Key to Commentors

Commentor	ID #	Affiliation
Ileene Anderson, Lisa T. Belenky	1	Center for Biological Diversity
Teresa Motley	2	Clark County Department of Aviation
Greg Suba	3	California Native Plant Society
Michael J. Connor, Ph.D.	4	California District, Western Watershed Project
Jeffrey Harris	5	Solar Partners/Ellison, Schneider & Harris LLP
Kathleen M. Goforth	6	Environmental Protection Agency, Region IX
Kim Delfino, Joanna H. Wald, Alice Bond, Barbara Boyle	7	Sierra Club, Defenders of Wildlife, Natural Resources Defense Council, and The Wilderness Society
Michael Boyd	8	Californians for Renewable Energy (CARE)
Dave Singleton	9	Native American Heritage Commission
Kyle Ash	10	Greenpeace
Brendan Hughes	11	Private Citizen
Mike Vandeman	12	Private Citizen
Sheila Bowers	13	Private Citizen
Richard Montanucci	14	Clemson University
Lloyd Gunn	15	Private Citizen
Mark Burgum	16	Private Citizen
Jared Fuller	17	Private Citizen
Dennis Morrison	18	Private Citizen
Laura Cunningham, Kevin Emmerich	19	Basin and Range Watch

Processes (10000)
10120 - Coordination and Consultation with Other Agencies

Comment 6-8. In light of the decision to separate CEC's and BLM's environmental review processes, the responses to FEIS comments should discuss the resolution procedure that will be employed if BLM's FEIS presents a preferred alternative that differs from what CEC approves through its process.

Recommendation:

- Clarify, in responses to FEIS comments, how BLM's and CEC's now separated alternative selection processes will be reconciled. The SDEIS indicated that 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".

Response: *Since CEC's completion of their Final Staff Assessment, BLM and CEC have continued to coordinate in detail to ensure consistency in the selection of a preferred alternative. Although the reduced acreage alternative was not evaluated by CEC in their Final Staff Assessment in November 2009, it was analyzed in an addendum to the Final Staff Assessment dated March 2010. Therefore, CEC's subsequent hearing process has been based on the same information that has been available to BLM. The Decision unanimously chosen by the Commission on September 22, 2010, is the Mitigated Ivanpah 3 Alternative, the same Preferred Alternative analyzed in the FEIS and chosen as the Selected Alternative in this ROD.*

10220 - Ecosystems Emphasis

Comment 1-4. The proposed Plan amendment is not consistent with the bioregional planning approach in the CDCA Plan. The overarching principles expressed in the Decision Criteria in the CDCA are applicable to the proposed project including minimizing the number of separate rights-of-way, providing alternatives for consideration during the processing of applications, and "avoid[ing] sensitive resources wherever possible." CDCA Plan at 93. The BLM should have taken a more comprehensive look at the plan amendment to determine: 1) whether industrial scale projects are appropriate for any of the public lands in this area; 2) if so, how much of the public lands are suitable for such industrial uses given the need to balance other management goals including desert tortoise conservation and recreational uses among others; and 3) the location of the public lands suitable for such uses, if any.

Response: *Section 2.2.5 of the FEIS presents an analysis of the proposed Plan amendment with respect to the decision criteria and factors required in Chapter 7 of the CDCA Plan. Also, Section 4.20 of the FEIS includes an analysis of the specific actions associated with the proposed project and alternatives, including the Selected Alternative, with respect to the Multiple-Use Class Guidelines in Table 1 of the CDCA Plan, and concludes that the Selected Alternative is consistent with the guidelines for land uses in Multiple Use Class L.*

10310 - Adequacy of Comment Period

Comment 1-30. Failing to provide an adequate comment period for the Supplemental DEIS for the plan amendment.

Response: *The ISEGS Draft EIS was circulated for 90 days because it contained a proposed amendment to the CDCA Plan. Although the Supplemental DEIS provided analysis of two additional alternatives which were identified during the DEIS comment period, the CDCA Plan amendment would be unaffected by either of these alternatives. The text of the Plan amendment remained unchanged from that of the DEIS and the 45 day comment period provided for in the Notice of Availability complies with NEPA guidelines for the BLM. The BLM accepted additional public comment on the CDCA Plan Amendment/FEIS within 30 days after the Environmental Protection Agency published the Notice of Availability in the Federal Register.*

10320 - Adequacy of Entire Timeframe

Comment 19-8. NEPA review was so rushed that essential studies or consideration of alternatives to industrial scale solar either was not or could not be completed in the applicant-driven time frame.

Comment 8-6. As the Gold Rush of 1848 left a toxic legacy of mining tailings whose impact is measurable over 150 years later, Large Thermal Solar Developments will create impacts that will similarly be long term and disastrous.
a. Grading of desert surfaces
b. Use of scarce water for cooling and cleaning panels
c. Interruption of animal migration patterns
d. Reflectivity and potential atmospheric effects
e. Impacts to watersheds
f. Impacts to plant material and natural indigenous pharmacological resources
h. Net effects on CO2 sinkage and release.

Comment 8-8. These impacts have not been studied to the degree to inspire confidence. Under the ARRA Fast Tracking process, Environmental Impact Statements have been quickly prepared. Answers are supplied by the Applicant in many cases before the questions can be asked. What are the effects of construction stripping the desert of its surface over major areas of virtually undisturbed wilderness?

Comment 1-1. The Center is concerned that the environmental review pursuant to NEPA, the FLPMA compliance, and the ESA compliance for this proposed project have been rushed and are inadequate to provide full and fair public review and participation.

Response: *The fast track schedule for the Ivanpah SEGS EIS is based on The Energy Policy Act and Secretarial Order 3285 (dated March 11, 2009) and not on the applicant's schedule. These directives are discussed in Section 2.1 of the FEIS as part of BLM's policy goals. The BLM has committed to meeting the goals in these directives and fast tracking some of the renewable energy projects will allow the BLM to meet those goals. The fast tracking included preparation of the joint SA/DEIS with the CEC. The fast track schedule is not in any way dependent on or in response to pressure from the applicant.*

10330 - Use of Contractors for Content Analysis

Comment 8-7. It seems to indicate the FEIS and amended CDCA Plan adopted by BLM with CEC and the project Applicant purportedly in government to government consultations pursuant to Section 106 by the BLM with Indian tribes is unlawful since they rely on authorizing the Applicant to conduct specific identification efforts for this undertaking by allowing the Applicant to retain an archaeological consultant to complete all of the investigations necessary to identify and evaluate cultural resources located within the Area of Potential Effect (APE) for both direct and indirect effects.

