amendment for the Ivanpah Solar Electric Generating System (ISEGS) project, a proposed solar-thermal electricity generation facility located on public lands managed by the BLM in San Bernardino County, California.

The DEIS evaluated a variety of project alternatives (including the proposed project, No Action Alternative, alternative locations, alternative configurations with reduced acreage, and alternative generating technologies), and included a detailed impact analysis for the proposed project and No Action Alternatives. The DEIS concluded that the proposed project could have direct, adverse impacts with respect to several resources, but that most of these impacts, such as those associated with the desert tortoise and Soil and Water Resources, could be effectively mitigated. However, the DEIS identified impacts that could not be effectively mitigated, including:

- Cumulative impacts on special-status plant species, Land Use, Traffic and Transportation, and Visual Resources; and
- Direct impacts on Visual Resources.

The largest number and highest magnitude of impacts identified for Biological Resources and Soil and Water Resources were associated with the northern 433-acre portion of Ivanpah Unit 3. This area was identified, in the DEIS, to be the area that had the highest concentrations of desert tortoise and rare plants, and also the area that presented the greatest risk of potential stormwater damage.

The Notice of Availability of the DEIS was published on November 10, 2009; the 90-day public review and comment period ended on February 11, 2010. BLM received comments from the public and other local, state, and federal agencies during the public comment period, and is currently evaluating the comments for response and consideration in a Final EIS.

The public comments on the DEIS provided BLM with additional information regarding the presence of resources and expected effectiveness of mitigation measures associated with the northern 433-acre portion of the proposed project area. As a result of BLM's review of the public comments, BLM concluded that the rationale for eliminating two of the alternatives (the Reduced Acreage and I-15 Alternatives) from more detailed analysis in the DEIS was insufficient, and that these two alternatives merit more detailed evaluation in a Supplemental Draft EIS (SDEIS).

The objective of this SDEIS is to supplement the current DEIS with the identification and evaluation of environmental impacts and mitigation measures for the Mitigated Ivanpah 3 Alternative and Modified I-15 Alternative, as additional alternatives to the proposed project.

1.2 Mitigated Ivanpah 3 Alternative Summary

In support of the analysis of a reduced acreage alternative, BrightSource (the applicant) submitted a Biological Mitigation Proposal, also referred to as the "Mitigated Ivanpah 3" proposal, on February 11, 2010 (BSE 2010a). The Mitigated Ivanpah 3 proposal was presented for consideration to BLM as an alternative to the proposed project. The Mitigated Ivanpah 3 proposal seeks to address the impacts identified in the DEIS by proposing a facility with the following characteristics:

- Using the same concentrating solar power technology as in the proposed project;
- Reducing the number and modifying the arrangement of heliostats and power towers, thus reducing the overall acreage requested for the ROW authorization;
- Proposing the revised arrangement of heliostats and power towers in a manner that avoids the northern portion of the Ivanpah 3 Unit, and thus reduces the identified impacts associated with special-status plants, desert tortoises, Visual Resources, and Soil and Water Resources in that area.

A detailed description of the Mitigated Ivanpah 3 proposal is presented in Section 3 of this SDEIS, and an evaluation of the environmental impacts of the proposal is presented in Section 4. The evaluation concluded that the Mitigated Ivanpah 3 would accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed project, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the direct and cumulative adverse impacts of the Mitigated Ivanpah 3 Alternative would be lower than the proposed project, specifically in the areas of Biological Resources (including DT, and special-status plant species), Soil and Water, Visual Resources, Land Use, and Traffic and Transportation. The reduction in impacts would be accomplished by eliminating the northern 433-acre portion of Ivanpah Unit 3 from the project footprint.

1.3 Modified I-15 Alternative Summary

To support the analysis of a Modified I-15 Alternative, the applicant submitted a map showing a proposed reconfiguration of Ivanpah Unit 3 to BLM on March 17, 2010 (BSE 2010b). The Modified I-15 Alternative would use the same technology and configuration of components as the Mitigated Ivanpah 3 Alternative, but would seek to further reduce impacts to Biological Resources by placing Ivanpah Unit 3 in an area which is reported to have a lower density of those resources.

A detailed description of the Modified I-15 Alternative, which involves a reconfiguration of Ivanpah Unit 3 in a location closer to Interstate 15, is presented in Section 5 of this SDEIS, and an evaluation of the environmental impacts of the alternative is presented in Section 6. The evaluation concluded that the Modified I-15 Alternative would also accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It

would also achieve almost all of the beneficial impacts of the proposed projects, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Modified I-15 Alternative would be lower than the proposed project in some areas, but would be increased in other areas. With respect to Biological Resources, the Modified I-15 Alternative would likely have a reduced impact on high quality desert tortoise habitat, as a result of avoiding the northern 433-acre portion of Ivanpah Unit 3, as well as reconfiguring Ivanpah Unit 3 in a location which partially overlaps the lower quality habitat adjacent to Interstate 15. By including this lower quality habitat within the reconfigured Ivanpah Unit 3 boundaries, the overall impact of the Modified I-15 Alternative on the desert tortoise is likely to be lower than that of the Mitigated Ivanpah 3 Alternative; however, this cannot be concluded without formal surveys of the reconfigured Ivanpah Unit 3 area.

Impacts of the Modified I-15 Alternative to Visual Resources and potential glare impacts for viewers on Interstate 15 would increase over those of both the proposed project and the Mitigated Ivanpah 3 Alternative, due to the placement of heliostat fields within 1,000 feet of the highway for a distance of 1.8 miles. The Modified I-15 Alternative could also result in an increase in impacts to recreational access as compared to the proposed project and Mitigated Ivanpah 3 Alternative, due to the greater length of existing OHV trails that would be included within the project footprint.

2.0 Introduction

2.1 Summary of DEIS

On November 4, 2009, the Bureau of Land Management (BLM) and California Energy Commission (Energy Commission) staff jointly prepared the Final Staff Assessment (FSA)/Draft Environmental Impact Statement (DEIS) and Draft California Desert Conservation Area (CDCA) Plan Amendment for the Ivanpah Solar Electric Generating System (ISEGS) project, a proposed solar-thermal electricity generation facility located on public lands managed by the BLM in San Bernardino County, California.

The ISEGS project proponent is BrightSource Energy, a U. S. Corporation whose business model includes the development and deployment of concentrating solar power tower technology. BrightSource Energy has formed limited liability corporations Solar Partners I, II, IV, and VIII (the applicant) for the purposes of filing Right-of-Way (ROW) applications with the BLM for the use of public land necessary to implement their proposed project. Through the limited liability corporations, the applicant has applied for four ROW grants from the BLM to construct the proposed ISEGS project that would occupy 4,073 acres of public land, use approximately 100 acre feet of water per year, produce a nominal 400 megawatts (MWs) of electricity, and operate for a term of 50 years. The four ROW grants would comprise authorization for three independent power generating units (Ivanpah Units 1, 2, and 3), and the acreage required for shared administration and construction staging area facilities.

The FSA/DEIS represented a joint environmental review document developed by BLM and the Energy Commission to evaluate direct, indirect, and cumulative impacts associated with the proposed project under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). For the BLM, the DEIS analyzed the environmental impacts that would be associated with authorization of the requested ROW, and compared them to the impacts that would be associated with denial of the ROW (No Action Alternative). The DEIS concluded that the proposed project could have direct, adverse impacts with respect to several resources, but that most of these impacts, such as those associated with the desert tortoise and Soil and Water Resources, could be effectively mitigated. However, the DEIS identified impacts that could not be effectively mitigated, including:

- Cumulative impacts on special-status plant species, Land Use, Traffic and Transportation, and Visual Resources; and
- Direct impacts on Visual Resources.

In general, the DEIS determined that the largest contribution to project-related impacts was associated with the northern portion of Ivanpah Unit 3, where a higher concentration of special-status plants and active drainage channels was present. The DEIS developed mitigation measures, which were designed to reduce the magnitude of those impacts.

In addition to the proposed project and No Action Alternatives, BLM also considered a variety of other alternatives in the DEIS, including alternative locations, alternative configurations with reduced acreage, and alternative generating technologies. Each was considered to determine if it would meet the purpose and need for the proposed project, and whether it was likely to result in a reduced level of impacts compared to the proposed project if implemented. Of those alternatives, two (the Reduced Acreage Alternative and the I-15 Alternative) are discussed in more detail below, because they are the primary subject of this Supplemental Draft EIS (SDEIS).

The Reduced Acreage Alternative, as evaluated in the DEIS, would be located entirely within the 4,073 acre footprint of the proposed project, but would avoid development in those areas where sensitive plant occurrences are densest, and would reduce the need for desert tortoise translocation. The DEIS concluded that the proposed project impact reductions that could be realized by the Reduced Acreage Alternative would be sufficiently addressed by a proposed mitigation requirement , designated as BIO-18, which would establish performance standards for plant avoidance, and require the applicant to avoid the most valuable biological habitat during final project design. Because the proposed project with BIO-18 would result in impacts similar to the Reduced Acreage Alternative, and because the project proponent did not apply for nor did it hold third party sales contracts for reduced project output at the time of the DEIS, the Reduced Acreage Alternative was not developed and evaluated in detail.

The “I-15 Alternative”, as evaluated in the DEIS, would include a facility partially overlapping the property for the proposed project, but including a reconfiguration of Ivanpah Units 2 and 3 along Interstate 15 on the southern side of Unit 1. This alternative was recommended by one of the intervenors in the Energy Commission certification process, the Sierra Club. The intended purpose for evaluating an

alternative in this area was to consider whether the area near Interstate 15 contained lower quality habitat for desert tortoises, and would therefore reduce the impacts of the proposed project on desert tortoises. Based upon the information before the agencies at the time the DEIS was prepared, the DEIS analysis determined that the alternative would have impacts to desert tortoises similar to the proposed project, and would result in greater Visual Resource impacts. Therefore, the I-15 Alternative was not developed and evaluated in detail in the DEIS.

2.2 BLM Decision to Develop the Supplemental Draft EIS

The Notice of Availability of the DEIS was published on November 10, 2009; the 90-day public review and comment period ended on February 11, 2010. During the public comment period, a variety of activities occurred in which BLM received additional information regarding the proposed project and potential alternatives, impacts, and mitigation measures. These activities included:

- Receipt of comments from the public, and other local, state, and federal agencies during the public comment period;
- Public testimony by Energy Commission staff and consultants, BrightSource staff and consultants, and intervenors associated with the Energy Commission certification process for ISEGS;
- Workshops, involving BLM staff and consultants as well as the above groups, to consider and evaluate impact conclusions and mitigation approaches; and
- Submittal of additional technical reports, project design information, impact analyses, and applicant-proposed mitigation measures by BrightSource.

In addition to specific technical and process comments (all of which are currently being evaluated as part of the development of the Final EIS), additional information regarding the rationale provided in the DEIS for the elimination of the Reduced Acreage Alternative and the I-15 Alternative was obtained by BLM through these activities. With respect to the Reduced Acreage Alternative, this information included concerns, on the part of the several commenters, that the proposed project impact reductions that could be realized by the Reduced Acreage Alternative would not be sufficiently addressed by the proposed BIO-18 mitigation requirement. Regarding the I-15 Alternative, the additional information included further information on the tortoise population of the I-15 area, as well as further information regarding the detrimental effect of Interstate 15 on adjacent tortoise habitat.

Based on the receipt of these additional data, BLM has concluded that the rationale for eliminating the Reduced Acreage and I-15 Alternatives in the DEIS was insufficient, and that these two alternatives merit more detailed evaluation in a Supplemental Draft EIS (SDEIS). As part of the evaluation of the additional data, BLM has also concluded that the rationale provided in the DEIS for eliminating the other alternatives was accurate, and no further analysis of these alternatives is provided.

2.3 Objectives of the Supplemental Draft EIS

The objective of the SDEIS is to supplement the current DEIS with the identification and evaluation of environmental impacts and mitigation measures for the Mitigated Ivanpah 3 Alternative and Modified I-15 Alternative, as additional alternatives to the proposed project. Both the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be in conformance with BLM land use plans, including the CDCA Plan and its amendments, but would require a CDCA Plan amendment to identify the ISEGS facility as a component of the plan. As described below, the Mitigated Ivanpah 3 and Modified I-15 Alternatives would reconfigure Ivanpah Unit 3, but otherwise would have footprints substantially the same as that of the proposed project and considered in the DEIS. Accordingly, the SDEIS analyzes only the environmental impacts of implementing the Mitigated Ivanpah 3 and Modified I-15 Alternatives; it does not add to the plan amendment analysis already contained in the DEIS.

The Mitigated Ivanpah 3 Alternative, described in detail in Section 3 of this SDEIS, has been proposed by the applicant as a means to achieve the objectives of its proposed project, but in a manner that reduces the environmental impacts identified for the proposed project in the DEIS. The Modified I-15 Alternative, described in Section 5 of this SDEIS, has been proposed by the Sierra Club as a means to develop the proposed project in an area which would result in a lower magnitude of impacts to desert tortoise habitat. To achieve these objectives, the SDEIS is organized as follows:

- Section 3 provides a detailed description of the Mitigated Ivanpah 3 Alternative, including the acreage required for the ROW, the proposed design of the layout of the heliostat fields, power towers, and other infrastructure, and the associated construction, operation, and closure activities;
- Section 4 provides the environmental evaluation of the Mitigated Ivanpah 3 Alternative, including a summary of the environmental setting and resources (where different from those described for the proposed project in the DEIS), an evaluation of the impacts, and identification of mitigation measures;
- Section 5 provides a detailed description of the Modified I-15 Alternative;
- Section 6 provides the environmental evaluation of the Modified I-15 Alternative, including a summary of the environmental setting and resources (where different from those described for the proposed project in the DEIS), an evaluation of the impacts, and identification of mitigation measures
- Section 7 provides an analysis of required NEPA considerations such as Unavoidable Adverse Impacts, Irreversible and Irretrievable Commitment of Resources, and Growth-Inducing Effects; and
- Section 8 provides a summary and comparison of the environmental analysis of all alternatives, including the proposed project and No Action alternatives evaluated in the DEIS, as well as the Mitigated Ivanpah 3 Alternative and Modified I-15 Alternative.

As a document intended to supplement the information in the DEIS, this SDEIS is not intended to repeat or replace the information and analysis present in the DEIS, except

where specifically noted. The SDEIS is also not intended to constitute a complete response to public comments received on the DEIS. The SDEIS will be published and made available for a public review and comment period. Upon completion of that period, BLM will develop a Final EIS (FEIS) which will incorporate:

- The DEIS;
- Public comments on the DEIS;
- The SDEIS; and
- Public comments on the SDEIS.

The SDEIS is also not intended to represent a CEQA analysis of any of the project alternatives, including the Mitigated Ivanpah 3 Alternative or Modified I-15 Alternative, in support of the Energy Commission certification process. The FSA/DEIS represented a joint CEQA/NEPA document which acted as the Final Staff Assessment in support of the Energy Commission certification process. The Energy Commission is continuing their certification process, independently from the BLM NEPA process, through the consideration of the Mitigated Ivanpah 3 proposal in a Final Staff Assessment Addendum.

2.4 Revised BLM Purpose and Need Statement

The BLM Purpose and Need for the Ivanpah SEGS project was stated in the FSA/DEIS as follows:

The purpose of the proposed action is to approve, approve with modifications, or disapprove ROW applications filed by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC (applicant), which are subsidiaries of BrightSource Energy, Inc. to develop the Ivanpah Solar Electric Generating System (ISEGS) project. The BLM will determine and disclose the environmental impacts of the 400 MW ISEGS proposal and decide whether granting the requested ROW is in the public interest. The BLM has determined that the proposed solar project and associated ROW would require an amendment to the CDCA Plan (Plan). The BLM will also consider the amendment of the CDCA Plan to allow for the project.

The need for the action has its basis in Federal orders and laws that require government agencies to evaluate energy generation projects and facilitate the development of renewable energy sources. The proposed project could help meet the explicit policy goals of the State of California and the Federal goals of producing 10% of the nation's electricity from renewable sources by 2012 and 25% by 2025 and of approving 10,000 MW of non-hydropower renewable energy generated from the public lands by 2015. Authorities include:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."
- The Energy Policy Act of 2005 (EPAct), which requires the Department of the

Interior (BLM's parent agency) to approve at least 10,000 MW of renewable energy on public lands by 2015. Currently, proposed renewable energy projects amounting to 1,900 MW of electricity are on file with the BLM within the Ivanpah Dry Lake area, including 400 MW associated with the proposed Project.

- Secretarial Order 3285, dated March 11, 2009, which "establishes the development of renewable energy as a priority for the Department of the Interior".

As part of this SDEIS, the above purpose and need section is amended to add, after the first paragraph, "BLM's purpose and need for the Ivanpah Solar Electric Generating System (ISEGS) project is to respond to the applicants application under Title V of the FLPMA (43 USC 1761) for a right-of-way (ROW) grant to construct, operate, maintain, and decommission a concentrated solar electric generation plant on public land along with the associated infrastructure in compliance with FLPMA, BLM Regulations, and other applicable federal laws". This SDEIS also amends this section by deleting reference to BLM disclosing the environmental impacts for the "400 MW" ISEGS proposal. It was noted by comments on the DEIS that the purpose and need should not be constrained by defining a set generation capacity or output for the project because it too narrowly confines the reasonable range of alternatives. By removing specification of 400 MW from the text, BLM is able to consider the other alternatives that could have lesser or greater generation capacities.

The remainder of the original purpose and need contained in the DEIS remains unchanged.

3.0 Description of the Mitigated Ivanpah 3 Alternative

3.1 Introduction

Based on the submittal of additional information, in the form of public comments on the DEIS, regarding impacts to Biological Resources in the northern portion of Ivanpah Unit 3, BLM made the decision to develop a reduced acreage alternative which would avoid these resources, and to conduct a more detailed NEPA analysis of the newly developed alternative in this SDEIS. On February 11, 2010, BrightSource submitted a Biological Mitigation Proposal, also referred to as the "Mitigated Ivanpah 3" proposal, for consideration by both the Energy Commission and BLM as an alternative to the proposed project.

The applicant for the Mitigated Ivanpah 3 Alternative would be the same as that for the proposed project: Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC), which are subsidiaries of BrightSource Energy, Inc. The applicant filed four ROW applications with BLM for the ISEGS project on August 29, 2007, and filed an Application for Certification (AFC) with the Energy Commission on August 31, 2007. The four ROW applications to BLM and the AFC to the Energy Commission comprise a plan to develop shared facilities including a substation, administration and maintenance buildings within a Construction Logistics Area (CLA), and separate applications for the three power plants (Ivanpah Units 1, 2, and 3).

Subsequent to the ROW application and AFC submission, BLM and the Energy Commission conducted a joint NEPA/CEQA analysis, which resulted in the FSA/DEIS published on November 4, 2009. That process included the applicant's submission of several updates to the original ROW application and AFC in response to data requests filed by BLM and the Energy Commission, as well as the development of more detailed project designs by the applicant. **Table 3-1** below summarizes the scope of the proposed project modifications, and provides a summary of the features of the two potential alternatives considered and evaluated in this SDEIS.

Table 3-1
Summary of Applicant's Updates to its ISEGS Development Plans

Date	Reference Document	Project Area	Number of Heliostats	Other Revisions to Proposed Project
ROW and AFC Application				
8-31-07	AFC Section 2.1, page 2-2 (BSE2007a)	3,400	272,000	The original heliostat proposal consisted of a single 7 square meter (m²) mirror hung in a landscape orientation.
Revision 1 – Optimized Project Design				
5-9-08	Data Response 1D, page 4 (CH2ML2008f)	3,700	214,000	1. Reduced the total number of heliostats from 272, 000 in the single-hung to 214,000 in the double-hung mirror configuration (reducing from 68,000 to 55,000 heliostats each for Ivanpah 1 and 2, and reducing from 136,000 to 104,000 heliostats for Ivanpah 3); 2. Doubled the heliostat mirror surface area from 7 to 14 m²; 3. Reduced the number of power towers associated with Ivanpah 1 and 2 from three to one, and increased the height of the power tower from 262 to 459 feet; 4. Moved the project boundaries out an additional 250 feet on the perimeters within the surveyed areas to

				increase the spacing between the larger heliostats.
Revision 2 – Revision to Site Plans & Stormwater Drainage Design				
6-10-08	Data Response 2A (CH2ML2008b)	4,065	214,000	1. Revised stormwater drainage plans from pass-through to active management including large detention ponds and conveyance features; 2. The addition of stormwater detention ponds resulted in an increased project area from 3,700 to 4,065 acres; 3. Proposed a high level of grading and ground disturbance.
Note: Because the revised plans were not supported with underlying site characterization assumptions and stormwater calculations, BLM and Energy Commission staff requested supporting information from the applicant. This led the applicant to reconsider its site plans and to develop Revision 3.				
Revision 3 – Revision to Site Plans & Stormwater Drainage Design				
5-18-09	Data Response 2I (CH2ML2009a)	4,073	214,000	1. Revised stormwater drainage plans again, eliminating large detention basins and conveyance features, and relying on existing ephemeral drainages; 2. Proposed Low Impact Development (LID) approach to minimize ground disturbance and to retain as much vegetation as possible; Vegetation would be cut and maintained to a height of 12 to 18 inches.
Potential Project Alternative – Biological Mitigation/Mitigated Ivanpah 3 Proposal				
2-11-10	Biological Mitigation	3,640	173,500	1. Removes approximately

	Proposal (BSE2010)			433 acres of the requested ROW grant from the northern portion of Ivanpah 3; 2. Reduces the overall number of heliostats by approximately 40,000; 3. Reduces the number of power towers in Ivanpah 3 from five to one, and of the entire project from seven to three; 4. Realigns the boundary between Ivanpah 2 and 3; 5. Removes approximately 109 acres of the CLA from use for construction; 6. Uses approximately 67.5 acres of the CLA for a Rare Plant Transplantation Area and a Succulent Nursery; and 7. Relocates and realigns some infrastructure such as roads, the administrative complex, water supply wells, natural gas pipeline, and fencing.
Potential Project Alternative – Modified I-15 Alternative				
3-17-10	Modified I-15 Alternative	3,640	173,500	1. Total output, acreage, construction, operation, and closure and decommissioning features would be the same as that for the Mitigated Ivanpah 3 Alternative. 2. Ivanpah Unit 1 would be the exact same as the

				proposed project. 3. Ivanpah Unit 2 would be the same as that for the Mitigated Ivanpah 3 Alternative. 4. The acreage and layout of Ivanpah Unit 3 would be the same as that for the proposed project, except located in a different footprint to the south of Ivanpah Unit 1.

Note: The Power Purchase Agreement would allow utilization of up to 270,000 heliostats.

3.2 Location

The location of the Mitigated Ivanpah 3 Alternative would be the same as that for the proposed project. The Mitigated Ivanpah 3 Alternative would be located in the Mojave Desert, near the Nevada border in San Bernardino County, California, on land administered by the BLM. The Mitigated Ivanpah 3 Alternative 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.

3.3 Project and Acreage Description

The configuration of the Mitigated Ivanpah 3 Alternative is shown in **Figure 3-1**. Similar to the proposed project, the Mitigated Ivanpah 3 Alternative would be a development of three solar concentrating thermal power plants, which are comprised of fields of heliostats (elevated mirrors guided by a tracking system) focusing solar energy on boilers located on centralized power towers. Each heliostat tracks the sun throughout the day and reflects the solar energy to the receiver boiler. In each plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheat steam from the solar reheater. The applicant would develop the Mitigated Ivanpah 3 Alternative as three power plants in separate and sequential phases that are designed to generate a total of 370 MW of electricity. Ivanpah 1 would have an electrical generation capacity of 120 MW, and Ivanpah 2 and 3 would have a capacity of 125 MW each. Shared facilities consisting of the substation, administration and maintenance buildings would be developed during construction of the first power plant in the CLA between Ivanpah 1 and 2.

As noted above in **Table 3-1**, the applicant's proposed project plans have been updated for design optimization and for two revisions associated with stormwater management approaches since filing the original ROW application. The revision to propose the Mitigated Ivanpah 3 Alternative would reduce the acreage associated with Ivanpah Unit 3 by moving the northern boundary of the ROW grant approximately 1900 feet south of its location in the proposed project, resulting in a reduction of 433 acres of disturbance

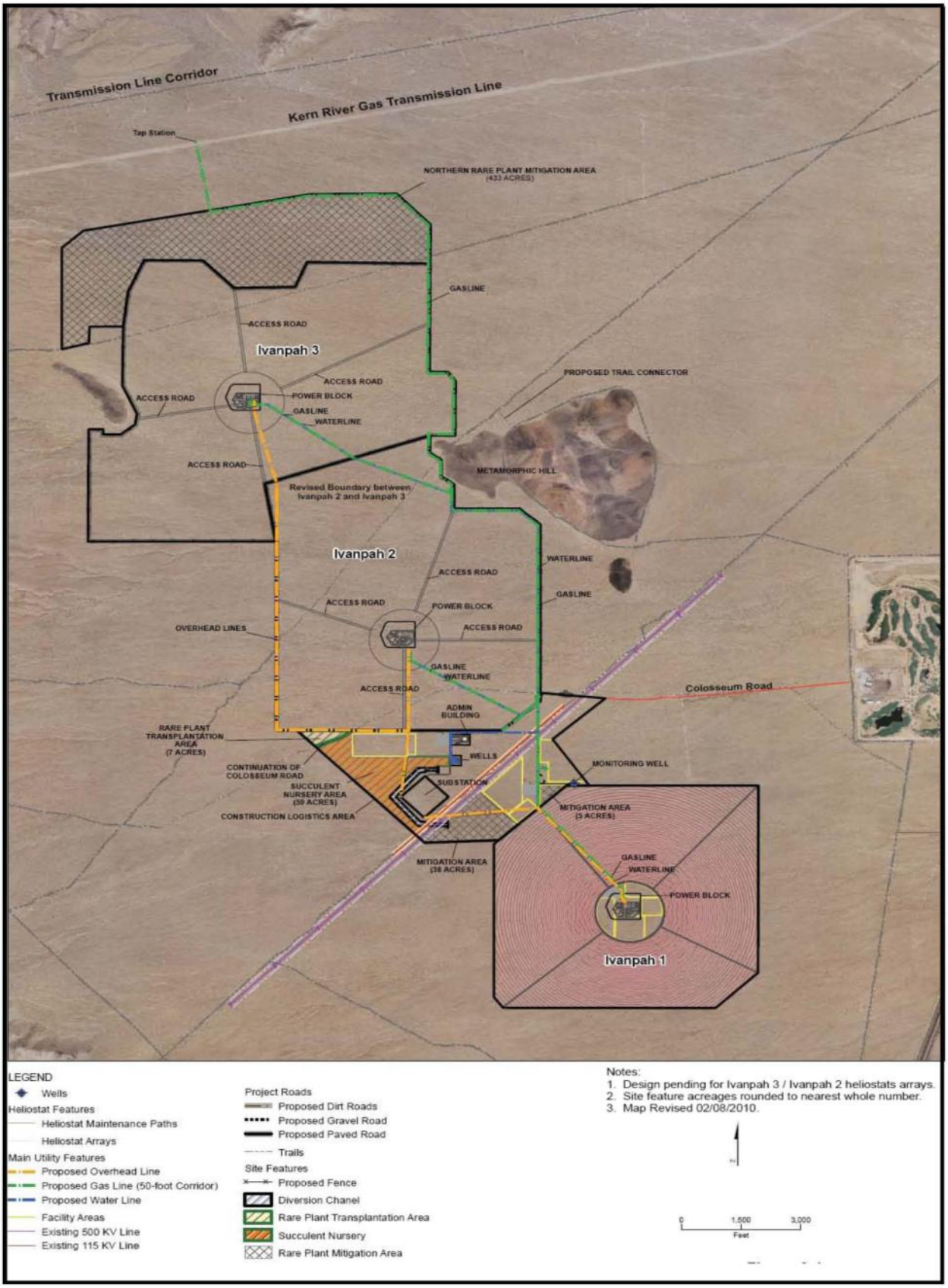

Figure 3-1. Site Plan for Mitigated Ivanpah 3 Alternative (Source: BSE 2010a)

in that area, as well as a reduction of 433 acres in the total overall ROW grant. The 433-acre area that would be eliminated from the proposed project alternative would be designated as the Northern Rare Plant Mitigation Area (BSE 2010a). The alternative would also eliminate the need to grade approximately 109 acres within the 377-acre CLA area. This area would remain within the ROW grant for the Mitigated Ivanpah 3 Alternative, and 67.5 acres of this area would be used as a Rare Plant Transplantation and Succulent Nursery Area. The alignment of the natural gas pipeline ROW, which would follow the northern boundary of Ivanpah Unit 3 in the proposed project alternative, would be extended to and along the revised northern boundary in the Mitigated Ivanpah 3 Alternative. The remainder of the acreage for the requested ROW grant would remain the same as that for the proposed project. However, other facilities and infrastructure within that footprint, including the boundary between Ivanpah 2 and 3, would be adjusted as needed to allow for construction and operation of the revised project design. The total acreage requested for the ROW for the Mitigated Ivanpah 3 Alternative would be 3564.2 acres.

The acreages of the ROW for the proposed project and the Mitigated Ivanpah 3 Alternative are summarized as follows in **Table 3-2**.

Table 3-2
Mitigated Ivanpah 3 Alternative, Acreage of BLM Right-of-Way

Overview of ISEGS Project Land Use		
Facility	**Proposed Project (acres)**	**Mitigated Ivanpah 3 Alternative (acres)**
Ivanpah Unit 1	913.5	913.5
Ivanpah Unit 2	920.7	1,097
Ivanpah Unit 3	1836.3	1,227
Construction Logistics Area (excludes all areas of Southern California Edison [SCE] exclusive usage)	377.5	159.2
External Features to ISEGS Project Boundaries (widening of Colosseum Road and natural gas line)	24.5	11.1
SCE use for El Dorado-Ivanpah Transmission Line (EITL) (substation, diversion channel, and transmission line)	n/a	90.4
Succulent Nursery and Rare Plant Transplantation Areas	n/a	66
Total ISEGS Project Land Use (including SCE transmission line usage)	4,073	3,564.2

Source: CH2ML2009a; BSE 2010a

Overall, the Mitigated Ivanpah 3 Alternative would require a BLM ROW grant totaling 3564.2 acres (approximately 5.6 square miles), a reduction of 12.5 percent from the ROW acreage required for the proposed project. Some of the areas included within this ROW grant, particularly the heliostat fields and power blocks within Ivanpah Units 1, 2 and 3, and the permanent facilities located within the CLA, would be permanently disturbed and occupied by ISEGS-related infrastructure throughout the duration of the ROW grant. This would include, at a minimum, the power blocks and heliostat fields associated with Ivanpah Units 1, 2, and 3, and the substation and administrative complex within the CLA. Together, these areas of permanent disturbance would total a minimum of 3290.8 acres, or 92.4 percent of the ROW grant.

Other areas, including the temporary construction staging areas within the CLA, would be disturbed during construction, but would no longer be needed once construction was complete. These areas could potentially have fencing removed, be restored according to the facility's approved Closure, Revegetation, and Rehabilitation Plan, and be removed from the ROW grant once the project becomes operational. These areas comprise a total of approximately 200 acres, or 5.7 percent of the Mitigated Ivanpah 3 Alternative ROW grant.

A third category of land included within the ROW grant includes areas for which the long-term status is uncertain. In their submittal describing the Mitigated Ivanpah 3 proposal (BSE 2010a), the applicant includes 109 acres of the CLA as being removed from development. This 109-acre area includes 59 acres for the Succulent Nursery Area, 7 acres for the Rare Plant Transplantation Area, and two separate areas (38 acres and 5 acres) designated as "mitigation" areas. Although the Mitigated Ivanpah 3 proposal suggests that these areas would not be disturbed, and should therefore be considered part of the reduction of the footprint of the Mitigated Ivanpah 3 Alternative, they are still part of the requested ROW grant, and would presumably be included within the fenced area. Also, the exact nature of activities that would occur within these areas is not defined. Although not used for construction, it seems likely that some level of vehicle traffic and/or ground disturbance would be required in the Succulent Nursery and Rare Plant areas to accommodate the movement and maintenance of plants. Therefore, for the purposes of this SDEIS analysis, BLM assumes that the 109 acre area is included as a disturbed area within the project footprint.

As the applicant finalizes their detailed plans, they may be able to avoid or minimize disturbance to certain areas, allowing these areas to remain as viable desert tortoise habitat. Therefore, a provision has been added to a mitigation measure, designated as BIO-17 in the DEIS, such that the acreage requiring mitigation for Desert Tortoise can be updated at a later time subject to BLM and Energy Commission approval. Through this process, the temporary disturbance areas and the areas with an unknown long-term status can be removed from the total land area requiring biological mitigation for compensation purposes.

3.4 Solar Power Plant Equipment and Facilities

Heliostats

The physical characteristics (size, materials, etc.) of the heliostats in the Mitigated Ivanpah 3 Alternative would be the same as those described in the DEIS for the proposed project. The primary difference would be that the Mitigated Ivanpah 3 Alternative would require approximately 40,000 fewer heliostats than the proposed project, or a total of 173,500. The reduction would be reached by not installing heliostats in the 433 acre northern portion of Ivanpah Unit 3.

The physical arrangement of the heliostats within the project boundaries would also be adjusted from that proposed project. In the proposed project, the heliostats in Ivanpah Unit 3 were arranged concentrically around five individual power towers. In the Mitigated Ivanpah 3 Alternative, the heliostats in Ivanpah Unit 3 would be arranged around a single power tower, thus requiring modification of their arrangement and configuration within the unit.

The Mitigated Ivanpah 3 Alternative would also include modification of the location of the boundary between Ivanpah Units 2 and 3 from that in the proposed project. This is due to the overall higher effectiveness of heliostats in the northern portion of a heliostat field (reflecting the sun in the southern sky) versus those in the southern portion. By eliminating the northern 433 acre portion of Ivanpah Unit 3 without adjusting the boundaries, the impact on the power output of Ivanpah Unit 3 in the Mitigated Ivanpah 3 Alternative would be much greater than the proportion of heliostats eliminated, because it would be the more effective northern heliostats eliminated. Therefore, the revised project design would re-direct a large number of “southern-field” heliostats in Ivanpah Unit 3 to become “northern-field” heliostats directed at the power tower in Ivanpah Unit 2. Combined with a proposed modification to the steam turbines in the Ivanpah Unit 2 and 3 power blocks (discussed below), these revisions result in reduced output from Ivanpah Unit 3 from 200 MW to 125 MW. However, they also result in increased output from Ivanpah Unit 2 from 100 to 125 MW (BSE 2010a).

Power Towers

The overall size, construction, and operation of the power towers in the Mitigated Ivanpah 3 Alternative would be the same as that described in the DEIS for the proposed project. The location and physical characteristics of the power towers in Ivanpah Units 1 and 2 would be the same as that for the proposed project. However, the number and location of power towers in Ivanpah Unit 3 would be modified from that in the proposed project. The proposed project includes five separate power towers within Ivanpah Unit 3. In the Mitigated Ivanpah 3 Alternative, the number of power towers would be reduced to one. The single power tower would be located in the center of the revised Ivanpah Unit 3 acreage, and thus located approximately 272 feet southwest of the location of the power block in the proposed project (BSE 2010a).

Power Block

The size, construction, location, and operation of the power blocks in the Mitigated Ivanpah 3 Alternative would be the same as that described in the DEIS for the proposed project. The location and physical characteristics of the power block in Ivanpah Unit 1 would be the same as that for the proposed project. However, the size of the steam turbines installed in the power blocks in Ivanpah Units 2 and 3 may be adjusted to make up for the reduction in power output caused by the elimination of heliostats (BSE 2010a). The power block in Ivanpah Unit 3 would be located approximately 272 feet southwest of its location in the proposed project.

3.5 Related Equipment and Facilities

Natural Gas Pipeline

The Mitigated Ivanpah 3 Alternative would require the use of natural gas in the same manner as that described in the DEIS for the proposed project. The source of the natural gas, the Kern River Gas Transmission Line located to the north of the proposed ISEGS facility, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative (BSE 2010a). The primary difference would be the length of the pipeline corridor that would exist outside of the project boundaries between the Kern River line and the modified northern border of Ivanpah Unit 3. In the proposed project, the length of this pipeline corridor was estimated to be 2,011 feet. Because the northern boundary of Ivanpah Unit 3 would be moved approximately 1,900 feet to the south, the length of the corridor would be approximately 3,911 feet in the Mitigated Ivanpah 3 Alternative.

The route of the pipeline would also be adjusted. In the proposed project, the pipeline corridor extends directly south from the Kern River line to its intersection with the northern border of Ivanpah Unit 3. At that location, the pipeline corridor would follow the northern border of Ivanpah Unit 3 to the east until it intersects the eastern boundary of Ivanpah Unit 3. The pipeline corridor would then follow the eastern boundary of Ivanpah Unit 3 to the south, ultimately being directed into the power blocks for Units 3, 2, and 1, respectively. In the Mitigated Ivanpah 3 Alternative, the pipeline corridor would still extend east along the northern border of Ivanpah Unit 3, but that eastward extension would be located approximately 1,900 feet south of its location in the proposed project. Once it reaches the eastern boundary of Ivanpah Unit 3, the pipeline corridor for the Mitigated Ivanpah 3 Alternative would then re-join, and be the same as that for the proposed project.

Air Pollution Control

The air pollution control equipment and management practices used on the natural gas-fired start-up boilers for the Mitigated Ivanpah 3 Alternative would be the same as those used for the proposed project. The size of the boiler used for Ivanpah Unit 3 in the alternative would be approximately 50 percent of the size of the boiler in the proposed project (BSE 2010a). However, the associated low-Nitrogen Oxide (NOx) burners, good combustion practices, continuous monitoring for Nox and Carbon Monoxide (CO), and

operational limitations would be no different than those associated with the proposed project.

Water Supply and Discharge

The general need for a water supply and discharge would be the same for the Mitigated Ivanpah 3 Alternative as for the proposed project. Both the proposed project and Mitigated Ivanpah 3 Alternative would require water as make-up water for the steam system, washwater for the heliostats, and potable water for domestic water needs (BSE 2010a). The volume of water required to support the Mitigated Ivanpah 3 Alternative would be slightly reduced from that required for the proposed project. This reduction would be due to the reduced number of heliostats that require washing in the Mitigated Ivanpah 3 Alternative. Because the reduction in the number of heliostats is approximately 18.7 percent, and heliostat washing is the largest use of water during operations, it is estimated that the volume of water required for operations would be reduced by about 18.7 percent.

The source of water for both alternatives would be groundwater supplied from one of two wells installed in the alluvial fan aquifer, and located within the CLA. To accommodate changes in the use of different areas of the CLA, the location of the wells within the CLA would be different in the Mitigated Ivanpah 3 Alternative. In the proposed project, the wells would be located in the southeast corner of the CLA, on the southeast side of the existing transmission lines, and abutting Ivanpah Unit 1. In the Mitigated Ivanpah 3 Alternative, the wells would be located in the northern portion of the CLA, north of the transmission lines, and close to Ivanpah Unit 2 (BSE 2010a). The wells would be located approximately 2400 feet north of the location in the proposed project.

Similar to the proposed project, the groundwater would be treated in activated carbon filters, de-ionization media, and a mixed-bed polisher to provide water of the required quality, and then directed to storage tanks designated for plant process needs and fire protection. The water in both alternatives would be supplied to the power blocks through underground pipelines (BSE 2010a). Because the locations of the wells would be modified, the precise route of the water pipelines within the CLA would be different in the Mitigated Ivanpah 3 Alternative than the proposed project. However, the routes for both alternatives would be located entirely within the broader outlines of the ROW grant, and the portions of the pipeline routes outside of the CLA would be the same for both alternatives.

Fire Protection

The fire protection system included as part of the Mitigated Ivanpah 3 Alternative would be exactly the same as that for the proposed project (BSE 2010a). For both alternatives, fire protection is provided through a 250,000 gallon water tank located at each power block, with 150,000 gallons reserved for fire protection purposes.

Access Roads and Maintenance Paths

The general approach for relocating existing roads and off-highway vehicle (OHV) trails would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project (BSE 2010a). Both alternatives would require paving and re-routing a portion of Colosseum Road to provide site access, and to divert the road around Ivanpah Unit 2. The configuration and construction details of the access roads to the power blocks, and the concentric heliostat maintenance paths, would be the same for both alternatives.

A primary difference between the proposed project and the Mitigated Ivanpah 3 Alternative would be the locations of the re-routed portions of two OHV trails. In the proposed project, Trail 699226, which currently passes through the northern portion of Ivanpah Unit 3, would be re-located around the outside of the facility, parallel to the northern boundary of Unit 3. Similarly, Trail 699198, currently passing through the proposed Ivanpah Unit 2 location, would be re-routed to a location between Ivanpah Units 2 and 3. In the Mitigated Ivanpah 3 Alternative, Trail 699226 would still be located within the boundaries of Unit 3. As a result, re-location of the trail along the northern boundary of Ivanpah Unit 3 would still be necessary. However, because the location and configuration of the northern boundary of Ivanpah Unit 3 would be approximately 1,900 feet further south in the Mitigated Ivanpah 3 Alternative, the re-routed location would be accordingly revised. Overall, the Mitigated Ivanpah 3 Alternative would result in a shorter, less obtrusive re-routing of this trail than would be associated with the proposed project. Because the location of the Ivanpah Unit 2 and 3 boundary would also be different in the Mitigated Ivanpah 3 Alternative, the location of the re-routed Trail 699198 would also be adjusted accordingly. In this case, the re-routed distance would be approximately the same in both alternatives, but in a slightly different location.

Construction Logistics Area, Substation, and Administrative Complex

Because it involves four fewer power tower receivers and 40,000 fewer heliostats, the Mitigated Ivanpah 3 Alternative would require a smaller amount of acreage (109 fewer acres) within the CLA for construction purposes. However, the alternative would use most of this acreage for a Rare Plant Transplantation Area (approximately 7 acres) and a Succulent Nursery Area (59 acres). Overall, both alternatives would require the same 377 acres designated in the ROW grant for the CLA (BSE 2010a).

In the proposed project, almost all of the CLA acreage would undergo either permanent or temporary disturbance associated with the substation, administrative complex, monitoring wells, and temporary construction laydown and storage areas. In the Mitigated Ivanpah 3 Alternative, the acreage of permanent disturbance required for the permanent facilities would be the same as that for the proposed project. However, the locations of these facilities and associated disturbance would be adjusted within the 377 acre boundaries of the CLA. The location of the substation would be the same for both alternatives, but the administrative complex and monitoring well locations would be re-located from the southeastern portion of the CLA in the proposed project to the northern portion of the CLA in the Mitigated Ivanpah 3 Alternative (BSE 2010a).

Fencing

The type, construction, and maintenance of fencing used for facility security and tortoise barrier would be the same for the proposed project and Mitigated Ivanpah 3 Alternatives (BSE 2010a). The fencing would be comprised of 8-foot tall steel chain-link topped with barbed wire for security purposes, and would also incorporate 1-inch horizontal by 2-inch vertical galvanized, welded wire fence as a tortoise barrier. Because the locations of the outside perimeter of Ivanpah Unit 3 and the boundary between Units 2 and 3 would be modified, the locations of the associated fencing would also be modified in the Mitigated Ivanpah 3 Alternative. The fence location at the northern boundary of Ivanpah Unit 3 would be approximately 1,900 feet south of its location in the proposed project, and the location of the boundary fence between Units 2 and 3 would be slightly north of its location in the proposed project.

As described in the DEIS for the proposed project, the applicant would need to have the fence located inset from the ROW boundary in order to allow for access to the fence from the outside for inspection and maintenance purposes. Also, with respect to the proposed project, the applicant stated a potential need to construct stormwater drainage systems outside of the fence, if needed to address stormwater damage issues. These requirements would still apply to the areas outside of the fence in the Mitigated Ivanpah 3 Alternative. If these inspection or maintenance activities would be required in areas outside of the approved ROW grant, then supplemental environmental review and analysis would need to be implemented, and appropriate land use authorizations and permits would need to be acquired by the applicant.

Transmission System Interconnection and Upgrades

The transmission system requirements of the Mitigated Ivanpah 3 Alternative would be exactly the same as that described in the DEIS for the proposed project (BSE 2010a). Although the total output of the facility would be reduced from 400 MW to 370 MW, the locations and capacities of the required gen-tie lines, Ivanpah substation, and switchyards with step-up transformers would all be the same as those required for the proposed project. The reduced output would also not affect the identified need and plan by SCE to upgrade approximately 36 miles of 115 kilovolt (kV) transmission line to 220 kV. That project, designated the El Dorado-Ivanpah Transmission Line (EITL) project, is proposed to accommodate an anticipated 1400 MW of load generation by ISEGS and five other planned renewable energy projects in the area, and the reduction of the ISEGS output from 400 MW to 370 MW would not be expected to affect the overall need for that project. The environmental impact of the EITL project is currently being evaluated by BLM and the California Public Utilities Commission (CPUC), and is also considered as part of the analysis of cumulative impacts of the ISEGS project in the DEIS.

Telecommunications Facilities

The telecommunications infrastructure required to support the Mitigated Ivanpah 3 Alternative would be exactly the same as that for the proposed project (BSE 2010a).

For both alternatives, the infrastructure is necessary to provide protective relay circuit and a supervisory control and data acquisition (SCADA) circuit for the proposed Ivanpah Substation, as well as data and telephone services. These services will be obtained by the construction of approximately eight miles of fiber optic cable from the ISEGS facility to Mountain Pass, along existing distribution line poles.

3.6 Project Design and Management Approach

Stormwater Management Approach

The general approach to be used to address stormwater management would be the same for the Mitigated Ivanpah 3 Alternative as for the proposed project. This approach includes the following elements:

- Using a Low Impact Development approach to minimize the amount of grading, vegetation removal, soil compaction, and site disturbance during construction of the heliostat fields;
- Providing active stormwater protection, through the use of diversion channels, around only the power blocks and CLA; and
- Allowing stormwater to follow natural flow paths through the heliostat fields.

Field investigations and stormwater modeling performed by the applicant and BLM during the DEIS process indicated that the deepest and widest stormwater drainage channels, and those expected to receive the highest volume and velocity of flow during major storm events, were those located in the northern portion of Ivanpah Unit 3. Accordingly, in the proposed project description, the primary area designated as requiring grading to allow construction of heliostat fields was the northern portion of Ivanpah Unit 3. Also, because the size of these channels is largest in the northern portion of Ivanpah Unit 3, that area comprised the greatest amount of drainage channel acreage that would be affected by the project.

Reduction of these impacts and associated mitigation requirements was one element in the applicant's decision to propose the Mitigated Ivanpah 3 Alternative. The revised northern boundary of Unit 3 in the alternative was designed, in part, to avoid the installation of heliostat fields in the most active drainages in this area. Accordingly, the Mitigated Ivanpah 3 Alternative would require an amount of grading, site disturbance, vegetation removal, and soil compaction that is substantially reduced from that associated with the proposed project (BSE 2010a).

Project Construction

In general, the sequence, procedures, and equipment used for project construction would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project. The primary difference that would be expected between the construction procedures and schedules would be the duration of construction, especially associated with Ivanpah Unit 3. The duration of construction for Ivanpah Unit 2 would likely be longer than the 3 to 4 months for the proposed project, due to the increased number of heliostats.

However, the duration of the construction of Ivanpah Unit 3 would be substantially reduced due to the elimination of four power tower receiver units, and elimination of more than 40,000 heliostats (BSE 2010a).

The construction equipment used for both alternatives would be the same; however, the areas and duration needed for the use of grading equipment would be reduced for the Mitigated Ivanpah 3 Alternative.

The standards and procedures to be used during construction would be the same for both alternatives. The construction of the Mitigated Ivanpah 3 Alternative would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These conditions would include provisions defined in the applicant's submittals for the proposed project, including:

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

Facility Operation and Maintenance

The operation and maintenance of the facility, as developed under the Mitigated Ivanpah 3 Alternative, would be the same as that for the proposed project. The specific operational procedures to be used in daily operations of Ivanpah Units 2 and 3 would differ, due to the different configurations and outputs of these Units in the Mitigated Ivanpah 3 Alternative. The primary differences would include a reduction in the level of effort and water volume needed for heliostat washing, and a reduction in the amount of natural gas burned in the start-up boilers (BSE 2010a). By reducing the number of heliostats from 214,000 to 173,500 (a reduction of 19 percent), the amount of water used for heliostat washing during operations would also be reduced by approximately 19 percent. The start-up boilers would be reduced in size from 924.4 million British thermal units per hour (MMBtu/hr); two boilers at 231.1 and one boiler at 462.2 MMBtu/hr in the proposed project to 693.3 MMBtu/hr in the Mitigated Ivanpah 3 Alternative, a reduction in natural gas usage of 25 percent.

Like construction, the standards and procedures to be used during operation and maintenance would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These conditions would include provisions defined in the applicant's submittals for the proposed project, including:

- Draft Contractor Health and Safety Standards (CH2ML 2009b)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2ML 2009d)
- Draft Raven Management Plan, ISEGS (CH2ML 2008c)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2ML 2009f)
- Draft Biological Assessment for the ISEGS Project (CH2ML 2008d)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2ML 2008e)

Waste Management

The types of non-hazardous solid wastes generated during construction, operations, and closure of the facility under the Mitigated Ivanpah 3 Alternative would be the same as those generated as part of the proposed project. All materials would be managed, recycled, and/or disposed of in the same manner for each alternative. The primary difference is that the Mitigated Ivanpah 3 Alternative is expected to generate a reduced volume of non-hazardous wastes, as compared to the proposed project. This is due to the reduced size of the Mitigated Ivanpah 3 Alternative, including construction of three power tower receivers instead of seven, and installation of 40,000 fewer heliostats (BSE 2010a).

Hazardous Waste Management

The types of hazardous materials used during project construction and operations under the Mitigated Ivanpah 3 Alternative would be the same as those generated as part of the proposed project. All materials would be managed, recycled, and/or disposed in the same manner for each alternative. Similar to non-hazardous wastes, the Mitigated Ivanpah 3 Alternative is expected to use a reduced volume of hazardous materials, as compared to the proposed project. This is due to the reduced size of the Mitigated Ivanpah 3 Alternative, including construction of three power tower receivers instead of seven, and installation of 40,000 fewer heliostats (BSE 2010a).

Project Decommissioning

The closure and decommissioning of the facility, as developed under the Mitigated Ivanpah 3 Alternative, would be the same as that for the proposed project. Similar to construction, the duration of the closure would be reduced under the Mitigated Ivanpah

3 Alternative, due to the reduced number of power tower receivers and heliostats that would require removal (BSE 2010a).

Like construction and operations, the standards and procedures to be used during closure and decommissioning would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These conditions would include provisions defined in the applicant's submittals for the proposed project, including:

- Draft Closure, Revegetation and Rehabilitation Plan (CH2ML 2009h)
- Draft Contractor Health and Safety Standards (CH2ML 2009b)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2ML 2009d)
- Draft Raven Management Plan, ISEGS (CH2ML 2008c)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2ML 2009f)
- Draft Biological Assessment for the ISEGS Project (CH2ML 2008d)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2ML 2008e).

4.0 Environmental Assessment of the Mitigated Ivanpah 3 Alternative

4.1 Air Quality

4.1.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to climate, meteorology, and existing air quality, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical to that of the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. This difference in location is not expected to result in any substantive difference in the climate, meteorology, or air quality data that are considered to be representative of the site for purposes of establishing background ambient air concentrations, and for evaluating the significance of potential impacts under NEPA.

The difference in location also does not affect the regulatory authority responsible for air quality, which is the Mojave Desert Air Quality Management District (MDAQMD), or the standards for regulatory compliance or significance of impacts. The area is located within the Mojave Desert Air Basin (MDAB), and is designated as moderate non-attainment for the state ozone and particulate matter (PM) 2.5 standards, and the state and federal PM10 standards. The area is classified as being in attainment for the federal ozone and PM2.5 standards, and as unclassified/attainment for state and federal CO, nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) standards.

4.1.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The analysis of the significance of potential air quality impacts is based on the following regulatory thresholds:

- General Conformity applicability thresholds, which for the Mitigated Ivanpah 3 Alternative is limited to 100 tons per year of PM10 and PM10 precursors (NOx and Sox). This regulatory threshold applies to both construction and operation emissions.
- Prevention of Significant Deterioration (PSD) permit applicability thresholds, which for the Mitigated Ivanpah 3 Alternative as a listed major source category is 100 tons per year for the criteria pollutants. This regulatory threshold only applies to direct project emissions during operations, and does not apply to secondary emissions such as fugitive dust emissions.
- The Mitigated Ivanpah 3 Alternative would cause air quality impacts in exceedance of the National Ambient Air Quality Standards (NAAQS).

To be considered significant with respect to NEPA, the alternative would need to generate emissions that exceed the standards defined in the first two criteria above. Both of these criteria are expressed in terms of a total mass of emissions generated. Should exceedance of either of these two criteria occur, then the potential for the alternative to cause exceedances of the NAAQS would need to be evaluated to determine if the alternative would result in a significant impact under NEPA. The evaluation of the NAAQS is expressed in terms of concentration of the pollutant, in units of mass per unit volume of air, such as micrograms/cubic meter (ug/m^3). To determine these concentrations in terms which can be compared to the NAAQS, the emissions associated with the project are evaluated using air dispersion modeling to establish the maximum concentrations that would be present at ground level for short-term (1-hour, 3-hour, 8-hour, and 24 hour) and annual periods.

In the original application, the applicant presented results from air dispersion modeling for the proposed project to evaluate whether resulting concentrations of the priority pollutants would result in exceedance of the NAAQS. The factors that were incorporated into the applicant's modeling included:

- Emission rates from the stationary sources that would be associated with the project, which would include generation of fugitive dusts during site disturbance, emissions from each of the 231.1 MMBtu/hr boilers located at Ivanpah Units 1 and 2, emissions from the 462.2 MMBtu/hr boiler located at Ivanpah Unit 3, emissions from the 240 brake horsepower (bhp) emergency fire water pumps at each of the three Units, and emissions from four 3750 bhp emergency generators (one each at Units 1 and 2, and two at Unit 3).
- The locations of the stationary emissions sources with respect to the ROW boundaries.
- Background concentrations of the pollutants, as developed from data from nearby air quality monitoring stations.

- Meteorological data from nearby meteorological stations.
- Use of U.S. Environmental Protection Agency (EPA)-approved models for each calculation.