Comment 8-9. Can applicants for federal permits or contractors hired by the agency initiate and carry out tribal consultation? No, federal agencies cannot unilaterally delegate their responsibilities to conduct government-to-government consultation with Indian tribes to non-federal entities. It is important to remember that Indian tribes are sovereign nations and that their relationship with the federal agency exists on a government-to-government basis. For that reason, some Indian tribes may be unwilling to consult with non-federal entities associated with a particular undertaking. Such non-federal entities include applicants[] for federal permits or assistance (which would include any contractors hired by the applicant), as well as contractors who are not government employees but are hired to perform historic preservation duties for a federal agency. In such cases, the wishes of the tribe for government-to-government consultation must be respected, and the agency must carry out tribal consultation for the undertaking. [Page 16 to 17]

Response: *See the Native American Consultation subsection of the Cultural Resources section (Pages 4-4.23 to 4.4-25 of the FEIS), and Tables 4-4.4 and 4-4.5 in the Cultural Resources section of the FEIS. Contractors for the applicant conducted cultural resources surveys, and also made their own contacts with the California Native American Heritage Commission to acquire information to support the ROW application, and to facilitate discussions between the applicant and tribal governments. However, these efforts were not conducted in place of government to government consultation conducted between BLM and the tribes. The formal, required government to government consultation was conducted directly by BLM staff and management, not by applicant or agency contractors.*

Consultation, Coordination and Public Involvement (11000)
11150 - Native Americans (Government-to-Government)

Comment 19-25. Sensitive archaeological sites, ancient trails, an unstudied geoglyph (ISEGS-01) next to the site, and cultural values for the local Tribes have not been sufficiently addressed or mitigated. The input of the Chemehuevi Tribe was not included.

Comment 9-2. Consultation with tribes and interested Native American tribes and interested Native American individuals, as consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(9 of federal NHPA (16 U.S.C. 470 *[f)]et se),* 36 CFR Part 800.3, the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq.)* and NAGPRA (25 U.S.C. 3001-3013), as appropriate. The 1992 *Secretary of the Interior's Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including *cultural landscapes. This project site is certainly within the 'cultural landscape of the Mojave. Furthermore,* consultation with Native -- American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e) and the National Environmental Policy Act (42. U.S.C. 4321- 43351).

Response: *See the Native American Consultation subsection of the Cultural Resources section (Pages 4-4.23 to 4.4-25 of the FEIS), and Tables 4-4.4 and 4-4.5 in the Cultural Resources section of the FEIS. These sections provide the consultation information requested in the comments. This information in the FEIS was updated to include the additional government-to-government consultation that occurred subsequent to the publication of the DEIS. No concerns were expressed by any of the Tribes consulted. Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes.*

Plan Amendment/Environmental Impact Statement (PA/EIS) (20000)
20500 - Relationship to BLM Policies, Programs, and LUP Conformance

Comment 19-7. Proposed project, if approved, essentially privatizes and fences off now public lands for private profit and permits intensive industrial scale solar development on resource sensitive CDCA public lands managed by BLM as MUC L.

Comment 4-9. The Federal Land Policy Management Act (FLPMA) guides the BLM's management and uses of public lands. 43 U.S.C. § 1732(a) directs that these lands be managed under principles of multiple use and sustained yield. The project will eliminate multiple use on 3,564 acres of public lands in the CDCA and will create a de facto industrial zone. The adoption of the proposed plan amendment will change the multiple-use character of these lands which currently provides habitat for the threatened desert tortoise, rare and sensitive plants, grazing, and off-road vehicle routes in favor of a single use that will completely displace other uses on the proposed site.

BLM has failed to conduct an adequate inventory of the resources of the affected lands as required by 43 U.S.C. § 1711(a). It does not even know how many desert tortoises are present on the project site. Without this baseline inventory, BLM cannot ensure that its decisions will prevent unnecessary and undue degradation of the public's lands in violation of FLPMA sections 1732(b) and 1732(d)(2)(a).

Response: *Section 2.2.5 of the FEIS presents an analysis of the proposed Plan Amendment with respect to the decision criteria and factors required in the CDCA Plan. Also, Section 4.20 of the FEIS includes an analysis of the specific actions associated with the proposed project and alternatives, including the Selected Alternative, with respect to the Multiple-Use Class Guidelines in Table 1 of the CDCA Plan, and concludes that the Selected Alternative is consistent with the guidelines for plan uses in Multiple Use Class L.*

The baseline data provided in chapter 4 and various appendices in the proposed plan amendment/FEIS is sufficient to support the environmental impact analysis of the plan amendment. The BLM has a baseline inventory of information for the ISEGS proposed project site that was prepared during the development of the CDCA Plan and the NEMO amendment to the CDCA Plan and is updated on an ongoing basis. Using these inventories, the BLM is able to protect and manage the public lands within the area of the proposed plan amendment consistent with its statutory directives. Although BLM realizes that more data could always be gathered, the baseline data provides the necessary basis to make an informed decision regarding the plan amendment.

Before beginning the land use plan revision process and throughout the planning effort, the BLM considered the availability of data from all sources, adequacy of existing data, data gaps, and the type of data necessary to support informed management decisions. During preparation of the plan amendment /EIS, the BLM consulted with and used data from other agencies and sources, including but not limited to the California Energy Commission, U.S. Army Corps of Engineers, National Park Service, U.S. Fish and Wildlife Service, California State Water Resources Control Board/Regional Water Quality Control Board, California Department of Fish and Game, and the County of San Bernardino. The BLM consulted on the analysis and the incorporation of available data into the proposed plan amendment/FEIS with its cooperating agencies and other agencies with jurisdiction or expertise. The FEIS describes the affected environment of

the amendment site with regard to desert tortoise at section 4.3.1.4. The Biological Opinion for the plan amendment provides additional information. Specifically, the FWS has modeled that there are approximately 7,580 square miles of Desert Tortoise habitat in the Northeastern Mojave Recovery Unit with an average density of 4.4 tortoise per square mile. They further estimate that there are approximately 15,600 tortoises in the recovery unit. The FWS estimates that based on the inventories of tortoises and burrows conducted in the project site, the project will displace up to 36 desert tortoises. A simple calculation indicates that 0.07 to 0.15 percent of habitat within the Northeastern Mojave Recovery Unit will be impacted by the project.

As the proposed plan amendment/FEIS states at Appendix A, Section 6.1, "[i]n support of this EIS, BLM has worked with the applicant to conduct the full scope of resource inventories necessary to support consultation with respect to biological and cultural resources for a Federal project. In addition, BLM has required the applicant to collect additional data and perform other site-specific analyses that are not required for formal interagency consultation, but that BLM deemed necessary to allow for a full evaluation of potential impacts in all resource areas. As part of the review of the public comments on the DEIS, BLM considered each specific item to determine if such an inventory was required, or would support the impact analysis in a way which could result in a clear distinction among alternatives. As a result of this review, BLM determined that the inventory of resources associated with the proposed project was sufficient to satisfy regulatory requirements and to allow for full resource impact evaluation."

Comment 4-10. The NEMO Plan's mitigation for Category III habitat applies to projects of less than 100 acres. NEMO at 2.27. The proposed action area is nearly forty times the maximum acreage for projects covered under the NEMO Plan. Thus, the BLM cannot simply tier off the NEMO Plan's mitigation guidance but must fully analyze the direct, indirect and cumulative impacts to the Northeastern Mojave desert tortoise population. BLM Handbook 1745 - *Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants* - requires that "Decisions for making introductions, transplants, or reestablishments should be made as part of the land use planning process (see BLM Manual Section 1622). Releases must be in conformance with approved RMPs. A Land Use Plan Amendment must be prepared for proposed releases if management direction is not provided in the existing Land Use Plan (see BLM Manual Section 1617, emphasis added)." The two new proposed alternatives and the other projects proposed for the project area will result in large scale movement and translocation of desert tortoises. There is no consideration in the California Desert Conservation Area Plan as amended by the NEMO Plan for desert tortoise translocations on this scale. Therefore, a plan amendment is required to comply with BLM policy.

Response: *The NEMO reference to projects of less than 100 acres discusses this limitation with respect to whether a project can be included within a Programmatic BO. The Selected Alternative is not included within any Programmatic BO, and instead has had a project-specific BO developed. The 100 acre limitation has no bearing on the size of projects that can be approved within the NEMO planning area.*

Translocation of a species, as is being proposed for desert tortoises on this project, is not addressed in the BLM's 1745 Manual, which applies to the introduction, transplant,

augmentation and re-establishment of fish, wildlife and plant species. Translocation is defined as "the transport from one location to another" and does not fall under the guidance of the 1745 manual. Further, the 1745 Manual references land use planning manual sections that have been removed: in November 2000, the BLM removed BLM Manual Sections 1617 and 1622 and issued Manual 1601. Manual Section 1601 (2000) explains that site-specific plans (for example, habitat management plans) are implementation level decisions rather than planning decisions.

Comment 1-5. The proposed plan amendment is not consistent with FLPMA which requires BLM to prevent unnecessary or undue degradation of public lands.

Response: *The process for siting and evaluating the ISEGS project has included extensive efforts on the part of BLM, the applicant, CEC, public commentors, and other agencies in order to identify a project that accomplishes the purpose and need and other project objectives, while preventing, to the extent possible, any unnecessary or undue degradation of the lands. These efforts have included:*

- *Siting of the proposed facility in a location in which solar power development can be authorized (following NEPA review), and which has not been specifically designated for the protection of any resources.*
- *Modification of the proposed boundaries of the facility to minimize impacts to mineral, biological, and other resources.*
- *Evaluation of project location alternatives which could meet the purpose and need for the proposed project, but result in the avoidance and/or minimization of impacts.*
- *The development of mitigation measures, including compensation requirements for the displacement of desert tortoise habitat, to further avoid or minimize impacts.*

The Selected Alternative will 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 Selected Alternative will be much lower than the proposed project, especially in the areas of Biological Resources, Soil and Water Resources, and Visual Resources. Based on the comparative analysis of the ability of each alternative to meet the purpose and need, and the environmental impacts that would be associated with each alternative as discussed in the Final EIS, the Mitigated Ivanpah 3 Alternative was identified by BLM as the preferred alternative, and is the Selected Alternative in this ROD. Therefore, the Selected Alternative does not create unnecessary or undue degradation of the lands.

Comment 1-6. The proposed Plan amendment is not consistent with FLPMA's planning provisions which require that in developing and revising land use plans, the BLM consider many factors and "use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences . . .

consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for realization of those values." 43 U.S.C. § 1712(c). It is also inconsistent with the FLPMA provisions which contemplate that BLM will prepare and maintain adequate inventory data on the resources of an area and that information be used to inform the planning process. 43 U.S.C. § 1711(a); 43 U.S.C. § 1701(a)(2).

Response: *The analysis of the Plan amendment in the FEIS was conducted using an interdisciplinary approach to evaluate and integrate potential project impacts to physical, biological, economic, and cultural resources. The analysis also included an evaluation of the potential for alternative sites to meet the purpose and need, and to avoid or minimize impacts. As a result of this process, the FEIS identified as the Preferred Alternative a site alternative, the Mitigated Ivanpah 3 Alternative, which was only developed by the applicant following the identification of the adverse impacts, and the proposed mitigation measures, associated with their original proposed project.*

Comment 7-8. The Proposed CDCA Plan Amendment and FEIS Do Not Comply with BLM Manual 6840: Special Status Species Management, for the following reasons:

A. Because the proposed action would result in the destruction of approximately 4,000 acres of occupied suitable habitat for the threatened Desert Tortoise, the proposed action is inconsistent with the BLM's obligation to conserve and/or recover listed species and the ecosystems on which they depend so that ESA protections are no longer needed.

B. Because the proposed action would result in the destruction of approximately 4,000 acres of habitat utilized by 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 4,000 acre project area, including Rusby's Desert-mallow, a BLM Sensitive Species. Impacts to the BLM Sensitive Golden Eagle through loss of foraging habitat is recognized, but potential impacts to this species from collision with project facilities and mortality caused by concentrated reflected sunlight between the mirror fields and the central receiving tower have not been adequately studied. Rather, the FEIS states that monitoring for such impacts would be required and that additional, but unspecified, mitigation may be required.

C. Requirements for achieving "no net loss" standard of the U.S. Fish and Wildlife Service for the Golden Eagle, including its foraging habitat, would be completed by the applicant within six months after project approval in the form of an Avian Protection Plan that must be approved by the U.S. Fish and Wildlife Service. The FEIS simply states that the U.S. Fish and Wildlife Service "believes" that the no net loss standard for Golden Eagles can be achieved, however no documentation of such a finding is contained in the FEIS.

Response: *The BLM appropriately analyzed effects to Special Status Species, consistent with the ESA and BLM Special Status Species Policy (BLM Manual 6840).*

The BLM ensures that all actions comply with the ESA, its implementing regulations, and other directives associated with ESA-listed and proposed species, which includes compliance with Section 7 consultations as well as conferences with the U.S. Fish and

Wildlife Service and National Marine Fisheries Service. A major focus of Manual 6840 is to ensure that BLM actions do not contribute to the need to list any species under the ESA, and to improve the condition of special species habitat to the point where their special status is no longer warranted.

BLM Manual 6840 – Special Status Species Management provides policy and guidance for the conservation of BLM special status species on BLM-administered lands and the ecosystems upon which they depend. As outlined in Manual 6840, when the BLM engages in the planning process, land use plans and subsequent implementation-level plans shall identify appropriate outcomes, strategies, restoration opportunities, use restrictions, and management actions necessary to conserve and/or recover listed species, as well as provisions for the conservation of BLM sensitive species. In particular, such plans should address any approved recovery plans and conservation agreements.

The ESA does not require action agencies to have no impact on species. As an action agency, the BLM has two primary responsibilities under ESA. First to assist the Service in conservation of species (Section 7(a)(1) of the Act) and second, ensure that projects funded, permitted, or carried out by the BLM do not jeopardize the continued existence of a listed species (Section 7(a)(2) of the Act). To meet the second responsibility, the BLM consulted with the Service and received a no jeopardy Biological Opinion.

The BLM will continue to meet our 7(a)(2) obligations by ensuring that the project is constructed, operated, and maintained as described, the compensation measures as described are implemented and that the terms and conditions of the Opinion are enforced. With regards to our responsibility to conserve species, while this can be assessed at a project level (and was for this project), this is generally approached at a landscape scale. From the project level, this project has mitigation measures specifically pulled from the Desert Tortoise Recovery Plan (e.g. at least 50 miles of fencing of primary highways and restoration of at least 50 closed OHV routes).