In the DEIS, the results of the applicant's modeling were evaluated by verifying the reasonableness of the emissions rates, verifying the applicability of the background concentrations and meteorological data, and re-running the models to verify the results. In that evaluation, the agency chose to modify the background concentrations used by the applicant, in order to perform a more conservative analysis. All other data and procedures were determined to be accurate and/or conservative, and were thus incorporated into the agency's confirmatory modeling. The result of that analysis was a conclusion that both construction and operations could cause direct, adverse impacts to air quality if not sufficiently mitigated. The DEIS adopted mitigation measures proposed by the applicant and developed additional mitigation measures to reduce the emissions and associated adverse impacts.

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with fugitive dust emissions, emissions from construction vehicles, and emissions from worker commuting vehicles. For the proposed project, the DEIS concluded that these emissions could cause direct, adverse air quality impacts, and the DEIS proposed a variety of mitigation measures to minimize these impacts.

The construction of the Mitigated Ivanpah 3 Alternative would be expected to generate approximately the same rates of fugitive dust, construction vehicle emissions, and worker commuting vehicle emissions as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of construction would be expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent (48 months for the proposed project versus 40 months for the Mitigated Ivanpah 3 Alternative). Although the rate of emissions would be the same for the construction of both alternatives, the overall mass of emissions associated with the Mitigated Ivanpah 3 Alternative would be lower, due to the reduced duration of construction.

Although the air quality impacts associated with construction of the Mitigated Ivanpah 3 Alternative would be reduced from those associated with the proposed project, it would still potentially cause direct, adverse air quality impacts. Therefore, mitigation measures developed for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

Operations Impacts

Operations impacts associated with the Mitigated Ivanpah 3 Alternative would result from the following sources:

- Fugitive dust from vehicle traffic on unpaved roads and maintenance paths;
- Emissions from maintenance vehicles;
- Emissions from worker's commuting vehicles; and
- Emissions from stationary sources such as the boilers, emergency generators, and emergency fire water pumps.

In the submittal describing the Mitigated Ivanpah 3 proposal (BSE 2010a), the applicant's original air modeling for the stationary sources was modified to account for the differences in the number, size, and locations of the sources with respect to the property boundaries. The other factors, including background concentrations, meteorological input data, and the modeling methodology were kept the same as those used for the original modeling. The primary differences between the proposed project and the Mitigated Ivanpah 3 Alternative included:

- The size of the boiler at Ivanpah Unit 3 was reduced from 462.2 to 231.1 MMBtu/hr (50 percent), resulting in a reduction in fuel use.
- One of the two emergency generators proposed for Ivanpah Unit 3 for the proposed project would be eliminated in the Mitigated Ivanpah 3 Alternative.
- The Ivanpah Unit 3 power block, including the associated emissions sources (boiler, emergency generator, and emergency fire pump), would be moved 272 feet to the southwest, which is closer to the ROW boundary than as in the proposed project.

In general, these changes result in a lower mass of emissions from the Mitigated Ivanpah 3 Alternative, as compared to the proposed project, and therefore reduced concentrations of almost all pollutants in almost all locations and durations. The only exception is the modeling result for NO_2 impacts, which shows an increase in short-term (1-hour and 3-hour) concentrations at the site boundary. This result occurs because, even though the number of emergency generators was reduced from two to one, the original modeling assumed that only one would operate at any given time. Therefore, the total amount of emissions released during the short-term testing of the emergency generator was the same in the modeling for the proposed project and the Mitigated Ivanpah 3 Alternative. Because the generator in the Mitigated Ivanpah 3 Alternative is located 272 feet closer to the site boundary, the result for the short-term analyses (1-hr and 3-hr) showed an increase over the proposed project. However, the increase in maximum concentration is small (123.7 ug/m^3 for the proposed project versus 126.7 ug/m^3 for the Mitigated Ivanpah 3 Alternative), and the overall mass of emissions per year would be reduced by 50 percent.

Overall, air emissions associated with operation of the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project. However, the emissions could still cause direct, adverse impacts to air quality in the absence of mitigation measures.

Closure/Decommissioning Impacts

Similar to construction, the closure and decommissioning impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with fugitive dust emissions, emissions from heavy equipment, and emissions from worker commuting vehicles. For the proposed project, the DEIS concluded that these emissions would not have an adverse impact on air quality, for the following reasons:

- The activities would have a much shorter duration than construction;
- Emissions from equipment would be expected to be lower due to technology advancement; and
- The activities would likely be controlled with mitigation measures that were equivalent or superior to those used for construction.

Based on these factors, including the shorter duration associated with decommissioning the reduced acreage of disturbance, reduced number of heliostats, and reduced number of power tower receivers, adverse impacts associated with closure and decommissioning of the Mitigated Ivanpah 3 Alternative would not be expected.

Cumulative Impacts

The DEIS evaluated two types of cumulative air quality impacts associated with the proposed project. These included:

- Compliance of the proposed project with programmatic efforts to reduce air pollutants in the region; and
- The proportional contribution of the proposed project to current and reasonably foreseeable emissions in the area.

Because the MDAB is designated as non-attainment for the federal 24-hour PM10 standard, the MDAQMD adopted a Federal Particulate Matter (PM10) Attainment Plan (PMAP) in July, 1995. Although the area is designated as unclassified/attainment for federal PM2.5 standards, it is classified as non-attainment for the annual state PM2.5 standard. Neither the PMAP nor the state specify control measures that would be applicable to the emissions sources that would be present at either the proposed project, or the Mitigated Ivanpah 3 Alternative. Therefore, compliance with the MDAQMD rules and regulations would constitute compliance with those authorities.

In the DEIS, localized cumulative impacts for air quality were defined as having the following components:

- Background conditions, which comprise emissions from existing projects that contribute to ambient air quality conditions;
- Project-related emissions, as estimated using emissions estimates from project-related sources and site-specific air dispersion modeling; and
- Emissions associated with reasonably foreseeable projects.

Both background conditions and emissions associated with reasonably foreseeable projects were established in the DEIS analysis for the proposed project. Based on the

designation of the area as non-attainment for the state ozone and PM2.5 standards, and the state and federal PM10 standards, it can be concluded that air quality impacts already exist in the project area. Although no specific applications for Authority to Construct (ATC) or Permit to Operate (PTO) for projects within a six-mile radius of the site have been identified, the DEIS did identify several proposed projects that are likely to contribute emissions that will affect air quality in the area. These included additional proposed solar energy facilities, the Southern Nevada Supplemental Airport in Jean, proposed commercial and residential development in Jean, and proposed high-speed rail projects. While none of these would be expected to have long-term operational emissions, each would likely release particulate emissions and fugitive dust associated with ground disturbance during construction. Therefore, these emissions, combined with construction and operations emissions from the Mitigated Ivanpah 3 Alternative, would likely contribute to an adverse cumulative impact on air quality. Mitigation measures, as described below, would be recommended to reduce the level of emissions associated construction, operation, and closure of the Mitigated Ivanpah 3 Alternative, and thus reduce the contribution of the project to potential cumulative impacts.

Beneficial Impacts

By generating needed power with only a small supplemental use of fossil fuels, the Mitigated Ivanpah 3 Alternative would potentially displace greenhouse gas and pollutant emissions associated with fossil fuel-powered generating facilities in the transmission area.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.1.3 Air Quality Summary

A comparison of the air quality impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-1**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the air quality impacts associated with the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project. Overall project air emissions, as compared to the proposed project, would be reduced due to the reduction in the size of the Ivanpah Unit 3 boiler, and the reduced area of ground disturbance associated with project construction. The re-location of the Ivanpah Unit 3 power block would result in a small increase in one-hour NOx emissions detected at the site boundary. However, these increased emissions would not exceed any of the regulatory thresholds, and would be very limited in duration.

Although the emissions would be lower than those for the proposed project, they would still cause direct, adverse impacts to air quality, and would also contribute, along with other proposed projects in the area, to a cumulative adverse impact on air quality. However, mitigation measures proposed by the applicant, and additional measures proposed in this SDEIS, would ensure that emissions would not exceed any NEPA or permitting criteria.

Table 4-1
Comparison of Air Quality Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
General Conformity Applicability Threshold	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact
PSD Permit Applicability Threshold	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact
Exceedance of NAAQS	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact

4.2 Biological Resources

4.2.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to biological resources, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed

project, with the exception of the elimination of the northern 433-acre area of Ivanpah Unit 3 in the Mitigated Ivanpah 3 Alternative.

The implementation of the Mitigated Ivanpah 3 Alternative would result in a reduced surface footprint and thus a reduction in impacts to biological resources. Since the habitat that would remain undisturbed is considered of relatively high quality and diverse native habitat, the benefits would be greater than avoidance of comparable acreage in other, lower quality habitat areas. Further, the location and magnitude of the Mitigated Ivanpah 3 Alternative site helps retain large scale ecological processes and migration corridors that are beneficial to wildlife species.

4.2.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM concluded that the proposed project would have direct, adverse impacts to 4073 acres of desert tortoise habitat, which would require state and federal endangered species “take” authorizations. The tortoises present in the ROW area would be removed and translocated to an area to the west of the project site. In addition to the direct loss of tortoise habitat, the proposed project would also fragment and degrade adjacent habitat, and could promote the spread of invasive plants and desert tortoise predators (ravens). The proposed project would also directly impact breeding and/or foraging habitat for other special-status wildlife species, including burrowing owl, loggerhead shrike, Crissal thrasher, golden eagle, and American badger. The proposed project would also impact vegetation in the 4,073-acre project area, including one species considered sensitive by BLM (the Rusby’s desert-mallow). Finally, the proposed project would adversely impact ephemeral drainages through site grading, compaction, and construction of infrastructure within drainage channels. Although the proposed project construction method, Low Impact Development, would be designed to minimize direct impacts to these drainages, the DEIS assumed that all 2,000 ephemeral drainages (198 acres of waters of the state) would be impacted, and would subject to a streambed alteration agreement with the California Department of Fish and Game (CDFG). For each of these NEPA impacts identified, the DEIS presented mitigation measures that have been proposed by the applicant, would be implemented to address issues for other state and federal agencies, and/or were identified by BLM and Energy Commission staff.

In addition to the evaluation of impacts under NEPA, the analysis of biological impacts of the proposed project in the DEIS included an evaluation of impacts to species considered sensitive under CEQA by the Energy Commission, including plant species listed by the California Native Plant Society (CNPS). For these species, the Energy Commission proposed additional Conditions of Certification to reduce the identified impacts. Implementation of these additional Conditions of Certification on public lands would require BLM consent.

For the Mitigated Ivanpah 3 Alternative, the potentially-impacted species which are evaluated below include wildlife, species afforded protection under the Migratory Bird Treaty Act (MBTA), and special status species. For the purposes of this discussion,

special status species include the following: federally listed, proposed, and federal candidate species (USFWS No Date); state-listed species (State of California 2004); and BLM sensitive species (BLM 2004). In addition to special status species, there are numerous species of concern, including Birds of Conservation Concern (BCC) and plant species identified as rare by the CNPS.

4.2.2.1 Wildlife

A general description of the biological resources associated with the proposed project area was provided in Section 6.2 of the DEIS. The species associated with the Mitigated Ivanpah 3 Alternative would be the same. Based on additional information identified through the DEIS public comments, Energy Commission hearing process, workshops with Energy Commission intervenors, and other activities conducted since the publication of the DEIS, the following species descriptions are provided in this SDEIS to supplement the species descriptions already provided in the DEIS.

Big Game and Other Wildlife Species

The project area consists primarily of Mojave creosote scrub and other native vegetation communities that are largely intact and relatively free from noxious and invasive weeds. The project area is inhabited by a variety of wildlife species. Mule deer and desert bighorn sheep are found in the region with populations occupying nearby mountain ranges. Big game move between mountain ranges utilizing general movement corridors along the alluvial fan. A diverse community of nongame species (e.g., small mammals, raptors, songbirds, and reptiles) also exists within this habitat and provides a prey base for coyotes, badger, skunk, raptors, and snakes. The vegetative community also supports a diverse community of insects and invertebrates that provide a forage base for many other species.

Non-game birds include a variety of migratory songbirds and raptors, many of which are protected by the MBTA (see below) and are included on the U.S. Fish and Wildlife Service (USFWS) BCC list.

Migratory Birds

The project area includes habitat which may be used by species protected under the MBTA. The MBTA provides that it is unlawful to "*pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird*" (16 U.S.C. 703).

Representative MBTA species, including raptors and songbirds, are listed in Section 6.2 of the DEIS. Many MBTA species utilize the project area for nesting and foraging, while others pass through the area as a movement corridor between regional mountainous areas and also the Colorado River.

Construction Impacts

Wildlife resources and their habitats would be directly and indirectly impacted by the construction of the project. The impacts are similar to those discussed in Section 6.2 of the DEIS.

Direct impacts to big game include the incremental long-term reduction of potential forage and the incremental increase of habitat fragmentation, displacement of species from existing habitats, and hampering or restricting movements between seasonal ranges and/or water sources. Although habitats adjacent to the project may support some displaced animals, species that are at or near carrying capacity could suffer some increased mortalities due to displacement. Additionally, increased human presence and related increase in traffic levels on project access roads increases the potential for wildlife/vehicular collisions.

Other potential direct impacts to non-game wildlife include nest or burrow abandonment and loss of eggs or young where construction occurs during the breeding season. Direct impacts from surface disturbance activities would result in the temporary loss of habitat and increased fragmentation until vegetation is reestablished. For species with relatively small home ranges (e.g., lizards), the loss of habitat may cause population reductions. Potential impacts also would result in mortalities of less mobile or burrowing non-game species (e.g., small mammals, birds, reptiles, invertebrates) due to exposure to vehicle and construction equipment traffic. Potential direct impacts also would include nest or burrow abandonment or loss of eggs or young when construction occurs during the breeding season.

Indirect impacts would result from increased noise levels and human presence during surface disturbance activities resulting in the displacement of wildlife species. Additional indirect impacts include increased presence of noxious and invasive weeds resulting in reduced forage and habitat quality, and dust effects from unpaved roads. These indirect effects can increase stress within individuals resulting in greater susceptibility to disease and lower fecundity.

Direct and indirect impacts to MBTA species from construction would be similar to those impacts described above, including loss of habitat quantity and quality, potential impairment within movement corridors, mortality due to vehicle/bird collisions, and increased human activity levels. If surface disturbance activities occur during the breeding season for passerines, raptors, and other summer avian residents (approximately March through July), nest or territory abandonment or the loss of eggs or young (loss of productivity) for the breeding season could result. Impacts to nesting birds would depend on the nest location relative to the proposed disturbance area, the phase of the breeding period, and the level and duration of the disturbance.

Operations Impacts

Operation impacts would include increased noise, human presence, and light to the area. Sources of noise during operations would be from mechanical equipment, vehicle traffic, and activities in the maintenance facility. Maintenance activities would increase vehicular traffic and increase the potential for dispersal of noxious and invasive weeds. Artificial lighting associated with the facilities on wildlife species may include disorientation from and attraction to artificial light, impact-related mortality due to disorientation, and effects on the light-sensitive cycles of many species (Saleh 2007).

Operation of the solar facility would include the potential for foraging and migrating avian and bat species to collide with the project facilities, including mirrors, transmission lines, and three 459-foot tall centralized power towers. Potential for mortality exists for migrating and foraging bat, avian, and insect species from radiation affects from the solar rays created by the facility. Although data are limited, one 79-acre solar facility with one 282-foot tall solar tower experienced 1.7 avian mortalities per week (McCrary 1986). The majority of avian mortalities were attributed to collisions, but approximately 20 percent were attributed to heat related injuries. In comparison, the proposed ISEGS project is approximately 50 times the size of the McCrary study site with more numerous and taller towers.

Closure/Decommissioning Impacts

Closure/decommissioning-related impacts would be consistent with those described within the DEIS. The Mitigated Ivanpah 3 Alternative would reduce the number of acres requiring facility removal and subsequent reclamation activities by 433 acres (approximately 12.5 percent) compared to the proposed project. Direct and indirect impacts to biological resources from closure/decommissioning activities would be similar to those described for construction impacts. Reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community. Noxious and invasive weeds would likely be more prevalent than existing conditions. Permanent changes in the vegetative communities would alter the ecosystem's ability to sustain the same type and numbers of species currently found at the site.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with wildlife resources.

4.2.2.2 Special Status Species

A general description of the biological resources associated with the proposed project area was provided in Section 6.2 of the DEIS. The species associated with the Mitigated Ivanpah 3 Alternative would be the same. Based on additional information identified through the public comments on the DEIS, Energy Commission hearing process, workshops with Energy Commission intervenors, and other activities

conducted since the publication of the DEIS, the following special status species descriptions are provided in this SDEIS to supplement the species descriptions already provided in the DEIS.

Impacts to special status species from construction, operation, and closure/decommissioning are similar to those discussed above for general wildlife species. However, the loss of individuals or subpopulations of special status species has greater significance to the overall viability of the species, than for general wildlife species. Therefore, species-specific impacts are described below for each species, as applicable.

Federally Listed Species

Desert Tortoise (*Gopherus agassizii*)

The desert tortoise is both federally and state-listed as threatened. The biology, critical habitat designation, and the Desert Tortoise Recovery Plan associated with desert tortoise was previously discussed in Section 6.2 of the DEIS. To briefly summarize key information from the DEIS, the proposed ISEGS project would be constructed within the Northeastern Mojave Recovery Unit, one of six designated evolutionarily significant units within the range of the desert tortoise (USFWS 1994). According to the 1994 recovery plan, tortoise densities in the Ivanpah Valley were estimated between 5 and 250 adult tortoises per square mile and the area was given a threat level of 3 out of 5 (5 = extremely high) (USFWS 1994). Desert tortoises are distributed throughout Ivanpah Valley with the exception of the dry lakes and developed areas. According to the Northern and Eastern Mojave Planning Area EIS (BLM 2002), the non-lakebed portion of the Ivanpah Valley area is considered excellent quality tortoise habitat with some of the highest population densities in the East Mojave.

Desert tortoises also occur along the ISEGS linear facilities (BSE 2007). Surveys of the fiber optic route by EPG, Inc. (2008) (cited in BSE 2007) confirmed that the entire route is within desert tortoise habitat. Protocol level surveys were not conducted. However, in surveying the fiber optic route EPG found three tortoise burrows and a tortoise shell.

Construction impacts would be similar to those described in the DEIS and for general wildlife species above. Trash and construction debris, plus additional perch sites, may increase raven predation on tortoise.

Operation of the proposed project would permanently affect approximately 4,073 acres of occupied desert tortoise habitat. Within the project site and surrounding area, the 2007/2008 protocol desert tortoise surveys found 25 live desert tortoises, 97 desert tortoise carcasses, 214 burrows, and 50 other tortoise sign (BSE 2007). Tortoise sign and density was greatest in Ivanpah 1 at the southern boundary of the project site and was less dense as the survey moved towards Clark Mountain and Ivanpah Unit 3, with the exception of the northernmost portion of Ivanpah Unit 3 where five tortoises and abundant tortoise sign was reported.

While the proposed project site is not within designated critical habitat for any species, it is located approximately five miles north of the Ivanpah Critical Habitat Unit for desert tortoise, just north of the I-15 and Route 164 (Nipton Road) interchange. Critical habitat was designated to identify areas containing key biological and physical attributes that are essential to the desert tortoise's survival and conservation, such as space, food, water, nutrition, cover, shelter, and reproductive sites.

While the recovery plans suggest that land managers focus the most aggressive recovery efforts toward tortoise conservation areas, they also emphasize that land managers should strive to limit the loss of desert tortoise habitat outside conservation areas as much as possible (USFWS 2008). The recovery plans recognize that activities occurring on lands beyond the boundaries of existing tortoise conservation areas can affect tortoise populations and the effectiveness of conservation actions occurring within the conservation area boundaries. While recovery efforts may be prioritized within existing desert tortoise conservation areas, populations, habitats, and actions outside of these areas may also contribute to, or hamper, recovery of the species.

Compared to the proposed project, the Mitigated Ivanpah 3 Alternative would have a reduced impact on desert tortoise by avoiding long-term impacts to 433 acres of habitat and providing an area for tortoise relocation within known tortoise habitat. Surveys in 2007 and 2008 found three tortoises within this area, an additional six tortoises within approximately 2,000 feet of the northern Ivanpah Unit 3 boundary (including one outside the project site), and 17 existing tortoise burrows within this area. Habitat within this area is considered to be of higher quality than surrounding habitat due to a greater frequency of tortoise sign observed during surveys, increased vegetation diversity and density, and greater number of ephemeral washes. Reducing the project footprint in this area would have greater anticipated benefit than reduction in project footprint in other locations.

Closure and decommissioning activities would have fewer future impacts on tortoise than the proposed project since fewer acres would require restoration.

The applicant also has identified mitigation to minimize impacts to desert tortoise due to the construction and operation of the proposed project, including conducting desert tortoise clearance surveys and establishing exclusionary fencing (BIO-8), developing and implementing a desert tortoise translocation plan (BIO-9), implementing avoidance measures and Best Management Practices (BMPs) (BIO-11), implementing raven and weed management plans (BIO-12 and BIO-13), and acquiring off-site habitat, establishing endowment, and enhancing suitable desert tortoise habitat (BIO-17).

While no critical habitat for desert tortoise would be impacted by the Mitigated Ivanpah 3 Alternative, the action is likely to adversely affect desert tortoise. This determination is based on the potential for incidental long-term loss of habitat from construction and operation, displacement of individuals, habitat fragmentation due to surface disturbance from the project, and the potential accidental loss of individuals from handling, tortoise relocation, and construction activities. Indirect impacts include an increase in noxious and invasive weeds, which would reduce forage quality. Dust and increased human

activity in the area would contribute to stress, possibly increasing susceptibility to disease. Similar to the proposed project, the Mitigated Ivanpah 3 Alternative would require a federal endangered species "take" authorization.

BLM Sensitive and State Protected Wildlife Species

Mammals

Pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*)

Information regarding the pallid and Townsend's big eared bats was provided in Section 6.2 of the DEIS. Both the pallid and Townsend's big-eared bat are BLM sensitive species and California species of concern. Pallid bat and Townsend's big-eared bat have been reported in the project vicinity (Brown 2008, California Natural Diversity Database [CNDDB] 2008).

Pallid and Townsend's big-eared bats may use the project area for nighttime foraging and might use nearby mine shafts for roosting. Based on the moderate probability of occurrence, nighttime foraging patterns, and preferred roosting habitat located outside of the Ivanpah 3 site, construction of the Mitigated Ivanpah 3 Alternative would not substantively affect pallid or Townsend's big-eared bats.

Like the proposed project, operation of the Mitigated Ivanpah 3 Alternative would increase risk of collision and heat-related injuries associated with the solar towers and transmission lines. The alternative may interfere with normal movement patterns. While the loss of habitat likely would result in fewer flying invertebrates for foraging bats, artificial lighting from the project may attract insects at night, thereby increasing the collision hazard for bats.

Closure and decommissioning activities would have fewer future impacts on bat species than the proposed project since fewer acres would require restoration.

Based on the low probability of occurrence on the project site, nighttime foraging patterns, and preferred roosting habitat located outside of the Ivanpah Unit 3 site, the Mitigated Ivanpah 3 Alternative would have limited adverse effects on these bat species.

Long-legged myotis (*Myotis volans*)

The long-legged myotis is a BLM sensitive species. It was not found within the project site during 2007 and 2008 surveys. Long-legged myotis are forest inhabitants over most of their range, preferring high, open woods, and mountainous terrain. Nursery colonies form in buildings, cliff crevices, and hollow trees. These bats do not appear to use caves as day roosts.

Because roosting habitats typically utilized by long-legged myotis are uncommon or absent from the Project area, construction would have negligible impacts on this species.

While roosting habitat is not found within the project area, these bat species may potentially forage in the project area. While the Mitigated Ivanpah 3 Alternative would reduce the amount of disturbed acreage and foraging habitat, operational impacts may be similar to those impacts described for other bat species.

Closure and decommissioning activities would have fewer future impacts on bat species than the proposed project since fewer acres would require restoration.

Based on the low probability of occurrence on the project site, nighttime foraging patterns, and preferred roosting habitat located outside of the Ivanpah Unit 3 site, the Mitigated Ivanpah 3 Alternative would have limited adverse effects on long-legged myotis.

Nelson's Bighorn Sheep (Ovis canadensis nelsoni)

The Nelson's bighorn sheep is a BLM sensitive species. The CNDDB records indicate that this species was documented in the vicinity of the ISEGS project in 1986, when approximately 150 sheep were recorded approximately 2.9 miles west and northwest of the project area near Clark Mountain (BSE 2007). Jaeger's (1994) studies of bighorn sheep in the Kingston Range and Clark Mountain area provide some more recent information on the demography, habitat use, behavior and movement patterns of the Clark Mountain population of Nelson's bighorn sheep. Jaeger (1994) also studied seasonal movements of bighorn sheep, and determined that radio-collared ewes near Clark Mountain moved seasonally between Clark Mountain and the State Line Hills, a part of the Spring Range in Nevada, to the northeast (Jaeger 1994). Bighorn also utilized the Mesquite Range, which lies to the northwest of Clark Mountain.

No studies are available that would confirm the presence of Nelson's bighorn sheep in the project area. Given the proximity of Clark Mountain, it is likely that bighorn sheep move down into the upper elevations of the Ivanpah Valley, including the ISEGS project area, to forage (CH2ML 2008d). Alluvial fans near steep rocky terrain can provide crucial foraging habitat for bighorn sheep (Wehausen 2009). For example, ewes at the end of gestation that need nutrients may come down from steep, rocky terrain looking for higher quality forage. They might use areas like the project site for only three weeks, but those three weeks are critical (Wehausen 2009). The margin of the Ivanpah Valley might also provide important movement corridors for deer and bighorn sheep (CH2ML 2008d). CDFG has noted that wildlife corridors are present through and adjacent to the ISEGS site, and have expressed concern that the project could adversely affect bighorn sheep (CDFG 2008). However, no studies are available documenting bighorn use of the Ivanpah Valley as a migratory area.

Construction, operational, and closure/decommissioning impacts would be the same as those described for big game wildlife.

Potential impacts to desert bighorn sheep would be minimized through implementation of the applicable mitigation measures identified in the DEIS. Based on the potential use of the movement corridor located north of the Ivanpah 3 site, the Mitigated Ivanpah 3

Alternative may have lesser impacts on Nelson's bighorn sheep by providing a greater buffer between human disturbance and the movement corridor.

Birds

Western Burrowing Owl *(Athene cunicularia hypugaea)*

The burrowing owl is a USFWS Species of Concern, a BLM sensitive species, and a California species of special concern. This species was detected on the ISEGS site during the 2008 surveys but not in 2007. Suitable habitat was identified. No owls, feathers, active burrows, pellets or whitewash were observed. The size and status of burrowing owl population at the project site is not known. The ISEGS site provides suitable foraging and breeding habitat for this species. The DEIS identified mitigation to reduce impacts to this species, including implementation of burrowing owl avoidance and mitigation measures (BIO-16) and off-site habitat acquisition and enhancement (BIO-17).

Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

Based on the preferred open habitat of burrowing owls, the Mitigated Ivanpah 3 Alternative would not substantially alter impacts to this species compared to the proposed project since the 433-acre area that would be remain undeveloped under the Mitigated Ivanpah 3 Alternative consists of numerous ephemeral drainages that are not ideal burrowing owl habitat.

Golden Eagle *(Aquila chrysaetos)*

The golden eagle is federally protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Golden eagles are a BLM sensitive species and a California species of concern. This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover. Golden eagles were detected on the ISEGS project site, but are unlikely to nest there because of the absence of suitable nesting habitat. However, Clark Mountain, just north of the project area, provides suitable nesting habitat for this species, and the ISEGS site provides foraging habitat.

Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

Based on the preferred foraging habitat of golden eagles, the Mitigated Ivanpah 3 Alternative would reduce potential impacts to this species since the 433-acre area that would remain undeveloped consists of numerous ephemeral drainages of high quality habitat that may provide good foraging habitat. The relocation of the northern ROW boundary also would increase the buffered distance from suitable nesting habitat and human activities associated with the project.

Bendire's thrasher (*Toxostoma bendirei*)

The Bendire's thrasher is a BLM sensitive species and a California species of concern. It was not found within the project site during 2007 and 2008 surveys. Several sightings of Bendire's thrasher were observed in the mountainous region of the Mojave National Preserve (BLM 2009). Breeding habitat is highly variable, but does occur within the Mojave and Great Basin deserts within dense Mojave Desert scrub with Joshua trees, Spanish bayonet, Mojave yucca, cholla cactus, or other succulents.

Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

There is the potential for Bendire's thrasher to occupy high quality habitat within the project area. Consequently, the Mitigated Ivanpah 3 Alternative would avoid disturbance to 433-acres of probable habitat for this species.

Gray Vireo (Vireo vicinior)

The gray vireo is a USFWS species of concern, BLM sensitive species, and a California species of special concern. It was not found within the project site during 2007 and 2008 surveys. Breeding habitat consists primarily of low density pinyon-juniper woodlands, often along the margin of this habitat where it mixes with shrublands of greater density (Winter and Hargrove 2004). Because the habitats typically utilized by gray vireo are uncommon or absent from the project site, this species is considered to have low potential for occurrence on the project site and was eliminated from further analysis.

Reptiles

Banded Gila Monster *(Heloderma suspectum)*

Information regarding the Gila monster was provided in Section 6.2 of the DEIS. The Gila monster is a BLM sensitive species and federal species of concern. The Gila monster is considered rare in California (Lovich and Beaman 2007) with only 26 credible records of the species documented in California within the past 153 years. Gila monsters have the potential to occur in the ISEGS project area, particularly near the metamorphic hill, immediately adjacent to the southeastern boundary of Ivanpah 3 (CH2ML 2008a). Gila monsters may venture from those rockier areas adjacent to the project area where they would likely take refuge in small crevices and caves to forage within the alluvial fan on which the proposed project is located (CH2ML 2008a).

Construction, operational, and closure/decommissioning impacts would be the same as those described for wildlife species.

Based on the low probability of occurrence within the site, since Gila monster preferred habitat is located outside of the Ivanpah Unit 3 site, the Mitigated Ivanpah 3 Alternative would not substantively benefit or adversely affect banded Gila monster.

Wildlife Species of Special Concern

Additional species of special concern, such as the American badger and the loggerhead shrike, have the potential to occur within the project area. These species have some regulatory protection by California state law. The DEIS identified many of the Species of Concern that have the potential to occur within the project site and well as those found in the region. These species are monitored due to concerns about population viability and as useful indicators of ecosystem health. Construction, operational, and closure/ decommissioning impacts for species of concern would be the same as those described for other similar wildlife species.

4.2.2.3 Sensitive Plant Species

The DEIS identified potential impacts to native plant species and communities, particularly special status plant species and species of concern. Within the project area, there are no known occurrences of federal- and state-listed plant species. The only BLM sensitive species known to occur within the project area is the Rusby's desert mallow. In the FSA/DEIS, the Energy Commission also identified a number of species of special concern located within the project site, including plants identified as rare by the CNPS (List IB and List 2).

In 2007 and 2008, species-specific surveys were conducted within the proposed project area for special status plant species and CNPS species of concern. Based on these surveys, one BLM sensitive species (i.e., Rusby's desert mallow) and seven CNPS species (i.e., Mojave milkweed, Parish's club cholla, desert pincushion, Utah vine milkweed, desert portulaca, nine-awned pappus grass, and small-flowered androstephium) were identified within the project area. **Table 4-2** summarizes these eight species, providing the estimated number of populations within the project area and the estimated percentage of those populations that would be avoided as result of the Mitigated Ivanpah 3 Alternative implementation.

While surveys were conducted for sensitive plant species, these surveys were only conducted in the spring, consequently, late summer and fall blooming species may have been undetected. Further review by federal and state agencies will occur to identify those species with potential for occurrence within the project area based on the current distribution of the species, habitat association, and relative occurrences within the project area. Based on the results of this review and the likelihood of additional sensitive plant species potentially occurring within the area, the BLM may recommend further field surveys be conducted within suitable habitat in the Project area following survey protocols appropriate for the species' of interest (see Section 4.2.3, Mitigation).

<u>Rusby's Desert Mallow and Mojave Milkweed</u>

The Rusby's desert mallow is a BLM sensitive plant species and a CNPS species of concern. Mojave milkweed is a CNPS species of concern. While there is no regulatory protection for Mojave milkweed, the Energy Commission specifically identified this species of particular interest for the area and, therefore, it is included in this discussion.

Surveys of these two species conducted in 2007 and 2008 found widely-scattered distribution patterns. The surveys identified ten locations containing Rusby's desert mallow. Five of the locations are outside of the proposed project site. One location is within the 433-acre northern portion of Ivanpah Unit 3, two are within the proposed Ivanpah Unit 3 site, one is within one of the smaller mitigation areas, and the remainder are within other portions of the project site. In the re-configured CLA associated with the Mitigated Ivanpah 3 Alternative, all three Rare Plant Mitigation Areas combined contain relatively few numbers of Rusby's desert mallow and Mojave milkweed.

Construction activities would have limited impacts to Rusby's desert mallow and Mojave milkweed. Plant avoidance and protection areas within the heliostat fields would be fenced during construction to avoid inadvertent encroachment. Dust from construction activities may stress plants within the construction area.

Fencing would be removed following construction and an alternative marking material (e.g., posts or stakes) would be installed for operations to indicate the areas where avoided plants are located. This mitigation measure attempts to preserve ecological connectivity between the 433-acre northern portion of Ivanpah Unit 3, the smaller Rusby's desert mallow and Mojave milkweed plant avoidance and protection areas, and other areas of undisturbed contiguous habitat, allowing seed dispersal, pollinator movement, and other ecological processes to occur. Rusby's desert mallow and Mojave milkweed plant avoidance and protection areas within the heliostat fields would be monitored to ensure the areas remain protected.

Compared to the proposed project, the Mitigated Ivanpah 3 plant avoidance and protection approach provides large areas of sensitive plant mitigation areas that would have a greater degree of protection from operational activities.

Construction Impacts

Construction-related impacts would be consistent with those described within the DEIS (BLM and CEC 2009); however, the Mitigated Ivanpah 3 Alternative would result in the elimination of 433 acres from surface-disturbance activities compared to the proposed project. Potential impacts to sensitive plant species from surface disturbance-related activities may include the loss of individuals as a result of crushing from construction vehicles and equipment. Because surface disturbance would be distributed over a relatively large geographic area and within an ecological-specific niche (i.e., Mojave Desert Ecoregion), population-level impacts to sensitive plant species may occur. Impacts may include the long-term loss of potentially suitable habitat until closure/decommissioning and native vegetation has been reestablished. Indirect impacts may include the introduction or spread of noxious weeds and invasive plant species. Noxious weed control through use of biological, mechanical, chemical, or various alternative methods may also indirectly impact species individuals and may alter potentially suitable habitat through changes in vegetation community cover and composition.

As previously stated, the implementation of the Mitigated Ivanpah 3 Alternative would result in the reduction of the project's surface disturbance footprint by 433 acres, or approximately 12.5 percent. Prior to construction, specified plants species within any project-related surface disturbance areas would be salvaged and relocated to the 7-acre Rare Plant Transplantation Area. The Rare Plant Transplantation Area would only be used for salvaged plant species of concern to reduce the amount of disturbance to salvaged plants should pre-construction surveys determine that remedial measures be needed. The 59-acre Succulent Nursery Area would be used for salvaged cacti and yucca species. Pending further consultation and BLM and Energy Commission review and concurrence, additional construction-related mitigation may be required.

To the maximum extent practical, plant species of concern located within the heliostat fields would be avoided and protected during construction through the use of fencing to avoid inadvertent encroachment. Fencing would be removed following construction and an alternative marking material (e.g., posts or stakes) would be installed to indicate the areas where avoided plants are located. This would allow ecological connectivity between the 433-acre northern portion of Ivanpah Unit 3, CLA, extant populations within the heliostat fields, and adjacent areas of undisturbed contiguous habitat, allowing ecological processes such as seed dispersal and pollinator movement to occur. Monitoring of these extant plant species of concern within the heliostat fields would be conducted.

Table 4-2
Plant Species of Concern Identified within the Mitigated Ivanpah 3 Alternative Area[1]

Common Name	Scientific Name	Status[2]	Number of Localities		Percent of Locations Avoided	
			Proposed Action	Mitigated Ivanpah 3	Proposed Action	Mitigated Ivanpah 3
Mojave milkweed	*Asclepias nyctaginifolia*	___/ 2.1	50	49	86	84
Desert pincushion	*Coryphantha chlorantha*	___/ 2.1	95	72	45	34
Nine-awned pappus grass	*Enneapogon desvauxii*	___/ 2.2	0	63	0	48
Parish's club-cholla	*Grusonia* [=*Opuntia*] *parishii*	___/ 2.2	29	28	22	21
Rusby's desert mallow	*Sphaeralcea rusbyi* var. *eremicola*	S / 1B.2	10	10	100	100

[1]Small-flowered androstephium (*Androstephium breviflorum*) was not identified within the Ivanpah 3 site during 2007 or 2008 surveys and; therefore, is not included within this table. Utah vine milkweed (*Cynanchum utahense*) and the desert portulaca (*Portulaca halimoides*) were identified within the Ivanpah 3 site during 2008 surveys; however, population-specific locations are unknown.

[2]Status: S = BLM Sensitive Species
California Native Plant Society status includes: List 1B = Rare, threatened, or endangered in California and elsewhere; List 2 = Rare, threatened, or endangered in California but more common elsewhere; List 3 = Plants which need more information; List 4 = Limited distribution; a watch list; 0.1 = Seriously threatened in California (high degree/immediacy of threat); 0.2 = Fairly threatened in California (moderate degree/immediacy of threat); 0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known).

Operations Impacts

Operation-related impacts would be consistent with those described within the DEIS (BLM and CEC 2009); however, the Mitigated Ivanpah 3 Alternative would result in the elimination of 433 acres from inspection, repair, and maintenance activities compared to the proposed project. Direct and indirect impacts to sensitive plant species from routine operational activities would be similar to those described for construction impacts. In addition, potential impacts to sensitive plant species from operational activities may include the loss of individuals as a result of shading caused by heliostat placement. To maintain the ground surface beneath the heliostats free of vegetation obstructions, operational mowing and weed control through the use of biological, mechanical, chemical, or various alternative methods may be conducted. As a result, sensitive plant species may be directly impacted by trampling, partial, or full removal as a result of vegetation maintenance and indirectly impacted as a result of altering potentially suitable habitat through changes in vegetation community cover and composition.

Closure/Decommissioning Impacts

Closure/decommissioning-related impacts would be consistent with those described within the DEIS (BLM and CEC 2009); however, the Mitigated Ivanpah 3 Alternative would result in the elimination of 433 acres from impacts associated with facility removal and subsequent reclamation activities compared to the proposed project. Direct and indirect impacts to sensitive plant species from closure/decommissioning activities would be similar to those described for construction impacts. In addition, potential impacts to sensitive plant species from closure/decommissioning activities may include the loss of individuals during structure removal and subsequent revegetation. If biological, mechanical, chemical, or various alternative methods are used to control noxious weed species during closure, direct and indirect impacts may include partial or full plant removal and indirectly alter potentially suitable habitat through changes in vegetation community cover and composition.

Long-term restoration of the project area likely would result in a greater frequency of noxious and invasive weeds as well as lower density and diversity of native plant species, including sensitive plant species.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with sensitive plant species.

4.2.3 Mitigation Measures

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

In addition to those mitigation measures identified in the DEIS, the following additional mitigation measures have been identified to minimize impacts to MBTA species. These additional mitigation measures would be applicable to either the proposed project or the Mitigated Ivanpah 3 Alternative.

1. SDEIS BIO-1: To mitigate construction impacts to MBTA species, BrightSource would perform vegetation removal prior to MBTA nesting season, implement seasonal buffers, and adhere to timing restrictions. Timing restrictions and buffers would be cooperatively determined by the BLM, CDFG, and USFWS. Effectiveness: Pre-clearing is highly effective for minimizing impacts to MBTA species.

2. SDEIS BIO-2: If vegetation is removed from the project area, but major construction activities have not started prior to the MBTA timing restriction period (as determined by the Authorized Officer), pre-construction surveys for ground nesting birds would be conducted no earlier than two weeks in advance of construction initiation. Any nests identified during this period would have a buffer established and maintained until the young have fledged or the nest fails. A Biological Monitor would be responsible for establishing and enforcing the buffer restriction during this period. Effectiveness: Establishment of buffers can be moderately effective mitigation, if the buffers are sufficient to minimize disturbance to nesting birds. Disturbance during the incubation period is frequently the most disruptive, since birds have greater fidelity to their nest after their eggs have hatched.

3. SDEIS BIO-3: For areas where vegetation removal is not conducted prior to construction activities, nesting bird surveys would be conducted and buffers would be established to protect active nests from construction disturbance. A Biological Monitor would be responsible for establishing and enforcing the buffer restriction while the nest is active. Effectiveness: This mitigation measure would have moderate to low effectiveness, depending on the efficiency of the nesting surveys.

4. SDEIS BIO-4: The Biological Monitor would report on nesting success and failures to the BLM in a weekly report during construction. If nest failure occurs, the Biological Monitor would attempt to identify the cause of the nest failure.

Effectiveness: This mitigation measure would assist the BLM in quantifying nesting success and providing an opportunity to modify buffers, if necessary.

5. SDEIS BIO-5: Because there are few data related to the impacts of large solar facilities on wildlife species, BrightSource would monitor the project site for wildlife mortalities by recording mortalities as they are identified. BrightSource would document wildlife mortalities observed on the Project site and attempt to determine the species affected and the probable cause of the fatal injuries. Photo-documentation would be required. Semi-annual summary reports would be submitted to the BLM for their review.

6. SDEIS BIO-6: Over the lifespan of the Project, the BLM may require additional mitigation to reduce or eliminate significant causes of wildlife mortality as additional information becomes available.

Through implementation of the BMPs and the additional mitigation measures cited above, the applicant would minimize construction impacts to MBTA species by protecting breeding birds, active nests, and eggs and young.

4.2.4 Cumulative Impacts

There are multiple projects proposed for the Ivanpah Valley area, including DesertXpress (high speed rail), two Next Light Silver State Projects (totaling 7840 acres), the adjacent Stateline Solar Project (totaling 6400 acres), and the Southern Nevada Supplemental Airport (5500 acres for the airport, and an additional 17,000 acre Noise Compatibility Zone to be deeded to Clark County). These projects alone would disturb more than 36,000 acres of BLM land that is currently available for biological habitat in the Ivanpah area. The cumulative impacts of these regional projects would result in substantial surface disturbance from construction and long-term impacts from permanent facilities. The disturbances would impact soils and vegetation, including special status plant species, and result in loss of habitat for wildlife and special status species. Habitat fragmentation would increase in the Ivanpah Valley and migration corridors may be disrupted. Additional solar projects and their associate transmission lines would increase collision hazards for bats and birds. Further, heat from additional solar projects would result in additional mortality to some species, including birds, bats (mornings and evenings), and flying insects. Multiple large-scale projects within the Ivanpah Valley would result in adverse changes in ecological processes, such as seed dispersal, potential loss of genetic diversity due to loss or reduction of subpopulations.

For desert tortoise, cumulative impacts resulting in the substantive loss of habitat in the Ivanpah Valley, increased mortality due to construction hazards and translocation stress may occur. The net loss of habitat may increase stress upon this population, potentially increasing the susceptibility to disease and mortality. Direct and indirect mortality from these cumulative impacts could result in a reduction or loss of this population.

For other special status species, impacts would be similar to those described for other plant and wildlife species. Since the region contains a large fraction of some special status populations, the impacts to special status species could have greater affects on

the species viability and possibly contribute to the listing of species if effects are not mitigated.

BrightSource and other project proponents would be required to apply mitigation measures to reduce impacts to biological resources, In general, avoidance is the preferred mitigation; however, when applied on a large scale from multiple projects, avoidance can result in patchy distribution patterns, which disrupts ecological processes. Off-site habitat compensation can potentially increase habitat for biological resources, though the habitat requirements of many species are poorly understood. Consequently, even with mitigation, cumulative impacts could result in substantial impacts to wildlife and special status animal and plant populations.

4.2.5 Biological Resources Summary

A comparison of the biological resources impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-3**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

The Mitigated Ivanpah 3 alternative would reduce surface disturbance impacts by a total of 433 acres. Of this total, 433 acres located along the northern portion of the proposed Ivanpah 3 site would be removed from the project, preserving an area of diverse, relatively undisturbed native habitat that contains few noxious or invasive weeds. The habitat contains numerous ephemeral drainages, adding to the locations diversity. Many of sensitive species, including desert tortoise utilize this area.

The Mitigated Ivanpah 3 Alternative was developed, in part, to reduce the impacts to wildlife and special status species. By reducing the project footprint by approximately 12.5 percent, the Mitigated Ivanpah 3 Alternative would result in a reduction in impacts to wildlife and special status species. Since the 433-acre area that would remain undisturbed is considered of relatively high quality and diverse native habitat, the benefits would be greater than avoidance of comparable acreage in other, lower quality habitat areas. Further, the location and magnitude of the Mitigated Ivanpah 3 Alternative helps retain large-scale ecological processes and migration corridors that are beneficial to wildlife species.

While the impacts from the Mitigated Ivanpah 3 Alternative would be less and would preserve some of the highest quality habitat, there would be long-term impacts to biological resources in comparison with the No Action Alternative.

Table 4-3
Comparison of Biological Resources Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Desert tortoise	Potential adverse impacts requiring formal consultation with USFWS	Potential adverse impacts that would require formal consultation if selected. Impacts less than proposed project, but greater than No Action alternative.	No potential impact
MBTA and Special Status Bat Species	Potential impacts to MBTA and bat species from loss of habitat, collision and heat hazards. Impacts from habitat could be mitigated, while impacts from collisions and heat impacts would be monitored and additional mitigation may be required in the future.	Potential impacts to MBTA and bat species from loss of habitat, collision and heat hazards. Impacts from habitat could be mitigated, while impacts from collisions and heat impacts would be monitored and additional mitigation may be required in the future. Impacts less than proposed project, but greater than No Action.	No potential impact
Special-status plant species	Potential impacts to Rusby's desert mallow and Mojave milkweed, plus other sensitive plant species. Impacts could be mitigated.	Potential impacts to Rusby's desert mallow and Mojave milkweed, plus other sensitive plant species. Impacts to native plant communities reduced compared to proposed project, but greater than No Action. Impacts could be mitigated.	No potential impact

4.3 Cultural Resources

4.3.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to cultural resources, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with cultural resources, including paleoclimate, geology and geomorphology, and prehistoric setting, ethnographic setting, and historic setting would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The inventory of historic resources conducted and summarized by the applicant and evaluated by BLM and the Energy Commission in the DEIS, and the notification of potentially interested native tribes by BLM, are considered to be relevant and sufficient for the Mitigated Ivanpah 3 Alternative, as they were for the proposed project. The difference in location also does not affect the regulatory authority governing cultural resources, or the need for consultation with interested agencies.

The primary difference between the Mitigated Ivanpah 3 Alternative and the proposed project would be that any resources potentially present in the northern 433 acre area of Ivanpah Unit 3 would not be included within the boundaries of the Mitigated Ivanpah 3 Alternative. Therefore, these resources would not be considered part of the existing environment for the alternative.

4.3.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that the proposed project would have no direct or indirect adverse impact on known or unknown National Register of Historic Places (NRHP)-eligible or California Register of Historical Resources (CRHR)-eligible resources. No NRHP- or CRHR-eligible resources were identified in the proposed project area. To address the possibility that unidentified resources may be present in the subsurface, BLM developed mitigation measures intended to facilitate the identification and assessment of previously unknown resources during project construction.

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the disturbance of NRHP- or CRHR-eligible resources during site excavation, grading, road construction, and installation of heliostats. For the proposed project, the DEIS concluded that these impacts were unlikely to occur, given the limited number and extent of these resources identified in existing and project-related surveys. To protect unidentified resources from impacts, the DEIS proposed a variety of mitigation measures that would require monitoring during site-disturbance activities, and identification, assessment, and avoidance of any resources identified. The DEIS

concluded that, with adoption of the mitigation measures, the impacts could be mitigated.

The construction of the Mitigated Ivanpah 3 Alternative would be expected to result in the same type and magnitude of potential threat to cultural resources as the proposed project. Like the proposed project, the Mitigated Ivanpah 3 Alternative would require site excavation, grading, road construction, and installation of heliostats, any of which could disturb and result in impacts to resources. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would involve the same type and amount of equipment, and the same procedures used in ground disturbance activities. The primary difference would be that the area of disturbance associated with the Mitigated Ivanpah 3 Alternative would be reduced by 433 acres, located in the northern portion of Ivanpah Unit 3. This acreage reduction, in itself, reduces the number of resources that may be impacted during project construction.

The reduction of ground disturbance of 433 acres in the northern portion of Ivanpah Unit 3 accounts for a reduction of approximately 12.5 percent from the land area that would be disturbed as part of the proposed project. However, the reduction in potential impacts to cultural resources is expected to be greater than 12.5 percent, due to the nature of the 433-acre area that would be eliminated. One of the impacts associated with the proposed project that the applicant seeks to avoid by proposing the Mitigated Ivanpah 3 Alternative is the amount of grading required to install heliostat fields. The northern portion of Ivanpah 3 is known to have a greater amount of topographic relief than the rest of the project area, with eroded drainage channels that may reach 10 feet deep and 20 feet across. Although the applicant's overall development plan incorporates Low-Impact Development principles, development of the proposed project would require extensive grading in the northern portion of Ivanpah Unit 3, and only limited grading in other portions of the site. Elimination of the 433-acre northern portion of Ivanpah Unit 3 would remove the area of the most intense site disturbance and grading from the project development. As site grading is one of the greatest risk factors potentially threatening cultural resources, elimination of the area requiring the greatest extent of grading would reduce potential impacts disproportionately to the simple 12.5 percent acreage reduction. Therefore, the Mitigated Ivanpah 3 Alternative would be expected to reduce site disturbance impacts to cultural resources by more than 12.5 percent over the proposed project. Any remaining potential impacts would be mitigated through the adoption of Conditions of Approval, as described below.

Operations Impacts

The DEIS concluded that operations associated with the proposed project would not have an adverse impact on cultural resources. This conclusion was due to the fact that all site disturbance would occur during construction, with no additional disturbance occurring during operations. This conclusion would be the same for the operation of the Mitigated Ivanpah 3 Alternative.

Closure/Decommissioning Impacts

Closure and decommissioning would involve re-grading of the site to restore original contours and removal of installed infrastructure, activities that would require earthmoving and ground disturbance. These activities could potentially cause impacts to resources that had remained in place following project construction. The potential for this occurrence would be low, as any resources would be expected to be found during monitoring associated with construction. The potential impacts associated with the Mitigated Ivanpah 3 Alternative would be similar to those for the proposed project, but would occur over a smaller area due to the reduced acreage.

Cumulative Impacts

Because no direct or indirect impacts to cultural resources would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with cultural resources.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.3.3 Cultural Resources Summary

A comparison of the cultural resources impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-4**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the cultural resource impacts associated with the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. Although the acreage would be reduced by approximately 12.5 percent, the potentially impacted area would be reduced by more than 12.5 percent, because the 433-acre area eliminated from the alternative would require extensive grading in the proposed project.

Table 4-4
Comparison of Cultural Resources Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
NRHP-eligible resources	Construction could impact resources. Impact would be mitigated.	Lower than proposed project, higher than No Action. Impact would be mitigated.	No potential impact

4.4 Hazardous Materials Management

4.4.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to hazardous materials, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with hazardous materials management, including meteorological conditions, terrain characteristics, and locations of population centers and sensitive receptors would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The type of technology and operations would also be the same, so the volume and type of hazardous materials used to construct, operate, and decommission the Mitigated Ivanpah 3 Alternative would the same the same as those for the proposed project. The difference in location also does not affect the regulations affecting the management of hazardous materials at the site. The primary difference between the proposed project and the Mitigated Ivanpah 3 Alternative would be that the reduced size of the Mitigated Ivanpah 3 Alternative would result in a reduction in the amount of hazardous materials used and stored onsite during construction, operations, and decommissioning.

4.4.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures proscribing hazardous materials management procedures, the proposed project would have no direct or indirect adverse impact on population centers or sensitive receptors.

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the use of hazardous materials in the fabrication and installation of project-related structures, including the use of hazardous materials used for maintenance of vehicles and construction equipment. For the proposed project, the

DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts.

The construction of the Mitigated Ivanpah 3 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of construction would be expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent.

Although the use of hazardous materials would be the same for the construction of both alternatives, the overall amount of materials associated with the Mitigated Ivanpah 3 Alternative would be lower, due to the reduced duration of construction.

Operations Impacts

The operations impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the use of hazardous materials in the operation of the power blocks, including the use of hazardous materials used for maintenance of vehicles and maintenance equipment. For the proposed project, the DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts.

The operations of the Mitigated Ivanpah 3 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the operations would occur with the same type and amount of equipment and workers as the proposed project. Therefore, there would not be any substantial difference in impacts associated with hazardous materials management between the proposed project and the Mitigated Ivanpah 3 Alternative.

Closure/Decommissioning Impacts

The closure and decommissioning impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the use of hazardous materials necessary to remove project-related structures, including the use of hazardous materials for maintenance of vehicles and earthmoving and demolition equipment. For the proposed project, the DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts.

The closure and decommissioning of the Mitigated Ivanpah 3 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the closure and decommissioning would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of closure and decommissioning would be

expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent. Although the use of hazardous materials would be the same for the closure of both alternatives, the overall amount of materials associated with the Mitigated Ivanpah 3 Alternative would be lower, due to the reduced duration of closure and decommissioning activities.

Cumulative Impacts

Because no direct or indirect impacts to hazardous materials management would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts associated with hazardous materials.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with hazardous materials management.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.4.3 Hazardous Materials Management Summary

A comparison of the hazardous materials management impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-5**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Mitigated Ivanpah 3 Alternative. Any hazards associated with hazardous materials use would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

Table 4-5
Comparison of Hazardous Materials Management Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Release of hazardous materials	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact

4.5 Land Use

4.5.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to land use, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with land use, including the current uses of the property and surrounding area, and the applicability of local, state, and federal zoning and land use plans, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative.

The land uses associated with the site vicinity and proposed project property include undeveloped lands, recreation, grazing, mineral development, and use of designated utility corridors for natural gas and electricity transmission. These land uses remain the same for both the proposed project and the Mitigated Ivanpah 3 Alternative, and the reduction in acreage for the alternative does not substantially affect the land uses associated with the project area.

The planning and zoning documents which would be applicable to the proposed project property include BLM's CDCA Plan, and the San Bernardino County General Plan and Development Code Land Use Districts. These plans would be equally applicable to both the proposed project and the Mitigated Ivanpah 3 Alternative, and the reduction in acreage for the alternative would not affect the components or requirements of these plans.

4.5.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM made the following determinations with respect the impact of the proposed project on land use:

- The proposed project would require a CDCA Plan amendment to identify the ISEGS project as an element of the CDCA Plan, but is otherwise in conformance with the

Plan and its amendments. The DEIS provides the environmental analysis necessary to support the consideration of the Plan amendment.

- The proposed project area would include portions of designated utility corridors BB and D, and would remove portions of those corridors from future use for utilities. However, it would not completely cover these corridors, and would therefore not completely eliminate future utility access through the project area.
- The proposed project would contribute to adverse and unavoidable cumulative land use impacts in the Ivanpah Valley and in the southern California desert region in general. These impacts would result from the removal from other potential uses of large areas of public land due to various forms of development, including the Southern Nevada Supplemental Airport, proposed high-speed rail projects, and proposed solar and wind power plants.

Mitigated Ivanpah 3 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Because land use impacts are associated with the occupation of the land area by the facility, separation of impacts into construction, operations, and closure/decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

The land use impacts resulting from the Mitigated Ivanpah 3 Alternative would be the same as those associated with the proposed project. Like the proposed project, the Mitigated Ivanpah 3 Alternative would be in conformance with the CDCA Plan and its amendments, but would require a new CDCA Plan amendment to identify the ISEGS facility as a component of the plan. The only difference between the two alternatives would be the description of the acreage that is identified to be occupied by the facility in the Plan amendment.

The impact of the Mitigated Ivanpah 3 Alternative on designated utility corridors would be similar to, but smaller than, that resulting from the proposed project. Like the proposed project, the Mitigated Ivanpah 3 Alternative would occupy portions of both the BB and D corridors, thus reducing the land area within those corridors available for other non-ISEGS utility uses. However, the Mitigated Ivanpah 3 Alternative would occupy a much smaller portion of corridor D. In the proposed project, the northern portion of Ivanpah Unit 3 is entirely located within corridor D, and the proposed project restricts the width of corridor D from two miles to approximately 0.8 miles. In the Mitigated Ivanpah 3 Alternative, 100 percent of the 433-acre area eliminated from use would be removed from corridor D. In this alternative, the width of corridor D would be reduced from 2 miles to approximately 1.2 miles. Therefore, the impact on the corridor in Mitigated Ivanpah 3 Alternative would be reduced from that in the proposed project.

Cumulative Impacts

The impact of the Mitigated Ivanpah 3 Alternative on cumulative land use impacts in the Ivanpah Valley, and the southern California desert in general, would be almost exactly

the same as those identified for the proposed project. Although the acreage associated with the alternative would be reduced by approximately 12.5 percent from that of the proposed project, this reduction is not so substantial that it would eliminate the magnitude of the contribution of the ISEGS facility to cumulative land use impacts.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with land use.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.5.3 Land Use Summary

A comparison of the land use impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-6**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the land use impacts associated with the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be removed from other potential land uses.

Table 4-6
Comparison of Land Use Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Conformance with BLM land use plans (CDCA Plan, and others)	Conforms, with proposed Plan Amendment	Conforms, with proposed Plan Amendment	Conforms, no Plan Amendment necessary
Interference with designated utility corridors	Interferes with portions of corridors BB and D, but does	Lower than proposed project, higher than No	No potential impact

	not eliminate their use	Action	
Contribution to cumulative reduction in other land uses	Contributes incrementally to reduction in land use in Ivanpah Valley, and southern California desert	Reduced by 12.5 percent from proposed project, higher than No Action.	No potential impact

4.6 Noise and Vibration

4.6.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to noise and vibration, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with the impacts of noise and vibration, including ambient noise conditions and the locations of potentially impacted receptors, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The difference in location also does not affect the applicability of regulations governing noise and vibration associated with the project, including state and federal regulations protecting workers from occupational noise exposure, San Bernardino County General Plan noise limits, and San Bernardino County Development Code noise and vibration limits.

4.6.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures proscribing noise monitoring and protection, the proposed project would have no adverse impacts associated with noise or vibration from project construction, operation, or decommissioning.

Construction Impacts

The noise and vibrations resulting from the construction of the Mitigated Ivanpah 3 Alternative would be associated with the use of construction equipment, drilling rigs used to install heliostats, and steam blow testing of the steam turbine system. For the proposed project, the DEIS evaluated the expected levels of noise and vibrations, including the impact of these issues on offsite receptors, and concluded that there would be no impacts.

The construction of the Mitigated Ivanpah 3 Alternative would be expected to use the same types of equipment and testing procedures as the proposed project. The size of the boilers to be tested, and the number of heliostats to be installed, would be reduced from those in the proposed project. In addition, the duration of construction would be

expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent. Therefore, the noise and vibration impacts associated with construction of the Mitigated Ivanpah 3 Alternative would be expected to be lower than those for the proposed project.

Operations Impacts

Noise and vibration sources associated with the operation of the Mitigated Ivanpah 3 Alternative would include the rotation of the steam turbine generators, flow of fluids (natural gas, water, and steam) through pipes, and the use of engines in equipment and vehicles. For the proposed project, the DEIS presented an evaluation of the expected levels of noise and vibrations from these sources, including the impact of these issues on offsite receptors, and concluded that there would be no impacts.

The noise and vibration source associated with operation of the Mitigated Ivanpah 3 Alternative would be the same as those for the proposed project. The size of some of the equipment and facilities associated with Ivanpah Unit 3, including the boiler, would be reduced from those in the proposed project. Therefore, the noise and vibration impacts associated with operation of the Mitigated Ivanpah 3 Alternative would be expected to be lower than those for the proposed project.

Closure/Decommissioning Impacts

The closure and decommissioning impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the use of heavy equipment necessary to remove project-related structures, including removal of 173,500 heliostats. For the proposed project, the DEIS concluded that noise and vibration sources would not result in any impacts. The closure and decommissioning of the Mitigated Ivanpah 3 Alternative would include the same type of equipment and activities, and therefore noise and vibration sources, as the proposed project. The primary difference would be that the duration of closure and decommissioning would be expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent. Therefore, noise and vibration impacts associated with closure and decommissioning of the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project, and therefore would not be expected to be adverse.

Cumulative Impacts

Because no direct or indirect impacts resulting from noise and vibration would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts from these sources.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with noise and vibration.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.6.3 Noise and Vibration Summary

A comparison of the noise and vibration impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-7**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Mitigated Ivanpah 3 Alternative. Any hazards associated with noise and vibration would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

Table 4-7
Comparison of Noise and Vibration Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Noise and vibration from construction sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Noise and vibration from operations sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Noise and vibration from decommissioning sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.

4.7 Public Health and Safety

4.7.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to public health and safety, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with the impacts to public health and safety would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. These factors include meteorology and terrain characteristics that affect the movement of air emissions from the facility, existing site contamination that may be disturbed or released, and the locations of potentially affected receptors. The difference in location also does not affect the regulatory requirements associated with air emissions or other releases from the facility, including state and federal Clean Air Act requirements, the California Health and Safety Code section 25249.5 (Proposition 65), the California Health and Safety Code section 41700 governing discharge of contaminants, and MDAQMD regulations.

4.7.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures, the proposed project would have no adverse impact on public health and safety.

Construction Impacts

The public health and safety impacts that could result from construction of the Mitigated Ivanpah 3 Alternative would include public exposure to toxic substances in contaminated soil disturbed during construction, and exposure to diesel exhaust from heavy equipment operation.

For the proposed project, the DEIS concluded that there was no evidence or reason to suspect the presence of potentially contaminated soil on the property, and that waste management regulations and mitigation measures would result in the identification and assessment of any hazardous materials during construction. Because the Mitigated Ivanpah 3 Alternative would disturb an area with a reduced acreage, the potential for exposing the public to contaminated soils would be lower than that for the proposed project.

The amount of air emissions associated with construction of the Mitigated Ivanpah 3 Alternative is discussed in Section 4.1.1 of this SDEIS. The DEIS presented an evaluation of potential public health threats associated with exposure to construction emissions from the proposed project. The DEIS concluded that mitigation measures intended to reduce diesel emissions from equipment and vehicles, and management practices intended to minimize fugitive dust emissions, would reduce any potential for adverse health impacts. Because the Mitigated Ivanpah 3 Alternative would use the

same types of heavy equipment and would have the same air emissions as the proposed project, the health impacts from construction would be the same as those described for the proposed project. In addition, the duration of construction would be expected to be shorter for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent. Therefore, the public health and safety impacts associated with construction of the Mitigated Ivanpah 3 Alternative would be expected to be lower than those for the proposed project.

Operations Impacts

Public health and safety impacts resulting from the operation of the Mitigated Ivanpah 3 Alternative would potentially occur from public exposure to air emissions from the natural-gas fired steam boilers, emergency diesel fire pumps, and emergency diesel generators. For the proposed project, the DEIS presented the results of a screening health risk assessment, and concluded that the Hazard Index associated with operations emissions was far below any value that could cause public health and safety threats. For example, the acute non-cancer Hazard Index was calculated to be 0.013, as compared to the significance level of 1.0. Therefore, no short-term or long-term adverse health effects from the proposed project would be expected.

As discussed in Section 4.1.1, the reduction in size of the boiler associated with Unit 3 in the Mitigated Ivanpah 3 Alternative would result in a reduction in overall operations emissions associated with alternative. However, the relocation of the Unit 3 power block closer to the project boundary would result in increased concentrations of NOx emissions at the site boundary for very short durations (1 hour and 3 hours). Although the short-term NOx emissions at the site boundary would increase, the increase is very slight, from 123.7 to 126.7 micrograms per liter. Because the Hazard Index calculated for the proposed project was substantially below the significance level, this slight increase in short-term NOx concentrations would not result in adverse public health impacts from the Mitigated Ivanpah 3 Alternative.

Closure/Decommissioning Impacts

Potential public health and safety threats associated with the closure and decommissioning of the Mitigated Ivanpah 3 Alternative would include public exposure to emissions from heavy equipment used to remove project-related structures, including removal of 173,500 heliostats. The closure and decommissioning of the Mitigated Ivanpah 3 Alternative would include the same type of equipment and activities as project construction, but for a much shorter duration. Therefore, public health and safety impacts associated with closure and decommissioning of the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project, and therefore would not be expected to be adverse.

Cumulative Impacts

Because no direct or indirect impacts to public health and safety would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to public health and safety.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with public health and safety.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.7.3 Public Health and Safety Summary

A comparison of the public health and safety impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-8**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Mitigated Ivanpah 3 Alternative. Any potential public health threats would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project, due to the reduced duration and acreage of construction, reduced overall level of emissions, and reduced duration of decommissioning.

Table 4-8
Comparison of Public Health and Safety Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Exposure to contaminated soil	No potential impact.	No potential impact	No potential impact.
Exposure to emissions from construction and decommissioning equipment	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Exposure to operations emissions	No adverse impact, could be mitigated.	Slightly higher than proposed project, higher than No Action	No potential impact.

4.8 Socioeconomics and Environmental Justice

4.8.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to socioeconomics and environmental justice, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with the impacts of socioeconomics would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. These include:

- Local demographic characteristics;
- Likely sources for construction and operations workers;
- Employment and labor force characteristics in the region;
- Available housing and commuting options for workers;
- Tax revenue sources and magnitude; and
- Public services.

The reduced acreage and output of the Mitigated Ivanpah 3 Alternative would result in a reduced duration of construction and fewer operations workers, thus reducing both adverse and beneficial impacts associated with employment for the project.

4.8.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, the factors evaluated with respect to impacts on socioeconomics and environmental justice for the proposed project included:

- Population and employment;
- Housing;
- Fiscal and Economic Effects; and
- Public Services.

In the DEIS, BLM determined that, with the implementation of mitigation measures, the proposed project would have no direct or indirect adverse impact on any of these socioeconomics or environmental justice issues. The proposed project would provide gross public benefits by providing capital costs, construction and operation payroll, and property and sales taxes.

Construction Impacts

With respect to population and employment, the DEIS concluded that the necessary number of construction workers (an average of approximately 474 workers throughout the construction period) for the proposed project was a small fraction of the number of

available construction workers within the expected commuting area (more than 230,000), and therefore no adverse impact to the workforce would occur. Although the Mitigated Ivanpah 3 Alternative would require approximately the same size workforce, it would require that workforce for a shorter duration, and therefore would also not cause an adverse impact. Similarly, because these workers would reside within commuting distance, there would be no adverse impact on the availability of housing.

Like the proposed project, construction of the Mitigated Ivanpah 3 Alternative would have a beneficial impact on fiscal and economic effects by providing a construction payroll and sales taxes. Because approximately the same number and type of construction workers would be employed, and the same amount of materials would be purchased, the annual rate of these taxes would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. However, the duration of construction of the Mitigated Ivanpah 3 Alternative would be reduced by approximately 17 percent from that of the proposed project. Therefore, the beneficial impact of these taxes would also be reduced by approximately 17 percent.

Because construction of the Mitigated Ivanpah 3 Alternative would not result in population migration to the area, it would not adversely impact public services such as law enforcement, schools or hospitals.

Operations Impacts

Similar to construction, the DEIS concluded that the number of operations workers employed at the proposed project (approximately 90) would constitute a small fraction of the available workforce, and would therefore not cause an adverse impact on that workforce, or housing needs for the workforce. The number of employees would also not be so large that it would beneficially impact unemployment rates in the local area. The employment level for operation of the Mitigated Ivanpah 3 Alternative would be approximately the same as that for the proposed project, and therefore the employment and housing impacts would be the same as those described in the DEIS for the proposed project.

Like the proposed project, operation of the Mitigated Ivanpah 3 Alternative would have beneficial impacts on fiscal and economic effects by providing a property tax to San Bernardino County, as well as payroll and sales taxes. In the DEIS, the annual property tax revenue to San Bernardino County was estimated to be approximately $2.2 million per year. Because the Mitigated Ivanpah 3 Alternative would be a smaller size and have a reduced output, it would be expected to generate a reduced amount of property tax revenue. However, the reduction would be small, and the overall impact on fiscal resources would still be beneficial. Payroll (approximately $5.4 million per year) and sales taxes (approximately $340,500 per year) associated with the operation of the proposed project would remain approximately the same under the Mitigated Ivanpah 3 Alternative. Overall, operation of the Mitigated Ivanpah 3 Alternative would have a beneficial impact on fiscal resources, but the benefit would be lower than that estimated for the proposed project.

Because operation of the Mitigated Ivanpah 3 Alternative would not result in population migration to the area, it would not adversely impact public services such as law enforcement, schools, or hospitals.

Closure/Decommissioning Impacts

The closure and decommissioning of the Mitigated Ivanpah 3 Alternative would not result in the addition of any population to the local area, and would therefore not have any impact on public services. The beneficial impacts to employment and fiscal resources would temporarily increase due to the increased workforce required for decommissioning, but would then cease altogether.

Cumulative Impacts

Because no direct or indirect impacts to socioeconomics or environmental justice would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

Like the proposed project, the Mitigated Ivanpah 3 Alternative would include the contribution to the local economy through the provision of construction and operations jobs, and increase in property and sales taxes. Because the duration of the construction period would be shortened, and overall project output reduced, the magnitude of the impact would be somewhat lower than that of the proposed project, but still beneficial.

Environmental Justice

The DEIS presented the results of a screening analysis conducted to determine if minority or low-income populations were present within the project area. That analysis identified 36 residents within six miles of the project site in California, with 27.8 percent of the residents identified as minorities. The analysis did not identify any census blocks containing minority populations greater than 50 percent, nor any residents living below the designated poverty level. Because no minority or low income communities were identified within or adjacent to the project area, there would be no adverse impacts to these populations as a result of the Mitigated Ivanpah 3 Alternative.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.8.3 Socioeconomics Summary

A comparison of the socioeconomics impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-9**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

The impacts to socioeconomics would be beneficial, due to the increase in local employment and tax revenues. However, the increase in employment would not result in an increase in the local population, so would not affect housing or public services. The beneficial impacts associated with the Mitigated Ivanpah 3 Alternative would be slightly lower than those for the proposed project, due to the reduced duration of construction and decommissioning.

Table 4-9
Comparison of Socioeconomics Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Employment	No adverse impact, slight beneficial impact	No adverse impact, slight beneficial impact	No potential impact.
Housing	No potential impact.	No potential impact.	No potential impact.
Fiscal resources	Beneficial impact through property, payroll, and sales taxes.	Slightly lower than proposed project, but still beneficial	No potential impact.
Public Services	No potential impact.	No potential impact.	No potential impact.
Environmental Justice	No potential impact.	No potential impact.	No potential impact.

4.9 Soil and Water Resources

4.9.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to soil and water resources, would be very similar to that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the general environmental setting factors associated with the impacts to soil and water resources, including soil types, groundwater resources, other groundwater users in the region, and the position of the alternative with respect to surface water drainage features, would be almost the same for the proposed project and the Mitigated Ivanpah 3 Alternative. However, a key difference between the setting of the Mitigated Ivanpah 3 Alternative as compared to that of the proposed project would be elimination of the drainage features associated with the northern 433 acre portion of Ivanpah Unit 3.

As discussed beginning on Page 6.9-12 of the DEIS, the size and number of drainage channels associated with the proposed project is highest in Ivanpah Unit 3. Based on mapping performed by the applicant, as well as observations from site visits conducted by BLM and Energy Commission staff, the largest channels in Ivanpah Unit 3 are located in the northern third of the property, approximately coincident with the 433-acre portion eliminated from development in the Mitigated Ivanpah 3 Alternative. As a result, the potential impacts on the facility from stormwater flows, and the potential impacts of project development on downstream resources, would differ between the proposed project and the Mitigated Ivanpah 3 Alternative.

4.9.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM evaluated potential impacts of the proposed project to a variety of soil and water issues, including:

- Soil erosion;
- Potential flooding impacts to the facility;
- Development-related changes leading to modified erosion or deposition characteristics; and
- Project-related impacts to groundwater availability and quality.

The DEIS concluded that the location of the proposed project on an active alluvial fan drainage system could subject the project area to flash flooding, which in turn could cause damage to facility-related infrastructure, including fencing, power blocks, power tower receivers, and heliostat fields. Throughout the environmental evaluation process, the applicant continued to review and modify their proposed facility and stormwater management design, as described in Table 3-1, to develop an optimized system. These modifications resulted in a decision to use Low Impact Development techniques to minimize the need to actively manage stormwater flows, provide diversion channel and berm protection only for power blocks and substation, and to construct other site features (primarily the heliostat fields) in a manner designed to withstand flows from a 100-year storm. To support this design, the applicant conducted a series of heliostat installation and integrity tests in August 2009, and both the applicant and BLM performed stormwater analysis and modeling to estimate stormwater flow volumes and velocities.

The conclusion of these analyses was that damage to heliostats from flooding events could occur, and would be an adverse impact. The damage would result from scour at the base of the heliostats, thus providing them with a reduced depth of insertion, and potentially making them unstable. Should heliostats fall during flood events, they could be moved downstream by flood flows, hitting and destabilizing other heliostats, stormwater management structures, site fencing, and ultimately, resources downstream of the project area. To address these impacts, the DEIS proposed mitigation measures, including a Storm Water Damage Monitoring and Response Plan, which provided installation depth specifications, as well as procedures required to evaluate and respond

to damage caused by flooding events. Following publication of the DEIS, the applicant, BLM, and the Energy Commission continued to work with the applicant to optimize stormwater analysis procedures, in order to develop a Heliostat Installation Plan that would meet the specifications required in the DEIS. Also, the applicant has continued to conduct heliostat installation and stability tests at the project site, allowing the collection of more data that is expected to lead to an improved project design.

In addition to evaluating the impact of flooding on the facility, these analyses included an evaluation of the impact of project development on soil compaction, runoff characteristics, and erosion and sedimentation rates, in order to determine if project development could result in project-related impacts to resources downstream of the authorized ROW area. These resources include biological and cultural resources, infrastructure such as Interstate 15, and recreational uses of the Ivanpah Dry Lake bed. In the DEIS, BLM concluded that modification of sedimentation and erosion characteristics in areas downstream of the proposed facility would not occur.

With respect to water use, the DEIS concluded that elements of the proposed project design, including use of air cooling technology and recycling of process wastewater, were consistent with state water policy requiring that best practices be used to minimize water use, and that state water resources be put to beneficial uses. In the DEIS, BLM and Energy Commission staff conducted an analysis of groundwater resources in Ivanpah Valley, as well as water use by the proposed project, and concluded that adverse impacts to groundwater supply and quality would not occur. Groundwater would be used for process water and heliostat washing, and the water extracted would eventually be evaporated and lost to the groundwater basin. However, the amount of groundwater used was determined to be small compared to the volume of the resource available in the area, so the impact was determined to not be adverse. To provide ongoing evaluation and documentation that groundwater resources were being protected, the DEIS proposed a mitigation measure which would require a Groundwater Level Monitoring and Reporting Plan.

Construction Impacts

Potential construction-related impacts associated with the Mitigated Ivanpah 3 Alternative would include:

- Soil erosion from grading and earthwork;
- Impacts to drainages, including Waters of the State;
- Stormwater and flooding impacts to facility infrastructure;
- Modification of downstream sedimentation and erosion characteristics; and
- Impacts to groundwater availability or quality.

As discussed in Section 3.6, the applicant has proposed a Low Impact Development approach which would minimize the amount of necessary grading and site disturbance by allowing stormwater to flow through the facility on its natural drainages. In the proposed project, active stormwater protection, in the form of diversion channels and berms, would be developed only around the power block and substation areas, leaving

stormwater to flow unimpeded through the heliostat areas. Grading would be limited to the power block and substation areas, and to areas of the heliostat fields where existing channels are large enough to require grading to provide site access and a relatively flat area for installation of heliostats. These areas of the heliostat fields requiring grading were mostly limited to the northern portion of Ivanpah Unit 3. Overall, the acreage requiring grading in the proposed project was estimated to be 170 acres.

In the Mitigated Ivanpah 3 Alternative, the northern portion of Ivanpah Unit 3, which is the area requiring the most extensive grading, would not be included within the project footprint. The acreage of grading required in the heliostat fields for the Mitigated Ivanpah 3 Alternative would be reduced from 170 to 20 acres, a reduction of approximately 88 percent. Therefore, with respect to potential soil erosion caused by grading, impacts associated with the Mitigated Ivanpah 3 Alternative are substantially lower than those for the proposed project.

The Mitigated Ivanpah 3 Alternative would also reduce the acreage of active drainage pathways, which are designated as Waters of the State, which would be affected by the proposed project. In the proposed project, a total of 198 acres of drainages are present, and the elimination of the northern portion of Ivanpah Unit 3 would reduce this acreage to 174 acres, a reduction of approximately 9 percent. By implementing the Low Impact Development construction approach, only a portion of these drainages would be affected by construction traffic and placement of heliostats, so the exact reduction in affected acreage that would be accomplished through the Mitigated Ivanpah 3 Alternative cannot be quantified. However, it can be assumed that the reduction of the affected acreage would be on the same scale as the reduction of the total acreage, or approximately 9 percent.

Potential impacts associated with stormwater damage to facility infrastructure and modification of downstream sedimentation and erosion characteristics would be the same for the construction, operations, and closure/decommissioning phases of both the proposed project and the Mitigated Ivanpah 3 Alternative. These impacts, and the relative comparisons between the proposed project and the Mitigated Ivanpah 3 Alternative, are addressed under operations impacts below.

The final issues associated with soil and water resources evaluated in the DEIS included potential impacts to groundwater resources, including the amount of groundwater available, as well as potential impacts to groundwater quality. The amount of water that would be used for any given period for construction of the proposed project would be the highest during construction of Ivanpah Unit 3, approximately 200 acre-feet per year, as compared to approximately 100 acre-feet per year for Ivanpah Units 1 and 2. The water volume required for Ivanpah Unit 3 would be higher due to the need for water to be used for dust control for the extensive grading needed in Ivanpah Unit 3. In the Mitigated Ivanpah 3 Alternative, the acreage of grading would be reduced from 170 acres to 20 acres. Therefore, the peak water usage period for construction of Ivanpah Unit 3 in the Mitigated Ivanpah 3 Alternative would be much shorter than that for the proposed project. Because the duration of water use for construction would be reduced for the Mitigated Ivanpah 3 Alternative, potential groundwater use conflicts would be lower than those for the proposed project.

Similarly, potential sources of groundwater contamination during construction would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. Because the duration of construction for the Mitigated Ivanpah 3 Alternative would be reduced from 48 months to 40 months, the risk of contamination occurring would be reduced from that of the proposed project.

The source of water for construction, operations, and closure/decommissioning of the Mitigated Ivanpah 3 Alternative would be slightly different from that in the proposed project. In the Mitigated Ivanpah 3 Alternative, the location of the water production wells would be approximately 2,400 feet northwest of their location in the proposed project. This location would be further from the wells operated by the Primm Valley Golf Course, and would therefore be less likely to affect those wells. Therefore, although the location of the water source would be slightly different in the Mitigated Ivanpah 3 Alternative, the change in the location of the water production wells would not affect overall groundwater availability.

The analysis presented in the DEIS concluded that no impacts to groundwater use or quality would occur as a result of proposed project construction. To ensure that this conclusion is accurate, the DEIS proposed a mitigation measure, in the form of a Groundwater Level Monitoring and Reporting Plan, that would require assessing potential groundwater use conflicts.

Operations Impacts

In the analysis of the proposed project in the DEIS, BLM, and the Energy Commission evaluated the potential for stormwater flows from the mountains to the west of the project area to cause flooding or erosion damage to site infrastructure, including fences and heliostats. Both the applicant and BLM conducted stormwater modeling of the drainage basin, including active alluvial fan areas, to estimate to volume and velocity of stormwater flow to which the facility may be subjected during extreme precipitation events. Those calculations showed that stormwater-related scour could occur at the base of heliostats, and this erosion could potentially result in heliostats falling down and moving downstream during storm events. The concerns of BLM and the Energy Commission included the potential for stormwater damage to affect the financial viability of the ongoing operation of the facility, and the potential for these events to transport heliostat and mirror debris to areas downstream of the approved ROW grant. As a result, the DEIS proposed mitigation measures, in the form of a Storm Water Damage Monitoring and Response Plan. The key components of this plan included:

- Installation of heliostats at a depth designed to withstand predicted levels of stormwater scour;
- Inspection of fences and heliostat fields following storm events to identify and correct damage; and
- Consideration of post-construction stormwater system design modifications, if needed to address ongoing issues.

All of these issues and concerns would remain for the Mitigated Ivanpah 3 Alternative, as for the proposed project. The location of the Mitigated Ivanpah 3 Alternative on the active alluvial fan would remain approximately the same, and the project would be

constructed with the same Low Impact Development approach. However, the potential for impacts would be reduced from those of the proposed project because the northern portion of Ivanpah Unit 3, which is the area determined to present the largest potential stormwater damage risk, would be eliminated in the Mitigated Ivanpah 3 Alternative. Although the project acreage would be reduced by approximately 12.5 percent, the stormwater damage risk would be reduced by a larger amount because the 12.5 percent of the area eliminated would be the area that has the largest and most active drainages channels. The proposed Storm Water Damage Monitoring and Response Plan, applied to the Mitigated Ivanpah 3 Alternative in the same manner as the proposed project, would help to ensure that stormwater damage impacts do not occur, or are addressed and mitigated when they do occur.

Similar to the discussion of water use for construction, the only differences in water use between the Mitigated Ivanpah 3 Alternative and the proposed project would be a small change in the location of the water production wells, and a reduction in the amount of water needed to clean heliostats. As stated in the discussion of construction impacts above, the change in the location of the wells in the Mitigated Ivanpah 3 Alternative would not result in any change to potential water use impacts. By reducing the number of heliostats from 214,000 to 173,500 (a reduction of 19 percent), the amount of water used for heliostat washing would also be reduced by approximately 19 percent. Therefore, potential water use impacts associated with operation of the Mitigated Ivanpah 3 Alternative would be reduced by 19 percent.

Closure/Decommissioning Impacts

The soil and water impacts associated with closure and decommissioning of the Mitigated Ivanpah 3 Alternative would be similar to those described for construction above. Because decommissioning would include a smaller area, and have a shorter duration, the Mitigated Ivanpah 3 Alternative would have a reduced potential for water use, water quality, and soil erosion impacts than the proposed project.

Cumulative Impacts

Although project-related impacts associated with stormwater events could potentially occur, these impacts would be localized, and would not combine with similar effects from any other past, existing, or reasonably foreseeable development. Therefore, the Mitigated Ivanpah 3 Alternative would not contribute to any cumulative impacts associated with stormwater flood events.

The project would constitute a consumptive use of groundwater in a location in close proximity to other groundwater users, specifically, the Primm Valley Golf Course. The location of the ISEGS supply wells proposed in the original application was modified, in part, to move them further from the Primm Valley Golf Course wells, and thus reduce the potential for overlapping water use conflicts. Because the amount of groundwater use is expected to be small compared to the volume of groundwater available in the basin, the Mitigated Ivanpah 3 Alternative would not contribute to any cumulative impacts to groundwater availability. Monitoring of groundwater levels, as recommended

in the proposed mitigation measures, would help to ensure that cumulative impacts do not occur.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with soil and water resources. The recycling of process water would constitute a beneficial use of that water, as is encouraged through California state regulations and policies. However, this use would still ultimately be consumptive, and would not constitute an overall beneficial impact from the alternative.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.9.3 Soil and Water Summary

A comparison of the soil and water impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-10**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the potential for soil and water impacts associated with the Mitigated Ivanpah 3 Alternative would be either the same as, or reduced from those associated with the proposed project. Some of these potential impacts, including soil erosion associated with site grading and potential stormwater damage to the facility would be reduced substantially, because of the nature of stormwater drainage on the 433-acre northern portion of Ivanpah Unit 3 that would be eliminated. The Mitigated Ivanpah 3 Alternative would also use a reduced amount of groundwater for washing of heliostats, and would therefore reduce potential groundwater use conflicts.

Table 4-10
Comparison of Soil and Water Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Soil erosion	No potential impact with regulatory compliance and mitigation measures	Substantially lower than proposed project, but still higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Water of the State	Approximately 198 acres in project area	Approximately 174 acres in project area	No potential impact
Stormwater impacts to facility infrastructure	Adverse impacts could occur, would be addressed under Storm Water Damage Monitoring and Response Plan	Adverse impacts could occur, but would be substantially lower than proposed project. Impacts would be addressed under Storm Water Damage Monitoring and Response Plan	No potential impact
Modification to downstream sedimentation and erosion characteristics	Impacts not expected, but potential would be addressed under Storm Water Damage Monitoring and Response Plan	Impacts not expected, and would be lower than proposed project. Potential would be addressed under Storm Water Damage Monitoring and Response Plan	No potential impact
Groundwater availability	Impacts not expected, but potential would be addressed under Groundwater Level Monitoring and Reporting Plan	Impacts not expected, and would be lower than proposed project. Potential would be addressed under Groundwater Level Monitoring and Reporting Plan	No potential impact
Groundwater quality	No potential impact with regulatory compliance and mitigation measures	No potential impact with regulatory compliance and mitigation measures	No potential impact

4.10 Traffic and Transportation

4.10.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to traffic and transportation, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Transportation-related infrastructure, including access roads and the means for delivery of project components, would be exactly the same as that for the proposed project. This includes not only the locations and features of commuting and construction access roads, but the Level of Service (LOS) on those routes.

4.10.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that both construction and operations of the proposed project result in could direct, adverse and cumulative impact to traffic on Interstate 15 on Friday afternoons, when traffic on the highway is heavy due to persons visiting Las Vegas for the weekend. To address these impacts, the DEIS proposed a mitigation measure, in the form of a Traffic Control Plan, that would regulate arrival and departure schedules in order to reduce traffic levels during times when impacts could occur.

The DEIS also evaluated the potential for glare, associated with reflections from the heliostat fields and the brightness of the power tower receivers, to cause a direct safety hazard to airplane pilots and drivers on nearby roads, or to cause a distraction to pilots and drivers that would cause safety issues. Although the DEIS determined that brightness levels would not be high enough to cause a direct safety hazard such as retinal damage, the issue of distraction is much more difficult to predict and quantify. Therefore, the DEIS proposed mitigation measures that would require monitoring of brightness levels, as well as complaints received from pilots and drivers.

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the increase in traffic on local roads, especially Interstate 15, from construction workers and delivery vehicles. For the proposed project, the DEIS concluded that the increase in traffic would not increase the LOS on Interstate 15, except for on Friday afternoons. On Friday afternoons, the increase in LOS would cause a direct adverse impact on traffic.

The construction of the Mitigated Ivanpah 3 Alternative would include approximately the same number of workers and deliveries as the proposed project. Therefore, the direct impacts identified in the DEIS for the proposed project would be the same for both alternatives. However, the duration of the impact associated with the construction period would be reduced by 8 months, or approximately 17 percent. The Traffic Control Plan proposed as a mitigation measure for the proposed project would be equally effective for the Mitigated Ivanpah 3 Alternative.

Operations Impacts

Similar to construction impacts, the DEIS concluded that operation of the proposed project would result in a direct adverse impact to traffic on Interstate 15 on Friday afternoons. The operation of the Mitigated Ivanpah 3 Alternative would include approximately the same number of workers and deliveries as the proposed project. Therefore, the direct impacts identified in the DEIS for the proposed project would be the same for both alternatives. The Traffic Control Plan proposed as a mitigation measure for the proposed project would be equally effective for the Mitigated Ivanpah 3 Alternative during operations.

With respect to potential safety impacts from glare, BLM concluded in the DEIS that the proposed project would not result in brightness levels that could produce a safety hazard. However, the issue of distraction caused by glare from the facility is more difficult to predict, and the DEIS proposed a mitigation measure that would require monitoring of brightness levels, and complaints received from pilots and/or drivers.

Although the glare distraction effect from the proposed project could not be predicted, the effect from the Mitigated Ivanpah 3 Alternative would be anticipated to be lower than that for the proposed project due to the reduced number of power tower receivers. Overall, the distance of the power towers and heliostats to the highway would be the same for both alternatives, and the brightness of the power tower receivers would be similar. However, in the case of Ivanpah Unit 3, there would only be one power tower receiver, as opposed to five under the proposed project. This reduction in the number of power tower receivers would be expected to reduce any potential distraction effect, should it exist.

Closure/Decommissioning Impacts

The closure and decommissioning impacts of the Mitigated Ivanpah 3 Alternative would be lower than those identified for construction, but would exceed those associated with operations. Closure and decommissioning would require an increase in the number of workers, so the number of commuting trips would be higher than during operations. However, the number of commuting workers would not reach the level associated with construction. Although decommissioning would not involve extensive delivery of materials, it would involve extensive removal of materials from the site, adding to potential impacts to traffic on Interstate 15.

Cumulative Impacts

The contribution of the Mitigated Ivanpah 3 Alternative to cumulative impacts to LOS on Interstate 15 on Friday afternoons would be approximately the same as those projected for the proposed project. Although the duration of cumulative impacts associated with construction and decommissioning would be reduced in the Mitigated Ivanpah 3 Alternative, the impacts associated with operations would be the same for both alternatives.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with traffic and transportation.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.10.3 Traffic and Transportation Summary

A comparison of the traffic and transportation impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-11**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Because the employment levels, and therefore commuting trips by workers, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative, the direct adverse impact, and contribution to cumulative impacts, on Interstate 15 on Friday afternoons would be the same. The primary difference in traffic impacts between the alternatives would be that the impacts associated with construction and decommissioning would occur for a shorter duration than for the proposed project.

Table 4-11
Comparison of Traffic and Transportation Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Direct impact to LOS on Interstate 15	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	No potential impact
Contribution to cumulative impact to LOS on Interstate 15	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	No potential impact
Glare impacts	Difficult to predict. To be evaluated by	Difficult to predict, but anticipated to be	No potential impact

	monitoring.	lower than proposed project. To be evaluated by monitoring.	

4.11 Transmission Line Safety and Nuisance

4.11.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to transmission line safety and nuisance, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the position of the facility with respect to existing utility corridors and transmission lines would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. Although the Mitigated Ivanpah 3 Alternative would have a reduced output from that in the proposed project, the proposed features of the transmission system, including locations and size of required components (substation, gen-tie lines, and connection to the SCE system), would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative.

4.11.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and industry standards for construction and operation of transmission lines, the proposed project would not result in any direct or indirect impacts from transmission line safety or nuisance. The DEIS concluded that the lines would not pose an aviation hazard according to criteria established by the Federal Aviation Administration (FAA). In addition, the potential for audible noise, fire hazards, exposure to Electric and Magnetic Fields (EMF), nuisance shocks, and hazardous shocks would be minimized through compliance with industry standards and state regulations for transmission line construction.

Construction Impacts

The transmission lines would not operate during the construction period. Therefore, the potential for transmission line safety and nuisance impacts would not exist for either the proposed project or the Mitigated Ivanpah 3 Alternative.

Operations Impacts

The construction, location, and operation of the transmission lines would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. Because no potential

impacts were identified in the DEIS for the proposed project, there would be no potential impacts associated with operation of the Mitigated Ivanpah 3 Alternative.

Closure/Decommissioning Impacts

The transmission lines would not operate during the closure and decommissioning. Therefore, the potential for transmission line safety and nuisance impacts would not exist for either the proposed project or the Mitigated Ivanpah 3 Alternative.

Cumulative Impacts

Because no direct or indirect impacts resulting from transmission line safety or nuisance would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to from these sources.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with transmission line safety and nuisance.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.11.3 Transmission Line Safety and Nuisance Summary

A comparison of the transmission line safety and nuisance impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-12**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Because the transmission lines would be the same under the proposed project and Mitigated Ivanpah 3 Alternative, the potential impacts would be the same for both alternatives. However, in both cases, the potential for adverse impacts would be minimized by compliance with regulations and industry standards for operation of transmission lines.

Table 4-12
Comparison of Transmission Line Safety and Nuisance Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Aviation safety	No potential impact	No potential impact	No potential impact
Audible noise	No potential impact	No potential impact	No potential impact
Fire hazards	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
Hazard shocks	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
Nuisance shocks	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
EMF exposure	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact

4.12 Resources

4.12.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to visual resources, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with the impacts to visual resources, including the regional landscape setting, project viewshed, landscape units and Key Observation Points (KOPs), and the persons potentially affected by modification of the visual character of the area, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative.

4.12.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The DEIS concluded that the proposed project would have a substantial adverse impact to existing scenic resources as seen from several KOPs, including the Primm Valley Golf Course, the middle-ground distance on Interstate 15, the Mojave National Preserve on the east face of Clark Mountain, and in the Stateline Wilderness Area, including the Umberci Mine. The DEIS concluded that the impacts to the KOPs at the golf course could be mitigated, and proposed surface treatment of structures and landscape

screening to address the identified impacts. However, these measures were found to not be sufficient to mitigate impacts to viewers at the other KOPs, and these impacts were found to be adverse and unavoidable.

The visual impacts associated with the proposed project were also determined to contribute to adverse, unavoidable cumulative impacts in the immediate project viewshed in Ivanpah Valley. These impacts would result from the combination of the proposed project with other developments in the valley, including the Southern Nevada Supplemental Airport and Noise Compatibility Area, proposed high-speed rail projects, and other proposed solar projects.

Construction Impacts

Potential visual impacts resulting from the construction of the ISEGS project would be associated with disturbance of native cover material during site grading, the presence of construction equipment and temporary structures, and use of nighttime lighting. For the proposed project, the DEIS concluded that these factors would have an adverse impact on the viewscape, but would be addressed through the proposed mitigation measures. The construction of the Mitigated Ivanpah 3 Alternative would result in the same type of impacts. However, the areal extent of the construction-related impacts, and their duration, would be reduced from those associated with the proposed project. Therefore, the mitigation measures proposed for the proposed project would likely be effective for the Mitigated Ivanpah 3 Alternative as well.

Operations Impacts

In the DEIS, BLM concluded that the visual character of the proposed project, as it operated, would have substantial adverse impacts to scenic resources that could not be effectively mitigated.

The visual character of the Mitigated Ivanpah 3 Alternative is presented in a visual simulation in **Figure 4-1**. Overall, the large-scale and industrial appearance of the facility under the Mitigated Ivanpah 3 Alternative would still result in the same type and magnitude of adverse visual impacts that were identified for the proposed project in the DEIS. However, several changes in the configuration and structures associated with the Mitigated Ivanpah 3 Alternative would result in reducing the magnitude of those impacts. These changes would include the following:

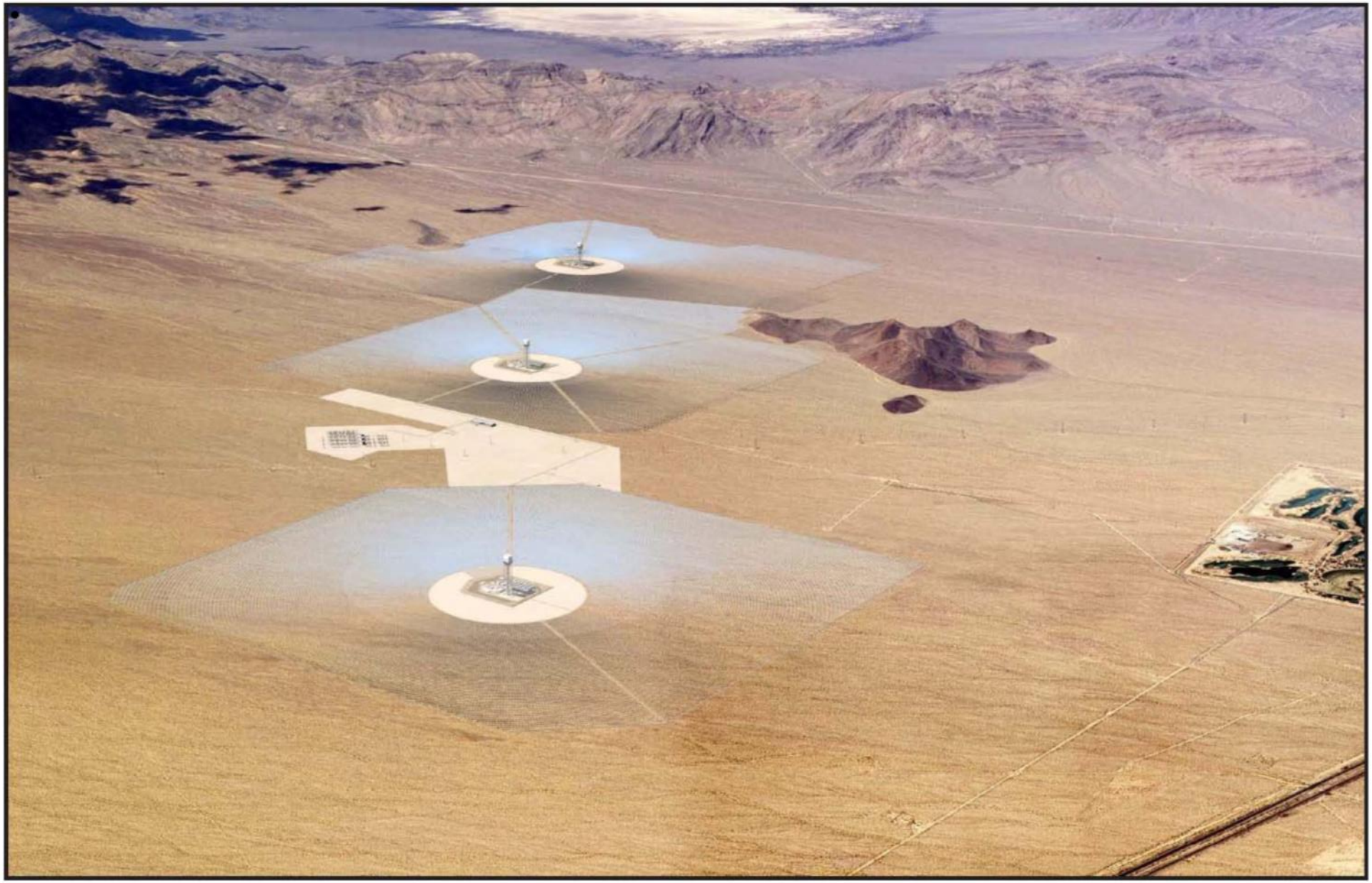

Figure 4-1. Artist Rendering of the Mitigated Ivanpah 3 Alternative (Source: BSE 2010a)

- The reduction of the number of power tower receivers from seven to three would reduce the visual impact of the towers themselves, as well as any glare associated with them during their operation.
- The reduction of the project footprint, including the 12.5 percent reduction in the acreage of the heliostat fields, would reduce the magnitude of the visual impact of the fields.
- The movement of the northern boundary of Ivanpah Unit 3, by approximately 1900 feet (0.36 miles) would place the facility, as a whole, at a further distance from several sensitive viewpoints, including KOP9 (north of Ivanpah Unit 3), KOP10 (Benson Mine), the Stateline Wilderness, and the Mojave National Preserve.

While the overall conclusions regarding the visual impacts associated with the Mitigated Ivanpah 3 Alterative would be the same as those reached for the proposed project, the magnitude of those impacts would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project.

Closure/Decommissioning Impacts

The source and nature of potential visual impacts resulting from the closure and decommissioning of the ISEGS project would be the same as those associated with construction. These would include the disturbance of native cover material during site grading, the presence of heavy equipment and temporary structures, and use of nighttime lighting. Although these characteristics would create an adverse impact on the viewscape, they would be addressed through mitigation measures identified in the DEIS. As with construction, the reduced size of the Mitigated Ivanpah 3 Alternative would result in these impacts being of a smaller magnitude and shorter duration than those associated with the proposed project.

Cumulative Impacts

In the DEIS, BLM concluded that the visual impacts associated with the proposed project would contribute to adverse, unavoidable cumulative impacts in the immediate project viewshed in Ivanpah Valley. These impacts would result from the combination of the proposed project with other industrial developments in the valley, including the Southern Nevada Supplemental Airport and Noise Compatibility Area, proposed high-speed rail projects, and other proposed solar projects. Due to the factors cited in the discussion of operations impacts above, the contribution of the Mitigated Ivanpah 3 Alterative to these cumulative visual impacts would be lower than those for the proposed project. However, the overall conclusion that the project would contribute incrementally to an increase in the industrial character of the area, would remain the same for the Mitigated Ivanpah 3 Alternative.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with visual resources.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.12.3 Visual Resources Summary

A comparison of the visual resources impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in Table **4-13**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the Mitigated Ivanpah 3 Alternative would have the same adverse impacts that would be associated with the proposed project. However, the magnitude of these impacts would be reduced due to the reduction in the number of power tower receivers, the reduction of the size of the heliostats fields, and the movement of the northern boundary of the facility further from sensitive viewing locations.

Table 4-13
Comparison of Visual Resources Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Appearance during construction	Adverse impact, would be mitigated	Lower than proposed project, greater than No Action. Would be mitigated	No potential impact
Appearance from sensitive viewing points in Mojave National Preserve and Stateline Wilderness	Adverse impact, would not be mitigated.	Lower than proposed project, but still adverse and unmitigable	No potential impact
Appearance from Interstate 15	Adverse impact, would not be	Lower than proposed project,	No potential impact

	mitigated.	but still adverse and unmitigable	
Glare	Difficult to predict. To be evaluated by monitoring.	Difficult to predict, but lower than proposed project. To be evaluated by monitoring.	No potential impact
Appearance during decommissioning	Adverse impact, would be mitigated	Lower than proposed project, greater than No Action. Would be mitigated	No potential impact

4.13 Waste Management

4.13.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to waste management, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with waste management, including the locations and capacities of offsite waste management facilities and regulations governing the management of project-generated wastes, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The type of technology and operations would also be the same, so the volume and type of wastes generated during construction, operation, and decommissioning of the Mitigated Ivanpah 3 Alternative would be similar to those for the proposed project. The primary difference between the proposed project and the Mitigated Ivanpah 3 Alternative would be that the reduced size of the Mitigated Ivanpah 3 Alternative would result in a small reduction in the amount of waste generated during construction, operations, and decommissioning.

4.13.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures specifying waste management and disposal procedures, the proposed project would have no direct or indirect impact on population centers or sensitive receptors, or on regional waste disposal capacity.

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the generation of non-hazardous wastes including construction debris, sanitary wastes, vehicle and equipment maintenance wastes, as well as hazardous wastes from the use of solvents, paints, and adhesives. In the DEIS, BLM concluded

that these wastes would be managed in accordance with applicable regulations and industry standards, and that the proposed project would therefore not result in any adverse impacts. The construction of the Mitigated Ivanpah 3 Alternative would be expected to use the same types and amounts of materials as the proposed project, and would therefore generate the same waste materials. The wastes would be managed and disposed of in the same manner for both alternatives. The primary difference in the construction of the alternatives would be the reduced number of power tower receivers and heliostats for the Mitigated Ivanpah 3 Alternative, which would result in a reduced volume of wastes generated. Therefore, the potential impact of waste management for the Mitigated Ivanpah 3 Alternative would be lower than that of the proposed project.

Operations Impacts

The waste management impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with the generation of waste materials during operations. For the proposed project, the DEIS concluded that management of wastes would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts.

The operations of the Mitigated Ivanpah 3 Alternative would be expected to generate the same types and amounts of wastes as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the operations would occur with the same type and amount of equipment and workers as the proposed project. Therefore, there would not be any substantial difference in impacts associated with waste management between the proposed project and the Mitigated Ivanpah 3 Alternative.

Closure/Decommissioning Impacts

The waste management impacts resulting from decommissioning of the Mitigated Ivanpah 3 Alternative would be associated with the demolition of site structures, as well as sanitary and vehicle maintenance wastes, similar to those generated during construction. For the proposed project, the DEIS concluded that management of waste materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts

The closure and decommissioning of the Mitigated Ivanpah 3 Alternative would be expected to generate the same types of wastes materials as the proposed project. However, due to the reduction in the acreage, number of power tower receivers, and number of heliostats, closure and decommissioning of the Mitigated Ivanpah 3 Alternative would generate a lower volume of waste materials than the proposed project.

Cumulative Impacts

Because no direct or indirect impacts from waste management practices would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts resulting from waste management.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with waste management.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.13.3 Waste Management Summary

A comparison of the waste management impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in Table **4-14**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Mitigated Ivanpah 3 Alternative. Any hazards associated with waste generation and management would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition.

Table 4-14
Comparison of Waste Management Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Construction debris	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with	No potential impact

		regulatory compliance and mitigation measures	
Sanitary wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Vehicle and equipment maintenance wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Hazardous wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Demolition wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact

4.14 Worker Safety and Fire Protection

4.14.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to worker safety and fire protection, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with worker safety and fire protection, including the location and type of fire support and emergency response services would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The type of technology and operations would also be the same, so the potential causes of fire and industrial hazards associated with

the Mitigated Ivanpah 3 Alternative would be the same as those for the proposed project. The difference in location also does not affect the regulations associated with building codes and occupational health and safety planning and protection that must be complied with during project construction, operation, and decommissioning.

4.14.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory and building code requirements and implementation of mitigation measures, the proposed project would have no direct or indirect impact on worker safety or local fire and emergency response resources.

Construction Impacts

Potential worker safety hazards associated with construction of the Mitigated Ivanpah 3 Alternative would be similar to those in any industrial setting, and could include exposure to noise; impacts from moving equipment; falls, trips, and lacerations; exposure to hazardous chemicals; burns from fires or hot equipment; and electrical hazards. In the DEIS, BLM concluded that, for the proposed project, these hazards would be addressed and minimized through compliance with Title 8 of the California Code of Regulations, as well as a project-specific Construction Safety and Health Program. The construction of the Mitigated Ivanpah 3 Alternative would be expected to expose workers to the same types of hazards, and would be performed under the same regulations and standards as those described in the DEIS for the proposed project. Because the magnitude of the infrastructure constructed in the Mitigated Ivanpah 3 Alternative, and the duration of construction, would be reduced from that of the proposed project, construction-related hazards to site workers would be reduced as well. Therefore, the potential impact of construction-related worker safety and health hazards for the Mitigated Ivanpah 3 Alternative would be lower than that of the proposed project.

Fire hazards and potential impacts to local fire and emergency response resources associated with construction of the Mitigated Ivanpah 3 Alternative would also be reduced from those for the proposed project. Fire hazards present during construction could potentially occur as a result of handling or management of fuels for vehicles and equipment. The use and handling of fuels for vehicles and equipment would be approximately the same, or slightly lower, for the Mitigated Ivanpah Alternative due to the reduced footprint of the facility, and the reduced duration of construction. These activities would not be expected to have an adverse impact on local fire protection and response resources.

Operations Impacts

Worker safety and fire hazards associated operation of the Mitigated Ivanpah 3 Alternative would be similar to those described for construction, but would be of a much

smaller magnitude. Operations would include far fewer workers than construction, and the use of heavy equipment and maintenance vehicles would be greatly reduced. Similar to construction, operations would occur in compliance with regulations in Title 8 of the California Code of Regulations, as well as project-specific operational safety and health plans. Although the magnitude of the Mitigated Ivanpah 3 Alternative would be slightly reduced from that of the proposed project, the number of workers and the nature of their work activities would be approximately the same. Therefore, there would not be any substantial difference in impacts associated with worker safety and fire hazards between the proposed project and the Mitigated Ivanpah 3 Alternative.

The DEIS also considered the potential impact of wildfires on the operational facility for the proposed project. The DEIS concluded that vegetation in critical areas, including the power blocks, substation, and administrative areas, would be removed, and would therefore not be subject to wildfires. Vegetation would remain in heliostat fields, but would be maintained at a level of 12 to 18 inches high. Therefore, the vegetation in the heliostat fields would also not present a fire hazard. These vegetation management procedures would be also be applied as a part of the Mitigated Ivanpah 3 Alternative. Therefore, the potential for fire hazard damage would be the same for both alternatives.

Closure/Decommissioning Impacts

The worker safety and fire hazard impacts resulting from decommissioning of the Mitigated Ivanpah 3 Alternative would be similar to those described for construction. For the proposed project, the DEIS concluded that decommissioning activities would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts. Decommissioning of the Mitigated Ivanpah 3 Alternative would involve the same procedures, but on a slightly reduced scale due to the lower number of power tower receivers and heliostats. Therefore, any worker safety hazards associated with decommissioning would be lower for the Mitigated Ivanpah 3 Alternative than the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to worker safety and fire protection would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to worker safety or fire protection.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with worker safety and fire protection.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.14.3 Worker Safety and Fire Protection Summary

A comparison of the worker safety and fire protection impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-15**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Mitigated Ivanpah 3 Alternative. Any hazards associated with worker safety would be lower for the Mitigated Ivanpah 3 Alternative than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition. The risk of wildfire damage to the facility would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project.