These measures will lead to the conservation of the tortoise by reclaiming 3600 acres of roadside habitat, reducing tortoise mortality, and improving habitat quality. The BLM will conduct long-term monitoring to ensure that these measures are effective and will result in the predicted tortoise conservation. From a landscape scale, the BLM actively participates in tortoise recovery projects -- restoration of habitat, funding long-term line distance sampling, conducting studies on the effectiveness of tortoise fencing, funding wildlife connectivity studies to ensure that tortoises will be able to move across the landscape, to name a few.

Since the publishing of the FEIS, the BLM received formal communication from the Service regarding compliance with Eagle Act for this project (memorandum dated September 15, 2010, part of the administrative record).

In their response letter, FWS concurred with BLM's initial determination of "take unknown" and agreed that an APP was needed and would be sufficient to meet requirements of the Eagle Act. The BLM understands concerns regarding the potential impacts to eagles from collision with project facilities and mortality caused by concentrated reflected sunlight between the mirror fields and the central receiving tower and agree that more information in this area is desired. However, it is impossible to gather information of this nature without building towers or mirror fields in the vicinity of

eagles. The reason we are requiring an APP, which will include long-term monitoring of the project with regards to potential avian mortality, is to gather such information and inform adaptive management for this project and future decisions. Based on the information currently available, we cannot say with any certainty that this project will kill or injury an eagle.

Comment 7-9. The Proposed CDCA Plan Amendment and FEIS do not conform to BLM Manual 1745: Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants, for the following reasons:

A. All proposed introductions, transplants, reestablishments, or augmentation/restocking shall be in conformance with management direction and decisions in an applicable Resource Management Plan (RMP) (see BLM Manual Sections 1601 and 1622). A site-specific activity plan must be prepared, using an interdisciplinary planning process, for all proposed introductions, transplants, and reestablishments, unless waived by the State Director.

B. NEPA compliance is required before introductions, transplants and reestablishments can be approved.

C. Quarantine procedures must comply with all Federal and State regulations, restrictions, and requirements governing the release of disease free organisms and the importation of exotic plants and animals into the U.S.

D. Interested and affected State and Federal agencies, private landowners, and other individuals and organizations must be notified through identified processes of possible introductions, transplants, and reestablishments during the planning and NEPA review processes.

E. Public participation is required. Parties potentially affected by introductions transplants, or reestablishments, must be given the opportunity to be involved in the public participation process outlined in BLM Manual Section 1614. Potentially affected parties include adjacent State, Federal, and private landowners, other interested groups, and individuals.

F. A site-specific activity plan is required prior to the introduction, transplant, and reestablishment of plants or animals on public lands, unless waived by the state Director. The activity plan must include:

1) Site-specific and measurable vegetation/habitat population objectives which are based on existing ecological site potential/condition, habitat capability, and other important factors. (See BLM Manual Sections 1619, 6780, and 4120).

2) Planned actions to accomplish the stated objectives.

3) Appropriate monitoring and evaluation.

4 Coordination with other management plans and programs.

Response: *Translocation of a species, as is being proposed for desert tortoises on this project, is not addressed in the BLM's 1745 Manual, which applies to the introduction, transplant, augmentation and re-establishment of fish, wildlife and plant species. Translocation is defined as "the transport from one location to another" and does not fall under the guidance of the 1745 manual. Further, the 1745 Manual references land use planning manual sections that have been removed: in November 2000, the BLM removed BLM Manual Sections 1617 and 1622 and issued Manual 1601. Manual Section 1601 (2000) explains that site-specific plans (for example, habitat management plans) are implementation level decisions rather than planning decisions.*

20910 - Resource Analysis

Comment 7-3. C. The analysis of direct, indirect and cumulative impacts provide considerable quantitative data on magnitude and duration of impacts to the Ivanpah Valley region, but consideration of these impacts in light of the statutory and regulatory standards for management and protection of the public lands in the CDCA is lacking.

Response: *Section 4.20 of the FEIS analyzed the proposed action and alternatives, including the Selected Alternative, with respect to conformance with the specific activities that are consistent with Multiple Use Class L guidelines.*

20930 – Failure to Follow BLM Planning Procedures

Comment 1-2. In addition, the Center is concerned that the lack of prior planning by BLM for siting of this proposed project and others could undermine the conservation goals of the CDCA Plan as a whole, create a *de facto* industrial solar zone in the Ivanpah Valley, undermining recovery of the desert tortoise in this area. As a result, if the plan amendment for the proposed project is approved (particularly along with other connected actions including the Eldorado-Ivanpah Transmission Project and the Silver State solar projects in Nevada – on BLM managed lands just across the state border) it will result in industrial sites sprawling across the Ivanpah Valley in currently occupied high-quality desert tortoise habitat that should be protected to achieve the necessary conservation for this threatened and declining species and other goals of the bioregional plan as a whole.

The proposed plan amendment would allow an industrial-scale solar power plant to be built on public lands that are occupied habitat for imperiled species, which is not consistent with the CDCA plan or FLMPA. The decision to adopt the plan amendment is not based on adequate environmental review as required by NEPA (including failure to provide adequate response to public comment); and the decision to adopt the plan amendment is not consistent with BLM's policies and agreements regarding conservation of listed species and rare plants.

Comment 1-29. Failing to address the significant impacts from creating a sprawling *de facto* renewable energy zone in the Ivanpah Valley without prior planning or consideration of alternatives. These issues are not adequately addressed in the EIS.

BLM's response to comments on this issue—that the project has somehow "benefitted" from the Programmatic Solar EIS process—does not address the concerns raised.

Response: *The process for siting and evaluating the ISEGS project has included extensive efforts on the part of BLM, the applicant, CEC, public commentors, and other agencies in order to identify a project that accomplishes the purpose and need and other project objectives, while preventing, to the extent possible, any unnecessary or undue degradation of the lands. These efforts have included:*

- *Siting of the proposed facility in a location in which solar power development can be authorized (following NEPA review), and which has not been specifically designated for the protection of any resources.*
- *Modification of the proposed boundaries of the facility to minimize impacts to mineral, biological, and other resources.*
- *Evaluation of project location alternatives which could meet the purpose and need for the proposed project, but result in the avoidance and/or minimization of impacts.*
- *The development of mitigation measures, including compensation requirements for the displacement of desert tortoise habitat, to further avoid or minimize impacts.*

In the CDCA Plan Record of Decision (ROD), the Assistant Secretary for Land and Water Resources (ASLW) discussed remaining major issues in the final CDCA Plan before he approved the same. (CDCA ROD, p. 10 et seq.) One of the remaining major issues was the allowance of wind, solar, and geothermal power plants within designated Class L lands. (CDCA ROD, p. 15) The ROD recognized that "These facilities are different from conventional power plants and must be located where the energy resource conditions are available. An EIS will be prepared for individual projects." The recommended decision, which was ultimately approved, noted: "Keep guidelines as they are to allow these power plants if environmentally acceptable. Appropriate environmental safeguards can be applied to individual project proposals which clearly must be situated where the particular energy resources are favorable."