Table 4-15
Comparison of Worker Safety and Fire Protection Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Worker safety	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Fire hazards	No potential impact with vegetation management procedures	No potential impact with vegetation management procedures	No potential impact
Impacts to fire and emergency response resources	No potential impact	No potential impact	No potential impact

4.15 Geology, Paleontology, and Minerals

4.15.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to geology, paleontology, and minerals, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with geology, paleontology, and minerals would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. These factors include:

- Regional geologic setting;
- Regional tectonic setting;
- Site-specific mineral resources;
- Site-specific paleontological resources; and
- Site-specific potential for seismic, subsidence, and landslide events.

4.15.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and building codes, and implementation of mitigation measures requiring identification and assessment of geologic and paleontological resources, the geologic conditions would not present a threat to the proposed project, and the proposed project would have no direct or indirect impact on these resources.

Construction Impacts

Paleontological resources could potentially be present in the project area, and therefore could potentially be disturbed during project construction. Potential impacts to these resources for both the proposed project and the Mitigated Ivanpah 3 Alternative would be mitigated through the use of monitoring and assessment procedures. Overall, the magnitude of the potential impact in the Mitigated Ivanpah 3 Alternative would be lower than that for the proposed project, due to the reduced acreage (approximately 12.5 percent lower) as compared to the proposed project. However, as discussed in the analysis of cultural resources in Section 4.3, the reduction in potential impacts to paleontological resources is expected to be greater than 12.5 percent, due to the nature of the 433-acre area that would be eliminated. Elimination of the 433 acre northern portion of Ivanpah Unit 3 would remove the area of the most intense site disturbance and grading from the project development. As site grading is one of the greatest risk factors potentially threatening paleontological resources, elimination of the area requiring the greatest extent of grading would reduce potential impacts disproportionately to the simple 12.5 percent acreage reduction. Therefore, the

Mitigated Ivanpah 3 Alternative would be expected to reduce site disturbance impacts to paleontological resources by more than 12.5 percent over the proposed project.

Operations Impacts

In the DEIS, BLM concluded that geologic conditions, including the potential for seismicity, subsidence, and landslides, would present potential impacts to the operation of the proposed project, but these would be mitigated through facility design and compliance with building codes. Because the location of the Mitigated Ivanpah 3 Alternative and the proposed project would be approximately the same, potential threats to the facility caused by seismicity, subsidence, and landslides would be identical.

In the DEIS, BLM concluded that the proposed project would remove the entire project acreage from potential development of leasable sand and gravel resources. However, due to the large magnitude of these resources in the local area, this removal was not expected to cause an adverse impact to leasable mineral resources. The Mitigated Ivanpah 3 Alternative would leave the northern 433-acre portion of Ivanpah Unit 3 available to mineral development, which could include leasable sand and gravel operations. Therefore, the potential impact on these resources would be lower for the Mitigated Ivanpah 3 Alternative versus the proposed project.

The DEIS also evaluated the potential impact of the proposed project on existing locatable minerals claims on Limestone Hill (Numbers CAMC234026 and CAMC237293), and concluded that there would be no potential impacts. The location of the Mitigated Ivanpah 3 Alternative with respect to these claims would be the same as that of the proposed project, and therefore the potential impact on those claims would be the same.

Closure/Decommissioning Impacts

Closure and decommissioning impacts on geologic, paleontologic, and mineral resources would be associated with site disturbance activities, and would be the same as that described for construction activities. Due to the reduced acreage of disturbance associated with the Mitigated Ivanpah 3 Alternative, potential impacts would be lower than those associated with the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to geology, paleontology, or minerals would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with geology, paleontology, and minerals.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.15.3 Geology, Paleontology, and Minerals Summary

A comparison of the geology, paleontology, and minerals impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-16**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, the paleontological resource impacts associated with the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. Although the acreage would be reduced by approximately 12.5 percent, the potentially impacted area would be reduced by more than 12.5 percent, because the 433-acre area eliminated from the alternative would require extensive grading in the proposed project. Impacts on leasable and locatable mineral resources would be the same or lower for the Mitigated Ivanpah 3 Alternative than the proposed project. No hazards to either the proposed project or Mitigated Ivanpah 3 Alternative from geologic conditions would be expected.

Table 4-16
Comparison of Geology, Paleontology, and Minerals Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Paleontological resources	Construction could impact resources. Impact would be mitigated.	Lower than proposed project, higher than No Action. Impact would be mitigated.	No potential impact
Leasable mineral resources	Sand and gravel resources would be removed from potential production. No impact expected.	Lower than proposed project, higher than No Action. No impact expected.	No potential impact
Locatable mineral resources	Project adjacent to locatable claims, but no impact expected.	Project proximity to locatable claims the same as proposed project, but no impact expected.	No potential impact
Geologic hazards (seismicity, subsidence,	Minimized through facility design and compliance with	Same as proposed project. Minimized through facility	No potential impact

landslides)	building codes.	design and compliance with building codes.	

4.16 Livestock Grazing

4.16.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to livestock grazing, would be similar to that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. As discussed in the DEIS, the proposed project location is located within the existing BLM Clark Mountain Grazing Lease, which is a perennial/ephemeral allotment (Allotment #09003) comprising 97,560 acres of public lands. The Mitigated Ivanpah 3 Alternative would also be located completely within the boundaries of this allotment, although the alternative would leave the portion of the allotment in the northern 433-acre area of Ivanpah Unit 3 undisturbed. Therefore, this 433-acre area would remain available to grazing as part of the allotment. The procedures and regulations that would be used by BLM to modify allotment boundaries and reduce the animal unit months (AUMs) permitted in the grazing lease would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative.

4.16.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, by following required procedures to adjust the Clark Mountain Grazing Allotment, and by requiring mitigation measures to protect cattle, the proposed project would have no direct or indirect adverse impact on the Clark Mountain Grazing Allotment. The proposed project would require that BLM modify the allotment boundaries, and reduce the number of AUMs available within the allotment, currently a total of 1,428 AUMs, by approximately 70 AUMs.

Mitigated Ivanpah 3 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to land use impacts discussed in Section 4.5, impacts to livestock grazing are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

The livestock grazing impacts resulting from the Mitigated Ivanpah 3 Alternative would be similar to those associated with the proposed project. This would include removal of approximately 3,564 acres from the existing Clark Mountain Grazing Lease. Because this is a reduction of 433 acres from the proposed project, the adverse impact of the Mitigated Ivanpah 3 Alternative on the grazing lease would be reduced from that

associated with the proposed project. By reducing the project footprint by approximately 12.5 percent, the Mitigated Ivanpah 3 Alternative would require a reduction of approximately 62 AUMs in the allotment.

Other potential impacts to the grazing lease could occur due to the use of vehicles and equipment in active grazing areas. During construction, potential risks to cattle from these vehicles would be mitigated by speed limits and informing site workers of the potential hazards. Once the site fence is constructed, these potential threats during operations and decommissioning would be reduced, and would be limited to infrequent monitoring and maintenance on the outside of the fence. Potential impacts from these sources would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project.

Cumulative Impacts

The direct impact to the acreage associated with the Clark Mountain Grazing Lease, combined with impacts from other current and potential projects (such as the DesertXpress rail line and other solar projects), would contribute incrementally to the long-term reduction of acreage available for grazing in the area. Because it would reduce the project footprint by 433 acres (approximately 12.5 percent), the Mitigated Ivanpah 3 Alterative would have a reduced contribution to this cumulative impact compared to the proposed project.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with livestock grazing.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project. However, Mitigation Measures proposed for other resources, such as speed limits for protection of desert tortoises, were considered to be effective for protection of cattle.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.16.3 Livestock Grazing Summary

A comparison of the livestock grazing impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-17**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

The impact of the Mitigated Ivanpah 3 Alternative on the existing Clark Mountain Grazing Lease would be direct and adverse, but would be lower than that associated with the proposed project. Any hazards associated with vehicle and equipment use in

active cattle grazing areas when cattle are present would be the same for both alternatives, and would be mitigated through the use of speed limits and worker notifications.

Table 4-17
Comparison of Livestock Grazing Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Clark Mountain Grazing Lease	Direct adverse impact from removal of 4,073 acres and 70 AUMs from the lease	Direct adverse impact from removal of 3,564 acres and 62 AUMs from the lease	No potential impact
Vehicle impacts to individual cattle	Potential impact low, and would be mitigated	Potential impact the same as proposed project, and would be mitigated	No potential impact
Cumulative impacts to land available for grazing	Incremental contribution to long-term land available for grazing	Lower than proposed project, higher than No Action.	No potential impact

4.17 Wild Horses and Burros

4.17.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to wild horses and burros, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the elimination of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with wild horses and burros, including the area inhabited, and the applicability of the Clark Mountain Herd Management Area (HMA) addressed under the BLM's East Mojave Herd Management Area Plan, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. Under the Northern and Eastern Mojave (NEMO) Plan Amendment, the Appropriate Management Level (AML) for the Clark Mountain HMA was reduced from 44 to zero. Although burros are still known to be present in the area, BLM plans to remove them in compliance with the AML reduction. The reduction in the AML and plans to remove the remaining burros are independent of BLM's consideration of a ROW authorization for the ISEGS facility. However, while the burros are present, they would still be protected by provisions of the Wild and Free-Roaming Horses and Burros Act. Wild horses are not present in the project area.

4.17.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that implementation of mitigation measures designed to protect wild horses and burros were sufficient to ensure that the proposed project would have no direct or indirect impact on those resources.

Mitigated Ivanpah 3 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to grazing and land use impacts, impacts to wild horses and burros are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

Because wild horses are not present in the project area, and BLM has established the AML for burros in the Clark Mountain HMA at zero, the fencing of the land area associated with either the proposed project or the Mitigated Ivanpah 3 Alternative would have no impact on wild horses and burros

Similar to grazing, potential impacts to individual burros could occur due to the use of vehicles and equipment when burros are present. During construction, potential risks to burros from these vehicles would be mitigated by speed limits and informing site workers of the potential hazards. Once the site fence is constructed, these potential threats during operations and decommissioning would be reduced, and would be limited to infrequent monitoring and maintenance on the outside of the fence. Potential impacts to individual burros from these sources would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to wild horses or burros would be associated with the Mitigated Ivanpah 3 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Mitigated Ivanpah 3 Alternative would not provide any beneficial impacts associated with wild horses and burros.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project. However, Mitigation Measures proposed for other resources, such as speed limits for protection of desert tortoises, were considered to be effective for protection of burros.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.17.3 Wild Horses and Burros Summary

A comparison of the wild horses and burros impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-18**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Neither the proposed project nor the Mitigated Ivanpah 3 Alternative would have an adverse impact on wild horses or burros in the project area. Any hazards to individual burros associated with vehicle and equipment use would be the same for both alternatives, and would be mitigated through the use of speed limits and worker notifications.

Table 4-18
Comparison of Wild Horses and Burros Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Fencing of land area	No potential impact	No potential impact	No potential impact
Vehicle impacts to individual burros	No potential impact	No potential impact	No potential impact

4.18 Recreation

4.18.1 Environmental Setting

The environmental setting of the Mitigated Ivanpah 3 Alternative, with respect to recreation, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of the removal of a 433-acre area in the northern portion of Ivanpah Unit 3. Therefore, the environmental setting factors associated with recreation, including the features of the Mojave Desert that attract visitors, would be the same for the proposed project and the Mitigated Ivanpah 3 Alternative. The recreational uses and the numbers, types and locations of persons participating in recreational activities would be the same for both alternatives. These uses include:

- Hiking, camping, hunting, rock climbing, and wildlife viewing on the proposed project property and adjacent BLM-managed lands;
- OHV use of trails and roads in officially-authorized events, and informally;
- Tourism associated with the casinos located at Primm;
- Uses of the Ivanpah Dry Lake bed, including BLM-authorized National and International Land Sailing Regattas, and permitted and casual uses for long distance bow and arrow target shooting, hang gliding, model rocket and airplane flying, and photograph and film projects; and

- Hiking, camping, and wildlife viewing in the Mojave National Preserve.

These recreational uses are largely facilitated by the presence of existing roads and trails, which provide vehicle access to remote areas. As discussed in Section 3.5, both the proposed project and the Mitigated Ivanpah 3 Alternative project areas currently include officially-designated OHV trails (Trail 699226 and 699198) which provide access to the Clark Mountain area and other destinations to the north and west of the ISEGS facility. For both alternatives, the applicant proposes to re-route the trails around the facility. The modification in the northern boundary of Ivanpah Unit 3, and the modification of the boundary between Ivanpah Units 2 and 3, would result in a slightly different length and location of the sections of the trails that would be impacted, and the manner in which they would need to be re-routed.

The reduced acreage and output of the Mitigated Ivanpah 3 Alternative would not affect the regulatory requirements, including BLM's authorization process, for proposed recreational uses in the surrounding area.

4.18.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The DEIS evaluated the potential for the proposed project to impact recreation in several different ways, including:

- Directly reducing or affecting access of persons to recreational opportunities on adjacent areas;
- Resulting in changes to sedimentation or erosion which could affect the surface of the Ivanpah Dry Lake, or changes to wind characteristics on the Dry Lake, and thus impacting uses of the Dry Lake surface for recreation; and
- Through its visibility, reducing the quality of the desert recreational experience for hikers, campers, hunters, wildlife viewers, and others.

Although the proposed facility would incorporate currently existing OHV trails, these trails would be re-routed around the facility. Therefore, the DEIS concluded that the proposed project would not affect access to adjacent areas.

As discussed in Section 4.9.2, the DEIS also concluded that the development of the proposed project would not modify sedimentation or erosion on the Dry Lake bed. It also would not be expected to modify wind characteristics on the Dry Lake bed. Therefore, the proposed project would not directly or indirectly affect recreational uses on the Dry Lake bed.

Finally, the DEIS concluded that the proposed project could affect the quality of the recreational experience for those seeking a natural setting for hiking, camping, and other outdoor activities. In addition, the proposed project would contribute incrementally to the cumulative, long-term reduction of outdoor recreational quality in the Ivanpah Valley due to the development of Interstate 15, the casinos at Primm, the Southern Nevada Supplemental Airport and Noise Compatibility Area, proposed high-speed rail projects, and proposed solar energy projects.

Mitigated Ivanpah 3 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to grazing and land use impacts, impacts to recreation are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

With respect to the impact of fencing of the project acreage, which would remove the acreage from potential recreational use, the DEIS concluded that the project area itself was not frequently used for recreational purposes, and the proposed project would not affect access to adjacent areas. Although the proposed project area includes OHV trails, these are primarily used to access other areas. By re-routing these trails around the facility, neither the proposed project nor the Mitigated Ivanpah 3 Alternative would result in an adverse impact to recreational access. Because it would result in a reduced amount of diversion, any impact on recreational access caused by the Mitigated Ivanpah 3 Alternative would be lower than that for the proposed project.

The DEIS also concluded that the development of the proposed project would not modify sedimentation or erosion on the Dry Lake bed, and would, therefore, not directly or indirectly affect recreational uses on the Dry Lake bed. The affect of the development of the Mitigated Ivanpah 3 Alternative on stormwater, including sedimentation and erosion characteristics downstream of the project area, would be less than that for the proposed project. Not only would the affected project area be reduced by 433 acres, but the area eliminated from the alternative would be the area of most active stormwater flow. Although the Mitigated Ivanpah 3 Alternative constitutes a reduction of approximately 12.5 percent in total developed acreage, the reduction of potential impact on stormwater flow pathways, and therefore potential modification of downstream sedimentation and erosion, would be disproportionate to the 12.5 percent acreage reduction. The Mitigated Ivanpah 3 Alternative would be expected to reduce potential downstream impacts to the Dry Lake bed by much more than 12.5 percent from those that might occur as part of the proposed project. Also, by reducing the number of heliostats, and therefore the amount of energy reflected to the power towers, the potential impact of the Mitigated Ivanpah 3 Alternative on wind characteristics in the area would also be reduced from those associated with the proposed project.

Cumulative Impacts

With respect to impacts on the quality of the recreational experience for those seeking a natural setting for hiking, camping, and other outdoor activities, the DEIS concluded that the proposed project would contribute incrementally to the cumulative, long-term reduction of outdoor recreational quality in the Ivanpah Valley due to the development of Interstate 15, the casinos at Primm, the Southern Nevada Supplemental Airport and Noise Compatibility Area, proposed high-speed rail projects, and proposed solar energy projects. Although the project acreage and the overall visual impact would be lower for the Mitigated Ivanpah 3 Alternative, the impact on the quality of the recreational experience would be expected to be about the same as that for the proposed project.

This is because the change of the area to a more industrial character would be similar to that expected for the proposed project.

Beneficial Impacts

The DEIS concluded that the proposed project would likely result in attracting a small number of visitors to the area specifically to observe a large-scale solar project. The affect of the Mitigated Ivanpah 3 Alternative in this respect would likely be the same as that for the proposed project.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Mitigated Ivanpah 3 Alternative.

No other Mitigation Measures are proposed for the Mitigated Ivanpah 3 Alternative.

4.18.3 Recreation Summary

A comparison of the recreation impacts between the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-19**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of impacts between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Overall, no direct or indirect impacts on recreational use of the project area, Dry Lake bed, and surrounding areas would be expected from either the proposed project or the Mitigated Ivanpah 3 Alternative. Both alternatives would likely provide a beneficial impact on tourism by attracting persons interested in the unusual and large-scale character of the facility. However, both alternatives would also contribute incrementally to an increase in the industrial character of the area, which would likely result in reducing the quality of the recreational experience for many recreational users of the area.

Table 4-19
Comparison of Recreation Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Removal of acreage from recreational use	No potential impact	No potential impact	No potential impact
Restriction of access to recreational areas	Impact on existing trails would be minor, and mitigated through re-routing	Lower than proposed project, would be mitigated through re-routing	No potential impact
Modifications	Impacts could	Impacts could	No potential impact

affecting recreational use of Dry Lake bed	occur, but analysis predicts no modification	occur, but would be substantially less than proposed project	
Cumulative impact on quality of recreational experience	Contributes incrementally to industrial character of area	Incremental contribution to industrial character approximately equal to proposed project	No potential impact
Beneficial impact on tourism	Would attract small number of tourists	Attraction of tourists approximately equal to proposed project	No potential impact

4.19 Engineering and Design Assessment

In the FSA/DEIS, the Energy Commission evaluated the engineering aspects of the proposed project, including the sufficiency of the facility design, efficiency, reliability, and engineering of the transmission system. In general, these sections of the FSA/DEIS were developed to ensure that the facility would meet the Energy Commission's standards with respect to the generation and transmission of power. For the proposed project, the FSA/DEIS concluded that, by being designed, constructed, and operated in compliance with state regulations, industry standards, and Energy Commission Conditions of Certification, the generation and transmission of energy from the facility would meet all applicable Energy Commission requirements.

The only differences between the proposed facility and the Mitigated Ivanpah 3 Alternative would include:

- The configuration of the Ivanpah Unit 2 and 3 heliostat fields;
- The number of boilers associated with associated with Ivanpah Unit 3; and
- The size of the steam turbine generators associated with Ivanpah Units 2 and 3.

The configuration of the heliostat fields and number of boilers is not expected to create any difference in the power generation and transmission system. Although the size of the steam turbine generators is modified in the Mitigated Ivanpah 3 Alternative, and the change in size would result in a reduced output from the facility, the change would not be expected to affect the reliability or efficiency of the facility. Similarly, the transmission system associated with the Mitigated Ivanpah 3 and proposed project alternatives would be identical. The reduced output of the Mitigated Ivanpah 3 Alternative would not have an impact on the engineering design of the transmission system.

With respect to land use efficiency, the FSA/DEIS presented a calculation that the proposed project would generate 0.107 MW/acre (rounded to 0.11 MW/acre in the FSA/DEIS) of land used, a value that is comparable to other solar power plants. Under the Mitigated Ivanpah 3 Alternative, the land use efficiency would increase to 0.114 MW/acre. Therefore, the Mitigated Ivanpah 3 Alternative would be slightly more efficient, with respect to land use, than the proposed project.

A comparison of the facility design, efficiency, reliability, and transmission system engineering characteristics of the proposed project, Mitigated Ivanpah 3 Alternative, and No Action Alternative is presented in **Table 4-20**. Following the evaluation of impacts associated with the Modified I-15 Alternative in Section 6, a comparison of the engineering characteristics between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative is provided in Section 8.

Table 4-20
Comparison of Engineering Characteristics

Engineering Characteristic	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
Facility Design	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable
Power Plant Efficiency – Fossil Fuel Resources	Decreases reliance on fossil fuel resources	Same as proposed project	Not applicable
Power Plant Efficiency – Land Use	Not as efficient as other solar technologies	Slightly more efficient than proposed project, still lower than other technologies	Not applicable
Power Plant Reliability	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable
Transmission System Engineering	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable

5.0 Description of the Modified I-15 Alternative

5.1 Introduction

Based on the submittal of additional information, in the form of public comments on the DEIS, regarding resources in the I-15 area, BLM made the decision to develop a potential project configuration in the area originally identified by the Sierra Club, and to conduct a more detailed NEPA analysis of the newly developed alternative in this SDEIS. To facilitate this evaluation, BrightSource has submitted a proposed footprint and configuration for evaluation in this SDEIS. This project footprint varies slightly from the area evaluated in the DEIS; therefore, this alternative will be referred to as the Modified I-15 Alternative in this SDEIS.

The applicant for the Modified I-15 Alternative would be the same as that for the proposed project: Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC), which are subsidiaries of BrightSource Energy, Inc. The four ROW applications to BLM and the AFC to the Energy Commission would still comprise a plan to develop shared facilities including a substation, administration, and maintenance buildings within the CLA, and separate applications for the three power plants (Ivanpah Units 1, 2, and 3). A comparison of the acreage, number of heliostats, and other features of the proposed project, Mitigated Ivanpah 3 Alternative, and Modified I-15 Alternative was presented in **Table 3-1**. That comparison shows that the project acreage, number of heliostats, and all other physical components of the Modified I-15 Alternative would be the same as the Mitigated Ivanpah 3 Alternative. The only difference between the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative would be the location of Ivanpah Unit 3.

5.2 Location

The general location of the Modified I-15 Alternative would be the same as that for the proposed project. The Modified I-15 Alternative would be located in the Mojave Desert, near the Nevada border in San Bernardino County, California, on land administered by the BLM. The Modified I-15 Alternative 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.

5.3 Project and Acreage Description

The configuration of the Modified I-15 Alternative is shown in **Figure 5-1** (BSE 2010b). Similar to the proposed project, the Modified I-15 Alternative would be a development of three solar concentrating thermal power plants, which are comprised of fields of heliostats (elevated mirrors guided by a tracking system) focusing solar energy on boilers located on centralized power towers. Each heliostat tracks the sun throughout the day and reflects the solar energy to the receiver boiler. In each plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheat steam from the solar reheater. The applicant would develop the Modified I-15 Alternative as three power plants in separate and sequential phases that are designed to generate a total of 370 MW of electricity. Ivanpah 1 would have an electrical generation capacity of 120 MW, and Ivanpah 2 and 3 would have a capacity of 125 MW each. Shared facilities consisting of the substation, administration and maintenance buildings would be developed during construction of the first power plant in the CLA between Ivanpah 1 and 2.

As noted in **Table 3-1**, the applicant's proposed project plans have been updated for design optimization and for two revisions associated with stormwater management approaches since filing the original ROW application. The Modified I-15 Alternative would reduce the acreage associated with Ivanpah Unit 3, and in the overall ROW grant, by 433 acres. The alternative would also eliminate the need to grade approximately 109 acres within the 377-acre CLA area. This area would remain within the ROW grant for the Modified I-15 Alternative, and 67.5 acres of this area would be

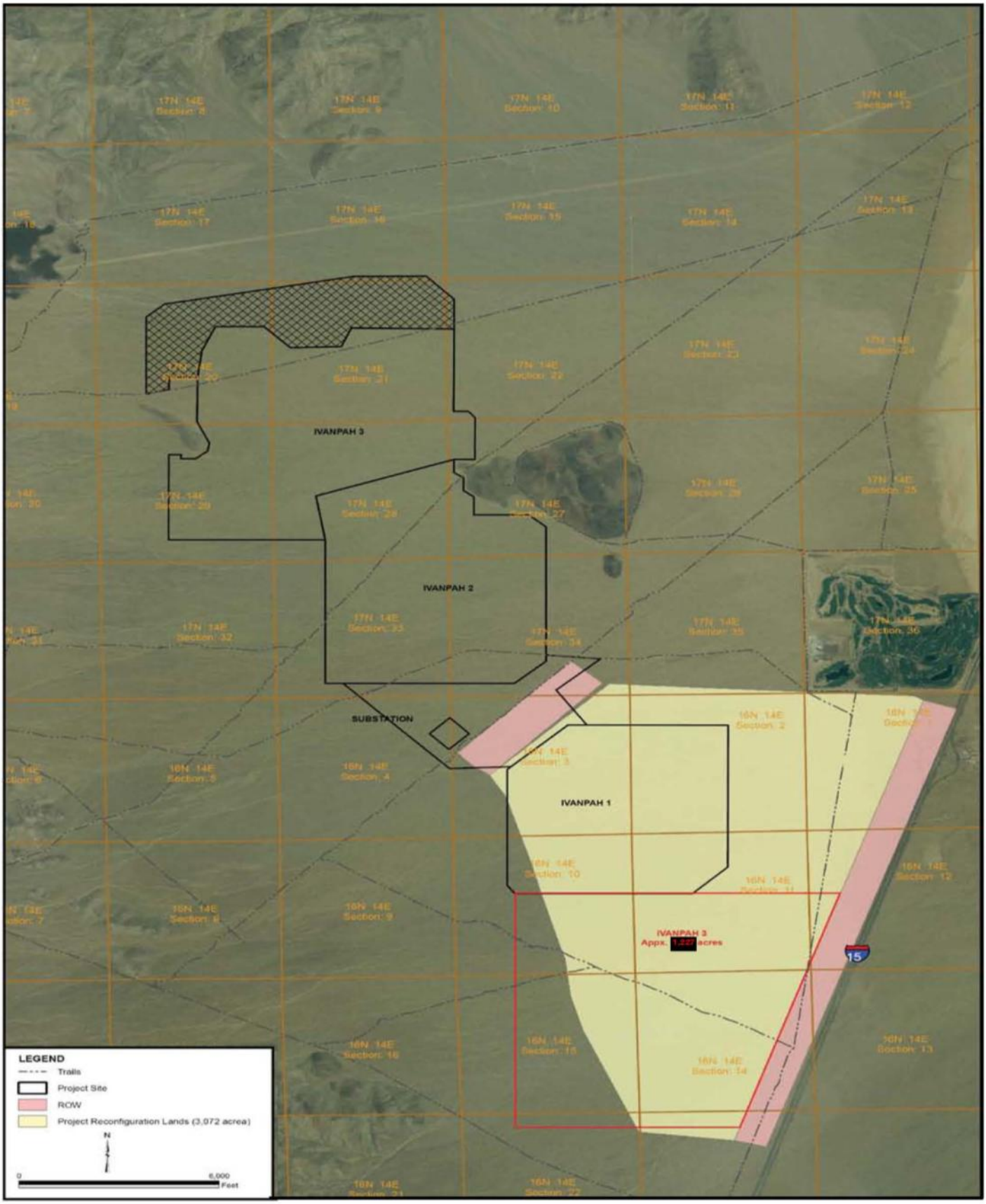

Figure 5-1. Reconfigured Unit 3 in Modified I-15 Alternative (Source: From BSE 2010b)

used as a Rare Plant Transplantation and Succulent Nursery Area. The alignment of the natural gas pipeline ROW, which would follow the northern boundary of Ivanpah Unit 3 in the proposed project alternative, would be extended to and along the northern boundary of Ivanpah Unit 2 in the Modified I-15 Alternative. The remainder of the acreage for the requested ROW grant would remain the same as that for the proposed project. However, other facilities and infrastructure within that footprint would be adjusted as needed to allow for construction and operation of the revised project design. The total acreage requested for the ROW for the Modified I-15 Alternative would be 3,564.2 acres.

The acreages of the ROW for the proposed project and the Modified I-15 Alternative are summarized as follows in **Table 5-1**.

Table 5-1
Modified I-15 Alternative, Acreage of BLM Right-of-Way

Overview of ISEGS Project Land Use		
Facility	**Proposed Project (acres)**	**Modified I-15 Alternative (acres)**
Ivanpah Unit 1	913.5	913.5
Ivanpah Unit 2	920.7	1,097
Ivanpah Unit 3	1836.3	1,227
Construction Logistics Area (excludes all areas of SCE exclusive usage)	377.5	159.2
External Features to ISEGS Project Boundaries (widening of Colosseum Road and natural gas line)	24.5	11.1
SCE use for EITP (substation, diversion channel, and transmission line)	n/a	90.4
Succulent Nursery and Rare Plant Transplantation Areas	n/a	66
Total ISEGS Project Land Use (including SCE transmission line usage)	4,073	3,564.2

Source: CH2ML2009a; BSE 2010a

Overall, the Modified I-15 Alternative would require a BLM ROW grant totaling 3564.2 acres (approximately 5.6 square miles), a reduction of 12.5 percent from the ROW acreage required for the proposed project. Although no specific proposal for the Modified I-15 Alternative has been submitted by the applicant, for the purpose of this analysis, it is assumed to be the same as the Mitigated Ivanpah 3 Alternative, with the exception of the reconfiguration of Ivanpah Unit 3. Therefore, the information provided by the applicant for the Mitigated Ivanpah 3 Alternative is assumed to be relevant for the Modified I-15 Alternative. Some of the areas included within this 3,564.2–acre ROW

grant, particularly the heliostat fields and power blocks within Ivanpah Units 1, 2 and 3, and the permanent facilities located within the CLA, would be permanently disturbed and occupied by ISEGS-related infrastructure throughout the duration of the ROW grant. This would include, at a minimum, the power blocks and heliostat fields associated with Ivanpah Units 1, 2, and 3, and the substation and administrative complex within the CLA. Together, these areas of permanent disturbance would total a minimum of 3,290.8 acres, or 92.4 percent of the ROW grant.

Other areas, including the temporary construction staging areas within the CLA, would be disturbed during construction, but would no longer be needed once construction was complete. These areas could potentially have fencing removed, be restored according to the facility's approved Closure, Revegetation, and Rehabilitation Plan, and be removed from the ROW grant once the project becomes operational. These areas comprise a total of approximately 200 acres, or 5.7 percent of the Modified I-15 Alternative ROW grant.

A third category of land included within the ROW grant includes areas for which the long-term status is uncertain. In their submittal describing the Mitigated Ivanpah 3 proposal (BSE 2010a), the applicant includes 109 acres of the CLA as being removed from development. This 109-acre area includes 59 acres for the Succulent Nursery Area, 7 acres for the Rare Plant Transplantation Area, and two separate areas (38 acres and 5 acres) designated as "mitigation" areas. Although the Mitigated Ivanpah 3 proposal suggests that these areas would not be disturbed, and should therefore be considered part of the reduction of the footprint of the Mitigated Ivanpah 3 Alternative, they are still part of the requested ROW grant, and would presumably be included within the fenced area. Also, the exact nature of activities that would occur within these areas is not defined. Although not used for construction, it seems likely that some level of vehicle traffic and/or ground disturbance would be required in the Succulent Nursery and Rare Plant areas to accommodate the movement and maintenance of plants. Therefore, for the purposes of this SDEIS analysis of the Modified I-15 Alternative, BLM assumes that the 109-acre area is included as a disturbed area within the project footprint.

As the applicant finalizes their detailed plans, they may be able to avoid or minimize disturbance to certain areas, allowing these areas to remain as viable desert tortoise habitat. Therefore, a provision has been added to a mitigation measure, designated as BIO-17 in the DEIS, such that the acreage requiring mitigation for desert tortoise can be updated at a later time subject to BLM and Energy Commission approval. Through this process, the temporary disturbance areas and the areas with an unknown long-term status can be removed from the total land area requiring biological mitigation for compensation purposes.

5.4 Solar Power Plant Equipment and Facilities

Heliostats

The physical characteristics (size, materials, etc.) and number of the heliostats in the Modified I-15 Alternative would be the same as those described in Section 3.4 for the

Mitigated Ivanpah 3 Alternative. The primary difference from the proposed project would be that the Modified I-15 Alternative would require approximately 40,000 fewer heliostats than the proposed project, or a total of 173,500.

The physical arrangement of the heliostats within the project boundaries would also be adjusted from that proposed project. In the proposed project, the heliostats in Ivanpah Unit 3 were arranged concentrically around five individual power towers. In the Modified I-15 Alternative, the heliostats in Ivanpah Unit 3 would be arranged around a single power tower, thus requiring modification of their arrangement and configuration within the unit.

The Modified I-15 Alternative would also include reconfiguration of the location of the northern boundary of Ivanpah Unit 2 from that in the proposed project. Combined with a proposed modification to the steam turbines in the Ivanpah Unit 2 and 3 power blocks (discussed below), these revisions result in reduced output from Ivanpah Unit 3 from 200 MW to 125 MW. However, they also result in increased output from Ivanpah Unit 2 from 100 to 125 MW (BSE 2010a).

Power Towers

The overall size, construction, and operation of the power towers in the Modified I-15 Alternative would be the same as that described in Section 3.4 for the Mitigated Ivanpah 3 Alternative, but different from that in the proposed project. The location and physical characteristics of the power towers in Ivanpah Units 1 and 2 would be the same as that for the proposed project. However, the number and location of power towers in Ivanpah Unit 3 would be modified from that in the proposed project. The proposed project includes five separate power towers within Ivanpah Unit 3. In the Modified I-15 Alternative, the number of power towers would be reduced to one. The single power tower would be located in the center of the revised Ivanpah Unit 3 acreage, and thus located approximately four miles to the southeast of the Unit 3 power block in the proposed project.

Power Block

The size, construction, and operation of the Unit 1 and 2 power blocks in the Modified I-15 Alternative would be the same as that described in the DEIS for the proposed project. The location and physical characteristics of the power blocks in Ivanpah Units 1 and 2 would be the same as that for the proposed project. However, the power block in Ivanpah Unit 3 would be located to the south of Ivanpah Unit 1. Also, the size of the steam turbines installed in the power blocks in Ivanpah Units 2 and 3 may be adjusted to make up for the reduction in power output caused by the elimination of heliostats (BSE 2010a).

5.5 Related Equipment and Facilities

Natural Gas Pipeline

The Modified I-15 Alternative would require the use of natural gas in the same manner as that described in the DEIS for the proposed project. The source of the natural gas, the Kern River Gas Transmission Line located to the north of the proposed ISEGS facility, would be the same for the proposed project and the Modified I-15 Alternative. The primary difference would be the length of the pipeline corridor that would exist outside of the project boundaries between the Kern River line and the ISEGS facility, and the need to extend the pipeline to the south of Ivanpah Unit 1 in order to service the reconfigured location of Ivanpah Unit 3. In the proposed project, the length of the pipeline corridor to the north of the ISEGS facility was estimated to be 2,011 feet. However, Ivanpah 3 would not be constructed in the same location, so the pipeline would need to extend to the northern boundary of Ivanpah Unit 2 instead of Unit 3. Because the original Ivanpah Unit 3 area would be removed from the development, the length of the corridor outside of the facility boundaries would be a minimum of 10,560 feet in the Modified I-15 Alternative, or more than five times the length of the corridor for the proposed project.

In addition to the extended length of the corridor between the Kern River line and the ISEGS facility, the pipeline would also need to extend to the south of Ivanpah Unit 1. In the proposed project, the line entered Ivanpah Unit 1 at its northwestern boundary. To extend to the reconfigured location of Ivanpah Unit 3, the line would need to extend an additional 6,200 feet (approximately) south along the western boundary of Ivanpah Unit 1, and then an additional 5,000 feet (approximately) into the probable power block area of Unit 3. Therefore, the Modified I-15 Alternative would require an estimated increase of more than 11,000 feet to the length of the pipeline ROW.

Air Pollution Control

The air pollution control equipment and management practices used on the natural gas-fired start-up boilers for the Modified I-15 Alternative would be exactly the same as those used for the proposed project. The size of the boiler used for Ivanpah Unit 3 in the alternative would be approximately 50 percent of the size of the boiler in the proposed project (BSE 2010a). However, the associated low-NOx burners, good combustion practices, continuous monitoring for Nox and CO, and operational limitations would be no different than those associated with the proposed project.

Water Supply and Discharge

The use of water and source of water for the Modified I-15 Alternative would be exactly the same as that described in the DEIS for the proposed project.

The general need for a water supply and discharge would be the same for the Modified I-15 Alternative as for the proposed project. Both the proposed project and Modified I-15 Alternative would require water as make-up water for the steam system, washwater for the heliostats, and potable water for domestic water needs (BSE 2010a). The

volume of water required to support the Modified I-15 Alternative would be slightly reduced from that required for the proposed project. This reduction would be due to the reduced number of heliostats that require washing in the Modified I-15 Alternative. Because the reduction in the number of heliostats is approximately 18.7 percent, and heliostat washing is the largest use of water during operations, it is estimated that the volume of water required for operations would be reduced by about 18.7 percent.

The source of water for both alternatives would be groundwater supplied from one of two wells located within the CLA. To accommodate changes in the use of different areas of the CLA, the location of the wells within the CLA would be different in the Modified I-15 Alternative than the proposed project. In the proposed project, the wells would be located in the southeast corner of the CLA, on the southeast side of the existing transmission lines, and abutting Ivanpah Unit 1. In the Modified I-15 Alternative, the wells would be located in the northern portion of the CLA, north of the transmission lines, and close to Ivanpah Unit 2 (BSE 2010a). The wells would be located approximately 2,400 feet north of the location in the proposed project.

Similar to the proposed project, the groundwater would be treated in activated carbon filters, de-ionization media, and a mixed-bed polisher to provide water of the required quality, and then directed to storage tanks designated for plant process needs and fire protection. The water in both alternatives would be supplied to the power blocks through underground pipelines (BSE 2010a). Because the locations of the wells would be modified, the precise route of the water pipelines within the CLA would be different in the Modified I-15 Alternative than the proposed project. However, the routes for both alternatives would be located entirely within the broader outlines of the ROW grant, and the portions of the pipeline routes outside of the CLA would be the same for both alternatives.

Fire Protection

The fire protection system included as part of the Modified I-15 Alternative would be exactly the same as that for the proposed project. For both alternatives, fire protection is provided through a 250,000 gallon water tank located at each power block, with 150,000 gallons reserved for fire protection purposes.

Access Roads and Maintenance Paths

The general approach for relocating existing roads and OHV trails would be the same for the Modified I-15 Alternative and the proposed project. Both alternatives would require paving and re-routing a portion of Colosseum Road to provide site access, and to divert the road around Ivanpah Unit 2. The configuration and construction details of the access roads to the power blocks, and the concentric heliostat maintenance paths, would be the same for both alternatives.

A primary difference between the proposed project and the Modified I-15 Alternative would be that different OHV trails would be affected, and would require re-routing. In the proposed project, Trail 699226, which currently passes through the northern portion

of Ivanpah Unit 3, would be re-located around the outside of the facility, parallel to the northern boundary of Unit 3. In the Modified I-15 Alternative, the 8,100 feet of Trail 699226 would not be affected, and would not require re-alignment. However, the new location of Ivanpah Unit 3 in the Modified I-15 Alternative would affect three other trails, as follows; Trail 699238 (for 2,880 feet), Trail 699194 (for 8,880 feet), and Trail 699221 (for 960 feet). The length of these trails within the Modified I-15 Alternative footprint is estimated at a total of 12,720 feet. Overall, the Modified I-15 Alternative would result in a longer and more obtrusive re-routing of existing trails than would be associated with the proposed project.

Construction Logistics Area, Substation, and Administrative Complex

Because it involves four fewer power tower receivers and 40,000 fewer heliostats, the Modified I-15 Alternative would require a smaller amount of acreage (109 fewer acres) within the CLA for construction purposes. However, the alternative would use most of this acreage for a Rare Plant Transplantation Area (approximately 7 acres) and a Succulent Nursery Area (59 acres). Overall, both alternatives would require the same 377 acres designated in the ROW grant for the CLA (BSE 2010a).

In the proposed project, almost all of the CLA acreage would undergo either permanent or temporary disturbance associated with the substation, administrative complex, monitoring wells, and temporary construction laydown and storage areas. In the Modified I-15 Alternative, the acreage of permanent disturbance required for the permanent facilities would be the same as that for the proposed project. However, the locations of these facilities and associated disturbance would be adjusted within the 377-acre boundaries of the CLA. The location of the substation would be the same for both alternatives, but the administrative complex and monitoring well locations would be re-located from the southeastern portion of the CLA in the proposed project to the northern portion of the CLA in the Modified I-15 Alternative (BSE 2010a).

Fencing

The type, construction, and maintenance of fencing used for facility security and tortoise barrier would be the same for the proposed project and Modified I-15 Alternative. The only difference would be the location of the fence, which would surround the Ivanpah Unit 3 in a different location under the Modified I-15 Alternative. As described in the DEIS for the proposed project, the applicant would need to have the fence located inset from the ROW boundary in order to allow for access to the fence from the outside for inspection and maintenance purposes. Also, with respect to the proposed project, the applicant stated a potential need to construct stormwater drainage systems outside of the fence, if needed to address stormwater damage issues. These requirements would still apply to the areas outside of the fence in the Modified I-15 Alternative. If these inspection or maintenance activities would be required in areas outside of the approved ROW grant, then supplemental environmental review and analysis would need to be implemented, and appropriate land use authorizations and permits would need to be acquired by the applicant.

Transmission System Interconnection and Upgrades

The transmission system requirements of the Modified I-15 Alternative would be exactly the same as those described in the DEIS for the proposed project (BSE 2010a). Although the total output of the facility would be reduced from 400 MW to 370 MW, the locations and capacities of the required gen-tie lines, Ivanpah substation, and switchyards with step-up transformers would all be the same as those required for the proposed project. The reduced output would also not affect the identified need and plan by SCE to upgrade approximately 36 miles of 115 kV transmission line to 220 kV. That project, designated the El Dorado-Ivanpah Transmission Line (EITL) project, is proposed to accommodate an anticipated 1400 MW of load generation by ISEGS and five other planned renewable energy projects in the area, and the reduction of the ISEGS output from 400 MW to 370 MW would not be expected to affect the overall need for that project. The environmental impact of the EITL project is currently being evaluated by BLM and the CPUC, and is also considered as part of the analysis of cumulative impacts of the ISEGS project in the DEIS.

Telecommunications Facilities

The telecommunications infrastructure required to support the Modified I-15 Alternative would be exactly the same as that for the proposed project. For both alternatives, the infrastructure is necessary to provide protective relay circuit and a supervisory control and data acquisition (SCADA) circuit for the proposed Ivanpah Substation, as well as data and telephone services. These services will be obtained by the construction of approximately eight miles of fiber optic cable from the ISEGS facility to Mountain Pass, along existing distribution line poles.

5.6 Project Design and Management Approach

Stormwater Management Approach

It is likely, but not certain, that the general approach to be used to address stormwater management would be the same for the Modified I-15 Alternative as for the proposed project. The reason for the uncertainty is because detailed stormwater modeling analysis has not been performed for the reconfigured Ivanpah Unit 3 site. As discussed in Section 3.6, reduction of potential stormwater impacts associated with the northern portion of Ivanpah Unit 3 was one element in the applicant's decision to propose the Mitigated Ivanpah 3 Alternative. The Modified I-15 Alternative would be similar in avoiding this area and its potential impacts. However, without detailed stormwater analysis, it is not certain whether the reconfigured location of Ivanpah Unit 3 in the Modified I-15 Alternative would be more or less favorable with respect to potential stormwater impacts. The applicant would likely intend to implement the same Low Impact Development approach to minimize the amount of grading, vegetation removal, soil compaction, and site disturbance during construction of the heliostat fields. However, if later stormwater analysis during the design phase indicated that the Low Impact Development approach was not applicable to the reconfigured Ivanpah Unit 3

area, then the applicant could choose to implement a more active stormwater management approach for this area.

Project Construction

In general, the sequence, procedures, and equipment used for project construction would be the same for the Modified I-15 Alternative and the proposed project. Because the acreage and infrastructure would be exactly the same, the duration of construction, required equipment and materials, and standards and procedures would also be expected to be the same. The reconfigured location of Ivanpah Unit 3 would not cause any substantive difference in site access or other characteristics associated with project construction.

The construction of the Modified I-15 Alternative would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These conditions would include provisions defined in the applicant's submittals for the proposed project, including:

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

Facility Operation and Maintenance

The operation and maintenance of the facility, as developed under the Modified I-15 Alternative, would be the same as that for the proposed project. The specific operational procedures to be used in daily operations of Ivanpah Units 2 and 3 would differ, due to the different configurations and outputs of these Units in the Modified I-15 Alternative. The primary differences would include a reduction in the level of effort and water volume needed for heliostat washing, and a reduction in the amount of natural gas burned in the start-up boilers (BSE 2010a). By reducing the number of heliostats from 214,000 to 173,500 (a reduction of 19 percent), the amount of water used for heliostat washing during operations would also be reduced by approximately 19 percent. The start-up boilers would be reduced in size from 924.4 MMBtu/hr (two

boilers at 231.1 and one boiler at 462.2 MMBTU/hr) in the proposed project to 693.3 MMBtu/hr in the Modified i-15 Alternative, a reduction in natural gas usage of 25 percent.

Like construction, the standards and procedures to be used during operation and maintenance would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These conditions would include provisions defined in the applicant's submittals for the proposed project, including:

- Draft Contractor Health and Safety Standards (CH2ML 2009b)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2ML 2009d)
- Draft Raven Management Plan, ISEGS (CH2ML 2008c)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2ML 2009f)
- Draft Biological Assessment for the ISEGS Project (CH2ML 2008d)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2ML 2008e)

Waste Management

The types of non-hazardous solid wastes generated during construction, operations, and closure of the facility under the Modified I-15 Alternative would be the same as those generated as part of the proposed project. All materials would be managed, recycled, and/or disposed of in the same manner for each alternative.

Hazardous Waste Management

The types of hazardous materials used during project construction and operations under the Modified I-15 Alternative would be the same as those generated as part of the proposed project. All materials would be managed, recycled, and/or disposed in the same manner for each alternative.

Project Decommissioning

The closure and decommissioning of the facility, as developed under the Modified I-15 Alternative, would be the same as that for the proposed project. Similar to construction, the duration of the closure would be reduced under the Modified I-15 Alternative, due to the reduced number of power tower receivers and heliostats that would require removal (BSE 2010a).

Like construction and operations, the standards and procedures to be used during closure and decommissioning would be subject to BLM Conditions of Approval as defined in the Record of Decision, Energy Commission Conditions of Certification, and permit and regulatory requirements of other state and federal agencies. These

conditions would include provisions defined in the applicant's submittals for the proposed project, including:

- Draft Closure, Revegetation and Rehabilitation Plan (CH2ML 2009h)
- Draft Contractor Health and Safety Standards (CH2ML 2009b)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2ML 2009d)
- Draft Raven Management Plan, ISEGS (CH2ML 2008c)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2ML 2009f)
- Draft Biological Assessment for the ISEGS Project (CH2ML 2008d)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2ML 2008e).

6.0 Environmental Assessment of the Modified I-15 Alternative

6.1 Air Quality

6.1.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to climate, meteorology, and existing air quality, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical to that of proposed project, with the exception that the location of Ivanpah Unit 3 would be reconfigured approximately four miles south of its location in the proposed project. This difference in location is not expected to result in any substantive difference in the climate, meteorology, or air quality data that are considered to be representative of the site for purposes of establishing background ambient air concentrations, and for evaluating the significance of potential impacts under NEPA. The difference in location also does not affect the regulatory authority responsible for air quality, which is the MDAQMD, or the standards for regulatory compliance or significance of impacts.

6.1.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The analysis of the significance of potential air quality impacts is based on the following regulatory thresholds:

- General Conformity applicability thresholds, which for the Modified I-15 Alternative is limited to 100 tons per year of PM 10 and PM10 precursors (NOx and Sox). This regulatory threshold applies to both construction and operation emissions.
- Prevention of Significant Deterioration (PSD) permit applicability thresholds, which for the Modified I-15 Alternative as a listed major source category is 100 tons per year for the criteria pollutants. This regulatory threshold only applies to direct project emissions during operations, and does not apply to secondary emissions such as fugitive dust emissions.

- The Modified I-15 Alternative would cause air quality impacts in exceedance of the National Ambient Air Quality Standards (NAAQS).

To be considered significant with respect to NEPA, the alternative would need to generate emissions that exceed the standards defined in the first two criteria above. Both of these criteria are expressed in terms of a total mass of emissions generated. Should exceedance of either of these two criteria occur, then the potential for the alternative to cause exceedances of the NAAQS would need to be evaluated to determine if the alternative would result in a significant impact under NEPA. The evaluation of the NAAQS is expressed in terms of concentration of the pollutant, in units of mass per unit volume of air, such as micrograms/cubic meter (ug/m^3). To determine these concentrations in terms which can be compared to the NAAQS, the emissions associated with the project are evaluated using air dispersion modeling to establish the maximum concentrations that would be present at ground level for short-term (1-hour, 3-hour, 8-hour, and 24 hour) and annual periods.

In the original application, the applicant presented results from air dispersion modeling for the proposed project to evaluate whether resulting concentrations of the priority pollutants would result in exceedance of the NAAQS. The factors that were incorporated into the applicant's modeling included:

- Emission rates from the stationary sources that would be associated with the project, which would include generation of fugitive dusts during site disturbance, emissions from each of the 231.1 Mmbtu/hr boilers located at Ivanpah Units 1 and 2, emissions from the 462.2 Mmbtu/hr boiler located at Ivanpah Unit 3, emissions from the 240 bhp emergency fire water pumps at each of the three Units, and emissions from four 3750 bhp emergency generators (one each at Units 1 and 2, and two at Unit 3).
- The locations of the stationary emissions sources with respect to the ROW boundaries.
- Background concentrations of the pollutants, as developed from data from nearby air quality monitoring stations.
- Meteorological data from nearby meteorological stations.
- Use of EPA-approved models for each calculation.

In the DEIS, the results of the applicant's modeling were evaluated by verifying the reasonableness of the emissions rates, verifying the applicability of the background concentrations and meteorological data, and re-running the models to verify the results. The result of that analysis was a conclusion that both construction and operations could cause direct, adverse impacts to air quality if not sufficiently mitigated. The DEIS adopted mitigation measures proposed by the applicant and developed additional mitigation measures to reduce the emissions and associated adverse impacts.

Construction Impacts

The construction impacts resulting from the Modified I-15 Alternative would be associated with fugitive dust emissions, emissions from construction vehicles, and emissions from worker commuting vehicles. For the proposed project, the DEIS

concluded that these emissions could cause direct adverse air quality impacts, and the DEIS proposed a variety of mitigation measures to minimize these impacts.

The construction of the Modified I-15 Alternative would be expected to generate approximately the same rates of fugitive dust, construction vehicle emissions, and worker commuting vehicle emissions as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would occur with the same type and amount of equipment and workers as the proposed project. The two differences between the Modified I-15 Alternative and the proposed project would be the duration of construction, and the different location of Ivanpah Unit 3.

The duration of construction would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent (48 months for the proposed project versus 40 months for the Modified I-15 Alternative). Although the rate of emissions would be the same for the construction of both alternatives, the overall mass of emissions associated with the Modified I-15 Alternative would be lower, due to the reduced duration of construction.

The construction of Ivanpah Unit 3 would occur in a location that is four miles south of its location in the proposed project. The reconfigured location is not any closer to or further from local residents or sensitive receptors than the original location, so the emissions associated with construction would not have adverse impacts on receptors.

Although the air quality impacts associated with construction of the Modified I-15 Alternative would be reduced from those associated with the proposed project, it would still potentially cause direct, adverse air quality impacts. Therefore, mitigation measures developed for the proposed project would also be applicable to the Modified I-15 Alternative.

Operations Impacts

Operations impacts associated with the Modified I-15 Alternative would result from the following sources:

- Fugitive dust from vehicle traffic on unpaved roads and maintenance paths;
- Emissions from maintenance vehicles;
- Emissions from worker's commuting vehicles; and
- Emissions from stationary sources such as the boilers, emergency generators, and emergency fire water pumps.

No modeling has been conducted specifically to estimate operational air emissions from the Modified I-15 Alternative. In the submittal describing the Mitigated Ivanpah 3 proposal (BSE 2010a), the applicant's original air modeling for the stationary sources was modified to account for the differences in the number, size, and locations of the sources with respect to the property boundaries. For the Modified I-15 Alternative, it is assumed that all of these parameters, including the number, size, and distance from each source to the property boundaries would be the same as assumed in the modeling

for the Mitigated Ivanpah 3 Alternative. The assumptions used for the Mitigated Ivanpah 3 Alternative modeling, and which are assumed to be applicable to the Modified I-15 Alternative, include background concentrations, meteorological input data, and the modeling methodology. These include:

- The size of the boiler at Ivanpah Unit 3 was reduced from 462.2 to 231.1 Mmbtu/hr (50 percent), resulting in a reduction in fuel use from the proposed project.
- One of the two emergency generators proposed for Ivanpah Unit 3 for the proposed project would be eliminated in the Modified I-15 Alternative.
- The Ivanpah Unit 3 power block, including the associated emissions sources (boiler, emergency generator, and emergency fire pump), would be moved 272 feet closer to the ROW boundary than as in the proposed project.

As in the Mitigated Ivanpah 3 Alternative, these changes result in a lower mass of emissions from the Modified I-15 Alternative, as compared to the proposed project, and therefore reduced concentrations of almost all pollutants in almost all locations and durations. The only exception is the modeling result for NO_2 impacts, which shows an increase in short-term (1-hour and 3-hour) concentrations at the site boundary due the placement of the Unit 3 power block 272 feet closer to that boundary.

The operational emissions associated with Ivanpah Unit 3 would be located four miles south of their location in the proposed project. The reconfigured location is not any closer to or further from local residents or sensitive receptors than the original location, so the emissions associated with operations would not have adverse impacts on receptors.

Overall, air emissions associated with operation of the Modified I-15 Alternative would be lower than those associated with the proposed project. However, the emissions could still cause direct, adverse impacts to air quality in the absence of mitigation measures. Therefore, mitigation measures developed for the proposed project would also be applicable to the Modified I-15 Alternative.

Closure/Decommissioning Impacts

Similar to construction, the closure and decommissioning impacts resulting from the Modified I-15 Alternative would be associated with fugitive dust emissions, emissions from heavy equipment, and emissions from worker commuting vehicles. For the proposed project, the DEIS concluded that these emissions would not have an adverse impact on air quality, for the following reasons:

- The activities would have a much shorter duration than construction;
- Emissions from equipment would be expected to be lower due to technology advancement; and
- The activities would likely be controlled with mitigation measures that were equivalent or superior to those used for construction.