The allowance of wind, solar, and geothermal power plants on designated Class L lands in the CDCA was approved by the ASLW and concurred with by the Secretary of the Interior on December 19, 1980. The BLM has met the NEPA requirements for the plan amendment through the analysis contained in the DEIS, SDEIS, and FEIS. The amendment will allow the solar use only on the ISEGS project site. As stated in the FEIS, the reason for the amendment is to specifically allow a solar power generation project on the project site, which was not previously designated in the CDCA Plan. This amendment and the overall amendment process are consistent with the implementation of the CDCA Plan. The CDCA Plan amendment will not result in sweeping changes to the Limited Use designation within the overall boundary of the CDCA. Furthermore, the proposed plan amendment identifies and analyzes sensitive resources and values. In addition, the BLM has ensured that the plan amendment will not significantly diminish sensitive values by way of design features, mitigation, and monitoring.

Section 2.2.5 of the FEIS presents an analysis of the proposed Plan Amendment with respect to the decision criteria and factors required in the CDCA Plan. Also, Section 4.20 of the FEIS includes an analysis of the specific actions associated with the

proposed project and alternatives, including the Selected Alternative, with respect to the Multiple-Use Class Guidelines in Table 1 of the CDCA Plan, and concludes that the Selected Alternative is consistent with the guidelines for plan uses in Multiple Use Class L.

Comment 7-7. C. BLM failed to conduct an adequate inventory of the resources of the affected lands prior to preparing the PRMP-A/DEIS and FEIS as required by 43 U.S.C. § 1711(a), and as a result cannot ensure that its decisions will prevent unnecessary and undue degradation of the public's lands in violation of FLPMA. (*Id.* §§ 1732(b), 1732(d)(2)(a)). The affected lands must also include those that would be used for Desert Tortoise translocation.

Response: *In support of this EIS, BLM has worked with the applicant to conduct the full scope of resource inventories necessary to support consultation with respect to biological and cultural resources for a Federal project, including surveys of the proposed translocation area. In addition, BLM has required the applicant to collect additional data and perform other site-specific analyses that are not required for formal interagency consultation, but that BLM deemed necessary to allow for a full evaluation of potential impacts in all resource areas. As part of the review of the public comments on the DEIS, BLM considered each specific item to determine if such an inventory was required, or would support the impact analysis in a way which could result in a clear distinction among alternatives. As a result of this review, BLM determined that the inventory of resources associated with the proposed project was sufficient to satisfy regulatory requirements and to allow for full resource impact evaluation.*

20940 – Failure to Follow BLM NEPA Procedures

Comment 19-6. Reports, Plans, and analysis must be concluded prior to project approval. Otherwise, it cannot be said that the agencies have truly taken into account all the adverse effects of the project and considered all feasible mitigation measures. Improperly delaying the completion of mitigation plans and impact reports until after project approval is something we are seeing with more frequency on projects in our area, especially those related to industrial utility projects and is a practice that we believe is not supported in the law.

Some examples of Deferred plans found in the FEIS, illegal piece-mealing under NEPA:

Draft Contractor Health and Safety Plan
Draft BO
Draft tortoise translocation/Relocation Plans
Draft Raven Management Plan
Draft Construction Stormwater Pollution Prevention Plan
Draft Erosion, Drainage, and Sedimentation Plan
Draft Closure, Revegetation and Rehabilitation Plan
Also, on p. 3-11- final row of heliostats to be determined to add or subtract later, for optimization.

The Tortoise Translocation Plan is only in Draft form, and the decision on whether to

translocate tortoises into the Mojave National Preserve is still undecided and pending (PMPD evidentiary hearing, August 23, 2010). We strongly believe that mitigation measures must be known and implementable at the time of project approval - not deferred until sometime after public review closes or after project approval. A failure to timely present mitigation will result in the inability of the public to have an opportunity to openly review the measures. Moreover, there is an obligation for the applicant and approving agency not to rush to override significant adverse impacts without adopting feasible mitigation measures to help lessen those impacts.

Response: *In all cases mentioned in the comment, the applicant provided draft management plans as part of their application, BLM provided comments on the plans, and the plans were revised and re-submitted by the applicant during the EIS process. Final versions of all of the plans were submitted by the applicant prior to the development of the ROD. Therefore, these plans are not deferred – they were submitted in a timely manner, and are being made more specific as additional project details are developed. Note that management plans, in general, are always intended to be flexible and amendable as additional information is obtained. The process of providing more specificity into the applicant's management plans throughout the EIS process has been no different.*

Comment 8-2. The Final EIS is pre-committing to a certain plan prior to conducting an independent environmental review [SA/EIS] which violates the public participation requirements under the California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA).

Response: *The Final EIS constitutes an independent review by BLM, and was performed following the Final SA and Draft EIS review conducted jointly by BLM and CEC. The FEIS identifies a preferred agency alternative but it is does not commit the decision maker to any action.*

Comment 1-27. Failing to adequately address growth inducing impacts.

Response: *Section 6.3 of the FEIS analyzes growth-inducing impacts. The comment does not present specific deficiencies in this analysis.*

Comment 1-28. Failing to analyze connected, cumulative, and similar actions that should be considered in the same environmental review to avoid unlawful segmentation. These impacts are not adequately addressed in a "cumulative analysis" only. *See* FEIS at A.2-31 to 32.

Comment 5-6. Connected Actions – The FEIS notes at page 5-14 that cumulative impacts arising out of the Eldorado-Ivanpah Transmission Project ("EITP") are analyzed by incorporation of the cumulative impacts analysis found in the EITP Draft EIS published by the BLM. BLM published the EITP Draft EIS in April 2010. In that DEIS, the BLM states that the EITP project and the ISEGS project are "cumulative actions." (EITP DEIS at p. 2-35.) In comments submitted to the BLM on the EITP DEIS, BrightSource noted that the ISEGS project "is not dependent upon the EITP in order to operate at full power." BrightSource Comment Letter on EITP DEIS at 2. Given the

incorporation by reference of the EITP DEIS analysis into the ISEGS FEIS, BrightSource is submitting a copy of its comment letter on the EITP DEIS as Exhibit 5 to these comments. By way of summary, while it is true that the current Southern California Edison lines would not provide sufficient capacity by itself for all phases of the ISEGS project, the operation of the ISEGS project does not rely solely on the EITP; other transmission options exist for the project.

Response: *The cumulative analysis presented in the FEIS includes detailed and quantitative analysis of all projects that are past, present or reasonably future foreseeable, including the EITP project and the Silver State Solar projects.*

Comment 5-4. Cumulative Impacts – The Applicant believes that the analysis of cumulative impacts in the FEIS is thorough and complete. The DEIS and SDEIS contained considerable analysis on cumulative effects. The FEIS strengthens and enhances the previous analysis by covering all of the cumulative impacts together and addressing new issues raised in DEIS and SDEIS comments. By gathering together in a single chapter the cumulative impacts analysis that was spread across the discussion of impacts in the DEIS, the FEIS offers a detailed and informative evaluation to be considered in developing the ROD. The cumulative impacts analysis in the FEIS therefore adequately considers the cumulative effects of past, present and reasonably foreseeable future actions in compliance with NEPA.