Based on these factors, including the shorter duration associated with decommissioning the reduced acreage of disturbance, reduced number of heliostats and reduced number

of power tower receivers, adverse impacts associated with closure and decommissioning of the Modified I-15 Alternative would not be expected.

Cumulative Impacts

The DEIS evaluated two types of cumulative air quality impacts associated with the proposed project. These included:

- Compliance of the proposed project with programmatic efforts to reduce air pollutants in the region; and
- The proportional contribution of the proposed project to current and reasonably foreseeable emissions in the area.

Because the MDAB is designated as non-attainment for the federal 24-hour PM10 standard, the MDAQMD adopted a Federal Particulate Matter (PM10) Attainment Plan (PMAP) in July, 1995. Although the area is designated as unclassified/attainment for federal PM2.5 standards, it is classified as non-attainment for the annual state PM2.5 standard. Neither the PMAP nor the state specify control measures that would be applicable to the emissions sources that would be present at the either the proposed project, or the Modified I-15 Alternative. Therefore, compliance with the MDAQMD rules and regulations would constitute compliance with those authorities.

In the DEIS, localized cumulative impacts for air quality were defined as having the following components:

- Background conditions, which comprise emissions from existing projects that contribute to ambient air quality conditions;
- Project-related emissions, as estimated using emissions estimates from project-related sources and site-specific air dispersion modeling; and
- Emissions associated with reasonably foreseeable projects.

Both background conditions and emissions associated with reasonably foreseeable projects were established in the DEIS analysis for the proposed project. Based on the designation of the area as non-attainment for the state ozone and PM2.5 standards, and the state and federal PM10 standards, it can be concluded that air quality impacts already exist in the project area. Although no specific applications for Authority to Construct (ATC) or Permit to Operate (PTO) for projects within a six-mile radius of the site have been identified, the DEIS did identify several proposed projects that are likely to contribute emissions that will affect air quality in the area. These included additional proposed solar energy facilities, the Southern Nevada Supplemental Airport in Jean, proposed commercial and residential development in Jean, and proposed high-speed rail projects. While none of these would be expected to have long-term operational emissions, each would likely release particulate emissions and fugitive dust associated with ground disturbance during construction. Therefore, these emissions, combined with construction and operations emissions from the Modified I-15 Alternative, would likely contribute to an adverse cumulative impact on air quality. Mitigation measures, as described below, would be recommended to reduce the level of emissions associated

construction, operation, and closure of the Modified I-15 Alternative, and thus reduce the contribution of the project to potential cumulative impacts.

Beneficial Impacts

By generating needed power with only a small supplemental use of fossil fuels, the Modified I-15 Alternative would potentially displace greenhouse gas and pollutant emissions associated with fossil fuel-powered generating facilities in the transmission area.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.1.3 Air Quality Summary

A comparison of the air quality impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-1**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, the air quality impacts associated with the Modified I-15 Alternative would be lower than those associated with the proposed project. Overall project air emissions, as compared to the proposed project, would be reduced due to the reduction in the size of the Ivanpah Unit 3 boiler, and the reduced area of ground disturbance associated with project construction. The re-location of the Ivanpah Unit 3 power block closer to the property boundary would result in a small increase in one-hour NOx emissions detected at the site boundary. However, these increased emissions would not exceed any of the regulatory thresholds, and would be very limited in duration.

Although the emissions would be lower than those for the proposed project, they would still cause direct, adverse impacts to air quality, and would also contribute, along with other proposed projects in the area, to a cumulative adverse impact on air quality. However, mitigation measures proposed by the applicant, and additional measures proposed in this SDEIS, would ensure that emissions would not exceed any NEPA or permitting criteria.

Table 6-1
Comparison of Air Quality Impacts

Potential Impact	Proposed Project	Modified I-15	No Action Alternative
General Conformity Applicability Threshold	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact
PSD Permit Applicability Threshold	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact
Exceedance of NAAQS	Could exceed threshold if not mitigated	Lower than proposed project, higher than No Action. Could exceed threshold if not mitigated.	No potential impact

6.2 Biological Resources

6.2.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to biological resources, would be similar to, but not exactly the same, as that described in the DEIS for the proposed project. The location and biological resources associated with Ivanpah Units 1 and 2 would be the same as that of the proposed project. However, the location of Ivanpah Unit 3 would be reconfigured from northwest of Ivanpah Unit 2 to directly south of Ivanpah Unit 1, approximately four miles to the southeast. Because the location of this 1,227-acre area would be moved approximately 4 miles, the biological resources associated with Ivanpah Unit 3 would be different. At this time, detailed biological surveys of the reconfigured location have not been performed. However, based on the results of reconnaissance-level surveys, the relation of the location to the mountains, Ivanpah Dry Lake bed, and Interstate 15, and other factors, the following observations can be made regarding the biological resources associated with Ivanpah Unit 3:

- The Modified I-15 Alternative contains habitat of variable quality for desert tortoise, based on characteristics of the physical terrain, vegetation, and proximity to Interstate 15. The topography is flatter, there are fewer washes, and there are many dirt roads fragmenting the habitat. There are fewer desert tortoises and burrows within this alternative site, compared to the proposed

project site. Biological resources within approximately 25% of the revised Ivanpah Unit 3 location are already impacted by the proximity of the highway. By co-locating with the highway, the reconfiguration of the Ivanpah Unit 3 site to the Modified I-15 Alternative location would decrease the total amount of tortoise habitat fragmentation.

- Reconfiguration of the Ivanpah Unit 3 site to the Modified I-15 Alternative site co-locates major facilities, while avoiding impacts to the northern portion of the proposed project area. As a consequence, movement corridors between mountainous areas remain broad and relatively undisturbed. Human activities associated with the project are less likely to adversely impact big game species, including desert bighorn sheep, as well as other species associated with mountainous habitats.

- Because the highway causes direct and indirect affects to other wildlife species (e.g., vehicle-wildlife collisions, lower habitat quality within the highway easement, noise, artificial lighting), co-location would reduce adverse impacts to a number of wildlife species, while avoiding high quality habitat along the northern portion of the project area.

- While some of the habitat within the Modified I-15 Alternative is similar in quality to the Ivanpah Unit 3 site, much of the alternative's habitat located below 2,750-feet in elevation is less diverse and of lower quality than for the proposed project. Although surveys have not been conducted, it is anticipated that there would be fewer acres capable of sustaining rare plant communities, compared to the proposed project Ivanpah Unit 3 site.

6.2.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM concluded that the proposed project would have direct, adverse impacts to 4,073 acres of desert tortoise habitat, which would require state and federal endangered species "take" authorizations. The tortoises present in the ROW area would be removed and translocated to an area to the west of the project site, which would include the area which would comprise Ivanpah Unit 3 in the Modified I-15 Alternative. In addition to the direct loss of tortoise habitat, the proposed project would also fragment and degrade adjacent habitat, and could promote the spread of invasive plants and desert tortoise predators (ravens). The proposed project would also directly impact breeding and/or foraging habitat for other special-status wildlife species, including burrowing owl, loggerhead shrike, Crissal thrasher, golden eagle, and American badger. The proposed project would also impact vegetation in the 4,073 project area, including one species considered sensitive by BLM (the Rusby's desert-

mallow). Finally, the proposed project would adversely impact ephemeral drainages through site grading, compaction, and construction of infrastructure within drainage channels. Although the proposed project construction method, Low Impact Development, would be designed to minimize direct impacts to these drainages, the DEIS assumed that all 2,000 ephemeral drainages (198 acres of waters of the state) would be impacted, and would require mitigation under a streambed alteration agreement with the CDFG. For each of these NEPA impacts identified, the DEIS presented mitigation measures that have been proposed by the applicant, would be required by other state and federal agencies, and/or were identified by BLM and Energy Commission staff.

In addition to the evaluation of impacts under NEPA, the analysis of biological impacts of the proposed project in the DEIS included an evaluation of impacts to species considered sensitive under CEQA by the Energy Commission, including plant species listed by the CNPS. For these species, the Energy Commission proposed additional Conditions of Certification to reduce the identified impacts.

For the Modified I-15 Alternative, the potentially-impacted species which are evaluated below include wildlife, species afforded protection under the Migratory Bird Treaty Act, and special status species. For the purposes of this discussion, special status species include the following: federally listed, proposed, and federal candidate species (USFWS No Date); state-listed species (State of California 2004); and BLM sensitive species (BLM 2004). In addition to special status species, there are numerous species of concern, including Birds of Conservation Concern (BCC) and plant species identified as rare by the CNPS.

6.2.2.1 Wildlife

A general description of the biological resources associated with the proposed project area was provided in Section 6.2 of the DEIS. The species associated with the Modified I-15 Alternative would be the same. Based on additional information identified in public comments on the DEIS, the Energy Commission hearing process, workshops with Energy Commission intervenors, and other activities conducted since the publication of the DEIS, additional wildlife species descriptions were developed to supplement the species descriptions already provided in the DEIS. These supplemented species descriptions were provided in Section 4.2.2.1, for the Mitigated Ivanpah 3 Alternative. The wildlife species descriptions would be the same for the Modified I-15 Alternative, but to avoid repetition, are not presented again in this section. The reader is directed to Section 4.2.2.1 for the wildlife species descriptions that would be applicable to the Modified I-15 Alternative.

Construction Impacts

Wildlife resources and their habitats would be directly and indirectly impacted by the construction of the Modified I-15 Alternative. The impacts are similar to those discussed in Section 6.2 of the DEIS.

Direct impacts to big game include the incremental long-term reduction of potential forage and the incremental increase of habitat fragmentation, displacement of species from existing habitats, and hampering or restricting movements between seasonal ranges and/or water sources. Although habitats adjacent to the project may support some displaced animals, species that are at or near carrying capacity could suffer some increased mortalities due to displacement. Additionally, increased human presence and related increase in traffic levels on project access roads increases the potential for wildlife/vehicular collisions. Compared to the Proposed Action, the Modified I-15 Alternative would reduce habitat fragmentation by co-locating a portion of the project adjacent to the highway. The alternative would also maintain a broader big game movement corridor to the north of the project, as compared to the Proposed Action.

Other potential direct impacts to wildlife species include nest or burrow abandonment and loss of eggs or young where construction occurs during the breeding season. Direct impacts from surface disturbance activities would result from the temporary loss of habitat and increased fragmentation until vegetation is reestablished. For species with relatively small home ranges (e.g., lizards), the loss of habitat may cause population reductions. Potential impacts also would result in mortalities of less mobile or burrowing non-game species (e.g., small mammals, birds, reptiles, invertebrates) due to exposure to vehicle and construction equipment traffic. Potential direct impacts also would include nest or burrow abandonment or loss of eggs or young when construction occurs during the breeding season.

Indirect impacts would result from increased noise levels and human presence during surface disturbance activities resulting in the displacement of wildlife species. Additional indirect impacts include increased presence of noxious and invasive weeds resulting in reduced forage and habitat quality, and dust effects from unpaved roads. These indirect effects can increase stress within individuals resulting in greater susceptibility to disease and lower fecundity.

Direct and indirect impacts to MBTA species for construction would be similar to those impacts described above, including loss of habitat quantity and quality, potential impairment within movement corridors, mortality due to vehicle/bird collisions, and indirect impacts from construction and increased human activity levels. If surface disturbance activities occur during the breeding season for passerines, raptors, and other summer avian residents (approximately March through July), nest or territory abandonment or the loss of eggs or young (loss of productivity) for the breeding season could result. Impacts to nesting birds would depend on the nest location relative to the proposed disturbance area, the phase of the breeding period, and the level and duration of the disturbance.

Operations Impacts

Operation impacts would include increased noise, human presence, and light to the area. Sources of noise during operations would be mechanical, vehicle traffic, and maintenance facility noise. Maintenance activities would increase vehicular traffic and

increase the potential for dispersal of noxious and invasive weeds. Artificial lighting associated with the facilities on wildlife species may include disorientation from and attraction to artificial light, impact-related mortality due to disorientation, and effects on the light-sensitive cycles of many species (Saleh 2007). Because the I-15 corridor already causes many of these impacts, co-location would reduce the footprint of these impacts within the entire project area.

Operation of the solar facility would include the potential for foraging and migrating avian and bat species to collide with the project facilities, including mirrors, transmission lines, and three 459-foot tall centralized power towers. Potential for mortality exists for migrating and foraging bat, avian, and insect species from radiation affects from the solar rays created by the facility. Although data are limited, one 79-acre solar facility with one 282-foot tall solar tower experienced 1.7 avian mortalities per week (McCrary 1986). The majority of avian mortalities were attributed to collisions, but approximately 20 percent were attributed to heat related injuries. In comparison, the proposed ISEGS project is approximately 50 times the size of the McCrary study site with more numerous and larger towers. Transmission lines also would create the potential for avian electrocution and may be used as perches by avian predators that artificially increase predation rates on small game and other nongame species.

Closure/Decommissioning Impacts

Closure/decommissioning-related impacts would be consistent with those described within the DEIS. The Modified I-15 Alternative would have the 433 fewer acres requiring facility removal and subsequent reclamation activities as the proposed project. Direct and indirect impacts to biological resources from closure/decommissioning activities would be similar to those described for construction impacts. Reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community. Noxious and invasive weeds would likely be more prevalent than existing conditions. Permanent changes in the vegetative communities would alter the ecosystems ability to sustain the same type and numbers of species currently found at the site.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with wildlife resources.

6.2.2.2 Special Status Species

A general description of the biological resources associated with the proposed project area was provided in Section 6.2 of the DEIS. The species associated with the Modified I-15 Alternative would be the same. Based on additional information identified in public comments on the DEIS, the Energy Commission hearing process, workshops with Energy Commission intervenors, and other activities conducted since the publication of the DEIS, additional special status species descriptions were developed to supplement

the species descriptions already provided in the DEIS. These supplemented species descriptions were provided in Section 4.2.2.2, for the Mitigated Ivanpah 3 Alternative. The special status species descriptions would be the same for the Modified I-15 Alternative, but to avoid repetition, are not presented again in this section. The reader is directed to Section 4.2.2.2 for the special status species descriptions that would be applicable to the Modified I-15 Alternative. Although the species descriptions are not repeated, the following subsection presents an analysis of the potential impacts to the special status species due to the construction, operations, and decommissioning of the Modified I-15 Alternative.

Federally Listed Species

Desert Tortoise (*Gopherus agassizii*)

Construction impacts would be similar to those described in the DEIS and for general wildlife species above. Trash and construction debris, plus additional perch sites, may increase raven predation on tortoise.

Operation of the proposed project would permanently affect approximately 4073 acres of occupied desert tortoise habitat.

Subsequent to the publication of the DEIS, testimony from multiple expert witnesses indicated that tortoise densities may substantially decline with proximity to I-15 due to highway mortality, declining habitat quality, and habitat fragmentation. Thus, an alternative co-locating Ivanpah 3 with I-15 was examined to determine whether the alternative might reduce impacts to desert tortoise. Historical survey data extrapolated to this region (Berry 1984) suggest tortoise densities might be lower closer to the highway. Recent anecdotal information provided by intervenors in the Energy Commission certification process indicates a lower density of burrows in the Modified I-15 Alternative area than in other nearby habitats (Cashen 2010). This may be attributable to less desirable habitat, including flatter terrain occurring at a lower elevations, fewer washes, potential differences in burrow habitat, greater frequency of dirt roads, differences in forage quality (more weed species), and proximity to Interstate 15. Dr. Sanders with the CEC testified that I-15 creates a mortality hazard and increases habitat fragmentation. During Ms. Chainey-David's testimony (CEC staff), she emphasized the need for maintaining large portions of contiguous habitat.

Review of the scientific literature suggests there is a measurable impact on desert tortoises from highways that bisect their habitat. Boarman and Sazaki (2006) found statistically significant impacts to desert tortoise populations occur at distances less than 800 meters from a highway. Based on this highway-effect zone of 800 meters, the Modified I-15 Alternative would overlap with approximately 315 acres (equivalent to 25 percent) of habitat already impacted by the presence of I-15. Further, co-location with the highway would reduce local habitat fragmentation, providing larger, contiguous areas of tortoise habitat. Desert tortoises relocated from the Modified I-15 Alternative area into higher elevation habitat further to the north (e.g., the proposed Ivanpah Unit 3

area) likely would be placed into more suitable habitat, as demonstrated by tortoise densities. Compared to the proposed project, the Modified I-15 Alternative likely would result in less mortality, based on presumed lower densities due to the highway's existing impacts. Surveys in 2007 and 2008 near the Modified I-15 Alternative area found only one tortoise; however, site-specific surveys have not been conducted for this project alternative. Based on the road-effect anticipated from the proximity of I-15, the Modified I-15 Alternative would have fewer anticipated impacts to desert tortoise than the proposed project.

Closure and decommissioning activities would have fewer future impacts on tortoise than the proposed project since fewer acres would require restoration.

The applicant also has identified mitigation to minimize impacts to desert tortoise due to the construction and operation of the proposed project, including conducting desert tortoise clearance surveys and establishing exclusionary fencing (BIO-8), developing and implementing a desert tortoise translocation plan (BIO-9), implementing avoidance measures and Best Management Practices (BIO-11), implementing raven and weed management plans (BIO-12 and BIO-13), and acquiring off-site habitat, establishing endowment, and enhancing suitable desert tortoise habitat (BIO-17) .

While no critical habitat for desert tortoise would be impacted by the Modified I-15 Alternative, the action is likely to adversely affect some individual desert tortoise and their habitat. This determination is based on the potential for incidental long-term loss of habitat from construction and operation, displacement of individuals, habitat fragmentation due to surface disturbance from the project, and the potential accidental loss of individuals from handling, tortoise relocation, and construction activities. Indirect impacts include an increase in noxious and invasive weeds which would reduce forage quality. Dust and increased human activity in the area would contribute to stress, possibly increasing susceptibility to disease. Similar to the proposed project, the Modified I-15 Alternative would require a federal endangered species "take" authorization.

BLM Sensitive and State Protected Wildlife Species

Mammals

Pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*)

Like the proposed project, operation of the Modified I-15 Alternative would increase risk of collision and heat-related injuries associated with the solar towers and transmission lines. The alternative may interfere with normal movement patterns. While the loss of habitat likely would result in fewer flying invertebrates for foraging bats, artificial lighting from the project may attract insects at night, thereby increasing the collision hazard for bats.

Closure and decommissioning activities would have fewer potential impacts on bat species as compared to the proposed project because 433 fewer acres would require restoration.

Based on the low probability of occurrence on the project site, nighttime foraging patterns, and preferred roosting habitat located outside of the Ivanpah Unit 3 site, the Modified I-15 Alternative would have limited adverse effects on these bat species.

Long-legged myotis (*Myotis volans*)

Because roosting habitats typically utilized by long-legged myotis are uncommon or absent from the project area, construction would have negligible impacts on this species.

While roosting habitat is not found within the project area, these bat species may potentially forage in the project area. Because the Modified I-15 Alternative would have the 433 fewer acres of disturbed foraging habitat, operational impacts may be similar to those impacts described for other bat species.

Closure and decommissioning activities would have fewer potential impacts on bat species as the proposed project because 433 fewer acres would require restoration.

Based on the low probability of occurrence on the project site, nighttime foraging patterns, and preferred roosting habitat located outside of the Ivanpah Unit 3 site, the Modified I-15 Alternative would have limited adverse effects on long-legged myotis.

Nelson's Bighorn Sheep (Ovis canadensis nelsoni)

As discussed in Section 4.2.2.2, no studies are available that would confirm the presence of Nelson's bighorn sheep in the project area. However, that section presented information suggesting that the bighorn sheep near Clark Mountain could move down into the upper elevations of the Ivanpah Valley, including the ISEGS project area, to forage (CH2ML 2008d). Construction, operation, and closure/decommissioning impacts would be the same as those described for big game wildlife.

Potential impacts to desert bighorn sheep would be minimized through implementation of the applicable mitigation measures identified in the DEIS. Based on the potential use of the movement corridor located north of the Ivanpah 3 site, the Modified I-15 alternative may have a lesser impact on Nelson's bighorn sheep by broadening the movement corridor along the north side of the project area. Since the proposed Ivanpah Unit 3 site is furthest north, the reconfiguration of that unit away from Clark Mountain, closer to the Dry Lake bed, and adjacent to I-15 would reduce potential impacts to bighorn sheep and other big game movement corridors. Consequently, the Modified I-15 Alternative would have reduced impacts on desert bighorn sheep compared to the proposed project.

Birds

Western Burrowing Owl *(Athene cunicularia hypugaea)*

Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

Based on the preferred open habitat of burrowing owls, the Modified I-15 Alternative would not substantially alter impacts to this species compared to the proposed project.

Golden Eagle *(Aquila chrysaetos)*

Golden eagles were detected on the ISEGS project site, but are unlikely to nest there because of the absence of suitable nesting habitat. However, Clark Mountain, just north of the project area, provides suitable nesting habitat for this species, and the ISEGS site provides foraging habitat. Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

Based on the preferred foraging habitat of golden eagles, the Modified I-15 Alternative would reduce potential impacts to this species since the Ivanpah Unit 3 area in the proposed project is more proximal to their habitat on Clark Mountain. Moving the Ivanpah Unit 3 further south would avoid disturbance of the numerous ephemeral drainages of high quality habitat that provide good foraging habitat in close proximity to nesting habitat. Moving the location of Ivanpah Unit 3 further south would also would increase the buffered distance from suitable nesting habitat and human activities associated with the project.

Based on the preferred nesting habitat located outside of the proposed Ivanpah Unit 3 site and avoidance of highest quality foraging habitat in the proposed Ivanpah Unit 3, the Modified I-15 Alternative would have reduced impacts on golden eagle compared to the proposed project.

Bendire's thrasher (*Toxostoma bendirei*)

The Bendire's thrasher was not found within the project site during 2007 and 2008 surveys. Several sightings of Bendire's thrasher were observed in the mountainous region of the Mojave National Preserve (BLM 2009). Breeding habitat is highly variable, but does occur within the Mojave and Great Basin deserts within dense Mojave Desert scrub with Joshua trees, Spanish bayonet, Mojave yucca, cholla cactus, or other succulents. Construction, operational, and closure/decommissioning impacts would be the same as those described for other MBTA species.

There is the potential for Bendire's thrasher to occupy high quality habitat within the project area. While the Modified I-15 Alternative would reduce potential habitat for the Bendire's thrasher, there would be 433 fewer acres of disturbance than the proposed project. Additionally, the habitat within the Modified I-15 Alternative may be slightly less

suitable than in the proposed Ivanpah 3 Unit site due to flatter terrain, differences in quality and quantity of vegetation and associated prey species, greater density of dirt roads (habitat fragmentation), and proximity to the highway. Based on the potential to occur in the highest quality habitat, the Modified I-15 Alternative would avoid the highest quality habitat in the proposed Ivanpah Unit 3, resulting in reduced impacts to Bendire's thrasher compared to the proposed project.

Gray Vireo (Vireo vicinior)

The gray vireo was not found within the project site during 2007 and 2008 surveys. Breeding habitat consists primarily of low density pinyon-juniper woodlands, often along the margin of this habitat where it mixes with shrublands of greater density (Winter and Hargrove 2004). Because the habitats typically utilized by gray vireo are uncommon or absent from the project site, this species is considered to have low potential for occurrence on the project site and was eliminated from further analysis.

Reptiles

Banded Gila Monster *(Heloderma suspectum)*

Gila monsters have the potential to occur in the ISEGS project area, particularly near the metamorphic hill, immediately adjacent to the southeastern boundary of Ivanpah 3 (CH2ML 2008a). Gila monsters may venture from those rockier areas adjacent to the project area where they would likely take refuge in small crevices and caves to forage within the alluvial fan on which the proposed project is located (CH2ML 2008a).

Construction, operational, and closure/decommissioning impacts would be the same as those described for wildlife species.

Based on the low probability of occurrence within the site since Gila monster preferred habitat is located outside of the Ivanpah Unit 3 site, the Modified I-15 Alternative would not substantively benefit or adversely affect banded Gila monster.

Wildlife Species of Special Concern

Additional species of special concern, such as the American badger, have the potential to occur within the project area. These species have some regulatory protection by California state law. The DEIS identified many of the Species of Concern that have the potential to occur within the project site and well as those found in the region. These species are monitored due to concerns about population viability and as useful indicators of ecosystem health.

Construction, operational, and closure/ decommissioning impacts for species of concern would be the same as those described for other similar wildlife species.

6.2.2.3 Sensitive Plant Species

The DEIS identified potential impacts to native plant species and communities, particularly special status plant species and species of concern. Within the project area, there are no known occurrences of federal- and state-listed plant species. The only BLM sensitive species known to occur within the project area is the Rusby's desert mallow. In the FSA/DEIS, the Energy Commission also identified a number of species of special concern located within the project site, including plants identified as rare by the CNPS (List IB and List 2).

In 2007 and 2008, species-specific surveys were conducted within the proposed project area for special status plant species and CNPS species of concern. Based on these surveys, one BLM sensitive species (i.e., Rusby's desert mallow) and seven CNPS species (i.e., Mojave milkweed, Parish's club cholla, desert pincushion, Utah vine milkweed, desert portulaca, nine-awned pappus grass, and small-flowered androstephium) were identified within the project area. However, these surveys have not been conducted within the footprint of Ivanpah Unit 3 in the Modified I-15 Alternative.

Without protocol rare plant surveys, it is not possible to directly compare the Modified I-15 Alternative to the proposed project. However, reconnaissance level surveys conducted by the applicant in August 2009 found that the most suitable habitat for rare plants occurs in locations above the 2,750-foot elevation contour, where vegetation diversity and microtopography improves and reflects the same species composition and structure associated with the ISEGS site rare plant occurrences. Below that elevation, the topography tends to flatten out, the habitat lacks the microtopography and soil textures upon which many rare plant species depend, and the overall plant diversity is reduced, with important indicators such as cacti and succulents dropping out of the species composition.

<u>Rusby's Desert Mallow and Mojave Milkweed</u>

Surveys of these two species conducted in 2007 and 2008 found widely-scattered distribution patterns. The surveys identified ten locations containing Rusby's desert mallow, of which two locations are within the proposed Ivanpah Unit 3 area. There were 57 locations of Mojave milkweed identified within the proposed project area, of which 33 were within the proposed Ivanpah Unit 3 site. While it is not possible to quantify differences between the Ivanpah Unit 3 site and the Modified I-15 Alternative without proper surveys, it is probable that the majority of Rusby's desert mallow and Mojave milkweed locations (if any) would occur within the higher quality habitat located above 2,750-feet elevation.

Construction activities would have limited impacts to Rusby's desert mallow and Mojave milkweed. Plant avoidance and protection areas within the heliostat fields would be fenced during construction to avoid inadvertent encroachment. Dust from construction activities may stress plants within the construction area.

Fencing would be removed following construction and an alternative marking material (e.g., posts or stakes) would be installed for operations to indicate the areas where avoided plants are located. Rusby's desert mallow and Mojave milkweed plant avoidance and protection areas within the heliostat fields would be monitored to ensure the areas remain protected.

Compared to the proposed project, the Modified I-15 Alternative is expected to impact fewer locations of Rusby's desert mallow and Mojave milkweed. This assumption is based on the general distribution of these plants throughout the proposed project area. More locations were identified north of the electrical transmission line separating Unit 1 from Units 2 and 3. This distribution suggests few locations of these rare plants would occur within the Modified I-15 Alternative site, but surveys would be required to confirm this assumption.

Construction Impacts

Construction-related impacts would be consistent with those described within the DEIS (BLM and CEC 2009); however, the Modified I-15 Alternative would likely impact fewer locations with Rusby's desert mallow or Mojave milkweed based on the rationale provided above. Potential impacts to sensitive plant species from surface disturbance-related activities may include the loss of individuals as a result of crushing from construction vehicles and equipment. Because surface disturbance would be distributed over a relatively large geographic area and within an ecological-specific niche (i.e., Mojave Desert Ecoregion), population-level impacts to sensitive plant species may occur. Impacts may include the long-term loss of potentially suitable habitat until closure/decommissioning and native vegetation has been reestablished. Indirect impacts may include the introduction or spread of noxious weeds and invasive plant species. Noxious weed control through use of biological, mechanical, chemical, or various alternative methods may also indirectly impact species individuals and may alter potentially suitable habitat through changes in vegetation community cover and composition.

The implementation of the Modified I-15 Alternative would have 433 fewer acres of disturbance compared to the proposed project. Prior to construction, specified plants species within any project-related surface disturbance areas would be salvaged and relocated to the 7-acre Rare Plant Transplantation Area. The Rare Plant Transplantation Area would only be used for salvaged plant species of concern to reduce the amount of disturbance to salvaged plants should pre-construction surveys determine that remedial measures be needed. The 59-acre Succulent Nursery Area would be used for salvaged cacti and yucca species. Pending further consultation and BLM and Energy Commission review and concurrence, additional construction-related mitigation may be required.

To the maximum extent practical, plant species of concern located within the heliostat fields would be avoided and protected during construction through the use of fencing to avoid inadvertent encroachment. Fencing would be removed following construction and

an alternative marking material (e.g., posts or stakes) would be installed to indicate the areas where avoided plants are located. This would allow ecological connectivity between the extant populations within the heliostat fields and adjacent areas of undisturbed contiguous habitat, allowing ecological processes such as seed dispersal and pollinator movement to occur. Monitoring of theses extant plant species of concern within the heliostat fields would be conducted.

Operations Impacts

Operation-related impacts associated with the Modified I-15 Alternative would be consistent with those described within the DEIS (BLM and CEC 2009). Direct and indirect impacts to sensitive plant species from routine operational activities would be similar to those described for construction impacts. In addition, potential impacts to sensitive plant species from operational activities may include the loss of individuals as a result of shading caused by heliostat placement. To maintain the ground surface beneath the heliostats free of vegetation obstructions, operational mowing and weed control through the use of biological, mechanical, chemical, or various alternative methods may be conducted. As a result, sensitive plant species may be directly impacted by trampling, partial, or full removal as a result of vegetation maintenance and indirectly impacted as a result of altering potentially suitable habitat through changes in vegetation community cover and composition.

Closure/Decommissioning Impacts

Closure/decommissioning-related impacts associated with the Modified I-15 Alternative would be consistent with those described within the DEIS (BLM and CEC 2009). Direct and indirect impacts to sensitive plant species from closure/decommissioning activities would be similar to those described for construction impacts. In addition, potential impacts to sensitive plant species from closure/decommissioning activities may include the loss of individuals during structure removal and subsequent revegetation. If biological, mechanical, chemical, or various alternative methods are used to control noxious weed species during closure, direct and indirect impacts may include partial or full plant removal and indirectly alter potentially suitable habitat through changes in vegetation community cover and composition.

Long-term restoration of the project area likely would result in a greater frequency of noxious and invasive weeds as well as lower density and diversity of native plant species, including sensitive plant species.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with sensitive plant species.

6.2.4 Mitigation Measures

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

In addition to those mitigation measures identified in the DEIS, additional mitigation measures identified to minimize impacts to MBTA species were discussed in Section 4.2.3. These additional mitigation measures would also be applicable to the Modified I-15 Alternative.

6.2.5 Cumulative Impacts

There are multiple projects proposed for the Ivanpah Valley area, including DesertXpress (high speed rail), two Next Light Silver State Projects (totaling 7840 acres), the adjacent Stateline Solar Project (totaling 6400 acres), and the Ivanpah Valley Airport (5500 acres for the airport, and an additional 17,000 acre Noise Compatibility Zone to be deeded to Clark County). These projects alone would disturb more than 36,000 acres of BLM land that is currently available for biological habitat in the Ivanpah area. The cumulative impacts of these regional projects would result in substantial surface disturbance from construction and long-term impacts from permanent facilities. The disturbances would impact soils and vegetation, including special status plant species, and resulting in loss of habitat for wildlife and special status species. Habitat fragmentation would increase in the Ivanpah Valley and migration corridors may be disrupted. Additional solar projects and their associate transmission lines would increase collision hazards for bats and birds. Further, heat from additional solar projects would result in additional mortality to some species, including birds, bats (mornings and evenings), and flying insects. Multiple large-scale projects within the Ivanpah Valley would result in adverse changes in ecological processes, such as seed dispersal, potential loss of genetic diversity due to loss or reduction of subpopulations.

For desert tortoise, cumulative impacts resulting in the substantive loss of habitat in the Ivanpah Valley, increased mortality due to construction hazards and translocation stress. The net loss of habitat may increase stress upon this genetically distinct subpopulation, potentially increasing the susceptibility to disease and mortality. Direct and indirect mortality from these cumulative impacts could result in a reduction or loss of this subpopulation.

For other special status species, impacts would be similar to those described for other plant and wildlife species. Since the region contains a large fraction of some special status populations, the impacts to special status species could have greater affects on

the species viability and possibly contribute to the listing of species if effects are not mitigated.

BrightSource and other project proponents would be required to apply mitigation measures to reduce impacts to biological resources. In general, avoidance is the preferred mitigation. However, when applied on a large scale from multiple projects, avoidance can result in patchy distribution patterns, which disrupts ecological processes. Off-site habitat compensation can potentially increase habitat for biological resources, though the habitat requirements of many species are poorly understood. Consequently, even with mitigation, cumulative impacts could result in substantial impacts to wildlife and special status animal and plant populations.

6.2.6 Biological Resources Summary

A comparison of the biological resources impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-4**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

The reconfiguration of the proposed Ivanpah Unit 3 to a site adjacent to I-15 would likely result in a reduction in overall impacts to biological resources. For desert tortoise, the Modified I-15 Alternative site would be located within an area already impacted by the proximity of the highway. It is estimated that 315 acres of the reconfigured location of Ivanpah Unit 3, equivalent to 25 percent of the Unit, is adversely impacted by the presence of the highway. Habitat is variable, with areas located below 2,750-feet in elevation consisting of lower quality habitat due to terrain (flat topography with fewer washes), lower forage quality, and proximity to the highway. Fewer tortoises and burrows have been reported at the alternative site (Berry 1984, Cashen 2010), although formal surveys have not been conducted. Consequently, the co-location of the Modified I-15 Alternative with the highway, coupled with fewer acres of high quality tortoise habitat, would likely result in fewer impacts to desert tortoise. Further, some of the highest densities of desert tortoise and highest quality habitat in the project area (the proposed Ivanpah Unit 3 site) would be avoided. Overall, impacts from the Modified I-15 Alternative likely would be less than the proposed project, but would remain greater than the No Action Alternative. Formal consultation with the USFWS will be required for desert tortoise impacts.

Reconfiguration of the Ivanpah Unit 3 site to the Modified I-15 Alternative site co-locates major facilities, while avoiding impacts to the northern portion of the proposed project area. As a consequence, movement corridors between mountainous areas north of the project area remain broad and relatively undisturbed. Human activities associated with the project are less likely to adversely impact big game species, including desert bighorn sheep, as well as other species (e.g., birds, bats) associated with mountainous habitats. Co-location would also reduce habitat fragmentation, leaving large portions of higher quality contiguous habitat intact.

Because the Modified I-15 Alternative would result in direct and indirect affects to wildlife species (e.g., vehicle-wildlife collisions, lower habitat quality within the highway easement, noise, artificial lighting), co-location would reduce adverse impacts to biological resources, while avoiding high quality habitat along the northern portion of the project area.

While some of the habitat within the Modified I-15 Alternative is similar in quality to the Ivanpah Unit 3 site, much of the alternative's habitat located below 2,750-feet in elevation is less diverse and of lower quality than that associated with the proposed project. Although surveys have not been conducted, it is anticipated that there would be fewer acres capable of sustaining rare plant communities, compared to the original Ivanpah Unit 3 site in the proposed project.

The Modified I-15 Alternative was developed, in part, to reduce the impacts to wildlife and special status species by reconfiguring Ivanpah Unit 3 in an area which may have fewer desert tortoises than the location of Ivanpah Unit 3 in the proposed project. The Modified I-15 Alternative likely would reduce impacts to desert tortoise, and also probably to rare plant species, although field surveys would be necessary to confirm this assessment. Big game and other wildlife species would benefit from co-location with the highway, minimizing habitat fragmentation, retaining movement corridors, and avoiding impacts to high quality habitat along the northern portion of the proposed project.

While the impacts from the Modified I-15 Alternative would be less than those associated with the proposed project, there would still be long-term impacts to biological resources in comparison with the No Action Alternative.

Table 6-2
Comparison of Biological Resources Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Desert tortoise	Potential adverse impacts requiring formal consultation with USFWS	Potential adverse impacts that would require formal consultation if selected. Impacts anticipated to be less than proposed project, but greater than No Action alternative.	No potential impact
MBTA and Special Status Bat Species	Potential impacts to MBTA and bat species from loss of habitat, collision and heat hazards. Impacts from habitat	Potential impacts to MBTA and bat species from loss of habitat, collision and heat hazards. Impacts from habitat	No potential impact

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
	could be mitigated, while impacts from collisions and heat impacts would be monitored and additional mitigation may be required in the future.	could be mitigated, while impacts from collisions and heat impacts would be monitored and additional mitigation may be required in the future. Impacts the less than proposed project, and greater than No Action.	
Special-status plant species	Potential impacts to Rusby's desert mallow and Mojave milkweed, plus other sensitive plant species. Impacts could be mitigated.	Potential impacts to Rusby's desert mallow and Mojave milkweed, plus other sensitive plant species. Impacts to native plant communities are likely reduced compared to proposed project, but greater than No Action. Impacts could be mitigated.	No potential impact

6.3 Cultural Resources

6.3.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to cultural resources, would be very similar to, but not exactly the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that the location of Ivanpah Unit 3 would be four miles to the south of its location in the proposed project. Therefore, the environmental setting factors associated with cultural resources, including paleoclimate, geology and geomorphology, and prehistoric setting, ethnographic setting, and historic setting would be the same for the proposed project and the Modified I-15 Alternative.

Although the inventory of historic resources conducted and summarized by the applicant and evaluated by BLM and the Energy Commission in the DEIS, and the notification of potentially interested native tribes by BLM, are considered to be relevant and sufficient for most of the Modified I-15 Alternative project area, these inventories and notifications did not include the reconfigured location of Ivanpah Unit 3. Because the reconfigured location has not undergone an inventory, there may be specific resources associated with that reconfigured location that have not been identified, and

therefore impacts to specific resources cannot be evaluated. Also, BLM's previous consultation with native tribes did not include identification of the reconfigured Ivanpah Unit 3 location as being included within the potential development.

6.3.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that the proposed project would have no direct or indirect adverse impact on known or unknown NRHP-eligible or CRHR-eligible resources. No NRHP- or CRHR-eligible resources were identified in the proposed project area. To address the possibility that unidentified resources may be present in the subsurface, BLM developed mitigation measures intended to facilitate the identification and assessment of previously unknown resources during project construction.

Construction Impacts

The construction impacts resulting from the Modified I-15 Alternative would be associated with the disturbance of NRHP- or CRHR-eligible resources during site excavation, grading, road construction, and installation of heliostats. For the proposed project, the DEIS concluded that these impacts were unlikely to occur, given the limited number and extent of these resources identified in existing and project-related surveys. To protect unidentified resources from impacts, the DEIS proposed a variety of mitigation measures that would require monitoring during site-disturbance activities, and identification, assessment, and avoidance of any resources identified. The DEIS concluded that, with the adoption of mitigation measures, the impacts could be mitigated.

The construction of the Modified I-15 Alternative would be expected to result in the same type and magnitude of potential threat to cultural resources as the proposed project. Like the proposed project, the Modified I-15 Alternative would require site excavation, grading, road construction, and installation of heliostats, any of which could disturb and result in impacts to resources. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would involve the same type and amount of equipment, and the same procedures used in ground disturbance activities. Because the acreage associated with Ivanpah Unit 3 would be reduced from that in the proposed project by 433 acres (approximately 12.5 percent), the potential impacts associated with construction of the Modified I-15 Alternative would be reduced.

The specific resources that could be impacted in the revised Ivanpah Unit 3 location have not been inventoried, and impacts cannot be fully evaluated at this time. The revised Ivanpah Unit 3 location is directly adjacent to Interstate 15 and Ivanpah Unit 1, and very close to the Primm Valley Golf Course, all areas that have undergone extensive development and/or prior surveys for cultural resources. Therefore, while unidentified resources are likely to be present, they are likely to be of the same type as those identified in those adjacent areas. Based on this, the mitigation measures

described in the DEIS for the proposed project would be expected to be effective in avoiding and/or mitigating impacts to resources within the revised Ivanpah Unit 3.

Operations Impacts

The DEIS concluded that operations associated with the proposed project would not have an adverse impact on cultural resources. This conclusion was due to the fact that all site disturbance would occur during construction, with no additional disturbance occurring during operations. This conclusion would be the same for the operation of the Modified I-15 Alternative.

Closure/Decommissioning Impacts

Closure and decommissioning would involve re-grading of the site to restore original contours and removal of installed infrastructure, activities that would require earthmoving and ground disturbance. These activities could potentially cause impacts to resources that had remained in place following project construction. The potential for this occurrence would be low, as any resources would be expected to be found during monitoring associated with construction. The potential impacts associated with the Modified I-15 Alternative would be similar to those for the proposed project, but would occur over a smaller area due to the reduced acreage.

Cumulative Impacts

Because no direct or indirect impacts to cultural resources would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with cultural resources.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.3.3 Cultural Resources Summary

A comparison of the cultural resources impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-3**. A comparison of

impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, the cultural resource impacts associated with the Modified I-15 Alternative would be expected to be the same as those associated with the proposed project, due to the similarity in general location, acreage, and construction methods. However, an area comprising 1,836 acres, which is the reconfigured location of Ivanpah Unit 3, has not had a cultural resources inventory conducted, could potentially contain resources that would be impacted, and which would not be addressed by the proposed mitigation measures.

Table 6-3
Comparison of Cultural Resources Impacts

Potential Impact	Proposed Project	Mitigated Ivanpah 3 Alternative	No Action Alternative
NHRP-eligible resources	Construction could impact resources. Impact would be mitigated.	Lower than proposed project, higher than No Action. Impact would be mitigated.	No potential impact

6.4 Hazardous Materials Management

6.4.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to hazardous materials, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical to that of the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles south of its location in the proposed project. Therefore, the environmental setting factors associated with hazardous materials management, including meteorological conditions, terrain characteristics, and locations of population centers and sensitive receptors would be the same for the proposed project and the Modified I-15 Alternative. The type of technology and operations would also be the same, so the volume and type of hazardous materials used to construct, operate, and decommission the Modified I-15 Alternative would be the same as those for the proposed project. The difference in location also does not affect the regulations affecting the management of hazardous materials at the site. The primary difference between the proposed project and the Modified I-15 Alternative would be that the reduced size of the Modified I-15 Alternative would result in a reduction in the amount of hazardous materials used and stored onsite during construction, operations, and decommissioning.

6.4.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures proscribing hazardous materials management procedures, the proposed project would have no direct or indirect adverse impact on population centers or sensitive receptors.

Construction Impacts

The construction impacts resulting from the Modified I-15 Alternative would be associated with the use of hazardous materials in the fabrication and installation of project-related structures, including the use of hazardous materials used for maintenance of vehicles and construction equipment. For the proposed project, the DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts

The construction of the Modified I-15 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of construction would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent. Although the use of hazardous materials would be the same for the construction of both alternatives, the overall amount of materials associated with the Modified I-15 Alternative would be lower, due to the reduced duration of construction.

Operations Impacts

The operations impacts resulting from the Modified I-15 Alternative would be associated with the use of hazardous materials in the operation of the power blocks, including the use of hazardous materials used for maintenance of vehicles and maintenance equipment. For the proposed project, the DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts

The operations of the Modified I-15 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the operations would occur with the same type and amount of equipment and workers as the proposed project. Therefore, there would not be any substantial difference in impacts associated with hazardous materials management between the proposed project and the Modified I-15 Alternative.

Closure/Decommissioning Impacts

The closure and decommissioning impacts resulting from the Modified I-15 Alternative would be associated with the use of hazardous materials necessary to remove project-related structures, including the use of hazardous materials for maintenance of vehicles and earthmoving and demolition equipment. For the proposed project, the DEIS concluded that management of hazardous materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts

The closure and decommissioning of the Modified I-15 Alternative would be expected to use the same types and amounts of hazardous materials as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the closure and decommissioning would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of closure and decommissioning would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent. Although the use of hazardous materials would be the same for the closure of both alternatives, the overall amount of materials associated with the Modified I-15 Alternative would be lower, due to the reduced duration of closure and decommissioning activities.

Cumulative Impacts

Because no direct or indirect impacts to hazardous materials management would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts associated with hazardous materials.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with hazardous materials management.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.4.3 Hazardous Materials Management Summary

A comparison of the hazardous materials management impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-4**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Modified I-15 Alternative. Any hazards associated with hazardous materials use would be lower for the Modified I-15 Alternative than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

Table 6-4
Comparison of Hazardous Materials Management Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Release of hazardous materials	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact

6.5 Land Use

6.5.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to land use, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception of that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with land use, including the current uses of the property and surrounding area, and the applicability of local, state, and federal zoning and land use plans, would be the same for the proposed project and the Modified I-15 Alternative.

The land uses associated with the site vicinity and proposed project property include undeveloped lands, recreation, grazing, mineral development, and use of designated utility corridors for natural gas and electricity transmission. These land uses remain the same for both the proposed project and the Modified I-15 Alternative, and the reduction in acreage and reconfiguration of Ivanpah Unit 3 for the alternative does not substantially affect the land uses associated with the project area.

The planning and zoning documents which would be applicable to the proposed project property include BLM's CDCA Plan, and the San Bernardino County General Plan and Development Code Land Use Districts. These plans would be equally applicable to

both the proposed project and the Modified I-15 Alternative, and the reduction in acreage and reconfiguration of Ivanpah Unit 3 for the alternative would not affect the components or requirements of these plans.

6.5.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM made the following determinations with respect the impact of the proposed project on land use:

- The proposed project would require a CDCA Plan Amendment to identify the ISEGS project as an element of the CDCA Plan, but is otherwise in conformance with the Plan and its amendments. The DEIS provides the environmental analysis necessary to support the consideration of the Plan Amendment.
- The proposed project area would include portions of designated utility corridors BB and D, and would remove portions of those corridors from future use for utilities. However, it would not completely cover these corridors, and would therefore not completely eliminate future utility access through the project area.
- The proposed project would contribute to adverse, unavoidable cumulative land use impacts in the Ivanpah Valley, and in the southern California desert region in general. These impacts would result from the removal from other potential uses of large areas of public land due to various forms of development, including the Southern Nevada Supplemental Airport and the Noise Compatibility Area, proposed high-speed rail projects, and proposed solar and wind power plants.

Modified I-15 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Because land use impacts are associated with the occupation of the land area by the facility, separation of impacts into construction, operations, and closure/decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

The land use impacts resulting from the Modified I-15 Alternative would be the same as those associated with the proposed project. Like the proposed project, the Modified I-15 Alternative would be in conformance with BLM land use plans, including the CDCA Plan and its amendments, but would require a new CDCA Plan amendment to identify the ISEGS facility as a component of the plan. The only difference between the two alternatives would be the description of the acreage that is identified to be occupied by the facility in the Plan amendment.

The impact of the Modified I-15 Alternative on designated utility corridors would be similar to, but different than, that resulting from the proposed project. Like the proposed project, the Modified I-15 Alternative would occupy portions of the BB corridor, thus reducing the land area within that corridor available for other non-ISEGS utility uses. However, the Modified I-15 Alternative would not occupy any of corridor D. Therefore,

there would be no impact on corridor D, as there would be in the proposed project and the Mitigated Ivanpah 3 Alternative.

Although the reconfiguration of Ivanpah Unit 3 would eliminate the impact to corridor D, it would create an impact to corridor B, which comprises a two-mile wide strip centered on Interstate 15. By being placed directly adjacent to Interstate 15, the Modified I-15 Alternative would occupy the entire width of corridor B on the western side of Interstate 15. The portion of corridor B on the eastern side of Interstate 15 would remain unaffected.

Cumulative Impacts

The impact of the Modified I-15 Alternative on cumulative land use impacts in the Ivanpah Valley, and the southern California desert in general, would be almost exactly the same as those identified for the proposed project. Although the acreage associated with this alternative would be reduced by approximately 12.5 percent from that of the proposed project, this reduction is not so substantial that it would eliminate the magnitude of the contribution of the ISEGS facility to cumulative land use impacts.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with land use.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.5.3 Land Use Summary

A comparison of the land use impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-5**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, the land use impacts associated with the Modified I-15 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be removed from other potential land uses.

Table 6-5
Comparison of Land Use Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Conformance with BLM land use plans (CDCA Plan, and others)	Conforms, with proposed Plan Amendment	Conforms, with proposed Plan Amendment	Conforms, no Plan Amendment necessary
Interference with designated utility corridors	Interferes with portions of corridors BB and D, but does not eliminate their use	Impact on corridor D removed, but impact on corridor B added. Higher than No Action	No potential impact
Contribution to cumulative reduction in other land uses	Contributes incrementally to reduction in land use in Ivanpah Valley, and southern California desert	Slightly reduced from proposed project, higher than No Action.	No potential impact

6.6 Noise and Vibration

6.6.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to noise and vibration, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that the location of Ivanpah Unit 3 would be reconfigured approximately four miles to the south. Therefore, the environmental setting factors associated with the impacts of noise and vibration, including ambient noise conditions and the locations of potentially impacted receptors, would be almost the same for the proposed project and the Modified I-15 Alternative. Although the location of Ivanpah Unit 3 would be reconfigured, the reconfigured location would not be any closer to residences or sensitive receptors, so would not create any difference in the potentially affected receptors. The difference in the location of Ivanpah Unit 3 also does not affect the applicability of regulations governing noise and vibration associated with the project, including state and federal regulations protecting workers from occupational noise exposure, San Bernardino County General Plan noise limits, and San Bernardino County Development Code noise and vibration limits.

6.6.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures proscribing noise monitoring and protection, the

proposed project would have no adverse impacts associated with noise or vibration from project construction, operation, or decommissioning.

Construction Impacts

The noise and vibrations resulting from the construction of the Modified I-15 Alternative would be associated with the use of construction equipment, drilling rigs used to install heliostats, and steam blow testing of the steam turbine system. For the proposed project, the DEIS evaluated the expected levels of noise and vibrations, including the impact of these issues on offsite receptors, and concluded that there would be no impacts.

The construction of the Modified I-15 Alternative would be expected to use the same types of equipment and testing procedures as the proposed project. The size of the boilers to be tested, and the number of heliostats to be installed, would be reduced from those in the proposed project. In addition, the duration of construction would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent. Therefore, the noise and vibration impacts associated with construction of the Modified I-15 Alternative would be expected to be lower than those for the proposed project.

Operations Impacts

Noise and vibration sources associated with the operation of the Modified I-15 Alternative would include the rotation of the steam turbine generators, flow of fluids (natural gas, water, and steam) through pipes, and the use of engines in equipment and vehicles. For the proposed project, the DEIS presented an evaluation of the expected levels of noise and vibrations from these sources, including the impact of these issues on offsite receptors, and concluded that there would be no impacts.

The noise and vibration source associated with operation of the Modified I-15 Alternative would be the same as those for the proposed project. The size of some of the equipment and facilities associated with Ivanpah Unit 3, including the boiler, would be reduced from those in the proposed project. Therefore, the noise and vibration impacts associated with operation of the Modified I-15 Alternative would be expected to be lower than those for the proposed project.

Closure/Decommissioning Impacts

The closure and decommissioning impacts resulting from the Modified I-15 Alternative would be associated with the use of heavy equipment necessary to remove project-related structures, including removal of 173,500 heliostats. For the proposed project, the DEIS concluded that noise and vibration sources would not result in any impacts. The closure and decommissioning of the Modified I-15 Alternative would include the same type of equipment and activities, and therefore noise and vibration sources, as the proposed project. The primary difference would be that the duration of closure and decommissioning would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent. Therefore, noise and vibration impacts associated with

closure and decommissioning of the Modified I-15 Alternative would be lower than those associated with the proposed project, and therefore would not be expected to be adverse.

Cumulative Impacts

Because no direct or indirect impacts resulting from noise and vibration would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts from these sources.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with noise and vibration.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.6.3 Noise and Vibration Summary

A comparison of the noise and vibration impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-6**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Modified I-15 Alternative. Any hazards associated with noise and vibration would be lower for the Modified I-15 Alternative than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

Table 6-6
Comparison of Noise and Vibration Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Noise and vibration from construction sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Noise and vibration from operations sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Noise and vibration from decommissioning sources	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.

6.7 Public Health and Safety

6.7.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to public health and safety, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. The reconfigured location of Ivanpah Unit 3 is not any closer to residences, workplaces, or members of the public. Therefore, the environmental setting factors associated with the impacts to public health and safety would be the same for the proposed project and the Modified I-15 Alternative. These factors include meteorology and terrain characteristics that affect the movement of air emissions from the facility, existing site contamination that may be disturbed or released, and the locations of potentially affected receptors. The difference in location also does not affect the regulatory requirements associated with air emissions or other releases from the facility, including state and federal Clean Air Act requirements, the California Health and Safety Code section 25249.5 (Proposition 65), the California Health and Safety Code section 41700 governing discharge of contaminants, and MDAQMD regulations.

6.7.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures, the proposed project would have no adverse impact on public health and safety.

Construction Impacts

The public health and safety impacts that could result from construction of the Modified I-15 Alternative would include public exposure to toxic substances in contaminated soil disturbed during construction, and exposure to diesel exhaust from heavy equipment operation.

For the proposed project, the DEIS concluded that there was no evidence or reason to suspect the presence of potentially contaminated soil on the property, and that waste management regulations and mitigation measures would result in the identification and assessment of any hazardous materials during construction. Although an assessment of the revised Ivanpah Unit 3 location has not been conducted, the area appears, based on cursory visual inspection, to be undeveloped. Therefore, for the purpose of the analysis in this SDEIS, it is assumed that the condition of the reconfigured location of Ivanpah Unit 3 is the same as the condition of the Ivanpah Unit 3 area in the proposed project.

The amount of air emissions associated with construction of the Modified I-15 Alternative is discussed in Section 6.1.1 of this SDEIS. The DEIS presented an evaluation of potential public health threats associated with exposure to construction emissions from the proposed project. The DEIS concluded that mitigation measures intended to reduce diesel emissions from equipment and vehicles, and management practices intended to minimize fugitive dust emissions, would reduce any potential for adverse health impacts. Because the Modified I-15 Alternative would use the same types of heavy equipment and would have the same air emissions as the proposed project, the health impacts from construction would be the same as those described for the proposed project. In addition, the duration of construction would be expected to be shorter for the Modified I-15 Alternative, by approximately 17 percent. Therefore, the public health and safety impacts associated with construction of the Modified I-15 Alternative would be expected to be lower than those for the proposed project.

Operations Impacts

Public health and safety impacts resulting from the operation of the Modified I-15 Alternative would potentially occur from public exposure to air emissions from the natural-gas fired steam boilers, emergency diesel fire pumps, and emergency diesel generators. For the proposed project, the DEIS presented the results of a screening health risk assessment, and concluded that the Hazard Index associated with operations emissions was far below any value that could cause public health and safety threats. For example, the acute noncancer Hazard Index was calculated to be 0.013, as compared to the significance level of 1.0. Therefore, no short-term or long-term adverse health effects from the proposed project would be expected.

As discussed in Section 6.1.1, the reduction in size of the boiler associated with Unit 3 in the Modified I-15 Alternative would result in a reduction in overall operations emissions associated with alternative. However, the relocation of the Unit 3 power block closer to the project boundary would result in increased concentrations of NOx emissions at the site boundary for very short durations (1 hour and 3 hours). Although

the short-term Nox emissions at the site boundary would increase, the increase is very slight, from 123.7 to 126.7 micrograms per liter. Because the Hazard Index calculated for the proposed project was substantially below the significance level, this slight increase in short-term Nox concentrations would not result in adverse public health impacts from the Modified I-15 Alternative.

Closure/Decommissioning Impacts

Potential public health and safety threats associated with the closure and decommissioning of the Modified I-15 Alternative would include public exposure to emissions from heavy equipment used to remove project-related structures, including removal of 173,500 heliostats. The closure and decommissioning of the Modified I-15 Alternative would include the same type of equipment and activities as project construction, but for a much shorter duration. Therefore, public health and safety impacts associated with closure and decommissioning of the Modified I-15 Alternative would be lower than those associated with the proposed project, and therefore would not be expected to be adverse.

Cumulative Impacts

Because no direct or indirect impacts to public health and safety would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to public health and safety.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with public health and safety.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.7.3 Public Health and Safety Summary

A comparison of the public health and safety impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-7**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Modified I-15 Alternative. Any potential public health threats would be lower for the Modified I-15 Alternative than for the proposed project, due to the reduced duration and acreage of

construction, reduced overall level of emissions, and reduced duration of decommissioning.

Table 6-7
Comparison of Public Health and Safety Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Exposure to contaminated soil	No potential impact.	No potential impact	No potential impact.
Exposure to emissions from construction and decommissioning equipment	No adverse impact, could be mitigated.	Lower than proposed project, higher than No Action	No potential impact.
Exposure to operations emissions	No adverse impact, could be mitigated.	Slightly higher than proposed project, higher than No Action	No potential impact.

6.8 Socioeconomics and Environmental Justice

6.8.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to socioeconomics and environmental justice, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with the impacts of socioeconomics would be the same for the proposed project and the Modified I-15 Alternative. These include:

- Local demographic characteristics;
- Likely sources for construction and operations workers;
- Employment and labor force characteristics in the region;
- Available housing and commuting options for workers;
- Tax revenue sources and magnitude; and
- Public services.

The reduced acreage and output of the Modified I-15 Alternative would result in a reduced duration of construction and fewer operations workers, thus reducing both adverse and beneficial impacts associated with employment for the project.

6.8.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, the factors evaluated with respect to impacts on socioeconomics and environmental justice for the proposed project included:

- Population and employment;
- Housing;
- Fiscal and Economic Effects; and
- Public Services.

In the DEIS, BLM determined that, with the implementation of mitigation measures, the proposed project would have no direct or indirect adverse impact on any of these socioeconomics or environmental justice issues. The proposed project would provide gross public benefits by providing capital costs, construction and operation payroll, and property and sales taxes.

Construction Impacts

With respect to population and employment, the DEIS concluded that the necessary number of construction workers (an average of approximately 474 workers throughout the construction period) for the proposed project was a small fraction of the number of available construction workers within the expected commuting area (more than 230,000), and therefore no adverse impact to the workforce would occur. Although the Modified I-15 Alternative would require approximately the same size workforce, it would require that workforce for a shorter duration, and therefore would also not cause an adverse impact. Similarly, because these workers would reside within commuting distance, there would be no adverse impact on the availability of housing.

Like the proposed project, construction of the Modified I-15 Alternative would have a beneficial impact on fiscal and economic effects by providing a construction payroll and sales taxes. Because approximately the same number and type of construction workers would be employed, and the same amount of materials would be purchased, the annual rate of these taxes would be the same for the proposed project and the Modified I-15 Alternative. However, the duration of construction of the Modified I-15 Alternative would be reduced by approximately 17 percent from that of the proposed project. Therefore, the beneficial impact of these taxes would also be reduced by approximately 17 percent.

Because construction of the Modified I-15 Alternative would not result in population migration to the area, it would not adversely impact public services such as law enforcement, schools, or hospitals.

Operations Impacts

Similar to construction, the DEIS concluded that the number of operations workers employed at the proposed project (approximately 90) would constitute a small fraction of

the available workforce, and would therefore not cause an adverse impact on that workforce, or housing needs for the workforce. The number of employees would also not be so large that it would beneficially impact unemployment rates in the local area. The employment level for operation of the Modified I-15 Alternative would be approximately the same as that for the proposed project, and therefore the employment and housing impacts would be the same as those described in the DEIS for the proposed project.

Like the proposed project, operation of the Modified I-15 Alternative would have beneficial impacts on fiscal and economic effects by providing a property tax to San Bernardino County, as well as payroll and sales taxes. In the DEIS, the annual property tax revenue to San Bernardino County was estimated to be approximately $2.2 million per year. Because the Modified I-15 Alternative would be a smaller size and have a reduced output, it would be expected to generate a reduced amount of property tax revenue. However, the reduction would be small, and the overall impact on fiscal resources would still be beneficial. Payroll (approximately $5.4 million per year) and sales taxes (approximately $340,500 per year) associated with the operation of the proposed project would remain approximately the same under the Modified I-15 Alternative. Overall, operation of the Modified I-15 Alternative would have a beneficial impact on fiscal resources, but the benefit would be lower than that estimated for the proposed project.

Because operation of the Modified I-15 Alternative would not result in population migration to the area, it would not adversely impact public services such as law enforcement, schools, or hospitals.

Closure/Decommissioning Impacts

The closure and decommissioning of the Modified I-15 Alternative would not result in the addition of any population to the local area, and would therefore not have any impact on public services. The beneficial impacts to employment and fiscal resources would temporarily increase due to the increased workforce required for decommissioning, but would then cease altogether.

Cumulative Impacts

Because no direct or indirect impacts to socioeconomics or environmental justice would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

Like the proposed project, the Modified I-15 Alternative would include the contribution to the local economy through the provision of construction and operations jobs, and increase in property and sales taxes. Because the duration of the construction period would be shortened, and overall project output reduced, the magnitude of the impact would be somewhat lower than that of the proposed project, but still beneficial.

Environmental Justice

The DEIS presented the results of a screening analysis conducted to determine if minority or low-income populations were present within the project area. That analysis identified 36 residents within six miles of the project site in California, with 27.8 percent of the residents identified as minorities. The analysis did not identify any census blocks containing minority populations greater than 50 percent, nor any residents living below the designated poverty level. Because no minority or low income communities were identified within or adjacent to the project area, there would be no adverse impacts to these populations as a result of the Modified I-15 Alternative.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.8.3 Socioeconomics Summary

A comparison of the socioeconomics impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-8**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

The impacts to socioeconomics would be beneficial, due to the increase in local employment and tax revenues. However, the increase in employment would not result in an increase in the local population, so would not affect housing or public services. The beneficial impacts associated with the Modified I-15 Alternative would be slightly lower than those for the proposed project, due to the reduced duration of construction and decommissioning.

Table 6-8
Comparison of Socioeconomics Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Employment	No adverse impact, slight beneficial impact	No adverse impact, slight beneficial impact	No potential impact.
Housing	No potential impact.	No potential impact.	No potential impact.
Fiscal resources	Beneficial impact through property, payroll, and sales taxes.	Slightly lower than proposed project, but still beneficial	No potential impact.
Public Services	No potential impact.	No potential impact.	No potential impact.
Environmental Justice	No potential impact.	No potential impact.	No potential impact.

6.9 Soil and Water Resources

6.9.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to soil and water resources, would be similar to, but not exactly the same as, that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located four miles to the south. Therefore, the general environmental setting factors associated with the impacts to soil and water resources, including soil types, groundwater resources, other groundwater users in the region, and the position of the alternative with respect to surface water drainage features, would be almost the same for the proposed project and the Modified I-15 Alternative. However, a key difference between the setting for the Modified I-15 Alternative as compared to that of the proposed project would be the reconfigured location of Ivanpah Unit 3 with respect to the upstream stormwater drainage basins.

As discussed beginning on Page 6.9-12 of the DEIS, the size and number of drainage channels associated with the proposed project is highest in Ivanpah Unit 3. Elimination of the proposed project Ivanpah Unit 3 in the Modified I-15 Alternative would result in this area of active drainage channels being left undeveloped as part of the ISEGS project. The stormwater drainage basins and channels that would be associated with the revised Ivanpah Unit 3 location have not been completely mapped, modeled, or otherwise evaluated to determine their potential impact on the facility. The existing drainage channel mapping and stormwater modeling did extend approximately 0.5 miles to the south of Ivanpah Unit 1, and therefore covers approximately half of the revised Ivanpah Unit 3 location. Also, cursory visual inspection of the revised Ivanpah Unit 3 location and review of topographic maps of the upstream drainage basins has been conducted to develop a qualitative comparison of the proposed and revised Ivanpah Unit 3 locations. Based on these preliminary evaluations, the reconfigured location of Ivanpah Unit 3 appears to be in a similar, or possibly somewhat more favorable position than the proposed Ivanpah Unit 3 location, with respect to the size of upstream drainage basins and associated active drainage channels. Therefore, for the purpose of this SDEIS, it is assumed that the stormwater drainage setting of the Modified I-15 Alternative is the same as that for the proposed project.

6.9.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM evaluated potential impacts of the proposed project to a variety of soil and water issues, including:

- Soil erosion;
- Potential flooding impacts to the facility;
- Development-related changes leading to modified erosion or deposition characteristics; and
- Project-related impacts to groundwater availability and quality.

The DEIS concluded that the location of the proposed project on an active alluvial fan drainage system could subject the project area to flash flooding, which in turn could cause damage to facility-related infrastructure, including fencing, power blocks, power tower receivers, and heliostat fields. Throughout the environmental evaluation process, the applicant continued to review and modify their proposed facility and stormwater management design, as described in **Table 3-1**, to develop an optimized system. These modifications resulted in a decision to use Low Impact Development (LID) techniques to minimize the need to actively manage stormwater flows, provide diversion channel and berm protection only for power blocks and substation, and to construct other site features (primarily the heliostat fields) in a manner designed to withstand flows from a 100-year storm. To support this design, the applicant conducted a series of heliostat installation and integrity tests in August, 2009, and both the applicant and BLM performed stormwater analysis and modeling to estimate stormwater flow volumes and velocities.

The conclusion of these analyses was that damage to heliostats from flooding events could cause an adverse impact to soil and water resources. The damage would result from scour at the base of the heliostats, thus providing them with a reduced depth of insertion, and potentially making them unstable. Should heliostats fall during flood events, they could be moved downstream by flood flows, hitting and destabilizing other heliostats, stormwater management structures, site fencing, and ultimately, resources downstream of the project area. To address these impacts, the DEIS proposed mitigation measures, including a Storm Water Damage Monitoring and Response Plan, which provided installation depth specifications, as well as procedures required to evaluate and respond to damage caused by flooding events. Following publication of the DEIS, the applicant, BLM, and the Energy Commission continued to work with the applicant to optimize stormwater analysis procedures, in order to develop a Heliostat Installation Plan that would meet the specifications required in the DEIS. Also, the applicant has continued to conduct heliostat installation and stability tests at the project site, allowing the collection of more data that is expected to lead to an improved project design.

In addition to evaluating the impact of flooding on the facility, these analyses included an evaluation of the impact of project development on soil compaction, runoff characteristics, and erosion and sedimentation rates, in order to determine if project development could result in project-related impacts to resources downstream of the authorized ROW area. These resources include biological and cultural resources, infrastructure such as Interstate 15, and recreational uses of the Ivanpah Dry Lake bed. In the DEIS, BLM concluded that modification of sedimentation and erosion characteristics in areas downstream of the proposed facility would not cause adverse impacts.

With respect to water use, the DEIS concluded that elements of the proposed project design, including use of air cooling technology and recycling of process wastewater, were consistent with state water policy requiring that best practices be used to minimize water use, and that state water resources be put to beneficial uses. In the DEIS, BLM and Energy Commission staff conducted an analysis of groundwater resources in Ivanpah Valley, as well as water use by the proposed project, and concluded that there

would be no adverse impacts to groundwater supply and quality. Groundwater would be used for process water and heliostat washing, and the water extracted would eventually be evaporated and lost to the groundwater basin. However, the amount of groundwater used was determined to be small compared to the volume of the resource available in the area, so the impact was determined to not be adverse. To provide ongoing evaluation and documentation that groundwater resources were being protected, the DEIS proposed a mitigation measure which would require a Groundwater Level Monitoring and Reporting Plan.

Construction Impacts

Potential construction-related impacts associated with the Modified I-15 Alternative would include:

- Soil erosion from grading and earthwork;
- Impacts to drainages, including Waters of the State;
- Stormwater and flooding impacts to facility infrastructure;
- Modification of downstream sedimentation and erosion characteristics; and
- Impacts to groundwater availability or quality.

As discussed in Section 3.6, the applicant has proposed a Low Impact Development approach which would minimize the amount of necessary grading and site disturbance by allowing stormwater to flow through the facility on its natural drainages. In the proposed project, active stormwater protection, in the form of diversion channels and berms, would be developed only around the power block and substation areas, leaving stormwater to flow unimpeded through the heliostat areas. Grading would be limited to the power block and substation areas, and to areas of the heliostat fields where existing channels are large enough to require grading to provide site access and a relatively flat area for installation of heliostats. These areas of the heliostat fields requiring grading were mostly limited to the northern portion of Ivanpah Unit 3. Overall, the acreage requiring grading in the proposed project was estimated to be 170 acres, and the acreage of active drainage pathways, designated as Waters of the State, was 198 acres.

Because the drainage channels in the revised Ivanpah Unit 3 location have not been fully evaluated, the extent of grading required in that area cannot be determined at this time. Therefore, although the Modified I-15 Alternative would eliminate the need for grading 170 acres in the proposed project, it could result in requiring a larger area of grading in the Modified I-15 Alternative. The impact of the Modified I-15 Alternative on active drainage pathways, which are designated as Waters of the State, also cannot be fully evaluated without detailed mapping and evaluation of the revised Ivanpah Unit 3 location. However, as stated above, a preliminary review of the stormwater drainage setting of the revised Ivanpah Unit 3 location suggests that the setting is similar to, or perhaps more favorable than, the original Unit 3 location in the proposed project. Therefore, impacts associated with the Modified I-15 Alternative are assumed to be

approximately the same as those for the proposed project, and would be subject to the same mitigation measures.

The final issues associated with soil and water resources evaluated in the DEIS included potential impacts to groundwater resources, including the amount of groundwater available, as well as potential impacts to groundwater quality. The amount of water that would be used for any given period for construction of the proposed project would be the highest during construction of Ivanpah Unit 3, approximately 200 acre-feet per year, as compared to approximately 100 acre-feet per year for Ivanpah Units 1 and 2. The water volume required for Ivanpah Unit 3 would be higher due to the need for water to be used for dust control for the extensive grading needed in Ivanpah Unit 3. In the Modified I-15 Alternative, the acreage of required grading cannot be evaluated at this time, so the volume of water and duration of water usage to support grading in the revised Ivanpah Unit 3 location cannot be evaluated. Assuming the same approximate amount of grading, the peak water usage period for construction of Ivanpah Unit 3 in the Modified I-15 Alternative would be the same as that for the proposed project. Because the overall duration of water use for construction would be reduced for the Modified I-15 Alternative, potential groundwater use conflicts would be lower than those for the proposed project.

Similarly, potential sources of groundwater contamination during construction would be the same for the proposed project and the Modified I-15 Alternative. Because the duration of construction for the Modified I-15 Alternative would be reduced from 48 months to 40 months, the risk of contamination occurring would be reduced from that of the proposed project.

The source of water for construction, operations, and closure/decommissioning of the Modified I-15 Alternative would be slightly different from that in the proposed project. In the Modified I-15 Alternative, the location of the water production wells would be approximately 2400 feet northwest of their location in the proposed project. This location would be further from the wells operated by the Primm Valley Golf Course, and would therefore be less likely to affect those wells. Therefore, although the location of the water source would be slightly different in the Modified I-15 Alternative, the change in the location of the water production wells would not affect overall groundwater availability.

The analysis presented in the DEIS concluded that no impacts to groundwater use or quality would occur as a result of proposed project construction. To ensure that this conclusion is accurate, the DEIS proposed a mitigation measure, in the form of a Groundwater Level Monitoring and Reporting Plan, that would require assessing potential groundwater use conflicts.

Operations Impacts

In the analysis of the proposed project in the DEIS, BLM and the Energy Commission evaluated the potential for stormwater flows from the mountains to the west of the project area to cause flooding or erosion damage to site infrastructure, including fences and heliostats. Both the applicant and BLM conducted stormwater modeling of the drainage basin, including active alluvial fan areas, to estimate to volume and velocity of stormwater flow to which the facility may be subjected during extreme precipitation

events. Those calculations showed that stormwater-related scour could occur at the base of heliostats, and this erosion could potentially result in heliostats falling down and moving downstream during storm events. The concerns of BLM and the Energy Commission included the potential for stormwater damage to affect the financial viability of the ongoing operation of the facility, and the potential for these events to transport heliostat and mirror debris to areas downstream of the approved ROW grant. As a result, the DEIS proposed mitigation measures, in the form of a Storm Water Damage Monitoring and Response Plan. The key components of this plan included:

- Installation of heliostats at a depth designed to withstand predicted levels of stormwater scour;
- Inspection of fences and heliostat fields following storm events to identify and correct damage; and
- Consideration of post-construction stormwater system design modifications, if needed to address ongoing issues.

All of these issues and concerns would remain for the Modified I-15 Alternative, as for the proposed project. The location of the Modified I-15 Alternative on the active alluvial fan would remain approximately the same, and the project would be constructed with the same Low Impact Development approach. Based on the assumption that the stormwater setting of the revised Ivanpah Unit 3 location is the same, or more favorable than, the proposed project, and the acreage reduction of approximately 12.5 percent, it is likely that the Modified I-15 Alternative has an overall lower level of risk for stormwater damage impacts. The proposed Storm Water Damage Monitoring and Response Plan, applied to the Modified I-15 Alternative in the same manner as the proposed project, would help to ensure that stormwater damage impacts do not occur, or are addressed and mitigated when they do occur.

Similar to the discussion of water use for construction, the only differences in water use between the Modified I-15 Alternative and the proposed project would be a small change in the location of the water production wells, and a reduction in the amount of water needed to clean heliostats. As stated in the discussion of construction impacts above, the change in the location of the wells in the Modified I-15 Alternative would not result in any change to potential water use impacts. By reducing the number of heliostats from 214,000 to 173,500 (a reduction of 19 percent), the amount of water used for heliostat washing would also be reduced by approximately 19 percent. Therefore, potential water use impacts associated with operation of the Modified I-15 Alternative would be reduced by 19 percent.

Closure/Decommissioning Impacts

The soil and water impacts associated with closure and decommissioning of the Modified I-15 Alternative would be similar to those described for construction above. Because decommissioning would include a smaller area, and have a shorter duration, the Modified I-15 Alternative would have a reduced potential for water use, water quality, and soil erosion impacts than the proposed project.

Cumulative Impacts

Although project-related impacts associated with stormwater events could potentially occur, these impacts would be localized, and would not combine with similar effects from any other past, existing, or reasonably foreseeable development. Therefore, the Modified I-15 Alternative would not contribute to any cumulative impacts associated with stormwater flood events.

The project would constitute a consumptive use of groundwater in a location in close proximity to other groundwater users, specifically, the Primm Valley Golf Course. The location of the ISEGS supply wells proposed in the original application was modified, in part, to move them further from the Primm Valley Golf Course wells, and thus reduce the potential for overlapping water use conflicts. Because the amount of groundwater use is expected to be small compared to the volume of groundwater available in the basin, the Modified I-15 Alternative would not contribute to any cumulative impacts to groundwater availability. Monitoring of groundwater levels, as recommended in the proposed mitigation measures, would help to ensure that cumulative impacts do not occur.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with soil and water resources. The recycling of process water would constitute a beneficial use of that water, as is encouraged through California state regulations and policies. However, this use would still ultimately be consumptive, and would not constitute an overall beneficial impact from the alternative.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.9.3 Soil and Water Summary

A comparison of the soil and water impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-9**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

The potential impacts on soil erosion due to grading, Waters of the State, and stormwater damage to facility infrastructure cannot be fully evaluated at this time, because complete drainage channel mapping and stormwater modeling of the revised Ivanpah Unit 3 location has not been performed. However, based on a preliminary evaluation of the existing drainage mapping, stormwater modeling, and topographic maps of the area, it is likely that the soil and water impacts associated with the Modified I-15 Alternative would be either similar to or lower than those of the proposed project. The Modified I-15 Alternative would also use a reduced amount of groundwater for washing of heliostats, and would therefore reduce potential groundwater use conflicts.

Table 6-9
Comparison of Soil and Water Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Soil erosion	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, but higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Water of the State	Approximately 198 acres in project area	Unknown, but likely to be about the same in project area	No potential impact
Stormwater impacts to facility infrastructure	Adverse impacts could occur, would be addressed under Storm Water Damage Monitoring and Response Plan	Adverse impacts could occur, and would likely be approximately the same as the proposed project. Impacts would be addressed under Storm Water Damage Monitoring and Response Plan	No potential impact
Modification to downstream sedimentation and erosion characteristics	Impacts not expected, but potential would be addressed under Storm Water Damage Monitoring and Response Plan	Impacts not expected, but potential would be addressed under Storm Water Damage Monitoring and Response Plan	No potential impact
Groundwater availability	Impacts not expected, but potential would be addressed under Groundwater Level	Impacts not expected, and would be lower than proposed project. Potential would be	No potential impact

	Monitoring and Reporting Plan	addressed under Groundwater Level Monitoring and Reporting Plan	
Groundwater quality	No potential impact with regulatory compliance and mitigation measures	No potential impact with regulatory compliance and mitigation measures	No potential impact

6.10 Traffic and Transportation

6.10.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to traffic and transportation, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Transportation-related infrastructure, including access roads and the means for delivery of project components, would be exactly the same as that for the proposed project. This includes not only the locations and features of commuting and construction access roads, but the LOS on those routes.

6.10.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that both construction and operations of the proposed project could result in direct adverse and cumulative impacts to traffic on Interstate 15 on Friday afternoons, when traffic on the highway is heavy due to persons visiting Las Vegas for the weekend. To address these impacts, the DEIS proposed a mitigation measure, in the form of a Traffic Control Plan, that would regulate arrival and departure schedules in order to reduce traffic levels during times when impacts could occur.

The DEIS also evaluated the potential for glare, associated with reflections from the heliostat fields and the brightness of the power tower receivers, to cause a direct safety hazard to airplane pilots and drivers on nearby roads, or to cause a distraction to pilots and drivers that would cause safety issues. Although the DEIS determined that brightness levels would not be high enough to cause a direct safety hazard such as retinal damage, the issue of distraction is much more difficult to predict and quantify. Therefore, the DEIS proposed mitigation measures that would require monitoring of brightness levels, as well as complaints received from pilots and drivers.

Construction Impacts

The construction impacts resulting from the Modified I-15 Alternative would be associated with the increase in traffic on local roads, especially Interstate 15, from construction workers and delivery vehicles. For the proposed project, the DEIS concluded that the increase in traffic would not increase the LOS on Interstate 15,

except for on Friday afternoons. On Friday afternoons, the increase in LOS would cause a direct adverse impact on traffic.

The construction of the Modified I-15 Alternative would include approximately the same number of workers and deliveries as the proposed project. Therefore, the direct impacts identified in the DEIS for the proposed project would be the same for both alternatives. However, the duration of the impact associated with the construction period would be reduced by 8 months, or approximately 17 percent. The Traffic Control Plan proposed as a mitigation measure for the proposed project would be equally effective for the Modified I-15 Alternative.

Operations Impacts

Similar to construction impacts, the DEIS concluded that operation of the proposed project would result in a direct adverse impact to traffic on Interstate 15 on Friday afternoons. The operation of the Modified I-15 Alternative would include approximately the same number of workers and deliveries as the proposed project. Therefore, the direct impacts identified in the DEIS for the proposed project would be the same for both alternatives. The Traffic Control Plan proposed as a mitigation measure for the proposed project would be equally effective for the Modified I-15 Alternative during operations.

With respect to potential safety impacts from glare, BLM concluded in the DEIS that the proposed project would not result in brightness levels that could produce a safety hazard. However, the issue of distraction caused by glare from the facility is more difficult to predict, and the DEIS proposed a mitigation measure that would require monitoring of brightness levels, and complaints received from pilots and/or drivers.

The potential glare distraction effect from the Modified I-15 Alternative, like that from the proposed project, is difficult to predict. With respect to the number of potential glare sources, the number of power tower receivers in the Modified I-15 Alternative would be reduced from seven to three, thus reducing the number of glare sources. However, the power tower receiver associated with Ivanpah Unit 3 would be located much closer to Interstate 15 in the Modified I-15 Alternative. In the proposed project, the closest power tower receiver to Interstate 15 is that in Ivanpah Unit 1. The Ivanpah Unit 1 power tower would be located approximately 8,400 feet (1.6 miles) from Interstate 15 in the proposed project. In contrast, the Ivanpah Unit 3 power tower receiver would be located approximately 4,800 feet (0.9 miles) from Interstate 15 in the Modified I-15 Alternative. Therefore, although the number of potential glare sources would be reduced, one of the sources would be located much closer to interstate 15, and thus may present an increased potential glare distraction effect.

Closure/Decommissioning Impacts

The closure and decommissioning impacts of the Modified I-15 Alternative would be lower than those identified for construction, but would exceed those associated with operations. Closure and decommissioning would require an increase in the number of

workers, so the number of commuting trips would be higher than during operations. However, the number of commuting workers would not reach the level associated with construction. Although decommissioning would not involve extensive delivery of materials, it would involve extensive removal of materials from the site, adding to potential impacts to traffic on Interstate 15.

Cumulative Impacts

The contribution of the Modified I-15 Alternative to cumulative impacts to LOS on Interstate 15 on Friday afternoons would be approximately the same as those projected for the proposed project. Although the duration of cumulative impacts associated with construction and decommissioning would be reduced in the Modified I-15 Alternative, the impacts associated with operations would be the same for both alternatives.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with traffic and transportation.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.10.3 Traffic and Transportation Summary

A comparison of the traffic and transportation impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-10**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Because the employment levels, and therefore commuting trips by workers, would be the same for the proposed project and the Modified I-15 Alternative, the direct adverse impact, and contribution to cumulative impacts, on Interstate 15 on Friday afternoons would be the same. The primary difference in traffic impacts between the alternatives would be that the impacts associated with construction and decommissioning would occur for a shorter duration than for the proposed project.

Table 6-10
Comparison of Traffic and Transportation Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Direct impact to LOS on Interstate 15	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	No potential impact
Contribution to cumulative impact to LOS on Interstate 15	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	Direct and adverse on Friday afternoons, would be mitigated by Traffic Control Plan	No potential impact
Glare impacts	Difficult to predict. To be evaluated by monitoring.	Difficult to predict, but could be higher than proposed project. To be evaluated by monitoring.	No potential impact

6.11 Transmission Line Safety and Nuisance

6.11.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to transmission line safety and nuisance, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the position of the facility with respect to existing utility corridors and transmission lines would be approximately the same for the proposed project and the Modified I-15 Alternative. Although the Modified I-15 Alternative would have a reduced output from that in the proposed project, the proposed features of the transmission system, including locations and size of required components (substation, gen-tie lines, and connection to the SCE system), would be the same for the proposed project and the Modified I-15 Alternative.

6.11.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and industry standards for construction and operation of transmission lines, the proposed project would not result in any direct or indirect adverse impacts from transmission line safety or nuisance. The DEIS concluded that the lines would not pose an aviation hazard according to criteria established by the Federal Aviation Administration (FAA). In addition, the potential for audible noise, fire hazards, exposure to EMF, nuisance

shocks, and hazardous shocks would be minimized through compliance with industry standards and state regulations for transmission line construction.

Construction Impacts

The transmission lines would not operate during the construction period. Therefore, the potential for transmission line safety and nuisance impacts would not exist for either the proposed project or the Modified I-15 Alternative.

Operations Impacts

The construction, location, and operation of the transmission lines would be the same for the proposed project and the Modified I-15 Alternative. Because no potential impacts were identified in the DEIS for the proposed project, there would be no potential impacts associated with operation of the Modified I-15 Alternative.

Closure/Decommissioning Impacts

The transmission lines would not operate during the closure and decommissioning. Therefore, the potential for transmission line safety and nuisance impacts would not exist for either the proposed project or the Modified I-15 Alternative.

Cumulative Impacts

Because no direct or indirect impacts resulting from transmission line safety or nuisance would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to from these sources.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with transmission line safety and nuisance.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.11.3 Transmission Line Safety and Nuisance Summary

A comparison of the transmission line safety and nuisance impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-11**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Because the transmission lines would be the same under the proposed project and Modified I-15 Alternative, the potential impacts would be the same for both alternatives. However, in both cases, the potential for adverse impacts would be minimized by compliance with regulations and industry standards for operation of transmission lines.

Table 6-11
Comparison of Transmission Line Safety and Nuisance Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Aviation safety	No potential impact	No potential impact	No potential impact
Audible noise	No potential impact	No potential impact	No potential impact
Fire hazards	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
Hazard shocks	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
Nuisance shocks	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact
EMF exposure	Minimized by compliance with regulations and industry standards	Minimized by compliance with regulations and industry standards	No potential impact

6.12 Visual Resources

6.12.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to visual resources, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with the impacts to visual resources, including the regional landscape setting, project viewshed, landscape units and Key Observation Points (KOPs), and the persons potentially affected by

modification of the visual character of the area, would be the same for the proposed project and the Modified I-15 Alternative.

6.12.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The DEIS concluded that the proposed project would have a substantial adverse impact to existing scenic resources as seen from several KOPs, including the Primm Valley Golf Course, the middle-ground distance on Interstate 15, the Mojave National Preserve on the east face of Clark Mountain, and in the Stateline Wilderness Area, including the Umberci Mine. The DEIS concluded that the impacts to the KOPs at the golf course could be mitigated, and proposed surface treatment of structures and landscape screening to address the identified impacts. However, these measures were found to not be sufficient to mitigate impacts to viewers at the other KOPs, and these impacts were found to be adverse and unavoidable.

The visual impacts associated with the proposed project were also determined to contribute to adverse, unavoidable cumulative impacts in the immediate project viewshed in Ivanpah Valley. These impacts would result from the combination of the proposed project with other developments in the valley, including the Southern Nevada Supplemental Airport, proposed high-speed rail projects, and other proposed solar projects.

Construction Impacts

Potential visual impacts resulting from the construction of the ISEGS project would be associated with disturbance of native cover material during site grading, the presence of construction equipment and temporary structures, and use of nighttime lighting. For the proposed project, the DEIS concluded that these factors would have an adverse impact on the viewscape, but would be addressed through the proposed mitigation measures. The construction of the Modified I-15 Alternative would result in the same type of impacts. The areal extent of the construction-related impacts, and their duration, would be reduced from those associated with the proposed project. However, the impacts would be located closer to viewers on Interstate 15. Overall, the mitigation measures proposed for the proposed project would likely be effective for the Modified I-15 Alternative as well.

Operations Impacts

In the DEIS, BLM concluded that the visual character of the proposed project, as it operated, would have substantial adverse impacts to scenic resources that could not be effectively mitigated.

Overall, the large-scale and industrial appearance of the facility under the Modified I-15 Alternative would still result in the same type and magnitude of adverse visual impacts that were identified for the proposed project in the DEIS. However, several changes in

the configuration and structures associated with the Modified I-15 Alternative would result in these impacts being different from those associated with the proposed project.

The first change would be a reduction in visual impacts to some viewers due to the reduced size and amount of infrastructure associated with the Modified I-15 Alternative. These changes would include the following:

- The reduction of the number of power tower receivers from seven to three would reduce the visual impact of the towers themselves, as well as any glare associated with them during their operation.
- The reduction of the project footprint, including the 12.5 percent reduction in the acreage of the heliostat fields, would reduce the magnitude of the visual impact of the fields.
- The movement of the northern boundary of the ISEGS facility, by approximately 7,200 feet (1.4 miles) would place the facility, as a whole, at a further distance from several sensitive viewpoints, including KOP9 (north of Ivanpah Unit 3), KOP10 (Benson Mine), the Stateline Wilderness, and the Mojave National Preserve.

These changes would reduce the magnitude of visual impacts of the Modified I-15 Alternative from those of the proposed project for the viewers located to the north and west of the facility, including viewers in the Mojave National Preserve and the Stateline Wilderness.

The second change would be that the Modified I-15 Alternative would include reconfiguration of Ivanpah Unit 3 approximately four miles to the south, to within 1,000 feet of Interstate 15. In the proposed project, the closest power tower to Interstate 15 would be that associated with Ivanpah Unit 1, which would be located approximately 8,400 feet (1.6 miles) from Interstate 15. In the Modified I-15 Alternative, the power tower associated with Ivanpah Unit 3 would be located approximately 4,800 feet (0.9 miles) from Interstate 15. The closest heliostat fields, which would be located approximately 6,200 feet (1.2 miles) from Interstate 15 in the proposed project, would be located within 1,000 feet (0.2 miles) of Interstate 15 in the Modified I-15 Alternative. The length of the heliostat fields directly adjacent to Interstate 15 would be approximately 9,600 feet (1.8 miles). Therefore, the visual impacts associated with viewers from Interstate 15 would be increased, as compared to the impacts to those viewers under the proposed project.

Closure/Decommissioning Impacts

The source and nature of potential visual impacts resulting from the closure and decommissioning of the ISEGS project would be the same as those associated with construction. These would include the disturbance of native cover material during site grading, the presence of heavy equipment and temporary structures, and use of nighttime lighting. Although these characteristics would create an adverse impact on the viewscape, they would be addressed through mitigation measures identified in the DEIS. As with construction, the reduced size of the Modified I-15 Alternative would result in these impacts being of a smaller magnitude and shorter duration than those

associated with the proposed project. However, the impacts would also be located closer to viewers on Interstate 15.

Cumulative Impacts

In the DEIS, BLM concluded that the visual impacts associated with the proposed project would contribute to adverse, unavoidable cumulative impacts in the immediate project viewshed in Ivanpah Valley. These impacts would result from the combination of the proposed project with other industrial developments in the valley, including the Southern Nevada Supplemental Airport, proposed high-speed rail projects, and other proposed solar projects. Due to the factors cited in the discussion of operations impacts above, the contribution of the Modified I-15 Alterative to these cumulative visual impacts would be slightly different from those for the proposed project. The size of the facility, reduction in number of power towers and heliostats, and reconfiguration of Ivanpah Unit 3 would result in a reduction in visual impacts to viewers located to the west and north. However, the reconfiguration of Ivanpah Unit 3 four miles to the south would result in an increase in the magnitude of impacts to viewers on Interstate 15. In general, the overall conclusion that the project would contribute incrementally to an increase in the industrial character of the area would remain the same for the Modified I-15 Alternative.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with visual resources.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.12.3 Visual Resources Summary

A comparison of the visual resources impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-12**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, the Modified I-15 Alternative would have the same type of adverse impacts that would be associated with the proposed project. To viewers located in the Mojave

National Preserve and Stateline Wilderness to the west and north of the facility, the magnitude of these impacts would be reduced due to the reduction in the number of power tower receivers, the reduction of the size of the heliostats fields, and the reconfiguration of Ivanpah Unit 3. However, the reconfiguration of Ivanpah Unit 3 four miles to the south, to a location directly adjacent to Interstate 15, would increase the magnitude of visual impacts to viewers on Interstate 15.

Table 6-12
Comparison of Visual Resources Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Appearance during construction	Adverse impact, would be mitigated	Lower magnitude than proposed project, but closer to I-15, greater than No Action. Would be mitigated	No potential impact
Appearance from sensitive viewing points in Mojave National Preserve and Stateline Wilderness	Adverse impact, would not be mitigated.	Lower than proposed project, but still adverse and unmitigable	No potential impact
Appearance from Interstate 15	Adverse impact, would not be mitigated.	Higher than proposed project, adverse and unmitigable	No potential impact
Glare	Difficult to predict. To be evaluated by monitoring.	Difficult to predict, but higher than proposed project for viewers on I-15. To be evaluated by monitoring.	No potential impact
Appearance during decommissioning	Adverse impact, would be mitigated	Lower than proposed project, but closer to I-15 greater than No Action. Would be mitigated	No potential impact

6.13 Waste Management

6.13.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to waste management, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with waste

management, including the locations and capacities of offsite waste management facilities and regulations governing the management of project-generated wastes, would be the same for the proposed project and the Modified I-15 Alternative. The type of technology and operations would also be the same, so the volume and type of wastes generated during construction, operation, and decommissioning of the Modified I-15 Alternative would be similar to those for the proposed project. The primary difference between the proposed project and the Modified I-15 Alternative would be that the reduced size of the Modified I-15 Alternative would result in a small reduction in the amount of waste generated during construction, operations, and decommissioning.

6.13.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and implementation of mitigation measures specifying waste management and disposal procedures, the proposed project would have no direct or indirect adverse impact on population centers or sensitive receptors, or on regional waste disposal capacity.

Construction Impacts

The construction impacts resulting from the Modified I-15 Alternative would be associated with the generation of non-hazardous wastes including construction debris, sanitary wastes, vehicle and equipment maintenance wastes, as well as hazardous wastes from the use of solvents, paints, and adhesives. In the DEIS, BLM concluded that these wastes would be managed in accordance with applicable regulations and industry standards, and that the proposed project would therefore not result in any adverse impacts. The construction of the Modified I-15 Alternative would be expected to use the same types and amounts of materials as the proposed project, and would therefore generate the same waste materials. The wastes would be managed and disposed of in the same manner for both alternatives. The primary difference in the construction of the alternatives would be the reduced number of power tower receivers and heliostats for the Modified I-15 Alternative, which would result in a reduced volume of wastes generated. Therefore, the potential impact of waste management for the Modified I-15 Alternative would be lower than that of the proposed project.

Operations Impacts

The waste management impacts resulting from the Modified I-15 Alternative would be associated with the generation of waste materials during operations. For the proposed project, the DEIS concluded that management of wastes would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts.

The operations of the Modified I-15 Alternative would be expected to generate the same types and amounts of wastes as the proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that

the operations would occur with the same type and amount of equipment and workers as the proposed project. Therefore, there would not be any substantial difference in impacts associated with waste management between the proposed project and the Modified I-15 Alternative.

Closure/Decommissioning Impacts

The waste management impacts resulting from decommissioning of the Modified I-15 Alternative would be associated with the demolition of site structures, as well as sanitary and vehicle maintenance wastes, similar to those generated during construction. For the proposed project, the DEIS concluded that management of waste materials would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts

The closure and decommissioning of the Modified I-15 Alternative would be expected to generate the same types of wastes materials as the proposed project. However, due to the reduction in the acreage, number of power tower receivers, and number of heliostats, closure and decommissioning of the Modified I-15 Alternative would generate a lower volume of waste materials than the proposed project.

Cumulative Impacts

Because no direct or indirect impacts from waste management practices would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts resulting from waste management.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with waste management.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.13.3 Waste Management Summary

A comparison of the waste management impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-13**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Modified I-15 Alternative. Any hazards associated with waste generation and management would be lower for the Modified I-15 Alternative than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition.

Table 6-13
Comparison of Waste Management Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Construction debris	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Sanitary wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Vehicle and equipment maintenance wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Hazardous wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact

Demolition wastes	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact

6.14 Worker Safety and Fire Protection

6.14.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to worker safety and fire protection, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with worker safety and fire protection, including the location and type of fire support and emergency response services would be the same for the proposed project and the Modified I-15 Alternative. The type of technology and operations would also be the same, so the potential causes of fire and industrial hazards associated with the Modified I-15 Alternative would be the same as those for the proposed project. The difference in location also does not affect the regulations associated with building codes and occupational health and safety planning and protection that must be complied with during project construction, operation, and decommissioning.

6.14.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory and building code requirements and implementation of mitigation measures, the proposed project would have no direct or indirect adverse impact on worker safety or local fire and emergency response resources.

Construction Impacts

Potential worker safety hazards associated with construction of the Modified I-15 Alternative would be similar to those in any industrial setting, and could include exposure to noise; impacts from moving equipment; falls, trips, and lacerations; exposure to hazardous chemicals; burns from fires or hot equipment; and electrical hazards. In the DEIS, BLM concluded that, for the proposed project, these hazards would be addressed and minimized through compliance with Title 8 of the California Code of Regulations, as well as a project-specific Construction Safety and Health Program. The construction of the Modified I-15 Alternative would be expected to expose workers to the same types of hazards, and would be performed under the same regulations and standards as those described in the DEIS for the proposed project.

Because the magnitude of the infrastructure constructed in the Modified I-15 Alternative, and the duration of construction, would be reduced from that of the proposed project, construction-related hazards to site workers would be reduced as well. Therefore, the potential impact of construction-related worker safety and health hazards for the Modified I-15 Alternative would be lower than that of the proposed project.

Fire hazards, and potential impacts to local fire and emergency response resources, associated with construction of the Modified I-15 Alternative would also be reduced from those for the proposed project. Fire hazards present during construction could potentially occur as a result of handling or management of fuels for vehicles and equipment. The use and handling of fuels for vehicles and equipment would be approximately the same, or slightly lower, for the Modified I-15 Alternative due to the reduced footprint of the facility, and the reduced duration of construction. These activities would not be expected to have an adverse impact on local fire protection and response resources.

Operations Impacts

Worker safety and fire hazards associated operation of the Modified I-15 Alternative would be similar to those described for construction, but would be of a smaller magnitude. Operations would include far fewer workers than construction, and the use of heavy equipment and maintenance vehicles would be greatly reduced. Similar to construction, operations would occur in compliance with regulations in Title 8 of the California Code of Regulations, as well as project-specific operational safety and health plans. Although the magnitude of the Modified I-15 Alternative would be slightly reduced from that of the proposed project, the number of workers and the nature of their work activities would be approximately the same. Therefore, there would not be any substantial difference in impacts associated with worker safety and fire hazards between the proposed project and the Modified I-15 Alternative.

The DEIS also considered the potential impact of wildfires on the operational facility for the proposed project. The DEIS concluded that vegetation in critical areas, including the power blocks, substation, and administrative areas, would be removed, and would therefore not be subject to wildfires. Vegetation would remain in heliostat fields, but would be maintained at a level of 12 to 18 inches high. Therefore, the vegetation in the heliostat fields would also not present a fire hazard. These vegetation management procedures would be also be applied as a part of the Modified I-15 Alternative. Therefore, the potential for fire hazard damage would be the same for both alternatives.

Closure/Decommissioning Impacts

The worker safety and fire hazard impacts resulting from decommissioning of the Modified I-15 Alternative would be similar to those described for construction. For the proposed project, the DEIS concluded that decommissioning activities would be conducted in compliance with regulatory requirements, as well as recommended mitigation measures, and would therefore not result in any impacts. Decommissioning of the Modified I-15 Alternative would involve the same procedures, but on a slightly

reduced scale due to the lower number of power tower receivers and heliostats. Therefore, any worker safety hazards associated with decommissioning would be lower for the Modified I-15 Alternative than the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to worker safety and fire protection would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to worker safety or fire protection.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with worker safety and fire protection.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

The text of several of the Mitigation Measures identified in the DEIS has been revised since the publication of the DEIS, based on discussions between BLM, the Energy Commission, the applicant, and intervenors in the Energy Commission certification process. The revised text for those Mitigation Measures is included within Attachment C to this SDEIS.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.14.3 Worker Safety and Fire Protection Summary

A comparison of the worker safety and fire protection impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-14**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for either the proposed project or the Modified I-15 Alternative. Any hazards associated with worker safety would be lower for the Modified I-15 Alternative than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition. The risk of wildfire damage to the facility would be the same for the Modified I-15 Alternative and the proposed project.

Table 6-14
Comparison of Worker Safety and Fire Protection Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Worker safety	No potential impact with regulatory compliance and mitigation measures	Lower than proposed project, higher than No Action. No potential impact with regulatory compliance and mitigation measures	No potential impact
Fire hazards	No potential impact with vegetation management procedures	No potential impact with vegetation management procedures	No potential impact
Impacts to fire and emergency response resources	No potential impact	No potential impact	No potential impact

6.15 Geology, Paleontology, and Minerals

6.15.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to geology, paleontology, and minerals, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with geology, paleontology, and minerals would be very similar for the proposed project and the Modified I-15 Alternative. These factors include:

- Regional geologic setting;
- Regional tectonic setting;
- Site-specific mineral resources;
- Site-specific paleontological resources; and
- Site-specific potential for seismic, subsidence, and landslide events.

Although the inventory of paleontological and mineral resources conducted and summarized by the applicant and evaluated by BLM and the Energy Commission in the DEIS is considered to be relevant and sufficient for most of the Modified I-15 Alternative project area, these inventories and notifications did not include the reconfigured location of Ivanpah Unit 3. Because the reconfigured location has not undergone these evaluations, there may be specific resources associated with that reconfigured location that have not been identified, and therefore impacts to specific resources cannot be evaluated.

6.15.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, with compliance with regulatory requirements and building codes, and implementation of mitigation measures requiring identification and assessment of geologic and paleontological resources, the geologic conditions would not present a threat to the proposed project, and the proposed project would have no direct or indirect adverse impact on these resources.

Construction Impacts

Paleontological resources could potentially be present in the project area, and therefore could potentially be disturbed during project construction. Potential impacts to these resources for both the proposed project and the Modified I-15 Alternative would be mitigated through the use of monitoring and assessment procedures. Like the proposed project, the Modified I-15 Alternative would require site excavation, grading, road construction, and installation of heliostats, any of which could disturb and result in impacts to resources. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would involve the same type and amount of equipment, and the same procedures used in ground disturbance activities. Because the acreage associated with Ivanpah Unit 3 would be reduced from that in the proposed project by 433 acres (approximately 12.5 percent), the potential impacts associated with construction of the Modified I-15 Alternative would be reduced.

The specific resources that could be impacted in the revised Ivanpah Unit 3 location have not been inventoried, and impacts cannot be fully evaluated at this time. The revised Ivanpah Unit 3 location is directly adjacent to Interstate 15 and Ivanpah Unit 1, and very close to the Primm Valley Golf Course, all areas that have undergone extensive development and/or prior inventories for paleontological resources. Therefore, while unidentified resources are likely to be present, they are likely to be of the same type as those identified in those adjacent areas. Based on this, the mitigation measures described in the DEIS for the proposed project would be expected to be effective in avoiding and/or mitigating impacts to resources within the revised Ivanpah Unit 3.

Operations Impacts

In the DEIS, BLM concluded that geologic conditions, including the potential for seismicity, subsidence, and landslides, would present potential impacts to the operation of the proposed project, but these would be mitigated through facility design and compliance with building codes. Because the location of the Modified I-15 Alternative and the proposed project would be approximately the same, potential threats to the facility caused by seismicity, subsidence, and landslides would be identical.

In the DEIS, BLM concluded that the proposed project would remove the entire project acreage from potential development of leasable sand and gravel resources. However,

due to the large magnitude of these resources in the local area, this removal was not expected to cause an adverse impact to leasable mineral resources. The Modified I-15 Alternative would leave the original location of Ivanpah Unit 3 in the proposed project available to mineral development, which could include leasable sand and gravel operations. However, an equivalent acreage of potential mineral resources would be removed from potential development in the revised Ivanpah Unit 3 location.

The DEIS also evaluated the potential impact of the proposed project on existing locatable minerals claims on Limestone Hill (Numbers CAMC234026 and CAMC237293), and concluded that there would no potential impacts. In the Modified I-15 Alternative, Ivanpah Unit 3 would be located further away from Limestone Hill, and would therefore present even less of a potential disruption to development of those minerals claims.

Closure/Decommissioning Impacts

Closure and decommissioning impacts on geologic, paleontologic, and mineral resources would be associated with site disturbance activities, and would be the same as that described for construction activities. Due to the reduced acreage of disturbance associated with the Modified I-15 Alternative, potential impacts would be lower than those associated with the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to geology, paleontology, or minerals would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with geology, paleontology, and minerals.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.15.3 Geology, Paleontology, and Minerals Summary

A comparison of the geology, paleontology, and minerals impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-15**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, the paleontological resource impacts associated with the Modified I-15 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. Although the resources within the revised Ivanpah Unit 3 location have not been inventoried, they are likely to be similar to those identified and evaluated for the proposed project. Impacts on leasable and locatable mineral resources would be the same or lower for the Modified I-15 Alternative than the proposed project. No hazards to either the proposed project or Modified I-15 Alternative from geologic conditions would be expected.

Table 6-15
Comparison of Geology, Paleontology, and Minerals Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Paleontological resources	Construction could impact resources. Impact would be mitigated.	Lower than proposed project, higher than No Action. Impact would be mitigated.	No potential impact
Leasable mineral resources	Sand and gravel resources would be removed from potential production. No impact expected.	Lower than proposed project, higher than No Action. No impact expected.	No potential impact
Locatable mineral resources	Project adjacent to locatable claims, but no impact expected.	Project proximity to locatable claims is further than in the proposed project, no impact expected.	No potential impact
Geologic hazards (seismicity, subsidence, landslides)	Minimized through facility design and compliance with building codes.	Same as proposed project. Minimized through facility design and compliance with building codes.	No potential impact

6.16 Livestock Grazing

6.16.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to livestock grazing, would be similar to that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. As discussed in the DEIS, the proposed project location is located within the existing BLM Clark Mountain Grazing Lease, which is a perennial/ephemeral allotment (Allotment #09003) comprising 97,560 acres of public lands. The Modified I-15 Alternative would also be located completely within the boundaries of this allotment,

although the alternative would have a reduced acreage associated with the revised footprint associated with Ivanpah Unit 3. The 433-acre reduction of Ivanpah Unit 3 would remain available to grazing as part of the allotment. The procedures and regulations that would be used by BLM to modify allotment boundaries and reduce the AUMs permitted in the grazing lease would be the same for the proposed project and the Modified I-15 Alternative.

6.16.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that, by following required procedures to adjust the Clark Mountain Grazing Allotment, and by requiring mitigation measures proscribing measures to protect cattle, the proposed project would have no adverse impact on the Clark Mountain Grazing Allotment. The proposed project would require that BLM modify the allotment boundaries, and reduce the number of AUMs available within the allotment, currently a total of 1,428 AUMs, by approximately 70 AUMs.

Modified I-15 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to land use impacts discussed in Section 4.5, impacts to livestock grazing are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

The livestock grazing impacts resulting from the Modified I-15 Alternative would be similar to those associated with the proposed project. This would include removal of approximately 3,564 acres from the existing Clark Mountain Grazing Lease. Because this is a reduction of 433 acres from the proposed project, the adverse impact of the Modified I-15 Alternative on the grazing lease would be reduced from that associated with the proposed project. By reducing the project footprint by approximately 12.5 percent, the Modified I-15 Alternative would require a reduction of approximately 62 AUMs in the allotment. The reconfigured location of the Ivanpah Unit 3 footprint is not expected to cause any difference in the impacts to the allotment.

Other potential impacts to the grazing lease could occur due to the use of vehicles and equipment in active grazing areas. During construction, potential risks to cattle from these vehicles would be mitigated by speed limits and informing site workers of the potential hazards. Once the site fence is constructed, these potential threats during operations and decommissioning would be reduced, and would be limited to infrequent monitoring and maintenance on the outside of the fence. Potential impacts from these sources would be the same for the Modified I-15 Alternative and the proposed project.

Cumulative Impacts

The direct impact to the acreage associated with the Clark Mountain Grazing Lease, combined with impacts from other current and potential projects (such as the Desert Xpress rail line and other solar projects), would contribute incrementally to the long-term reduction of acreage available for grazing in the area. Because it would reduce the project footprint by 433 acres (approximately 12.5 percent), the Modified I-15 Alterative would have a reduced contribution to this cumulative impact compared to the proposed project.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with livestock grazing.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project. However, Mitigation Measures proposed for other resources, such as speed limits for protection of desert tortoises, were considered to be effective for protection of cattle.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.16.3 Livestock Grazing Summary

A comparison of the livestock grazing impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-16**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

The impact of the Modified I-15 Alternative on the existing Clark Mountain Grazing Lease would be direct and adverse, but would be lower than that associated with the proposed project. Any hazards associated with vehicle and equipment use in active cattle grazing areas when cattle are present would be the same for both alternatives, and would be mitigated through the use of speed limits and worker notifications.

Table 6-16
Comparison of Livestock Grazing Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Clark Mountain Grazing Lease	Direct adverse impact from removal of 4,073 acres and 70 AUMs from the lease	Direct adverse impact from removal of 3,564 acres and 62 AUMs from the lease	No potential impact
Vehicle impacts to	Potential impact	Potential impact the	No potential impact

individual cattle	low, and would be mitigated	same as proposed project, and would be mitigated	
Cumulative impacts to land available for grazing	Incremental contribution to long-term land available for grazing	Lower than proposed project, higher than No Action.	No potential impact

6.17 Wild Horses and Burros

6.17.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to wild horses and burros, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with wild horses and burros, including the area inhabited, and the applicability of the Clark Mountain HMA addressed under the BLM's East Mojave Herd Management Area Plan, would be the same for the proposed project and the Modified I-15 Alternative. Under the NEMO Plan Amendment, the AML for the Clark Mountain HMA was reduced from 44 to zero. Although burros are still known to be present in the area, BLM plans to remove them in compliance with the AML reduction. The reduction in the AML and plans to remove the remaining burros are independent of BLM's consideration of a ROW authorization for the ISEGS facility. However, while the burros are present, they would still be protected by provisions of the Wild and Free-Roaming Horses and Burros Act. Wild horses are not present in the project area.

6.17.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

In the DEIS, BLM determined that implementation of mitigation measures designed to protect wild horses and burros were sufficient to ensure that the proposed project would have no direct or indirect adverse impact on those resources.