Response: *The cumulative impact analysis was considered in the selection of the Mitigated Ivanpah 3 Alternative as the Selected Alternative.*

Comment 5-5. Mitigation Measures – The FEIS contains a large number of proposed mitigation measures designed to ameliorate impacts caused by the project. In its recently issued PMPD, the CEC has outlined a similar suite of mitigation measures for the project. The Applicant understands the need for mitigation and has been actively working with both BLM and the CEC to design appropriate measures. A review of the mitigation measures suggested in the PMPD and the FEIS indicates that there are potentially conflicting mitigation measures suggested by the two documents. The attached table outlines these potentially conflicting measures and recommendations for reconciling them, Exhibit 2 hereto. The specific condition language for each of these conditions is set forth in Exhibit 3 hereto. Moreover, the Applicant identified certain clerical errors to in the PMPD Conditions of Certification in a letter filed with the CEC on August 26, 2010, attached hereto as Exhibit 4.

Response: *Through the development of the ROD, BLM has continued to coordinate with the Energy Commission's certification process to ensure consistency between Energy Commission Conditions of Certification and BLM mitigation measures where appropriate. This has included additional evaluation of the mitigation measures presented in the FEIS to determine if they are technically accurate, necessary, redundant, and/or contain clerical errors. The measures presented in the ROD reflect these adjustments, which are mostly minor wording and clarification changes.*

Proposed Actions and Alternatives (22000)
22100 - LUP Amendment Decisions

Comment 19-10. ISEGS ignores and is inconsistent with the very basic principles of FLPMA included in the Introduction to the 1999 CDCA Plan as Amended.

Response: *The management principles of FLPMA, as specified in the introduction to the CDCA Plan, include multiple use, sustained yield, and maintenance of environmental quality, and the guidelines for the Multiple Use Classes were developed to be consistent with these principles. Section 4.20 of the FEIS evaluated the conformance of the proposed project and alternatives, including the Selected Alternative, with these guidelines, and determined that the Selected Alternative conforms to the guidelines.*

Comment 19-11. After reviewing the FEIS and what appears to be the intent of the PRMP-A, any approvals for the grant of a ROW are inconsistent with the clear text in the Introduction to both the original 1980 CDCA Plan and the 1999 CDCA Plan as Amended. By failing to include a comprehensive analysis of alternatives and any need other than processing an application submitted, BLM has failed to demonstrate any real need to approve such a massive industrial scale solar project of unproven technology on such sensitive lands. BLM has failed to demonstrate that there are no other alternative sites. Alternatives analysis should not be guided by the desires of a project applicant, but in the guidance set forth in the Introduction to the CDCA Plan.

Response: *The range of alternatives identified in Section 3 of the FEIS is not constrained by the purpose and need, the applicant's objectives, or anything other than technical and economic feasibility and the expected impacts associated with each alternative. This analysis has included evaluation of several alternative sites as identified by the applicant, the public commentors, and the Energy Commission. It is not required, or possible, for BLM to demonstrate that no alternative sites exist. The range of alternatives considered includes Private Land, locations and technologies not proposed by the applicant, and alternatives outside of BLM's jurisdiction to select. Four of these alternatives were carried into Section 4 for more detailed analysis.*

Comment 7-5. A. The proposed CDCA Plan Amendment and project have not been analyzed in the context of the CDCA and the CDCA Plan. Although specific management principles and guidelines are contained in the CDCA Plan, they have not been applied to either the proposed amendment or project. Nor have landscape level issues and management objectives been considered in evaluating these proposals or in selecting meaningful alternatives to them. Specifically, the analysis of the proposed plan amendment and project have not been adequately analyzed in the context of FLPMA's mandate for the CDCA: "…to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." (FLPMA Sec. 601 (b)).

Response: *Section 4.20 of the FEIS includes an analysis of the specific actions associated with the proposed project and alternatives, including the Selected Alternative, in the context of the Multiple-Use Class Guidelines in Table 1 of the CDCA Plan, and*

concludes that the Selected Alternative is consistent with the guidelines for plan uses in Multiple Use Class L.

22210 - Construction Phase

Comment 19-3. The Construction Logistics Area would be 377.5 acres, and it is stated that it would be "mostly" revegetated after temporary use, except for 40 acres for nursery and succulent. Please give detailed plans for how many acres will be revegetated and when.

Response: *The ROD includes an updated plan for the configuration of the Construction Logistics Area. The final acreage for this ROW grant would be 245.89 acres, all of it included within the area analyzed in the FEIS.*

22220 - Operation and Maintenance Phase

Comment 19-1. P.3-10 states that all heliostats will be put in stow position every night, and some during heat of day. How much parasitic load does this cause, does it take any electricity from the grid? This is said to be a House Load of 5.5 MW, to run plant. Please discuss capacity factor.

Response: *Table 3.3 in the FEIS presents the house load, which is synonymous with parasitic load. Table 4.2-2 of the FEIS uses the capacity factor, 28 percent, in the calculation of total facility MWh per year. The capacity factor is a calculation of the output facility over a period of time, based on the amount of power generated, and the period of time in which it is generated. Because solar power facilities only operate during sunlight hours, capacity factors less than 30 percent are common.*

Comment 19-2. Describe the air-cooled condensers: size, height, shape, number. These will be a large visual impact on the landscape and are not described at all.

Response: *There would be three condensers, one for each unit. Each condenser would have dimensions of approximately 242 by 124 feet, and 97 feet high. The visual impact simulations presented in Section 4.13 of the FEIS include the power block facilities, but they are very difficult to discern on the figures because they are very small compared to the height of the power towers and horizontal extent of the heliostat fields. In addition, the condensers would be painted to blend in with the surroundings as required in mitigation measure VIS-1. The analysis of the visual resources impact in Section 4.13 of the FEIS concludes that adverse visual impacts will occur, and cannot be mitigated.*

Comment 19-4. P. 3-18 says that more than one acre may be needed for additional storm water drainage construction and maintenance outside of the fence and ROW. BLM says the applicant is unclear about acreage, and distance from fence, may this require separate environmental analysis and permits. When is this going to be analyzed? This is a major uncertainty and needs to be determined now with public review. Will the ROW continue to grow with each new storm flood?

Response: *The FEIS recognizes that, although the stormwater analysis is based on conservative assumptions, there is limited operational data regarding facilities of this magnitude on alluvial fans. As a result, the FEIS has properly required monitoring of stormwater events, and response actions as necessary to avoid or minimize identified impacts. These responses are unlikely to include active stormwater management systems, but the FEIS recognizes that this may be necessary under certain circumstances. The location and magnitude of such a system cannot be predicted without any operational data, so cannot be analyzed completely at this time. This is why BLM has been very direct in limiting the amount of maintenance that can be done outside of the fenced area, and in specifying that any actions outside the boundary of the ROW would be subject to additional environmental analysis and would require additional authorization.*

Comment 19-5. The applicant says the project will follow Low Impact Development design, but this will require herbicides, soil binders, weighting agents, and clipping vegetation when needed to 12-18 inches. Also compaction and disturbance will ruin this ecosystem and reduce it to a pioneer weed stage, not the mature old growth creosote ring Mojave Desert scrub.

Response: *The Low Impact Development is a means of minimizing the amount of disturbance associated with project construction. However, disturbance will still occur.*

Comment 6-9. *Recommendation:*

- Discuss, in responses to FEIS comments, the changes that have resulted since the DEIS was issued that have resulted in the ability of the project proponent to consider a reduced project output.