Modified I-15 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to grazing and land use impacts, impacts to wild horses and burros are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

Because wild horses are not present in the project area, and BLM has established the AML for burros in the Clark Mountain HMA at zero, the fencing of the land area

associated with either the proposed project or the Modified I-15 Alternative would have no impact on wild horses and burros

Similar to grazing, potential impacts to individual burros could occur due to the use of vehicles and equipment when burros are present. During construction, potential risks to burros from these vehicles would be mitigated by speed limits and informing site workers of the potential hazards. Once the site fence is constructed, these potential threats during operations and decommissioning would be reduced, and would be limited to infrequent monitoring and maintenance on the outside of the fence. Potential impacts to individual burros from these sources would be the same for the Modified I-15 Alternative and the proposed project.

Cumulative Impacts

Because no direct or indirect impacts to wild horses or burros would be associated with the Modified I-15 Alternative, this alternative would not contribute to any cumulative impacts to these resources.

Beneficial Impacts

The Modified I-15 Alternative would not provide any beneficial impacts associated with wild horses and burros.

Mitigation

No Mitigation Measures were identified in the DEIS for the proposed project. However, Mitigation Measures proposed for other resources, such as speed limits for protection of desert tortoises, were considered to be effective for protection of burros.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.17.3 Wild Horses and Burros Summary

A comparison of the wild horses and burros impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-17**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Neither the proposed project nor the Modified I-15 Alternative would have an adverse impact on wild horses or burros in the project area. Any hazards to individual burros associated with vehicle and equipment use would be the same for both alternatives, and would be mitigated through the use of speed limits and worker notifications.

Table 6-17
Comparison of Wild Horses and Burros Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Fencing of land area	No potential impact	No potential impact	No potential impact
Vehicle impacts to individual burros	No potential impact	No potential impact	No potential impact

6.18 Recreation

6.18.1 Environmental Setting

The environmental setting of the Modified I-15 Alternative, with respect to recreation, would be the same as that described in the DEIS for the proposed project. The project location would be almost identical with that for the proposed project, with the exception that Ivanpah Unit 3 would be located approximately four miles to the south. Therefore, the environmental setting factors associated with recreation, including the features of the Mojave Desert that attract visitors, would be the same for the proposed project and the Modified I-15 Alternative. The recreational uses and the numbers, types and locations of persons participating in recreational activities would be the same for both alternatives. These uses include:

- Hiking, camping, hunting, rock climbing, and wildlife viewing on the proposed project property and adjacent BLM-managed lands;
- OHV use of trails and roads in officially-authorized events, and informally;
- Tourism associated with the casinos located at Primm;
- Uses of the Ivanpah Dry Lake bed, including BLM-authorized National and International Land Sailing Regattas, and permitted and casual uses for long distance bow and arrow target shooting, hang gliding, model rocket and airplane flying, and photograph and film projects; and
- Hiking, camping, and wildlife viewing in the Mojave National Preserve.

These recreational uses are largely facilitated by the presence of existing roads and trails, which provide vehicle access to remote areas. As discussed in Section 3.5, both the proposed project and the Modified i-15 Alternative project areas currently include officially-designated OHV trails which provide access to the Clark Mountain area and other destinations to the north, west, and south of the ISEGS facility. For both alternatives, the trails would be re-routed around the facility. The revision in the location of Ivanpah Unit 3 would result in no disruption to the OHV trail that currently passes through that area for a distance of approximately 8,100 feet (1.5 miles). However, a total of approximately 12,720 feet (2.4 miles) of trails within the reconfigured location of Ivanpah Unit 3 would be disrupted.

The reduced acreage and output of the Modified I-15 Alternative would not affect the regulatory requirements, including BLM's authorization process, for proposed recreational uses in the surrounding area.

6.18.2 Impact Analysis

Summary of Proposed Project NEPA Impacts

The DEIS evaluated the potential for the proposed project to impact recreation in several different ways, including:

- Directly reducing or affecting access of persons to recreational opportunities on adjacent areas;
- Resulting in changes to sedimentation or erosion which could affect the surface of the Ivanpah Dry Lake, or changes to wind characteristics on the Dry Lake, and thus impacting uses of the Dry Lake surface for recreation; and
- Through its visibility, reducing the quality of the desert recreational experience for hikers, campers, hunters, wildlife viewers, and others.

Although the proposed facility would incorporate currently existing OHV trails, these trails would be re-routed around the facility. Therefore, the DEIS concluded that the proposed project would not affect access to adjacent areas.

As discussed in Section 4.9.2, the DEIS also concluded that the development of the proposed project would not modify sedimentation or erosion on the Dry Lake bed. It also would not be expected to modify wind characteristics on the Dry Lake bed. Therefore, the proposed project would not directly affect recreational uses on the Dry Lake bed.

Finally, the DEIS concluded that the proposed project could affect the quality of the recreational experience for those seeking a natural setting for hiking, camping, and other outdoor activities. In addition, the proposed project would contribute incrementally to the cumulative, long-term reduction of outdoor recreational quality in the Ivanpah Valley due to the development of Interstate 15, the casinos at Primm, the Southern Nevada Supplemental Airport, proposed high-speed rail projects, and proposed solar energy projects.

Modified I-15 Alternative Construction, Operations, and Closure/Decommissioning Impacts

Similar to grazing and land use impacts, impacts to recreation are mostly associated with the occupation of the land area by the facility, and separation of impacts into construction, operations, and closure and decommissioning components is not applicable. Therefore, these components are combined for the following analysis.

With respect to the impact of fencing of the project acreage, which would remove the acreage from potential recreational use, the DEIS concluded that the project area itself was not frequently used for recreational purposes, and the proposed project would not

affect access to adjacent areas. Although the proposed project area includes OHV trails, these are primarily used to access other areas. By re-routing these trails around the facility, neither the proposed project nor the Modified I-15 Alternative would result in an adverse impact to recreational access. Because it would result in an increased amount of diversion, any impact on recreational access caused by the Modified I-15 Alternative would be higher than that for the proposed project.

The DEIS also concluded that the development of the proposed project would not modify sedimentation or erosion on the Dry Lake bed, and would, therefore, not directly affect recreational uses on the Dry Lake bed. The affect of the development of the Modified I-15 Alternative on stormwater, including sedimentation and erosion characteristics downstream of the project area, would be expected to be similar to that for the proposed project, but cannot be fully evaluated at this time. This is because drainage channel mapping and stormwater modeling has not been completed for the revised Ivanpah Unit 3 location. As discussed in Section 6.9, the existing drainage channel mapping and stormwater modeling did cover a portion of the reconfigured location of Ivanpah Unit 3, and cursory visual inspection and review of topographic maps indicate that the reconfigured location of Ivanpah Unit 3 appears to be in a similar, or possibly somewhat more favorable position than the proposed Ivanpah Unit 3 location, with respect to the size of upstream drainage basins and associated active drainage channels. Therefore, the conclusion that the proposed project would not be expected to modify downstream sedimentation and erosion characteristics is assumed to be applicable to the Modified I-15 Alternative as well.

Also, by reducing the number of heliostats, and therefore the amount of energy reflected to the power towers, the potential impact of the Modified I-15 Alternative on wind characteristics in the area would also be reduced from those associated with the proposed project.

Cumulative Impacts

With respect to impacts on the quality of the recreational experience for those seeking a natural setting for hiking, camping, and other outdoor activities, the DEIS concluded that the proposed project would contribute incrementally to the cumulative, long-term reduction of outdoor recreational quality in the Ivanpah Valley due to the development of Interstate 15, the casinos at Primm, the Southern Nevada Supplemental Airport, proposed high-speed rail projects, and proposed solar energy projects. Although the project acreage and the overall visual impact to viewers north and west of the facility would be lower for the Modified I-15 Alternative, the impact on the quality of the recreational experience would be expected to be about the same as that for the proposed project. This is because the change of the area to a more industrial character would be similar to that expected for the proposed project.

Beneficial Impacts

The DEIS concluded that the proposed project would likely result in attracting a small number of visitors to the area specifically to observe a large-scale solar project. The

affect of the Modified I-15 Alternative in this respect would likely be the same as that for the proposed project.

Mitigation

Mitigation Measures identified in the DEIS for the proposed project would also be applicable to the Modified I-15 Alternative.

No other Mitigation Measures are proposed for the Modified I-15 Alternative.

6.18.3 Recreation Summary

A comparison of the recreation impacts between the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-18**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Overall, no direct or indirect impacts on recreational use of the project area, Dry Lake bed, and surrounding areas would be expected from either the proposed project or the Modified I-15 Alternative. Both alternatives would likely provide a beneficial impact on tourism by attracting persons interested in the unusual and large-scale character of the facility. However, both alternatives would also contribute incrementally to an increase in the industrial character of the area, which would likely result in reducing the quality of the recreational experience for many recreational users of the area.

Table 6-18
Comparison of Recreation Impacts

Potential Impact	Proposed Project	Modified I-15 Alternative	No Action Alternative
Removal of acreage from recreational use	No potential impact	No potential impact	No potential impact
Restriction of access to recreational areas	Impact on existing trails would be minor, and mitigated through re-routing	Higher than proposed project, would be mitigated through re-routing	No potential impact
Modifications affecting recreational use of Dry Lake bed	Impacts could occur, but analysis predicts no modification	Impacts could occur, but would be similar to or less than proposed project	No potential impact
Cumulative impact on quality of recreational experience	Contributes incrementally to industrial character of area	Incremental contribution to industrial character approximately equal to proposed project	No potential impact
Beneficial impact on	Would attract small	Attraction of tourists	No potential impact

tourism	number of tourists	approximately equal to proposed project	

6.19 Engineering and Design Assessment

In the FSA/DEIS, the Energy Commission evaluated the engineering aspects of the proposed project, including the sufficiency of the facility design, efficiency, reliability, and engineering of the transmission system. In general, these sections of the FSA/DEIS were developed to ensure that the facility would meet the Energy Commission's standards with respect to the generation and transmission of power. For the proposed project, the FSA/DEIS concluded that, by being designed, constructed, and operated in compliance with state regulations, industry standards, and Energy Commission Conditions of Certification, the generation and transmission of energy from the facility would meet all applicable Energy Commission requirements.

The only differences between the proposed facility and the Modified I-15 Alternative would include:

- The configuration of the Ivanpah Unit 2 and 3 heliostat fields;
- The number of boilers associated with associated with Ivanpah Unit 3;
- The size of the steam turbine generators associated with Ivanpah Units 2 and 3; and
- The location of Ivanpah Unit 3

The configuration of the heliostat fields and number of boilers is not expected to create any difference in the power generation and transmission system. Although the size of the steam turbine generators is different in the Modified I-15 Alternative, and the change in size would result in a reduced output from the facility, the change would not be expected to affect the reliability or efficiency of the facility. Similarly, the transmission system associated with the Modified I-15 and proposed project alternatives would be identical. The reduced output of the Modified I-15 Alternative would not have an impact on the engineering design of the transmission system.

With respect to land use efficiency, the FDA/DEIS presented a calculation that the proposed project would generate 0.107 MW/acre (rounded to 0.11 MW/acre in the FSA/DEIS) of land used, a value that is comparable to other solar power plants. Under the Modified I-15 Alternative, the land use efficiency would increase to 0.114 MW/acre. Therefore, the Modified I-15 Alternative would be slightly more efficient, with respect to land use, than the proposed project.

A comparison of the facility design, efficiency, reliability, and transmission system engineering characteristics of the proposed project, Modified I-15 Alternative, and No Action Alternative is presented in **Table 6-19**. A comparison of impacts between the Modified I-15 Alternative and the Mitigated Ivanpah 3 Alternative is provided in Section 8.

Table 6-19
Comparison of Engineering Characteristics

Engineering Characteristic	Proposed Project	Modified I-15 Alternative	No Action Alternative
Facility Design	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable
Power Plant Efficiency – Fossil Fuel Resources	Decreases reliance on fossil fuel resources	Same as proposed project	Not applicable
Power Plant Efficiency – Land Use	Not as efficient as other solar technologies	Slightly more efficient than proposed project, still lower than other technologies	Not applicable
Power Plant Reliability	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable
Transmission System Engineering	Complies with applicable engineering regulations and standards	Same as proposed project	Not applicable

7.0 Other NEPA Considerations

7.1 Unavoidable Adverse Impacts

The unavoidable adverse impacts of the proposed project, as described in the section titled “Other CEQA and NEPA Considerations” in the DEIS, included the following items:

- Impacts to Biological Resources, including desert tortoises and special-status plant species;
- Contribution to cumulative impacts to other land uses within Ivanpah Valley; and
- Both direct and cumulative impacts to the visual character of the Ivanpah Valley as seen from several KOPs.

The Mitigated Ivanpah 3 Alternative would result in a lower magnitude of adverse impact for all three of these issues. By avoiding the northern 433-acre portion of Ivanpah Unit 3, the Mitigated Ivanpah 3 Alternative would eliminate direct adverse impacts to tortoises and special-status plants in the area of their densest populations in the proposed project area. The reduction of the acreage of the footprint would leave the 433-acre portion of Ivanpah Unit 3 available for other land uses, thereby reducing the

magnitude of the cumulative impacts to other land uses within Ivanpah Valley. Finally, the reduction of the number of power tower receivers from seven to three, reduction in the acreage of heliostat fields, and movement of the northern boundary of the facility to a location further from Key Observation Points in the Mojave National Preserve and Stateline Wilderness would result in reducing the direct adverse impact of the alternative on Visual Resources.

Although the Mitigated Ivanpah 3 Alternative would reduce the magnitude of adverse impacts in all three areas, it would not completely avoid these impacts. Biological Resources, including tortoises and special-status plants, would still be displaced in the 3,564-acre area occupied by the alternative. Although the alternative would make the 433-acre northern portion of Ivanpah Unit 3 available for other land uses, it would still remove the 3,564-acre project area from other potential land uses. And although the number of power tower receivers and heliostats would be reduced, the alternative facility would still contribute to a more industrial character for Ivanpah Valley, and thus impact Visual Resources.

Through its reduced acreage, the Modified I-15 Alternative would also have potentially reduced impacts when compared to the proposed project. The reduced acreage would result in a lower magnitude of direct impacts to special-status plant species, contribution to cumulative land use impacts within Ivanpah Valley, and direct and cumulative visual impacts as seen from several KOPs. However, the Modified I-15 Alternative may have approximately the same direct impact on desert tortoise habitat as the proposed project, would have increased impacts on Visual Resources, as seen from Interstate 15.

7.2 Irreversible and Irretrievable Commitment of Resources

The irreversible and irretrievable commitment of resources associated with the proposed project, as described in the DEIS, included the following items:

- Use of fuels for equipment and vehicles, construction materials, and hazardous materials for construction and operations;
- Elimination of vegetation and habitat; and
- Long-term modification of the visual character of the area.

With respect to the use of energy and materials, the DEIS concluded that the amount of these materials used for the proposed project would not be substantial. In addition, because the project is intended to provide renewable energy, it would not result in an increase in the use of non-renewable energy resources. The Mitigated Ivanpah 3 and Modified I-15 Alternatives would use the same types of fuel, construction materials, and hazardous materials as the proposed project. However, in each case, the alternatives would use a reduced amount of fuels and materials, due to their reduced size. The reduction of the size of the Mitigated Ivanpah 3 and Modified I-15 Alternatives includes:

- Reduction from seven to three power tower receivers (57 percent reduction)
- Reduction from 214,000 to 173,500 heliostats (19 percent reduction)
- Reduction from 4,073 to 3,564 acres (12.5 percent reduction)

- Reduction from 48 months to 40 month for construction (17 percent reduction)

These reductions in size would consequently reduce the consumption of fuel, construction materials, hazardous materials, and land resources used to build and operate the facility.

A net benefit of the proposed project would be the provision of renewable energy, which could displace generation provided by fossil-fueled energy sources. By reducing the size of the facility, the Mitigated Ivanpah 3 and Modified I-15 Alternatives would result in a reduction of renewable energy output from 400 MW to 370 MW, an 8.5 percent reduction.

7.3 Growth-Inducing Effects

The growth-inducting effects associated with the proposed project, as described in the DEIS, included an evaluation of whether the proposed project would remove obstacles to growth, or encourage or facilitate other activities that could impact the environment. The DEIS concluded that the employment created by the proposed project would be small compared to the work force in the local area, and would therefore not create local growth. The proposed project is intended to assist in meeting growth in peak electricity demand within California, and is not being implemented to support any specific project or development.

The effect of the Mitigated Ivanpah 3 and Modified I-15 Alternatives on growth would be expected to be the same as those identified for the proposed project.

8.0 Conclusions

A comparison of the impacts associated with the proposed project, Mitigated Ivanpah 3, Modified I-15 Alternative, and No Action Alternatives is presented in **Table 8-1** below.

Although the proposed project would achieve all project objectives, and generate the maximum amount of beneficial socioeconomic, greenhouse gas, and air pollutant impacts, it would also result in the greatest number and magnitude of adverse impacts. These would include impacts to Biological Resources, Soil and Water Resources, and Visual Resources that could not be completely mitigated.

Selection of the Mitigated Ivanpah 3 Alternative would accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed project, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Mitigated Ivanpah 3 Alternative would be much lower than the proposed project, especially in the areas of Biological Resources, Soil and Water Resources, and Visual Resources.

Selection of the Modified I-15 Alternative would also accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed projects, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Modified Ivanpah 3 Alternative would be lower than the proposed project in some areas, but would be increased in other areas. With respect to Biological Resources, the Modified I-15 Alternative would have a reduced impact on high quality desert tortoise habitat, as a result of moving Ivanpah Unit 3 to a location which partially overlaps the lower quality habitat adjacent to Interstate 15. However, impacts to Visual Resources and potential glare impacts for viewers on Interstate 15 would increase, due to the

placement of heliostat fields within 1,000 feet of the highway for a distance of 1.8 miles. The Modified I-15 Alternative could also result in an increase in impacts to recreational access as compared to the proposed project, due to the greater length of existing OHV trails that would be included within the project footprint.

Most of the impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be very similar to each other, based on the similar size, technology, and configuration of the facility. The only physical difference between the two alternatives would be the location of Ivanpah Unit 3, which would border the northern portion of the facility in the Mitigated Ivanpah 3 Alternative, and the southern portion of the facility in the Modified I-15 Alternative. This difference in location results in potentially different impacts to several resources, as follows:

- Biological Resources

  The difference in location has the potential to impact different habitat, wildlife, and plants in the two different locations. The northern location of Ivanpah Unit 3 in the Mitigated Ivanpah 3 Alternative is likely to have a higher density or tortoises, and therefore a higher potential for impacts, than the southern location of Ivanpah Unit 3 in the Modified I-15 Alternative. Although impacts to plant species may also be different between the two alternatives, these impacts cannot be determined without site-specific surveys on the Modified I-15 Alternative location.

- Land Use

  Both the Mitigated Ivanpah 3 and Modified I-15 Alternatives would partially occupy designated utility corridors; however, the corridors involved are different from each other. Under the Mitigated Ivanpah 3 Alternative, Ivanpah Unit 3 would occupy a portion of utility corridor D, while Ivanpah unit 3 in the Modified I-15 Alternative would partially occupy corridor B. In both cases, portions of the corridors would remain available for other uses.

- Soil and Water

  Based on a review of topographic information and stormwater modeling that covers a portion of the Modified I-15 site, it is likely that the position of the Modified I-15 site is similar to, or possibly slightly more favorable than, the Mitigated Ivanpah 3 site with respect to potential stormwater damage.

- Traffic and Transportation

  The potential issue of distraction to drivers on Interstate 15 due to glare from the heliostats and power tower receivers cannot be quantified, and is difficult to predict. If this issue should occur, it would likely be more disruptive at the Modified I-15 location than the Mitigated Ivanpah 3 location, due to the closer proximity of the heliostats and power towers to Interstate 15.

- Visual Resources

  With respect to the position of viewers located on Clark Mountain or the Stateline Wilderness to the north and west of the facility, visual impacts associated with

the Modified I-15 Alternative would be lower than those for the Mitigated Ivanpah 3 Alternative. This would be due to the more distal location of Ivanpah Unit 3 in the Modified I-15 Alternative. For the same reason, visual impacts to viewers on Interstate 15 would be higher for the Modified I-15 Alternative, due to the situation of Ivanpah Unit 3 within 1,000 feet of the highway, for a distance of approximately 1.8 miles.

- Recreation

  Both the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative would occupy land that currently includes designated OHV trails used for recreation. In both cases, the trails would be re-routed around the outside of the facilities. The length of trails that would be affected would be 8,100 feet (1.5 miles) for the Mitigated Ivanpah 3 Alternative, and 12,270 feet (2.4 miles) for the Modified I-15 Alternative.

Although it would have no adverse impacts, the No Action Alternative would not accomplish project objectives of meeting the demand for power, or contribute to meeting state and federal objectives for renewable energy development. It also would not provide the beneficial impacts associated with the proposed project and Mitigated Ivanpah 3 Alternative, including the socioeconomic benefits. By not contributing to the development of renewable energy, the No Action Alternative would cause the state to continue to rely on fossil-fueled energy sources, with the associated greenhouse gas and air pollutant emissions.

Table 8-1
Comparison of Impacts Between Alternatives

Resource	Proposed Project	Mitigated Ivanpah 3 Alternative	Modified I-15 Alternative	No Action Alternative
Air Quality	• Potential impacts could occur, would be mitigated • Beneficial impact is the avoidance of greenhouse gas and pollutant emissions associated with fossil-fueled power plants	• Potential impacts could occur, would be mitigated • Lower overall air emissions than proposed project, same as Modified I-15 • Higher short-term NOx concentrations than proposed project, same as Modified I-15 • Beneficial avoidance of greenhouse gas and pollutant emissions would be lower than proposed project, same as Modified I-15	• Potential impacts could occur, would be mitigated • Lower overall air emissions than proposed project, same as Mitigated Ivanpah 3 • Higher short-term NOx concentrations than proposed project, same as Mitigated Ivanpah 3 • Beneficial avoidance of greenhouse gas and pollutant emissions would be lower than proposed project, same as Mitigated Ivanpah 3	• No adverse impacts • Would not achieve beneficial impact of avoiding greenhouse gas and pollutant emissions associated with fossil-fueled power plants
Biological Resources	• Direct adverse impacts to desert tortoise • Potential impacts to MBTA and Special Status bat species	• Tortoise impacts reduced from proposed project, but likely still higher than Modified I-15 • Potential impacts to	• Tortoise impacts reduced from proposed project, and likely also reduced from Mitigated Ivanpah	• No adverse impacts

	• Potential impacts to Special Status plant species	MBTA and Special Status bat species • Special status plant impacts reduced from proposed project. Field surveys required at Modified I-15 to compare plant impacts between alternatives.	3 • Potential impacts to MBTA and Special Status bat species • Special status plant impacts likely reduced from proposed project. Field surveys required at Modified I-15 to compare plant impacts between alternatives.	
Cultural Resources	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project reduced due to reduced acreage of disturbance • Impacts likely to be similar to Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project reduced due to reduced acreage of disturbance • Impacts likely to be similar to Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts
Hazardous Materials Management	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction • Impacts likely to be	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction	• No adverse impacts

		similar to Modified I-15 • Impacts could be mitigated	• Impacts likely to be similar to Mitigated Ivanpah 3 • Impacts could be mitigated	
Land Use	• Conforms with land use plans • Partially covers designated utility corridors • Contributes to cumulative removal of land from other land uses	• Conforms with land use plans • Reduced impact on designated utility corridors, as compared to proposed project • Utility corridor impacts in different location than Modified I-15, but of the same magnitude • Reduced contribution to cumulative removal of land from other land uses when compared to proposed project • Contribution to cumulative removal of land similar to Modified I-15	• Conforms with land use plans • Reduced impact on designated utility corridors, as compared to proposed project • Utility corridor impacts in different location than Mitigated Ivanpah 3, but of the same magnitude • Reduced contribution to cumulative removal of land from other land uses • Contribution to cumulative removal of land similar to Mitigated Ivanpah 3	• No adverse impacts
Noise and Vibration	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced duration of construction	• Potential impacts would be lower than proposed project due to reduced duration	• No adverse impacts

		• Impacts likely to be similar to Modified I-15 • Impacts could be mitigated	of construction • Impacts likely to be similar to Mitigated Ivanpah 3 • Impacts could be mitigated	
Public Health and Safety	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction • Impacts likely to be similar to Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction • Impacts likely to be similar to Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts
Socioeconomics and Environmental Justice	• No adverse impact • Beneficial impact on employment and fiscal resources	• Beneficial impacts would be lower than proposed project, but the same as Modified I-15	• Beneficial impacts would be lower than proposed project, but the same as Mitigated Ivanpah 3	• No adverse impacts • No beneficial impacts
Soil and Water Resources	• Potential adverse impact due to stormwater damage to facility • Potential impacts on groundwater use and quality could be mitigated	• Stormwater damage impacts would be much lower than proposed project due to reduced acreage and disturbance of active drainages • Stormwater impacts	• Stormwater damage impacts likely lower than proposed project due to reduced acreage • Stormwater impacts likely to be	• No adverse impacts

		likely to be the same or higher than those in Modified I-15 • Groundwater use and quality impacts would be lower than proposed project, but the same as Modified I-15, and could be mitigated.	the same or lower than those in Mitigated Ivanpah 3 • Groundwater use and quality impacts would be lower than proposed project, but the same as Mitigated Ivanpah 3, and could be mitigated.	
Traffic and Transportation	• Direct and cumulative impact on I-15 traffic on Fridays • Unable to determine impact from potential glare distraction	• Impacts would be lower than proposed project, due to reduced duration of construction, and the same as Modified I-15 • Impacts during operations would be the same as the proposed project and Modified I-15 • Unable to determine impact from glare, but it would be lower than the proposed project and Modified I-15	• Impacts would be lower than proposed project, due to reduced duration of construction, and the same as Mitigated Ivanpah 3 • Impacts during operations would be the same as the proposed project and Mitigated Ivanpah 3 • Unable to determine impact from glare, but it could be higher than the proposed project and Mitigated Ivanpah 3 due to	• No adverse impacts

			placement of heliostats adjacent to I-15	
Transmission Line Safety and Nuisance	• Potential impacts could be mitigated	• Impacts would be equal to the proposed project and Modified I-15, and could be mitigated	• Impacts would be equal to the proposed project and Mitigated Ivanpah 3, and could be mitigated	• No adverse impacts
Visual Resources	• Direct, adverse impact to sensitive viewing locations • Contributes to cumulative increase in industrial character of area	• Adverse impacts would occur, but would be lower than proposed project • Impacts to viewers on I-15 would be lower than Modified I-15	• Impacts to viewers in recreation areas to the west and north would be reduced from proposed project and Mitigated Ivanpah 3, but still adverse • Impacts to viewers on I-15 would be increased from proposed project and Mitigated Ivanpah 3	• No adverse impacts
Waste Management	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts

Worker Safety and Fire Protection	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts
Geology, Paleontology, and Minerals	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts
Livestock Grazing	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction • Impacts would be in slightly different location than Modified I-15, but of the same magnitude • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction • Impacts would be in a slightly different location than Mitigated Ivanpah 3, but of the same	• No adverse impacts

			magnitude • Impacts could be mitigated	
Wild Horses and Burros	• Potential impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Modified I-15 • Impacts could be mitigated	• Potential impacts would be lower than proposed project due to reduced acreage and duration of construction, and the same as Mitigated Ivanpah 3 • Impacts could be mitigated	• No adverse impacts
Recreation	• Potential impacts to recreation access and Ivanpah Dry Lake bed could be mitigated • Would contribute to cumulative reduction of recreational experience by increasing industrial character of the area	• Potential impacts to recreation access and Ivanpah Dry Lake bed would be lower than proposed project due to reduced acreage and disturbance of active drainages • Contribution to cumulative reduction of recreational experience would be approximately equal to proposed project and Modified I-15	• Potential impacts to recreation access would be higher than proposed project and Mitigated Ivanpah 3 due to increased length of existing trails • Contribution to cumulative reduction of recreational experience would be approximately equal to proposed project and Mitigated Ivanpah 3	• No adverse impacts
Engineering Characteristics	• Potential impacts could	• Would have higher level of land use efficiency	• Would have higher level of land use	• No adverse impacts

	be mitigated	than proposed project • Characteristics would be the same as Modified I-15	efficiency than proposed project • Characteristics would be the same as Mitigated Ivanpah 3	

ATTACHMENT A

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ATTACHMENT B

LIST OR PREPARERS AND REVIEWERS

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ATTACHMENT C

Revised Text for Mitigation Measures Since Publication of the DEIS on November 4, 2009

AIR QUALITY

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the BLM's Authorized Officer and CPM in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project. Any deviation from the AQCMP mitigation measures shall require prior BLM Authorized Officer and CPM notification and approval.

Verification: The AQCMM shall provide the BLM's Authorized Officer and the CPM a Monthly Compliance Report (**COMPLIANCE-6**) to include the following to demonstrate control of fugitive dust emissions:

A. a summary of all actions taken to maintain compliance with this condition;

B. copies of any complaints filed with the District in relation to project construction; and

C. any other documentation deemed necessary by the BLM Authorized Officer, CPM, and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

1. The following fugitive dust mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**.

   a) The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved prior to taking initial deliveries.

   b) All unpaved construction roads and unpaved operational site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative

approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Condition of Certification **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

c) No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

d) Visible speed limit signs shall be posted at the construction site entrances.

e) All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

f) Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

g) All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

h) All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM and BLM Authorized Officer.

i) Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.

j) All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

k) At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

l) All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

m) All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

n) Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM in the Monthly Compliance Report a construction mitigation report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

Verification: The AQCMM shall include in the Monthly Compliance Report (**COMPLIANCE-6**) the following to demonstrate control of diesel construction-related emissions:

A. A summary of all actions taken to maintain compliance with this condition;

B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

C. Any other documentation deemed necessary by the CPM, and the AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**.

a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

b. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 3 engine is not available for any off-

road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” for the following, as well as other, reasons.

1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or

2. The construction equipment is intended to be on site for 5 days or less.

3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

c. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item “b” occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists :

1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

2. The retrofit control device is causing or is reasonably expected to cause engine damage.

3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.

4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

d. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

e. All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

f. Construction equipment will employ electric motors when feasible.

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the model year when obtained.

Verification: At least 60 days prior to the start commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report (**COMPLIANCE-7**).

AQ-SC7 The project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in the verification of **AQ-SC3** that would be applicable to reducing fugitive dust from ongoing operations~~,~~ that:

A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and

B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

The site operations fugitive dust control plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a non-toxic soil

stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition **AQ-SC4**. The performance requirements of **AQ-SC4** shall also be included in the Operations Dust Control Plan.

Verification: At least 60 days prior to start of commercial operation, the project owner shall submit to the BLM's Authorized Officer and the CPM for review and approval a copy of the site_Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs. At least 60 days after commercial operation, the project owner shall provide to the BLM's Authorized Officer and the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits.

AQ-SC9 The emergency generator and fire pump engines procured for this project will meet or exceed the NSPS Subpart IIII emission standards for the model year that corresponds to their date of purchase.

Verification: The project owner shall submit the emergency engine specifications to the CPM prior to engine installation.

BIOLOGICAL RESOURCES

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The project owner shall develop and implement an Ivanpah SEGS-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from BLM's Authorized Officer and the CPM. The USFWS and CDFG shall also be provided a copy of the WEAP for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants.

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that Gila monsters are venomous and should not be handled, and that no snakes, reptiles, or other wildlife shall be harmed;

3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;

4. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;

5. Present the meaning of various temporary and permanent habitat protection measures;

6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any project-related site disturbance activities, the project owner shall provide to BLM's Authorized Officer and the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to site and related facilities mobilization, the project owner shall submit two copies of the BLM- and CPM-approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.

Throughout the life of the project, the worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to BLM's Authorized Officer and the CPM and upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training.

During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

DESERT TORTOISE CLEARANCE SURVEYS AND FENCING

BIO-8 The project owner shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence installation, tortoise handling, artificial burrow construction, egg handling and other procedures would be consistent with those described in the *Guidelines for Handling Desert Tortoise During Construction Projects* (Desert Tortoise Council 1999) or more current guidance provided by CDFG and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. These measures include, but are not limited to, the following:

1. Fence Installation. To avoid impacts to desert tortoises the proposed fence alignment shall be flagged and the alignment surveyed within 24 hours prior to the initiation of construction of tortoise-exclusion fence. Surveys shall be conducted by the Designated Biologist(s) using techniques approved by the USFWS and CDFG. Biological Monitors may

assist the Designated Biologist under his or her supervision. These surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. This fence line transect will cover an area approximately 90 feet wide centered on the fence alignment. Transects would be no greater than 30 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with USFWS-approved protocol.

2. Fence Installation. Prior to the initiation of construction activities for each solar plant, the project owner shall enclose the boundary of the affected solar plant with permanent chain-link fencing for security purposes and permanent desert tortoise exclusionary fencing would be attached to the bottom of the chain link fencing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

    a. Fence Material and Installation. The permanent tortoise exclusionary fencing shall consist of galvanized hard wire cloth 1-inch by 2-inch mesh sunk 12 inches into the ground, and 24 inches above the ground (but not less than 18 inches above the ground) (USFWS 2008). The fencing shall be buried approximately 6 inches below ground or bent at a right angle towards the outside of the project site and covered with dirt, rocks or gravel to discourage the tortoise from digging under the fence.

    b. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise shall be installed at the gated entries to discourage tortoises from gaining entry.

    c. Utility Corridor Fencing. The utility rights-of-way shall be temporarily fenced on each side of the right-of-way prior to ground disturbing activities to prevent desert tortoise entry during construction. Temporary fencing must be capable of preventing desert tortoises from entering the work area, with supporting stakes sufficiently spaced to maintain fence integrity. The Designated Biologist or Biological Monitor shall be present to supervise all construction activities occurring within areas bounded by temporary fencing.

    d. Fence Inspections. Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary

fencing in the utility corridors, the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during/following all major rainfall events. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within two days of observing damage. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing must be inspected weekly and, where drainages intersect the fencing, during and immediately following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

3. Clearance Surveys. Following construction of the security fence and the attached tortoise exclusion fence, the fenced area shall be cleared of tortoises by Biological Monitors under the supervision of the Designated Biologist. Two complete passes with complete coverage shall be conducted as described above. If a desert tortoise is located on the second survey, a third survey would be conducted. Transects would be no wider than 30 feet. Each separate survey would be walked in a different direction to allow opposing angles of observation. Vegetation salvage operations shall not begin until the area is deemed free of desert tortoises.

4. Burrow Searches. During clearance surveys all potential desert tortoise burrows within the fenced area shall be inspected to determine if tortoises are present. In some cases, a fiber optic scope may be needed to determine presence or absence within a deep burrow. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined. Tortoises taken from burrows and from elsewhere on the site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

5. Burrow Excavation/Handling. All potential desert tortoise burrows located would be excavated by hand by a Biological Monitor, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. Burrows inhabited by tortoises shall be excavated using hand tools under the supervision of the Designated Biologist. If excavated during May through July, the Biological Monitor would search for desert tortoise nests/eggs, which are typically located near the entrance to burrows. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist or a Biological Monitor in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol would be implemented for the project.

6. Monitoring During Clearing. Following the tortoise clearance and translocation, workers and heavy equipment shall be allowed to enter the project site to perform vegetation salvage and earth work such as clearing, grubbing, leveling, trenching, and installation of heliostats. A Biological Monitor shall monitor clearing and grading activities to find and move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan to an area approved by the Designated Biologist.

7. Reporting. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within project areas shall be marked for future identification as described in *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1999) or more current guidance on the USFWS website. Digital photographs of the carapace, plastron, and fourth costal scute shall be taken. Scutes shall not be notched for identification.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to BLM's Authorized Officer, the CPM, USFWS, and CDFG describing how each of the mitigation measures described above has been satisfied. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises, and any other information needed to demonstrate compliance with the measures described above.

BIO-9 The project owner shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of BLM Authorized Officer, USFWS and the CPM, in consultation with CDFG. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the applicant dated May 2009 and shall include all revisions deemed necessary by BLM's Authorized Officer, USFWS, and the CPM, in consultation with CDFG.

Verification: Within 60 days of publication of the Energy Commission Decision the project owner shall provide BLM's Authorized Officer and the CPM with the

final version of a Desert Tortoise Relocation/Translocation Plan that has been reviewed by BLM, USFWS, CDFG and Energy Commission staff. BLM's Authorized Officer and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved translocation must be made only after consultation with BLM's Authorized Officer, USFWS and the CPM, in consultation with CDFG.

Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Plan have been completed, and a summary of all modifications to measures made during implementation of the Plan.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-11 During construction the project owner shall implement all feasible measures to avoid or minimize impacts to biological resources, including the following:

1. Limit Disturbance Areas. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. All disturbances, project vehicles and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 20 miles per hour within the project area, on maintenance roads for linear facilities, or on access roads to the ISEGS site.

4. Monitor During Construction. The Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. In areas that have not been fenced with tortoise exclusion fencing and

cleared, the USFWS-approved Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Mitigating Bird Collisions with Power Lines (APLIC 2004) to reduce the likelihood of large bird electrocutions and collisions.

6. Avoid Use of Toxic Substances. Road surfacing and sealants as well as soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

7. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. To minimize risk of avian collisions with the heliostat towers, only flashing or strobe lights shall be installed on these towers.

8. Badger Surveys. Concurrent with the desert tortoise clearance survey, the Designated Biologist or Biological Monitors shall perform a preconstruction survey for badger dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If badger dens are found, each den shall be classified as inactive, potentially active, or definitely active. Inactive dens shall be excavated by hand and backfilled to prevent reuse by badgers. Potentially and definitely active dens shall be monitored by the Designated Biologist or Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) at the entrance. If no tracks are observed in the tracking medium after 3 nights, the den shall be excavated and backfilled by hand. If tracks are observed, the applicant shall develop and implement a trapping and relocation plan in consultation with the Designated Biologist and CDFG. BLM approval may be required prior to release of badgers on public lands.

9. Gila Monster Surveys. If a Gila monster is encountered during clearance surveys or during construction, a qualified biologist experienced with Gila monster survey and capture techniques shall capture and maintain it in a

cool (<85 degrees F) environment until it can be released to a safe, suitable area beyond the construction impact zone. The biologist shall coordinate with staff and CDFG biologists in the transport and relocation of any Gila monsters encountered during project surveys, construction, or operation.

10. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it will be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS protocol (www.fws.gov/ventura/speciesinfo/protocols_guidelines and Desert Tortoise Council 1999).

11. Avoid Wildlife Pitfalls:

    a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual as described in the Desert Tortoise Relocation/Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

    b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored

within the permanently fenced area after the clearance surveys have been completed.

c. Cap Heliostat Holes. All holes drilled for heliostats shall be capped the same day they are drilled. Caps shall remain on the holes until heliostats are inserted into the holes, and shall be securely fastened and sufficiently sturdy to cover the heliostat holes indefinitely. The caps shall exclude all wildlife, and shall be inspected weekly by the Designated Biologist or Biological Monitors to ensure that the caps remain in place and that birds and terrestrial wildlife have not become trapped.

12. Minimize Standing Water. Water applied to construction areas and dirt roads for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises, common ravens and coyotes to construction sites.

13. Dispose of Roadkilled Animals. Road killed animals or other carcasses detected in the project area or on roads near the project area shall be picked up immediately and delivered to the Biological Monitor. Within 1 working day of receipt of the carcass the Biological Monitor shall contact CDFG and/or USFWS for guidance on disposal or storage of the carcass.

14. On-site personnel shall photograph and record the location of all bird carcasses encountered within the solar fields, and shall provide the bird carcass, photograph, and location data to the Designated Biologist. The Designated Biologist shall identify the bird, ascertain a cause of death if possible, maintain a database of this information for all bird carcasses, and each year of operation shall provide a report summarizing this information to the CPM, BLM's Authorized Officer, CDFG and USFWS.

15. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

16. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site. Except for

law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on Colosseum Road and other dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.

17. Monitor Ground Disturbing Activities Prior to Site Mobilization. If ground-disturbing activities are required prior to site mobilization, such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying how measures have been completed. The Designated Biologist shall provide to the CPM, BLM's Authorized Officer, CDFG, and USFWS an annual report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year.

RAVEN MANAGEMENT PLAN

BIO-12 The project owner shall implement a Raven Management Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of USFWS, BLM's Authorized Officer, and the CPM in consultation with CDFG. The draft Raven Management Plan submitted by the applicant (CH2M Hill 2008f) shall provide the basis for the final plan, subject to review and revisions from USFWS, BLM's Authorized Officer and the CPM in consultation with CDFG.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide BLM's Authorized Officer, the CPM, USFWS, and CDFG with the final version of a Raven Management Plan that has been reviewed by USFWS, CDFG, BLM, and the Energy Commission staff. The CPM and BLM's Authorized Officer will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Raven Management Plan shall be made only after approval by BLM's Authorized Officer and the CPM, in consultation with USFWS, and CDFG.

Within 60 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Raven Management Plan have been completed, a summary of all modifications to

mitigation measures made during the project's construction phase, and which items are still outstanding.

BIO-13 The project owner shall implement a Weed Management Plan that meets the approval of BLM and the CPM. The draft Weed Management Plan submitted by the applicant (CH2M Hill 2008e) shall provide the basis for the final plan, subject to review and approval from BLM and the CPM, in consultation with USFWS, and CDFG. In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction, the final Weed Management Plan shall include at least the following Best Management Practices to prevent the spread and propagation of noxious weeds:

1. Limit the size of any vegetation and/or ground disturbance to the absolute minimum, and limit ingress and egress to defined routes.

2. Maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.

3. Reestablish vegetation quickly on disturbed sites.

4. Monitoring and rapid implementation of control measures to ensure early detection and eradication for weed invasions.

5. Use only weed-free straw or hay bales used for sediment barrier installations, and weed-free seed.

6. Reclamation and revegetation shall occur on all temporarily disturbed areas, including pipelines, transmission lines, and staging areas.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide BLM's Authorized Officer and the CPM with the final version of a Weed Management Plan. BLM's Authorized Officer and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Weed Control Plan must be made only after consultation with the CPM and BLM's Authorized Officer, in consultation with USFWS, and CDFG.

Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Weed Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

BIO-14 The project owner shall develop and implement a revised Closure, Revegetation and Rehabilitation Plan (Plan) in cooperation with BLM and

Energy Commission staff to guide site restoration and closure activities, including methods proposed for revegetation of disturbed areas immediately following construction and rehabilitation and revegetation upon closure of the facility. This plan must address preconstruction salvage and relocation of succulent vegetation from the site to an onsite nursery facility for storage and propagation of material to reclaim disturbed areas. In the case of unexpected closure, the plan assumes restoration activities would possibly take place prior to the anticipated lifespan of the plant. The Plan shall address all issues discussed in **Biological Resources Appendix B**: *Issues to address in the Closure, Revegetation and Rehabilitation Plan*, and shall include but is not limited to the following elements in the revised plan:

1. Plan Purpose: The plan shall explicitly identify the objective of the revegetation plan to be re-creation of the types of habitats lost during construction and operation of the proposed solar energy facility. The final revegetation plan shall include introduction of mid- to late-successional species.

2. Standards/Monitoring: Performance standards for success thresholds, weed cover, performance monitoring methods and schedule, and maintenance monitoring in the revised Plan shall be conducted as described in **Biological Resources Appendix B**.

3. Baseline Surveys – Baseline vegetation surveys for planning restoration efforts shall be conducted as described in **Biological Resources Appendix B.**

4. Vegetation Clearing: Clearing of vegetation shall be limited to areas for which final maps are provided to BLM before approval of the ROW. Clearing of vegetation will be permitted on roads, utility routes, heliostat maintenance pathways, building and parking areas, and temporary staging areas provided these are specifically documented on a geo-referenced construction alignment drawing or aerial photo or shape file, showing the exact locations of soil disturbance. BLM will consider relocating specific installations prior to the beginning of construction and during construction on a case by case basis but will not approve additional acreage beyond that addressed in the current application.

5. Vegetation Mowing; Vegetation mowing shall be limited to areas adjoining vehicle pathways used for heliostat installation to allow installation of the heliostat pylon and allow for tracking clearance under the heliostat. Vegetation mowing may be repeated during the life of the facility to maintain appropriate clearance for heliostat tracking.

6. Succulent Salvage: The revised Plan shall include a table that shows proposed succulent salvage by species the number of plants onsite, the

lower threshold height for salvage, the number in each size class, and the fate of plants not salvaged. An inventory and map of proposed succulent transplants shall be provided as described in Appendix A. Information gained from succulent transplant experience gained in ISEGS 1 shall be applied to future salvage operations, as described in **Biological Resources Appendix B**.

7. Seed Handling: Seed collection, testing and application shall be conducted as described in **Biological Resources Appendix B**, with collection areas within 10 miles of the project boundaries and on similar terrain, soil, exposure, slope, and elevation to the project site.

8. Soil Preparation: Soil descriptions, compaction measurements, mulch application, soil storage, seed farming, mycorrhizal inoculation, and biological crust collection and storage shall be conducted as described in **Biological Resources Appendix B.** Soil stockpiles shall not be placed on areas that support special-status plant species or other sensitive biological resources.

9. Weed Management. Weed management activities needed to control weeds resulting from mirror washing shall be conducted as described in **Biological Resources Appendix B**.

10. Final Closure Plan**.** A Final Closure Plan, which addresses the final revegetation and rehabilitation activities upon closure and decommissioning of the project, shall be completed as part of the revised Plan. The Final Closure Plan shall include a cost estimate, adjusted for inflation, reflecting the costs of the revegetation, rehabilitation, and monitoring for the duration of time estimated to achieve the objective of re-creating plant communities impacted by the project.

Verification: No more than 30 days from the Energy Commission Decision and BLM Record of Decision the project owner shall provide BLM's Authorized Officer and the CPM with a draft version of the revised Closure, Revegetation and Rehabilitation Plan. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide BLM's Authorized Officer and the CPM with the final version of the Closure, Revegetation and Rehabilitation Plan that has been reviewed and approved by BLM's Authorized Officer and the CPM. All modifications to the approved Revegetation and Reclamation Plan must be made only after consultation with BLM's Authorized Officer and the CPM.

Within 30 days after completion of project construction for each phase of development, the project owner shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Closure, Revegetation and Rehabilitation Plan have been completed, a summary of all modifications to mitigation

measures made during the project's construction phase, and which items are still outstanding.

At least one year prior to planned closure and decommissioning the project owner shall submit to the BLM-Authorized Officer and the CPM a final Closure Plan for review to determine if revisions are needed. The project owner shall incorporate all required revisions to the final Closure Plan and submit to the BLM-Authorized Officer and the CPM no less than 90 days prior to the start of ground disturbing activities associated with closure and decommissioning activities.

BURROWING OWL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-16 The project owner shall implement the following measures for the burrowing owl:

1. Complete a pre-construction survey for burrowing owls for any areas subject to disturbance from construction prior to the start of initial ground disturbance activities. If burrowing owls are present within 500 feet of the project site or linear facilities, then the CDFG burrowing owl guidelines (1995) shall be implemented;

2. Monitor burrowing owl pairs within 500 feet of any activities that exceed ambient noise and/or vibration levels;

3. Establish a 500-foot set back from any active burrow and construct additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Post signs (in both English and Spanish) designating presence of sensitive area;

4. Actively relocate all owls occupying burrows that will be temporarily or permanently impacted by the project and implement the following CDFG take avoidance measures:

    a. Occupied burrows shall not be disturbed during the nesting season (February 1 – August 31) unless a qualified biologist can verify through non-invasive methods that egg laying/incubation has not begun or juveniles are foraging independently and able to fly;

    b. A qualified biologist must relocate owls, confirm that owls have left burrows prior to ground-disturbing activities, and monitor the burrows. Once evacuation is confirmed, the biologist should hand excavate burrows and then fill burrows to prevent reoccupation; and

    c. Relocation of owls shall be approved by and conducted in consultation with CDFG.

5. Submit a Burrowing Owl Mitigation and Monitoring Plan to the CPM and CDFG for review and approval prior to relocation of owls (and incorporate it into the project's BRMIMP) as well as a construction termination report with results to CDFG and CPM 30 days after completing owl relocation and monitoring and at least 30 days prior to the start of commercial operation.

Verification: The project owner shall complete a pre-construction survey for burrowing owls for any areas subject to disturbance from construction no more than 30 days prior to the start of any project-related site disturbance activities, and submit a report to CDFG, USFWS, BLM's Authorized Officer and the CPM that describes when surveys were completed, observations, mitigation measures, and the results of the mitigation. If burrowing owls are to be protected on site or relocated, the project owner shall coordinate with and report to CDFG, USFWS, BLM and Energy Commission staff on these proposed activities in a Burrowing Owl Mitigation and Monitoring Plan. Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance **or** at least 90 days prior to the sale of power, the project owner shall provide to the CDFG and CPM a written construction termination report identifying how measures have been completed.

DESERT TORTOISE COMPENSATORY MITIGATION

BIO-17 To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide compensatory mitigation at a 3:1 ratio for impacts to 3,582 acres or the area disturbed by the final project footprint. At least two thirds of the 3:1 mitigation to satisfy the Energy Commission's Complementary Mitigation Measures shall be achieved by acquisition, in fee title or in easement, of no less than 7,164 acres of land suitable for desert tortoise. The project owner shall provide funding for the acquisition, initial habitat improvements and long-term management endowment of these Energy Commission complementary compensation lands. The remaining third of the 3:1 compensatory mitigation, to satisfy BLM's mitigation requirements and the balance of the Energy Commission's mitigation requirements, shall be developed in accordance with BLM's desert tortoise mitigation requirements as described in the Northern and Eastern Mojave Desert Management Plan (BLM 2002). BLM's compensatory mitigation plan, serving as one third of the 3:1 mitigation ratio required to satisfy CESA, would include acquisition of up to 3,582 acres of land within the Northeastern Mojave Recovery Unit, or desert tortoise habitat enhancement or rehabilitation activities that meet BLM, CDFG, USFWS and Energy Commission approval, or some combination of the two. The Energy Commission requirements for acquisition of 7,164 acres of compensation lands shall include the following:

1. <u>Responsibility for Acquisition of Lands</u>: The responsibility for acquisition of lands may be delegated by written agreement from the Energy Commission and CDFG to a third party, such as a non-governmental

organization supportive of Mojave Desert habitat conservation. Such delegation shall be subject to approval by the CPM and CDFG, in consultation with BLM and USFWS, prior to land acquisition, enhancement or management activities. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for funding acquisition, habitat improvements and long-term management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Water and mineral rights shall be included as part of the land acquisition. Agreements to delegate land acquisition to CDFG or an approved third party and to manage compensation lands shall be implemented within 18 months of the Energy Commission's decision.

2. Selection Criteria for Compensation Lands. The compensation lands selected for acquisition shall:

    a. be as close to the project site as possible;

    b. provide good quality habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

    c. be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

    d. be connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover;

    e. not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;

    f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration, and

    g. not contain hazardous wastes.

3. Review and Approval of Compensation Lands Prior to Acquisition. A minimum of three months prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS and BLM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed

above. Approval from CDFG and the CPM, in consultation with BLM and the USFWS, shall be required for acquisition of all parcels comprising the 7,164 acres.

4. Energy Commission Complementary Mitigation Security The project owner shall provide financial assurances to the CPM and CDFG with copies of the document(s) to BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the Energy Commission Complementary Mitigation Measures described in this condition. These funds shall be used solely for implementation of the measures associated with the project. Alternatively, financial assurance can be provided to the CPM and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing project activities. Prior to submittal to the CPM, the Security shall be approved by CDFG and the CPM, in consultation with BLM and the USFWS, to ensure funding in the amount of $17,981,640. This Security amount was calculated as follows and may be revised upon completion of a Property Analysis Record (PAR) or PAR-like analysis of the proposed compensation lands:

    a. land acquisition costs for compensation lands, calculated at $910/acre = $6,519,240;

    b. costs of initial habitat improvements to compensation lands, calculated at $250/acre = $1,791,000;

    c. costs of establishing an endowment for long-term management of compensation lands, calculated at $1,350/acre = $9,671,400; and

    d. total security = $17,981,640.

5. Compensation Lands Acquisition Conditions The project owner shall comply with the following conditions relating to acquisition of the Energy Commission Complementary Mitigation compensation lands after the CDFG and the CPM, in consultation with BLM and the USFWS, have approved the proposed compensation lands and received Security as applicable and as described above.

    a. Preliminary Report: The project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary documents for the proposed 7,164 acres. All documents conveying or conserving compensation lands and all conditions of title/easement are subject to a field review and approval by CDFG and the CPM, in consultation with BLM and the USFWS, California Department of General Services and,

if applicable, the Fish and Game Commission and/or the Wildlife Conservation Board.

b. Title/Conveyance: The project owner shall transfer fee title or a conservation easement to the 7,164 acres of compensation lands to CDFG under terms approved by CDFG. Alternatively, a non-profit organization qualified to manage compensation lands (pursuant to California Government Code section 65965) and approved by CDFG and the CPM may hold fee title or a conservation easement over the habitat mitigation lands. If the approved non-profit organization holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If the approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. If a Security is provided, the project owner or an approved third party shall complete the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities.

c. Initial Habitat Improvement Fund. The project owner shall fund the initial protection and habitat improvement of the 7,164 acres. Alternatively, a non-profit organization may hold the habitat improvement funds if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the habitat improvement fund must go to CDFG.

d. Long-term Management Endowment Fund. Prior to ground-disturbing project activities, the project owner shall provide to CDFG a non-wasting capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that will be conducted for the 7,164 acres. The project owner's financial responsibility for the actual cost of mitigation shall not increase by more than 25% of the Security Amount $17,981,640). Alternatively, a non-profit organization may hold the endowment fees if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the endowment must go to CDFG, where it will be held in the special deposit fund established pursuant to California Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation or similarly approved entity identified by CDFG shall manage the endowment for CDFG and with CDFG supervision.

e. Interest, Principal, and Pooling of Funds. The project owner, CDFG and the CPM shall ensure that an agreement is in place with the endowment holder/manager to ensure the following conditions:

- Interest. Interest generated from the initial capital endowment shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.

- Withdrawal of Principal. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party endowment manager to ensure the continued viability of the species on the 7,164 acres. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation or similarly approved entity identified by CDFG will manage the endowment for CDFG with CDFG supervision.

- Pooling Endowment Funds. CDFG, or a CPM and CDFG approved non-profit organization qualified to hold endowments pursuant to California Government Code section 65965, may pool the endowment with other endowments for the operation, management, and protection of the 7,164 acres for local populations of desert tortoise. However, for reporting purposes, the endowment fund must be tracked and reported individually to the CDFG and CPM.