Response: *The applicant developed the Mitigated Ivanpah 3 Alternative in response to the intervenor's and other public comments on the Final Staff Assessment and DEIS, including the mitigation measures that would have been applied to the applicant should the proposed project be approved. Based on those comments and expected mitigation measures, the applicant determined that a reduced output alternative that avoided the most sensitive resources was appropriate. Although the Selected Alternative reduces the acreage and number of heliostats substantially (by 12.5 percent for acreage and 19 percent for heliostats), the applicant was able to make other project modifications, including changes to the size of the boilers, to provide only a minimal (less than 10 percent) reduction in output.*

22510 - Action Alternatives

Comment 19-9. BLM's scope of review of alternatives was biased toward Applicant interests and alternatives that required BLM decisions. BLM may be processing a ROW grant application, but the CDCA public lands managed by BLM will become de facto private lands fenced and controlled by the project applicant. A giant give away of public lands for a project which it is argued could be replaced by distributed generation rooftop photovoltaic panels. If the goal is to reduce dependence of diminishing fossil fuels, then there are realistic and cost effective alternatives to turning environmentally sensitive,

culturally sensitive lands into public lands solar sacrifice areas that will degrade the recreational experience for California Desert tourists and residents, in addition to destroying the sensitive resource values for which BLM had determined an Multiple Use Class L (Limited Use) for the Ivanpah Valley.

Comment 1-20. Narrowing the purpose and need to such an extent that the BLM failed to adequately address a meaningful range of alternatives.

Comment 7-1. A. The purpose and need statement is too narrow. BLM considers the purpose and need to be responding to the applicant's right of way application under Title V of the FLPMA. (FEIS at 2-6). It is focused on meeting the objective of the applicant (FEIS at 2-5) and on amending the CDCA for this project only, thus essentially foreclosing serious consideration of meaningful alternatives during the formulation of the final decision. *See* National Parks Conservation Assn. v. BLM, 586 F.3rd 735 (9th Cir. 2009). Our organizations commented on the inadequacy of the purpose and need and alternatives analysis in the DEIS, strongly advocating that BLM comply with NEPA by not only considering, but analyzing a range of alternatives that would contribute to achieving the federal and state mandated goals for generation and distribution of electrical energy from renewable sources. In preparing the FEIS, BLM considered a relatively large number of alternatives (i.e., 25) but prematurely and improperly dismissed all but four for further analysis.

The dismissal of private land alternatives is contrary to the requirements of NEPA as we have argued in our comments, and one public land alternative, the Siberia East, was eliminated from further analysis by BLM on the ground that it would not meet the applicant's objectives because it would not provide the proponent with the means to satisfy the timing conditions of their contractual obligations in their power purchase agreements. The Ivanpah Dry Lake Alternative was dismissed because BLM assumed the costs associated with dike construction for flood control would be prohibitively expensive, and would eliminate the use of Ivanpah Dry Lake for current recreational use (i.e., land sailing) (FEIS at 3-81). However, BLM did not undertake any studies of the dry lake alternative to estimate the cost of flood control. Nor did it consider that the proposed project would not affect the entire dry lake surface and not necessarily completely displace land sailing recreation use. Lastly, the Ivanpah Dry Lake alternative was eliminated, in part, because it is currently closed to off-road vehicle use as per the CDCA Plan. Such restriction applies only to casual off-road vehicle use which would not apply in the case of an authorized activity. It is our understanding that the applicant initially considered the Ivanpah Dry Lake for the proposed project but was deterred from pursuing that alternative based on discussions with BLM personnel from the Needles Field Office due to concerns over the impact to land sailing recreation.
The private land alternatives located near Harper Dry Lake and the triangular area east of Barstow were dismissed based on the applicant's conclusion that the costs associated with land acquisition were too high (Harper Dry Lake area) and that the ability of a developer to acquire multiple, contiguous private land holdings covering a large area would not likely be feasible (triangular area east of Barstow).

The Siberia East Alternative on public land was dismissed, in part, based on BLM's assumption that the impacts would not be substantially less than those associated with the proposed project site in Ivanpah Valley. (FEIS at 3-48). These reasons are not consistent with BLM's responsibilities under NEPA.

Considering that the CDCA Plan established various Multiple Use Classes to guide multiple uses to potentially appropriate locations, namely Classes Limited (L), Moderate (M) and Intensive (I), BLM should have fully considered a range of alternatives that included Multiple Use Classes M and I, which were established for the potential approval of multiple uses involving more intensive development and, in particular, industrial-scale solar power generation and transmission which this proposed project entails. For further discussion see Section II.B, below.

Comment 7-2. B. Because of the overly restricted purpose and need statement, the alternatives considered and analyzed do not include a reasonable range. The BLM's dismissal of the off-site alternatives assumed that the applicant's requirements for a proposed 400 MW project needed to be met in one location rather than multiple, smaller sites even if they were located within the same general area. The rationale for dismissing such an alternative is puzzling considering that the proposed project in Ivanpah Valley is actually comprised of four separate right of way applications.

Comment 19-15. A private land alternative would eliminate the outstanding unresolved issues that stand now on the site with biological, visual and hydrologic resources. The time schedule of Bright Source should not be the burden of the public land owner who is concerned about their resources. . . . E-Solar facilities take up as little as 20 acres and can produce up to 5 megawatts of energy. We would like to request that a private land alternative, involving smaller acreages in separate areas be considered and analyzed. It would seem that if the project could be separated into 5 or 6 smaller projects, a plan that could adapt to available private land parcels should be considered. It makes ecological sense for Brightsource to break their project up into 4 100 megawatt, more environmentally friendly, units. The Fast track schedule should be retired so that this can be planned more efficiently. http://www.esolar.com/our_projects/ . . . . This challenge should be the applicant's responsibility. The applicant should be flexible and consider a reduced megawatt pal to adapt to available private lands. This alternative would allow BLM to avoid the removal of so much habitat from the Ivanpah Valley. We would like to request that an alternative be analyzed that breaks the project into essentially 4 or 5 smaller project utilizing an adaptive plan that can adjust the megawatts accordingly to what land is actually available. Some flexibility and more time could assist BLM in avoiding conflicts on the site of the proposed action and allow BLM to protect valuable resources on the existing site.

Breaking up the project into 4 units or essentially 4 smaller projects could utilize an opportunity to explore both public and private lands located throughout the state of California. Retired agricultural lands of California's Central Valley should be considered

Response: *The criteria for eliminating alternatives from detailed analysis in the FEIS are those included in Section 6.6.3 of the BLM NEPA Handbook H-1790-1. Alternatives may be eliminated if they would not respond to the purpose and need, are not technically or economically feasible, are inconsistent with the basic policy objectives for the management of the area, are remote or speculative, are substantially similar in design to another alternative that is analyzed, or would have substantially similar effects to an alternative that is analyzed. The alternatives mentioned in these comments, including private land alternative, distributed generation, Ivanpah Dry Lake, and Siberia East, and many other alternatives that do not meet the purpose and need, the applicant's objectives, or are outside of BLM's jurisdiction to select, were each considered and weighed against these criteria, and then eliminated.*

It must be noted that, even though many alternatives were eliminated from "detailed" analysis in Section 4 of the FEIS, Section 3 of the FEIS still provides a substantial environmental analysis of each of the alternatives. Although eliminated from "detailed" analysis, the discussion of the environmental impacts of the private land alternative in Section 3 was 23 pages long, and included evaluation of all of the same resource areas as was done for the retained alternatives in Section 4. The analysis of the other eliminated alternatives also includes a resource-by-resource impact evaluation. Therefore it is not correct to imply that BLM simply eliminated these alternatives without any evaluation of their environmental impacts.