- Reimbursement Fund. The project owner shall provide reimbursement to CDFG or an approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other state or state approved federal agency reviews; and overhead related to providing compensation lands.

The project owner is responsible for all compensation lands acquisition/easement costs, including but not limited to, title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing compensation lands to the department or approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

Verification: A minimum of three months prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS, and BLM describing the parcels intended for purchase.

No later than 18 months following the publication of the Energy Commission Decision the project owner shall provide written verification to the CPM and CDFG that the Energy Commission Complementary Mitigation compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient(s). Alternatively, no later than 30 days prior to beginning project ground-disturbing activities, the project owner shall provide written verification of Security in accordance with this condition of certification. If Security is provided, the project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities. Within six months of the land or easement purchase, as determined by the date on the title, the project owner, or an approved third party, shall provide CDFG and the CPM with a management plan for the Energy Commission Complementary Mitigation compensation lands and associated funds. CDFG and the CPM shall review and approve the management plan, in consultation with BLM and the USFWS.

Within 90 days after completion of project construction, the project owner shall provide to the CPM and CDFG an analysis with the final accounting of the amount of habitat disturbed during project construction. If habitat disturbance exceeds 3,582 acres, the project owner shall provide a compensation plan to the CMP and CDFG for their review and approval, in consultation with BLM and the USFWS. The compensation plan shall be submitted no later than 90 days from the CPM's receipt of the final accounting, and shall include a description of additional funds required or lands that must be purchased to compensate for the unanticipated habitat disturbances, and a schedule for that acquisition or funding inclusive of all associated endowment and enhancement costs. The amount of funding for habitat acquisition, initial habitat improvement, and long-term management endowment shall be calculated at the adjusted market value at the time of construction. The project owner's financial responsibility for the actual cost of mitigation shall not increase by more than 25% of the Security Amount ($17,981,640).

SPECIAL-STATUS PLANT IMPACT AVOIDANCE AND MINIMIZATION

BIO-18 The project owner shall implement the following measures to avoid and minimize impacts to special-status plant species. Items 2, 3, 5, 6, 7, 10, and 11 are recommended exclusively by Energy Commission staff.

1. <u>On-Site Plant Avoidance/Minimization Areas:</u> To the extent feasible the project owner shall avoid and minimize disturbance to all special-status plant species within the project site. Impact avoidance (i.e., protection from project-related impacts of any kind through removal of acreage from the project footprint) and impact minimization efforts shall occur in all feasible locations. Impact avoidance shall focus on areas that support the highest density and diversity of special-status plant species and shall

remove, at a minimum, the three areas totaling 476 acres and labeled "Rare Plant Mitigation Area" in **Project Description Figure 13** from the project footprint. The natural gas pipeline shall be aligned and narrowed to avoid special-status plant occurrences north of Ivanpah 3 as depicted in **Project Description Figure 13**. Impact minimization shall be conducted throughout the site. Impact minimization within the solar field shall consist of protecting small perimeters ("halos") around Mojave milkweed, desert pincushion, and Rusby's desert-mallow plants as indicated in the applicant's January 2010 draft plan (Exhibit 81, Appendix B).

2. Protection Goals : The project owner shall implement all feasible measures to protect 75 percent of the individuals of small-flowered androstephium, Mojave milkweed, Rusby's desert-mallow, desert pincushion, nine-awned pappus grass, and Parish's club-cholla within the project area (as mapped in Figure 5-3 of the applicant's final botanical survey report [CH2M Hill 2008x]). Each year during construction the measurement of percent protection achieved shall be calculated based on a comparison of numbers of individuals of each of these five species present in this area identified before construction compared to numbers remaining post –construction. These pre- and post-construction plant numbers shall be based on floristic surveys conducted by a qualified botanist.

3. Identify and Establish Special-Status Plant Protection Areas: The project owner shall identify Special-Status Plant Protection Areas for exclusion from the project footprint and avoidance of project-related impacts of any kind to facilitate achieving the 75 percent protection goal. To accurately identify the boundaries of these areas, pre-construction floristic surveys shall be conducted by a qualified botanist at the appropriate time of year for special-status plant identification, including both spring and summer/fall blooming periods. The surveys shall encompass at a minimum the three areas totaling 476 acres and labeled "Rare Plant Mitigation Area" in **Project Description Figure 13** and shall extend 150 feet on both sides of the proposed gas pipeline alignment and 250 feet out from the project fenceline. The locations of the Special-Status Plant Protection Areas shall be clearly depicted on all final maps and project drawings and descriptions for exclusion of all project activities.

4. Protection of Adjacent Occurrences: The project owner shall identify special-status plants occurrences within 250 feet of the project fenceline during the pre-construction plant surveys described above. A qualified botanist shall delineate the boundaries of these special status plant occurrences prior to the initiation of ground disturbing activities. These flagged special status plant occurrences shall be designated as Environmentally Sensitive Areas on plans and specifications, and shall be protected from accidental impacts during construction (e.g., vehicle traffic,

temporary placement of soils or vegetation) and from the indirect impacts of project operation (e.g., herbicide spraying, changes in upstream hydrology, etc).

5. Develop and Implement a Special-Status Plant Protection and Monitoring Plan: The project owner shall develop and implement a Special-Status Plant Protection and Monitoring Plan for special-status plants occurring within the Special-Status Plant Protection Areas and on-site areas designated for impact minimization. The goal of the Special-Status Plant Protection and Monitoring Plan shall be to maintain the special-status plant species as healthy, reproductive populations that can be sustained in perpetuity. At a minimum, the Special-Status Plant Protection and Monitoring Plan shall:

   - establish baseline conditions and numbers of the plant occurrences in all protected areas (i.e., those to be excluded from the footprint and on-site areas to be protected) and success standards for protection of special-status plant occurrences;

   - provide information about microhabitat preferences and fecundity, essential pollinators, reproductive biology, and propagation and culture requirements for each special-status species;

   - describe measures (e.g., fencing, signage) to avoid direct construction and operation impacts to special-status plants within all protected areas;

   - describe measures to avoid or minimize indirect construction and operations impacts to special-status plants within protected areas (e.g., runoff from mirror-washing, use of soil stabilizers/tackifiers, alterations of hydrology from drainage diversions, erosion/sedimentation from disturbed soils upslope, herbicide drift, the spread of non-native plants, etc).

   - provide a monitoring schedule and plan for assessing the numbers and condition of special-status plants; and

   - identify specific triggers for remedial action (e.g., numbers of plants dropping below a threshold);

6. Develop Special-Status Plant Remedial Action Plan : The project owner shall develop a detailed Special-Status Plant Remedial Action Plan to be implemented if special-status plants within the 476 acres of protected area and on-site minimization “halos” fail to meet success standards described in the Special-Status Plant Protection and Monitoring Plan. The Plant Remedial Action Plan shall include specifications for ex-situ/off-site

conservation of seed and other propagules, and the seed bank and other symbionts contained in the topsoil where these plants occur. The remedial measures described in the Plant Remedial Action Plan shall not substitute for plant protection or other mitigation measures. The Special-Status Plant Remedial Action Plan shall include, at a minimum:

- guidelines for pre-construction seed collection (and/or other propagules) for each species;
- specifications for collecting, storing, and preserving the upper layer of soil containing seed and important soil organisms;
- detailed replacement planting program with biologically meaningful quantitative and qualitative success criteria (see Pavlik 1996), monitoring specifications, and triggers for remedial action; and
- ecological specifications for suitable planting sites.

7. Seed Collection: Implementation of the Special-Status Plant Remedial Action Plan would require a source of local source of seeds/propagules. In addition, seed collection would serve to preserve germplasm in the event that all mitigation fails. The project owner shall develop and implement a Seed Collection Plan to collect and store seed for small-flowered androstephium, Mojave milkweed, Rusby's desert-mallow, desert pincushion, nine-awned pappus grass, and Parish's club-cholla. The source of these seeds shall be from plants proposed for removal within the project footprint. The project owner shall engage the services of a qualified contractor approved by the CPM to undertake seed collection and storage.

8. Gas Pipeline Revegetation and Monitoring: In the natural gas pipeline construction corridor where disturbed soils will be revegetated, the topsoil excavated shall be segregated, kept intact, and protected, under conditions shown to sustain seed bank viability. At a minimum, the top 2 cm of the soil shall be separately stored and preserved. Topsoil salvage, storing, and replacement shall be replaced in its original vertical orientation following pipeline installation ensuring the integrity of the top 2 cm in particular. The project owner shall prepare a Gas Pipeline Revegetation and Monitoring Plan targeted at re-establishment of Rusby's desert-mallow, desert pincushion, Mojave milkweed, and potentially other special-status plant species. The Gas Pipeline Revegetation and Monitoring Plan shall identify success criteria for re-establishment and shall continue for a period of no less than 10 years until the defined success criteria are achieved. The Gas Pipeline Revegetation and Monitoring Plan shall include measures for seeding or other remedial actions. If no individuals of Rusby's desert-mallow, desert pincushion, or Mojave milkweed, are located during the first year of monitoring, the

project owner shall conduct supplemental seeding or other remedial measures in the area disturbed by natural gas pipeline installation.

9. Surveys on Acquired and Public Lands: The project owner shall conduct floristic surveys for Rusby's desert-mallow and Mojave milkweed on all lands that will be acquired as part of the desert tortoise compensatory mitigation requirements (see Condition of Certification **BIO-17**). The goal of the surveys shall be to identify at least the same number of occurrences on off-site compensation or public lands as the number of occurrences in the project area excluding the occurrences in the Special-Status Plant Protection Areas in **Project Description Figure 13**. If this goal is not met by surveys on proposed acquisition lands, additional surveys shall be conducted within suitable habitat on public lands. To be counted toward fulfillment of the goal, the occurrences must reflect new data not previously documented in other survey efforts. The survey requirements shall include the following:

   - All surveys shall be conducted by a qualified botanist in accordance with BLM, CDFG, and CNPS plant survey guidelines;

   - Surveys shall occur the first spring after construction begins and continue each year for a maximum of ten years until the same number of Mojave milkweed and Rusby's desert-mallow occurrences are identified on acquisition lands and/or public lands as located outside Special-Status Plant Protection Areas;

   - For each year surveys are conducted yearly survey results shall be provided to the CPM, BLM's Authorized Officer and CDFG, and shall include CNDDB field survey forms for all special-status plant species encountered during the surveys;

   - All field survey forms shall be submitted to the CNDDB at the time of submittal to the CPM, BLM and CDFG; and

   - The project owner's qualified botanist shall submit a completion report documenting fulfillment of the target goals and which describe the number of new, previously undiscovered occurrences identified and mapped. Locations shall be reported with GPS coordinates compatible with inclusion in a GIS database.

10. Security for Implementation of Plans: The project owner shall provide security adequate to fund implementation of the Special-Status Plant Protection and Monitoring Plan, the Special-Status Plant Remedial Action Plan for the life of the project, as well as the Seed Collection Plan, and the Gas Pipeline Revegetation Monitoring Plan.

11. Acquire Off-Site Occurrence of Mojave Milkweed or Adjacent Land: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 30 acres supporting a viable occurrence of Mojave milkweed (or suitable habitat adjacent to a known occurrence). The terms and conditions of this acquisition or easement shall be as described in Condition of Certification **BIO-17** with the additional criteria that the Mojave milkweed mitigation lands: 1) provide habitat for the special-status plant species that is of similar or better quality (e.g., in terms of native plant composition) than that impacted; 2) contain OR abut a known occurrence of Mojave milkweed, ideally with populations that are stable, recovering, or likely to recover, that shares the same watershed as the land; and 3) be adequately sized and buffered to support self-sustaining special-status plant populations. These mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above criteria are met. If sufficient new Mojave milkweed occurrences are discovered on desert tortoise compensation lands (not public lands) in accordance with item 9 above prior to acquiring this land, the associated security shall be refunded to the project owner.

Verification: No less than 30 days following the publication of the Energy Commission Decision the project owner shall submit final maps and design drawings depicting the location of Special-Status Plant Protection Areas within and adjacent to the project site, and shall identify the species and numbers of plants within each of the Special-Status Plant Protection Areas.

No less than 30 days following the publication of the Energy Commission Decision the project owner shall submit draft versions of the Special-Status Plant Protection and Monitoring Plan, the Special-Status Plant Remedial Action Plan, the Seed Collection Plan, and the Gas Pipeline Revegetation Monitoring Plan for review by the CPM, BLM's Authorized Agent, and CDFG. The project owner shall also provide a cost estimate for implementation of these plans which is subject to approval by the CPM, BLM's authorized agent, and the CDFG. The final plans shall be submitted for approval by the CPM, in consultation with BLM's Authorized Agent, CDFG, and CNPS within 90 days of the publication of the Commission Decision. The final plans shall be incorporated into the BRMIMP. At this time, the project owner shall also provide security sufficient to fund the implementation of the plans.

Within 30 days of the start of construction, the project owner shall submit copies of the contract with the CPM-approved seed contractor and the check for seed collection and curation fees to the CPM.

The project owner shall identify special-status plant occurrences within 250 feet of the project fence line during the pre-construction plant surveys described above. A qualified botanist shall delineate the boundaries of these special-status plant occurrences at least 30 days prior to the initiation of ground disturbing activities.

On January 31st of each year following construction the project owner's qualified botanist shall submit a report, including CNDDB field survey forms, describing the results of off-site plant surveys for Mojave milkweed and Rusby's desert-mallow to the BLM's authorized officer, the CPM, CDFG, and CNDDB. Submittal of survey reports shall continue for a maximum of 10 years until the same number of occurrences in the project area, excluding the occurrences in the Special-Status Plant Projection Areas, is identified on these off-site lands. The project owner's qualified botanist shall submit a completion report documenting fulfillment of the target goals and which describe the number of new, previously undiscovered occurrences identified and mapped using GIS techniques for each species. Mapping results shall include GPS coordinates of the plants found.

The Designated Biologist shall maintain written and photographic records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM, BLM Authorized Agent, and CDFG. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report for a period not less than 10 years for the Gas Pipeline Revegetation Plan, and for the life of the project for the Special-Status Plant Protection and Monitoring Plan, and the Special-Status Plant Remedial Action Plan, including funding for the seed storage.

No less than 90 days prior to acquisition of the parcel (s) containing or adjacent to a known Mojave milkweed occurrence, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground-disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

STREAMBED IMPACT MINIMIZATION AND COMPENSATION MEASURES

BIO-20 The project owner shall implement the following measures to avoid, minimize and mitigate for impacts to ephemeral drainages:

1. Acquire Off-Site Desert Wash: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes ephemeral washes with at least 175 acres of state jurisdictional waters. The terms and

conditions of this acquisition or easement shall be as described in Condition of Certification **BIO-17** with the additional criteria that the desert wash mitigation lands: 1) include at least 175 acres of state jurisdictional waters; 2) be characterized by similar soil permeability, hydrological and biological functions as the impacted drainages; and 3) be within the same watershed as the impacted wash. The desert wash mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above three criteria are met.

2. Security for Implementation of Mitigation: A security in the form of an irrevocable letter of credit, pledged savings account, or certificate of deposit for the amount of all mitigation measures pursuant to this condition of certification shall be submitted to, and approved by, the CPM, in consultation with CDFG, prior to commencing project activities within areas of CDFG jurisdiction. This amount shall be based on a cost estimate which shall be submitted to CDFG for review and to the CPM for approval within 60 days of the Energy Commission Decision's publication and prior to commencing project activities within areas of CDFG jurisdiction. The security shall be approved by the CPM, in consultation with CDFG's legal advisors, prior to its execution, and shall allow the CPM at its discretion to recover funds immediately if the CPM, in consultation with CDFG, determines there has been a default.

3. Preparation of Management Plan: The project owner shall submit to Energy Commission CPM and CDFG a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control. No later than 12 months after publication of the Energy Commission Decision the project owner shall submit a final Management Plan for review and approval to the CPM and CDFG.

4. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site or allow CDFG to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and to CDFG employees and/or their representatives the right to enter the project site at any time, to ensure compliance with the terms and conditions and/or to determine the impacts of storm events, maintenance activities, or other actions that might affect the restoration and revegetation efforts. The CPM and CDFG may, at the CPM's discretion, review relevant documents maintained by the operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.

5. Notification: The project owner shall notify the CPM and CDFG, in writing, at least five days prior to initiation of project activities in jurisdictional areas as noted and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM and CDFG no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports.

    a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

    b. Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

    c. Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

6. Code of Regulations: The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures from the Energy Commission Decision to all contractors, subcontractors, and the applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or personnel from another agency upon demand.

The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner, the CPM, if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

a. The information provided by the applicant regarding streambed alteration is incomplete or inaccurate;

b. New information becomes available that was not known to it in preparing the terms and conditions;

c. The project or project activities as described in the Final Staff Assessment have changed; or

d. The conditions affecting biological resources changed or the CPM, in consultation with CDFG, determines that project activities will result in a substantial adverse effect on the environment.

7. Best Management Practices: The project owner shall also comply with the following conditions:

a. The project owner shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.

b. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.

c. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.

d. Spoil sites shall not be located within drainages or locations that may be subjected to high storm flows, where spoil shall be washed back into a drainage.

e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage or Ivanpah

Dry Lake, by project owner or any party working under contract or with the permission of the project owner shall be removed immediately.

f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state.

g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage.

h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

Verification: No less than 90 days prior to acquisition of the parcel (s) containing 175 acres of waters of the state, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground-disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

No fewer than 30 days prior to the start of work potentially affecting waters of the state, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented and provide a discussion of work in waters of the state in Compliance Reports for the duration of the project.

HAZARDOUS MATERIALS

HAZ-4 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to BLM's Authorized Officer and the CPM for review and approval.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify BLM's Authorized Officer and the CPM that a site-specific Construction Security Plan is available for review and approval. The Construction Security Plan shall include the following:

1. Perimeter security consisting of fencing enclosing the construction area;
2. Security guards;
3. Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
5. Protocol for contacting law enforcement, BLM's Authorized Officer and the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures

HAZ-5 The project owner shall prepare a site-specific Operation Security Plan for the operational phase, which shall be made available to BLM's Authorized Officer and the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage.

Verification: At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify BLM's Authorized Officer and the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

The level of security to be implemented shall not be less than that described below (as per NERC 2002). The Operations Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least eight feet high around the Solar Field;

2. Main entrance security gate, either hand operable or motorized;

3. Evacuation procedures;

4. Protocol for contacting law enforcement, BLM's Authorized Officer and the CPM in the event of suspicious activity or emergency or conduct endangering the facility, its employees, or contractors; and

5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;

    a. A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;

    b. A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;

7. Site access controls for employees, contractors, vendors, and visitors;

8. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate; and

9. Additional measures to ensure adequate perimeter security consisting of either:

    a. Security guard present 24 hours per day, seven days per week, **OR**

b. Power plant personnel on-site 24 hours per day, seven days per week and **all** of the following:

1) The CCTV monitoring system required in number 8 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **AND**

2) Perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain BLM's Authorized Officer and CPM approval of any substantive modifications to the security plans. BLM's Authorized Officer and the CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

HAZ-6 The holder (project owner) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b

Verification: A copy of any report required or requested by any Federal or State governmental entity as a result of a reportable release or spill of any toxic substances shall be furnished to BLM's Authorized Officer and the CPM concurrent with the filing of the report with the Federal or State governmental entity.

LAND USE

LAND-2 The project owner shall allow a setback between the (1) security and tortoise exclusion fence, and (2) the proposed ROW boundary. Once the fencing is constructed, all inspection, monitoring, and maintenance activities required outside of the fencing will occur on lands included within this setback area.

Verification: At least thirty (30) days prior to the start of construction, the project owner shall provide BLM's Authorized Officer and the CPM with a revised project description and construction plans specifying the inclusion of a setback area. The setback area shall be a minimum 20 feet wide within the ROW boundaries between the tortoise fence and the ROW boundary on the upslope boundary of the ROW, and a minimum 8-12 foot wide between the tortoise fence and ROW boundary on side and down slope boundaries. The project owner shall also provide BLM's Authorized Officer and the CPM with certification acknowledging that the ISEGS development and all related construction, operation, maintenance and closure activities are to be conducted within the ROW boundaries for the life of the project.

NOISE AND VIBRATION

NOISE-1 Prior to the start of ground disturbance, the project owner shall notify the operator of the Primm Valley Golf Course, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This
telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: At least 15 days prior to ground disturbance, the project owner shall transmit to BLM's Authorized Officer and the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise complaints from residents of Primm, Nevada, or from the operator of the Primm Valley Golf Course. If legitimate project-related noise complaints are received from residents of Primm, the project owner shall perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 45 dBA L_{eq} measured at the nearest residence of the community of Primm, Nevada. If legitimate project-related noise complaints are received from the operator of the Primm Valley Golf Course, the project owner shall perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 55 dBA L_{eq} measured at the nearest boundary of the golf course. No new project components creating pure-tone noises will be added to ~~by~~ the project unless they are balanced by other plant features. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to BLM's Authorized Officer and the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected location. The character of the plant noise shall be evaluated at the affected residential locations to determine the presence of pure tones or other dominant sources of plant noise.

Verification: The survey shall take place within 30 days of the receipt of the noise complaint, unless the complaint has been resolved to the complaining party's satisfaction. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to BLM's Authorized Officer and the CPM. Included in the survey report will be a description of additional mitigation measures (if any) necessary to achieve compliance with the above-listed noise limit and a schedule, subject to BLM's Authorized Officer and CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to BLM's Authorized Officer and the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

CONSTRUCTION TIME RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy construction work that causes offsite annoyance as evidenced by the filing of a legitimate noise complaint shall be restricted to the 7:00 a.m. to 7:00 p.m. time period.

Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to BLM's Authorized Officer and the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

STEAM BLOW RESTRICTIONS

NOISE-7 If a high-pressure steam blow is employed, the project owner shall equip steam blow piping with a temporary silencer or take other effective measures that quiet the noise of steam blows to no greater than 60 dBA measured at the Primm Valley Golf Club and no greater than 55 dBA measured at any affected residential locations in Primm, NV. The project owner shall conduct high-pressure steam blows only during the hours of 7:00 a.m. to 7:00 p.m.

If a low-pressure continuous steam blow is employed, the project owner shall limit the noise of steam blows to no greater than 45 dBA measured at any affected residential location in Primm, NV. In lieu of specifying the level of silencing above, the project owner may alternatively submit an analysis to the BLM's Authorized Officer and the CPM that documents that during either high or low pressure steam blows, steam blow noise levels would not exceed 60 dBA at the Primm Valley Golf Club (daytime), or 55 dBA (daytime)/45 dBA (nighttime) at the nearest residential location in Primm.

Verification: At least fifteen (15) days prior to the first high pressure steam blow, the project owner shall submit to BLM's Authorized Officer and the CPM drawings or other information describing the temporary steam blow silencer or other noise attenuating measures to be taken, the noise levels expected and a description of the steam blow schedule.

At least fifteen (15) days prior to any low-pressure continuous steam blow, the project owner shall submit to BLM's Authorized Officer and the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

SOIL AND WATER RESOURCES

DRAINAGE EROSION AND SEDIMENTATION CONTROL PLAN

SOIL & WATER-1: Prior to site mobilization, the project owner shall obtain both BLM's Authorized Officer and the CPM's approval for a site specific DESCP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, and identify all monitoring and maintenance activities. The project owner shall complete all engineering plans, reports, and documents necessary for both BLM's Authorized Officer and the CPM to conduct a review of the proposed project and provide a written evaluation as to whether the proposed grading, drainage improvements, and flood management activities comply with all requirements presented herein. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1** and shall contain the following elements:

- **Vicinity Map:** A map shall be provided indicating the location of all project elements with depictions of all major geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas.

- **Site Delineation:** The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale

- **Drainage:** The DESCP shall include the following elements:

  a. Topography. Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist.

  b. Proposed Grade. Proposed grade contours shall be shown at a scale appropriate for delineation of onsite ephemeral washes, drainage ditches, and tie-ins to the existing topography.

  c. Hydrology. Existing and proposed hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical

overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.

d. Hydraulics. Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, diversion facilities and BMPs.

- **Watercourses and Critical Areas:** The DESCP shall show the location of all onsite and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.

- **Clearing and Grading:** The plan shall provide a delineation of all areas to be cleared of vegetation, areas to be preserved, and areas where vegetation would be cut to allow clear movement of the heliostats. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross-sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.

- **Soil Wind and Water Erosion Control:** The plan shall address exposed soil treatments to be used during construction and operation of the proposed project for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed project site that would not cause adverse effects to vegetation; BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by both BLM's Authorized Officer and the CPM prior to use.

- **Project Schedule:** The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element construction, and final grading/stabilization). BMP implementation schedules shall be provided for each project element for each phase of construction.

- **Best Management Practices:** The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.

- **Erosion Control Drawings:** The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion-control specialist.

- **Agency Comments:** The DESCP shall include copies of recommendations from the County of San Bernardino, California Department of Fish and Game (CDFG), and Lahontan Regional Water Quality Control Board (RWQCB).

- **Monitoring Plan:** Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and storm water diversions and the requirements specified in Appendix B, C, and D.

Verification: The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**, and relevant portions of the DESCP shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following:

a. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of San Bernardino and the RWQCB for review and comment. Both BLM's Authorized Officer and the CPM shall consider comments received from San Bernardino County and RWQCB and approve the DESCP.

b. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment-control measures and the results of monitoring and maintenance activities.

c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.

d. Provide BLM's Authorized Officer and the CPM with two (2) copies each of all monitoring or compliance reports.

WASTE DISCHARGE REQUIREMENTS

SOIL&WATER-2: The project owner shall comply with the requirements specified in Appendix B, C, and D for dredge and fill, wastewater, and storm water discharges associated with construction and industrial activity. The project owner shall develop, obtain both BLM's Authorized Officer and CPM approval of, and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for the construction of the project and an Industrial SWPPP for operation of the project.

Verification: At least sixty (60) days prior to construction, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the construction SWPPP for construction of the project for review and approval. At least sixty (60) days prior to commercial operation, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Industrial SWPPP for operation of the project for review and approval prior to commercial operation. The project owner shall retain a copy on site. The project owner shall submit copies to both BLM's Authorized Officer and the CPM of all correspondence between the project owner and the RWQCB regarding the WDRs for discharge of storm water associated with construction and industrial activity within ten (10) days of its receipt or submittal.

PROJECT GROUNDWATER WELLS

SOIL&WATER-3: Pre-Well Installation. The project owner shall construct and operate up to two onsite groundwater wells that produce water from the IVGB. The project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements, including the San Bernardino County's Desert Groundwater Management Ordinance. Prior to initiation of well construction activities, the project owner shall submit for review and comment a well construction packet to the County of San Bernardino, in accordance with the County of San Bernardino Code Title 2, Division 3, Chapter 6, Article 5, containing the documentation, plans, and fees normally required for the county's well permit, with copies to both BLM's Authorized Officer and the CPM. The project shall not construct a well or extract and use groundwater until both BLM's Authorized Officer and the CPM provides approval to construct and operate the well.

Post-Well Installation. The project owner shall provide documentation to both BLM's Authorized Officer and the CPM that the well has been properly completed. In accordance with California's Water Code section 13754, the driller of the well shall submit to the DWR a Well Completion Report for each well installed.

Verification: The project owner shall ensure the Well Completion Reports are submitted and shall ensure compliance with all county water well standards and requirements for the life of the wells. The project owner shall do all of the following:

1. No later than 180 days prior to the construction of the onsite groundwater wells, the project owner shall submit a Groundwater Monitoring and Management Plan to the County of San Bernardino for review and comment (see Condition of Certification **SOIL&WATER- 6**).

2. No later than sixty (60) days prior to the construction of the onsite groundwater wells, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the water well construction packet submitted to the County of San Bernardino for review and comment.

3. No later than thirty (30) days prior to the construction of the onsite water supply wells, the project owner shall submit a copy of any written comments received from the County of San Bernardino indicating whether the proposed well construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.

4. No later than sixty (60) days after installation of each well at the project site, the project owner shall provide to both BLM's Authorized Officer and the CPM copies of the Well Completion Reports submitted to the DWR by the well driller. The project owner shall submit to the CPM, together with the Well Completion Report, a copy of well drilling logs, water quality analyses, and any inspection reports.

5. During well construction and for the operational life of the well, the project owner shall submit two (2) copies each to BLM's Authorized Officer and the CPM for review and approval any proposed well construction or operation changes.

6. The project owner shall provide BLM's authorized officer and the CPM with (2) two copies each of all monitoring and other reports required for compliance with the County of San Bernardino water well standards and operation requirements.

7. No later than fifteen (15) days after completion of the onsite water supply wells, the project owner shall submit documentation to BLM's Authorized Officer and the CPM confirming that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements and that any onsite drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).

CONSTRUCTION AND OPERATIONS WATER USE

SOIL&WATER-4: The proposed project's use of groundwater during construction shall not exceed an average of 200 acre-feet per year over the forty-three (43) month construction period.

Groundwater use for operations activities shall not exceed 100 acre-feet per year. Prior to the use of groundwater for construction, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document project water use and to monitor and record in gallons per day the total volume(s) of water supplied to the project from this water source. The metering devices shall be operational for the life of the project.

Verification: Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary of amount of water used for construction purposes. The summary shall include the monthly range and monthly average of daily water usage in gallons per day.

At least sixty (60) days prior to the start of construction of the proposed project, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of evidence that metering devices have been installed and are operational.

The project owner shall prepare an annual summary, which will include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" will correspond to the date established for the annual compliance report submittal.

STORM WATER DAMAGE MONITORING AND RESPONSE PLAN

SOIL&WATER-5: The project owner shall ensure that the heliostats are designed and installed to withstand storm water scour of that may occur as a result of a 100-year storm event. The analysis of the storm event and resulting heliostat stability will be provided within a Pylon Insertion Depth and Heliostat Stability Report to be completed by the applicant. This analysis will incorporate results from site-specific geotechnical stability testing, as well as hydrologic and hydraulic stormwater modeling performed by the applicant. The modeling will be completed using methodology and assumptions approved by the CPM and BLM's Authorized Officer.

The project owner shall also develop a Storm Water Damage Monitoring and Response Plan to evaluate potential impacts from storm water, including heliostats that fail due to storm water flow or otherwise break and scatter mirror debris on to the ground surface.

Verification: The basis for determination of pylon embedment depths shall employ a step-by-step process as identified below and approved by both the BLM's Authorized Officer and the CPM:

A. Determination of peak storm water flow within each sub-watershed from a 100-year event:

- Use of San Bernardino County (SBC) Hydrology Manual to specify hydrologic parameters to use in calculations; and

- HEC -1 and Flo-2D models will be developed to calculate storm flows from the mountain watersheds upstream of the project site, and flood flows at the project site, based upon hydrologic parameters from SBC.

B. Determination of potential total pylon scour depth:

- Potential channel erosion depths will be determined using the calculated design flows, as determined in A above, combined with the methodology presented in "FAN, An Alluvial Fan Flooding Computer Program, FEMA, 1990."

- Potential local scour will be determined using the calculated design flows, as determined in A above, combined with the Federal Highway Administration (FHWA) equation for local bridge pier scour from the FHWA 2001 report, "Evaluating Scour at Bridges."

C. The results of the scour depth calculations and pylon stability testing will be used to determine the minimum necessary pylon embedment depth within the active portions of the alluvial fans. In the inactive portions of the alluvial fans that are not subject to channel erosion and local scour, the minimum pylon embedment depths will be based on the results of the pylon stability testing. Active versus inactive areas of the alluvial fans will be determined from the USGS 2006 Open-File Report "Preliminary Surficial Geologic Map of the Mesquite Lake 30' x 60' Quadrangle, California and Nevada" authored by Schmidt and McMackin and field observations.

D. The results of the calculated peak storm water flows and channel erosion and heliostat scour analysis together with the recommended heliostat installation depths shall be submitted to the BLM's authorized officer and CPM for review and approval sixty (60) days before the start of heliostat installation.

The Storm Water Damage Monitoring and Response Plan shall be submitted to both the BLM's authorized office and CPM for review and approval and shall include the following:

- Detailed maps showing the installed location of all heliostats within each project phase;

- Description of the method of removing all soil spoils should any be generated;

- Each heliostat should be identified by a unique ID number marked to show initial ground surface at its base, and the depth of the pylon below ground;
- Minimum Depth Stability Threshold to be maintained of pylons to meet long-term stability for applicable wind, water and debris loading effects;
- Above and below ground construction details of a typical installed heliostat;
- BMPs to be employed to minimize the potential impact of broken mirrors to soil resources;
- Methods and response time of mirror cleanup and measures that may be used to mitigate further impact to soil resources from broken mirror fragments; and
- Monitoring, documenting, and restoring the Ivanpah playa surface when impacted by sedimentation or broken mirror shards.

A plan to monitor and inspect periodically, before first seasonal and after every storm event:

- Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris.
- Heliostats within Drainages or subject to drainage overflow: Inspect for tilting, mirror damage, depth of scour compared to pylon depth below ground and the Minimum Depth Stability Threshold, collapse, and downstream transport.
- Drainage Channels: Inspect for substantial migration or changes in depth, and transport of broken glass.
- Constructed Diversion Channels: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.
- Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or broken glass.

Short-Term Incident-Based Response:

- Security and Tortoise Exclusion Fence: repair damage, and remove built-up of sediment and debris.

- Heliostats: Remove broken glass, damaged structure, and wiring from the ground, and for pylons no longer meeting the Minimum Depth Stability Threshold, either replace/reinforce or remove the mirrors to avoid exposure for broken glass.

- Drainage Channels: no short-term response necessary unless changes indicate risk to facility structures.

- Constructed Diversion Channels: repair damage, maintain erosion control measures and remove built-up sediment and debris.

Long-Term Design-Based Response:

- Propose operation/BMP modifications to address ongoing issues. Include proposed changes to monitoring and response procedures, frequency, or standards.

- Replace/reinforce pylons no longer meeting the Minimum Depth Stability Threshold or remove the mirrors to avoid exposure for broken glass.

- Propose design modifications to address ongoing issues. This may include construction of active storm water management diversion channels and/or detention ponds.

- Inspection, short-term incident response, and long-term design-based response may include activities both inside and outside of the approved right-of-way. For activities outside of the approved right-of-way, the applicant will notify BLM and acquire environmental review and approval before field activities begin.

At least sixty (60) days prior to construction, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Pylon Insertion Depth and Heliostat Stability Report for review and approval prior to construction. At least sixty (60) days prior to commercial operation, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Storm Water Damage Monitoring and Response Plan for review and approval prior to commercial operation. The project owner shall retain a copy of this plan onsite at the power plant at all times. The project owner shall prepare an annual summary of the number of heliostats failed, cause of the failure, and cleanup and mitigation performed for each failed heliostat.

GROUNDWATER LEVEL MONITORING AND REPORTING PLAN

SOIL&WATER-6: The project owner shall submit a Groundwater Level Monitoring and Reporting Plan to both BLM's Authorized Officer and the CPM for review and approval and to San Bernardino County for review and comment

regarding consistency with the County of San Bernardino Code Title 2, Division 3, Chapter 6, Article 5 (Desert Groundwater Management Ordinance). The Groundwater Level Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and project operation water use. The primary objective for the monitoring is to establish pre-construction and project related groundwater levels that can be quantitatively compared against observed and simulated levels near the project pumping well and near potentially impacted existing wells.

Prior to project construction, monitoring shall commence to establish pre-construction base-line conditions and shall incorporate the existing monitoring and reporting data collected for the Primm Valley Golf Club. The monitoring network shall be designed to incorporate the ongoing monitoring and reporting program established for the Primm Valley Golf Course. The monitoring plan and network may make use of existing wells in the basin that would satisfy the requirements for the monitoring program.

Verification: The project owner shall complete the following:

1. At least three (3) months prior to construction, a Groundwater Level Monitoring and Reporting Plan shall be submitted to the County of San Bernardino for review and comment before completion of Condition of Certification **SOIL& WATER-3**, and a copy of the County's comments and the plan shall be submitted to both BLM's Authorized Officer and the CPM for review and approval. The Plan shall include a scaled map showing the site and vicinity, existing well locations, and proposed monitoring locations (both existing wells and new monitoring wells proposed for construction). The map shall also include relevant natural and man-made features (existing and proposed as part of this project). The plan also shall provide: (1) well construction information and borehole lithology for each existing well proposed for use as a monitoring well; (2) description of proposed drilling and well installation methods; (3) proposed monitoring well design; and, (4) schedule for completion of the work.

2. At least two (2) months prior to construction, a Well Monitoring Installation and Groundwater Level Network Report shall be submitted to both BLM's Authorized Officer and the CPM. The report shall include a scaled map showing the final monitoring well network. It shall document the drilling methods employed, provide individual well construction as-builds, borehole lithology recorded from the drill cuttings, well development, and well survey results. The well survey shall measure the location and elevation of the top of the well casing and reference point for all water level measurements, and shall include the coordinate system and datum for the survey measurements. Additionally, the report shall describe the water level monitoring equipment employed in the wells and document their deployment and use.

3. As part of the monitoring well network development, all newly constructed monitoring wells shall be permitted and constructed consistent with San Bernardino County and State specifications.

4. At least two (2) months prior to project construction, all water level monitoring data shall be provided to both BLM's Authorized Officer and the CPM. The data transmittal shall include an assessment of pre-project water levels, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and a comparison and assessment of water level data relative to the assumptions and spatial levels simulated by the applicant's groundwater model.

5. After project construction and during project operations, the project owner shall submit the monitoring data annually to both BLM's Authorized Office and the CPM. The summary shall document water level monitoring methods, the water level data, water level plots, and a comparison between pre- and post-project start-up water level trends. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall), and a comparison and assessment of water level data relative to the assumptions and spatial levels simulated by the applicant's groundwater model.

SEPTIC SYSTEM AND LEACH FIELD REQUIREMENTS

SOIL&WATER-8: Prior to the start of construction of the sanitary waste system, the project owner shall submit to the County of San Bernardino for review and comment, and to both the BLM's authorized officer and CPM for review and approval, plans for the construction and operation of the project's proposed sanitary waste septic system and leach field. These plans shall comply with the requirements set forth in County of San Bernardino codes and Appendices B, C, and D. Project construction shall not proceed until both BLM's Authorized Officer and the CPM have approved the plans. The project owner shall remain in compliance with the San Bernardino County code requirements for the life of the project.

Verification: Sixty (60) days prior to the start of commercial operations, the project owner shall submit to the County of San Bernardino appropriate fees and plans for review and comment for the construction and operation of the project's sanitary waste septic system and leach field. A copy of these plans shall be submitted to both the BLM's authorized officer and CPM for review and approval. The plans shall demonstrate compliance with the sanitary waste disposal facility requirements of County of San Bernardino and Appendices B, C, and D.

Traffic and Transportation

TRAFFIC CONTROL PLAN

TRANS-1 Prior to start of construction of the ISEGS, the project owner shall prepare and implement a Traffic Control Plan (TCP) for ISEGS construction and operation traffic. The TCP shall address the movement of workers, vehicles, and materials, including arrival and departure schedules, and designated workforce and delivery routes.

The project owner shall consult with the County of San Bernardino and the Caltrans District 8 office in the preparation and implementation of the Traffic Control Plan and shall submit the proposed Traffic Control Plan to the County of San Bernardino and the Caltrans District 8 office in sufficient time for review and comment and to BLM's Authorized Officer and the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the plan. BLM's Authorized Officer and the CPM shall review and approve the TCP or identify any material deficiencies within thirty (30) days of receipt. The project owner shall provide a copy of any written comments from the County of San Bernardino and the Caltrans District 8 office and any changes to the Traffic Control Plan to BLM's Authorized Officer and the CPM prior to the proposed start of construction.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant site or its associated easements, the project owner shall submit the proposed traffic control plan to the County of San Bernardino and the Caltrans District 8 office for review and comment and to BLM's Authorized Officer and the CPM for review and approval. The project owner shall also provide BLM's Authorized Officer and the CPM with a copy of the transmittal letter to the County of San Bernardino and the Caltrans District 8 office requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from either the County of San Bernardino and the Caltrans District 8 office, along with any changes to the proposed traffic control plan to BLM's Authorized Officer and the CPM for review and approval.

The Traffic Control Plan shall include:

- providing an incentive program to encourage construction workers to use van or bus service;
- limiting truck deliveries to the project site on Fridays to mornings only so they occur before 12:00 noon;

- redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow;

- signage, lighting, and traffic control device placement at the project construction site and laydown areas;

- signage along eastbound and westbound Yates Well Road and at the entrance of each of the I-15 northbound and southbound off-ramps at Yates Well Road notifying drivers of construction traffic throughout the duration of the construction period;

- signage and detours to redirect traffic from Colosseum Road during construction activities related to roadway realignment and pipeline installation in and across the Colosseum Road right of way;

- a Heavy Haul Plan addressing the transport and delivery of heavy and oversized loads requiring permits from Caltrans or other state and federal agencies;

- a work schedule and end-of-shift departure plan will be implemented to limit Friday departures from the site, traveling north to Las Vegas, to 12 or fewer vehicles every three minutes between 12:00 noon and 10:00 PM.

REPAIR OF PUBLIC RIGHT-OF-WAY

TRANS-2 The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by the BLM's Authorized Officer and CPM. The project owner's use of Yates Well Road shall not diminish the rights or use of the road by other BLM authorized users. Repairs and restoration of access roads may be required at any time during the construction phase of the project to assure safe ingress and egress.

Prior to the start of site mobilization, the project owner shall consult with the County of San Bernardino and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of San Bernardino and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way

segment(s) and/or intersections and shall provide BLM's Authorized Officer, the CPM, the affected local jurisdiction(s) and Caltrans (if applicable) with a copy of these images. The project owner shall rebuild, repair and maintain all public roads, easements, rights-of-way in a usable condition throughout the construction phase of the project.

Prior to the start of site mobilization, the project owner shall consult with the County of San Bernardino and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of San Bernardino and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Within 60 calendar days after completion of construction, the project owner shall meet with BLM's Authorized Officer and the CPM, the County of San Bernardino and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the County of San Bernardino and Caltrans District 8 stating their satisfaction with the repairs to BLM's Authorized Officer and the CPM.

HELIOSTAT POSITIONING PLAN AND MONITORING

TRANS-3 The project owner shall prepare a Heliostat Positioning Plan that would avoid potential for human health and safety hazards from solar radiation exposure.

Verification: Within 90 days before commercial operation of any of the three ISEGS power plants, the project owner shall submit the Heliostat Positioning Plan to BLM's Authorized Officer and the CPM for review and approval. The project owner shall also submit the plan to CalTrans, FAA, and the Clark County Department of Aviation for review and comment and forward any comments received to BLM's Authorized Officer and the CPM. The Heliostat Positioning Plan shall accomplish the following:

1. Identify the heliostat movements and positions (including reasonably possible malfunctions) that could result in potential exposure of observers at various locations including in aircraft, motorists, pedestrians and hikers in the Clark Mountains to reflected solar radiation from heliostats;

2. Describe within the HPP how programmed heliostat operation would avoid potential for human health and safety hazards at locations of observers as attributable to momentary solar radiation exposure greater than the Maximum Permissible Exposure of 10 kw/m^2 (for a period of 0.25 second or less).

3. Prepare a monitoring plan that would: a) obtain field measurements in response to legitimate complaints; b) verify that the Heliostat Positioning Plan would avoid potential for human health and safety hazards including temporary or permanent blindness at locations of observers; and c) provide requirements and procedures to document, investigate and resolve legitimate complaints regarding glare.

4. The monitoring plan should be coordinated with the FAA, U.S. Department of the Navy, CalTrans, CHP, and Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport and be updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.

Verification: Within 90 days before commercial operation of any of the three ISEGS power plants, the project owner shall submit the Heliostat Positioning Plan to BLM's Authorized Officer and the CPM for review and approval. The project owner shall also submit the plan to CalTrans, FAA, and the Clark County Department of Aviation for review and comment and forward any comments received to BLM's Authorized Officer and the CPM.

VERIFICATION OF POWER TOWER RECEIVER LUMINANCE AND MONITORING

TRANS-4 The project owner shall prepare a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the power towers.

Verification: Within 60 days prior to commercial operation of the first ISEGS power plant to become operational, the project owner shall provide a Power Tower Luminance Monitoring Plan applicable for the ISEGS Project for review and approval by BLM's Authorized Officer and the CPM. The plan shall specify procedures to document, investigate and resolve complaints regarding glare, and report these to BLM's Authorized Officer and the CPM within 10 days of receiving a complaint.

The project owner shall evaluate the effects of the intensity of the luminance of light reflected from the power tower receivers for the following scenarios:

A. Within 90 days following commercial operation;

B. After the initial 5 years of operation;

C. If a major design change is implemented that results in an increase of the reflective luminance of the power tower for each of the three ISEGS power plants (Ivanpah 1, 2 and 3); and

D. After receiving a legitimate complaint regarding a distraction associated with the power towers.

The Power Tower Luminance Monitoring Plan shall include provisions for the following:

1. Coordination of luminance evaluations with the FAA, U.S. Department of the Navy, CalTrans, CHP, and with Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport;

2. Reporting within 30 days after completing luminance measurements required under this plan; the project owner shall submit a summary report to FAA, U.S. Department of the Navy, CalTrans, CHP and Clark County Department of Aviation for review and comment, and to BLM's Authorized Officer and the CPM for review and approval.

3. Measurement of luminance at the locations where any distraction effects have been reported and at the locations nearest the power towers from the four sides of the power plant boundaries, and the nearest public road~~s~~, which may be substituted for one of the sides of the power tower of each of the three power plants during the time of day when values would be highest;

4. Measurement of luminance using an illuminance meter, photometer, or similar device and reporting of data in photometric units; the measurements are intended to provide a relative and quantifiable measure of luminance that can be associated with any observed and reported distraction effect from the power tower receivers that may support anticipation and investigation of any future effects.

5. Provisions for identifying and implementing appropriate mitigation measures if reported distraction is determined to be legitimate and if power tower luminance is determined to be causing a safety concern; The project owner shall consider and propose any reasonable mitigation measures that are technically and financially feasible. The mitigation measures may include surface treatment or material changes to increase absorption and reduce reflectivity of the power tower receivers, road signage, screening or other reasonable measures.

6. Post-mitigation verification; Within 30 days following the implementation of mitigation measures designed to reduce reflectivity of the power towers, the project owner shall repeat the luminance measurements to demonstrate the effectiveness of mitigation measures and prepare a supplemental survey report for review and comment by FAA, U.S. Department of the Navy, CalTrans, CHP and Clark County Department of Aviation, and for review and approval by BLM's Authorized Officer and the CPM.

FAA NOTIFICATION

TRANS-6 Prior to start-up and testing activities of the plant and all related facilities, the project owner shall coordinate with the FAA to notify all pilots using the airspace in the vicinity of the ISEGS of potential air hazards from turbulence.

Verification: At least 60 days prior to start of project operation, the project owner shall submit to BLM's Authorized Officer and the CPM for review a letter from the FAA showing compliance with these measures. These notification activities would include, but not be limited to: 1) issuing a notice to airmen (NOTAM) of the identified air hazard, 2) updating all applicable FAA-approved airspace charts to indicate that plume hazards could exist up to an altitude of 1,350 feet above the ground surface, and 3) requesting FAA to require pilots to avoid direct overflight of the ISEGS site at or below this altitude during daylight hours.

Transmission System Engineering

TSE-5 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO.

A. The Ivanpah 1 will be interconnected to the SCE grid via a 115 kV segment approximately 5,800 feet long single circuit.

   The Ivanpah #2 will be interconnected to the SCE grid via a 115 kV single circuit segment approximately 3900 feet long and an approximately 1400 feet long double circuit 115 kV generator tie-line.

   The Ivanpah #3 115 kV generator tie line would be approximately 14,100 feet long which would merge into a 115kV double circuit with the Ivanpah #2 generator tie line.

   The proposed Ivanpah substation would use a double bus breaker- and-a half configuration with 3-bays and 5 positions or other configuration as may be approved by SCE.

B. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 and General Order 98 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders", California ISO standards, National Electric Code (NEC), and related industry standards.

C. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

D. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

E. The project conductors shall be sized to accommodate the full output from the project.

F. Termination facilities shall comply with applicable SCE interconnection standards.

G. The project owner shall provide to BLM's Authorized Officer and the CPM:

1. The final Detailed Facility Study (DFS) including a description of facility upgrades, operational mitigation measures, and/or Special Protection System (SPS) sequencing and timing if applicable,

2. Executed project owner, Transmission System Operator and California ISO Large Generator Interconnection Agreement (LGIA).

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO for approval:

A. Design drawings, specifications, and calculations conforming with CPUC General Order 95 and General Order 98 or NESC; Title 8, California Code of Regulations, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders"; NEC; applicable interconnection standards, and related industry standards for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment.

B. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst-case conditions,"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC; Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders"; NEC; applicable interconnection standards, and related industry standards.

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

C. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-5** A) through G) above.

D. The final Detailed Facility Study, including a description of facility upgrades, operational mitigation measures, and/or SPS sequencing and timing if applicable, shall be provided concurrently to BLM's Authorized Officer and the CPM.

TSE-6 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California transmission system as required in the LGIA.

Verification: The project owner shall provide copies of the California ISO notice to BLM's Authorized Officer and the CPM when it is sent to the California ISO. A report of the conversation with the California ISO shall be provided electronically to BLM's Authorized Officer and the CPM one day before synchronizing the facility with the California transmission system for the first time.

Transmission Line Safety and Nuisance

TLSN-1 The project owner shall construct the proposed generation tie lines to the first point of interconnection according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2. High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and Southern California Edison's EMF reduction guidelines.

Verification: At least 30 days before starting the generation tie lines or related structures and facilities, the project owner shall submit to BLM's Authorized Officer and the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-3 The project owner shall ensure that the rights-of-way of the proposed generation tie lines are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report to be provided to BLM's Authorized Officer and the CPM.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related generation tie lines are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to BLM's Authorized Officer and the CPM a letter confirming compliance with this condition.

Visual Resources

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public, other than surfaces that are included to direct or reflect sunlight, such that a) their colors minimize visual intrusion and contrast by blending with the existing tan and brown color of the surrounding landscape; and b) their colors and finishes do not create excessive glare. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

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

Verification: At least 90 days prior to specifying to the vendor the colors and finishes for each set of structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to BLM's Authorized Officer and the CPM for review and approval and simultaneously to San Bernardino County for review and comment. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a plan with the specified revision(s) for review and approval by BLM's Authorized Officer and the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to BLM's Authorized Officer and the CPM for review and approval. BLM's Authorized Officer and the CPM shall review and approve the Surface Treatment Plan or identify any material deficiencies within thirty (30) days of receipt.

The treatment plan shall include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

C. One set of color brochures or color chips showing each proposed color and finish;

D. A specific schedule for completion of the treatment; and

E. A procedure to ensure proper treatment maintenance for the life of the project.

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

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

LANDSCAPE SCREENING OF GOLF COURSE

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

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

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

golf course owner a revised plan for review and approval by BLM's Authorized Officer and the CPM. The plan shall include:

A. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction.

B. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose;

C. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project;

D. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project; and

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

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

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

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

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-4 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety

lighting; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan.

Verification: At least 90 days prior to ordering any permanent exterior lighting or temporary construction lighting, the project owner shall contact BLM's Authorized Officer and the CPM to discuss the documentation required in the lighting mitigation plan. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM. BLM's Authorized Officer and the CPM shall approve or identify any material deficiencies in the Lighting Plan within 30 days following receipt of the Plan.

The Lighting Plan shall include the following:

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

B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

C. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

D. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

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

Prior to commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that the lighting has been completed and is ready for inspection. If after

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

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

WASTE MANAGEMENT

WASTE-3 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to BLM's Authorized Officer and the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and

- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to BLM's Authorized Officer and the CPM for approval no less than 30 days prior to the initiation of construction activities at the site. BLM's Authorized Officer and the CPM shall approve or identify any material deficiencies in the Construction Waste Management Plan within 30 days following receipt of the Plan.

WASTE-6 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to BLM's Authorized Officer and the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;

- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

- information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices,

and/or authorizations shall be included in the plan and updated as necessary;

- a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and

- a detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to BLM's Authorized Officer and the CPM for approval no less than 30 days prior to the start of project operation. BLM's Authorized Officer and the CPM shall approve or identify any material deficiencies in the Operation Waste Management Plan within 30 days following receipt of the Plan. The project owner shall submit any required revisions to BLM's Authorized Officer and the CPM within 20 days of notification from BLM's Authorized Officer and the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-7 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements imposed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to BLM's Authorized Officer and the CPM within 30 days of the date the release was discovered.

Worker Safety and Fire Protection

WORKER SAFETY-1 The project owner shall submit to BLM's Authorized Officer and the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- A Construction Personal Protective Equipment Program;
- A Construction Exposure Monitoring Program;
- A Construction Injury and Illness Prevention Program;
- A Construction Emergency Action Plan; and
- A Construction Fire Prevention Plan.

Verification: At least thirty (30) days prior to the start of construction, the project owner shall submit to BLM's Authorized Officer and the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the BLM's Authorized Officer and CPM from the San Bernardino County Fire Department, if any is received, stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to BLM's Authorized Officer and the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the San Bernardino County Fire Department for review and comment prior to submittal to the BLM's Authorized Officer and CPM for approval.

WORKER SAFETY-2 The project owner shall submit to BLM's Authorized Officer and the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan;
- An Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Program (8 CCR § 3221); and;

- Personal Protective Equipment Program (8 CCR §§ 3401-3411).

Verification: At least thirty (30) days prior to the start of first-fire or commissioning, the project owner shall submit to BLM's Authorized Officer and the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to BLM's Authorized Officer and the CPM from the San Bernardino County Fire Department stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to BLM's Authorized Officer and the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Operation Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the San Bernardino County Fire Department for review and comment.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards, is capable of identifying workplace hazards relating to the construction activities, and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- Have over-all authority for coordination and implementation of all occupational safety and health practices, policies, and programs;

- Assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

- Assure that all construction and commissioning workers and supervisors receive adequate safety training;

- Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform BLM's Authorized Officer and the CPM of safety-related incidents; and

- Assure that all the plans identified in **WORKER SAFETY-1 and -2** are implemented.

Verification: At least thirty (30) days prior to the start of site mobilization, the project owner shall submit to BLM's authorized officer and the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of

any replacement (CSS) shall be submitted to BLM's Authorized Officer and the CPM within three business days.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- Record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- Summary report of safety management actions and safety-related incidents that occurred during the month;
- Report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- Report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO, and will be responsible for verifying that the Construction Safety Supervisor, as required in **WORKER SAFETY-3**, implements all applicable Cal/OSHA and Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least thirty (30) days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to BLM's Authorized Officer and the CPM for review and approval.