Comment 4-1. In the FEIS the BLM has failed to consider and analyze alternatives that would allow the project to proceed but would avoid impacts to desert tortoise, rare plants and other scarce and sensitive resources. . . The BLM failed to consider alternatives to the proposed plan amendment such as designating the North Ivanpah Valley as an Area of Critical Environmental Concern (ACEC) that would have brought BLM into compliance with the recommendations of the 1994 Desert Tortoise (Mojave Population) Recovery Plan or that would make the Clark Mountain Grazing Allotment available for voluntary relinquishment to benefit resource conservation which would have made grazing allotment buyout available as a site-specific mitigation measure.

Response: *(see Response to Comment 1-13) The analysis of a site specific location for a solar facility is not the appropriate forum to address a change to ACEC designations made during earlier programmatic planning processes. While the CDCA Plan of 1980, as amended, provides for site location for solar facilities within its boundary that does not subject the ACEC portion of the CDCA plan to potential revision. The request to create an ACEC within the North Ivanpah Valley was rejected by the Desert District Manager in accordance with the plan amendment process described in the CDCA Plan. In addition, the area had been previously and specifically considered, and rejected, during the NEMO amendment process. Designation of the North Ivanpah Valley as an ACEC through site specific project analysis is not a viable alternative to the ISEGS project inasmuch as the CDCA Plan identifies the process for the BLM to consider such a change. The potential addition of an ACEC through a site specific project analysis is simply not in keeping with the CDCA Plan, was previously rejected in the NEMO amendment and more recently by the Desert District Manager, and is a variation of the no-action alternative, which was fully addressed in the ISEGS EIS. It also would not meet the expressed purpose and need to for the project. The NEMO Plan amendment has already considered inclusion of the project area, including the translocation area, within the Ivanpah DWMA, ultimately rejecting inclusion in the DWMA.*

WWP also raised the issue of relinquishment of the Clark Mountain grazing allotment. Relinquishment of a grazing allotment merely ends the lessee's priority to graze specified public lands, it does not render unavailable the public lands for grazing. (BLM Instruction Memorandum 2007-067) Upon receipt of a request for relinquishment, the priority to use public lands under that lease terminates immediately. That does not mean however that the allotment cannot be grazed by another applicant. Relinquishment at the planning level was addressed by the NEMO Plan. However, the NEMO Plan amendment as it relates to grazing is not at issue in this project specific renewable energy decision making process. To the extent further change is made to the availability of forage for livestock grazing within the NEMO plan area, that is a land use plan

determination and not properly the subject of the site specific analysis presented here. Those decisions are programmatic in nature as opposed to site specific, and would require analysis of change on a planning area basis.

Comment 8-4. The FEIS improperly excludes the High DG alternative.

Comment 8-5. To comply with its obligations under NEPA, an agency must analyze an adequate range of reasonable alternatives. The PD and FEIR failed to engage in a sufficient alternatives analysis in three ways. First, it did not re-evaluate the range of feasible alternatives in light of the project purpose. Second, the range of alternatives considered by the Commission was unreasonable because it failed to consider the High DG alternative. Third, the analysis of the No Action Alternative was flawed. Therefore, the proposed No-Project alternative is inconsistent with the requirements of NEPA, and the agency must redo the study and allow public comment on a reasonable range of alternatives. The FEIS fails to identify the High DG alternative as preferred to the project so therefore the NEPA analysis must provide for a feasible No action and/or CEQA No-Project alternative which when combined with the High DG alternative should be environmentally superior to the proposed project. Essentially as proposed the applicant argues the proposed project is environmentally superior to doing nothing. Such a finding violates the NEPA and CEQA requirements to analyze the No action / No-Project Alternative and are nonsensical since the AFC failed to properly consider the "appropriate" alternatives" including the High DG alternative. Therefore final environmental analysis should consider the "appropriate" alternatives" including the High DG alternative and the No-Action alternative.

Comment 12-2. 3. Adequate, plentiful alternatives exist: there is plenty of space above roads, parking lots, buildings, etc. that is not being productively used and could be utilized to generate solar electricity.

Response: *Distributed generation was analyzed in the DEIS and FEIS. Section 3.3.2.5 (Pages 3-91 through 3-94) of the FEIS discusses the status of distributed generation in California, the technical and economic challenges that limit its ability to serve as a feasible alternative to commercial scale solar, and the environmental advantages and disadvantages of the alternative.*

Comment 1-21. Failing to analyze a range of appropriate project alternatives including distributed generation, a phased alternative, and off-site alternatives on previously disturbed or degraded lands.

Response: *Section 3.3 of the FEIS evaluated the distributed generation (pages 3-91 to 3-94), phased alternative (Pages 3-107 to 3-108), and off-site alternatives (3-54 to 3-77).*

Comment 11-1. The applicant, BLM, and CEC have failed to prove that the benefits of this project outweigh its environmental costs, especially in light of the more practical distributed-solar alternative for securing our energy future.

Comment 8-10. While the goal of greenhouse gas reduction is worthy, these large scale plants pose other dilemmas, from the water use required by the “Ivanpah” plant, to

potential displacement of endangered species, and possible destruction or diminishment of Native sacred sites.

Response: *The FEIS discussed the practicality of distributed solar for serving as an alternative to the proposed project. BLM was legally required to consider the application in light of federal policies and objectives which encourage renewable energy development, as discussed in Section 2.1 of the FEIS, and to analyze, disclose, identify feasible alternatives, and develop mitigation measures to address environmental impacts. The decision made in the ROD concluded that the public benefit of the development outweighed the environmental impact, and that the environmental impact was appropriately reduced through siting, alternatives development, and application of mitigation measures.*

Comment 5-3. While the Applicant believes that the alternatives analysis in the FEIS meets NEPA requirements, there are some details in the description of the Modified I-15 Alternative that should be further addressed. In discussing the full range of potential impacts for the Modified I-15 Alternative, the FEIS repeatedly asserts that the impacts of that alternative are "similar" or the "same as" impacts of the Mitigated Ivanpah 3 Alternative. (See pages 3-38 to 3-45 of the FEIS.) While the potential impacts of the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternatives on desert tortoise were correctly characterized as similar (as discussed below), the Applicant believes that the FEIS overstates the case for some similarities while ignoring or discounting other similarities. The effect of doing so is to understate the superiority of the Mitigated Ivanpah 3 Alternative to achieve the purpose and need of the proposed project.

Equally as problematic is the failure of the FEIS to note that impacts to desert tortoise, desert plant species, and other biological resources from both the Modified I-15 and the Mitigated Ivanpah 3 alternatives are essentially similar. As established in the record the Modified I-15 Alternative would be “located on high quality, relatively undisturbed habitat for desert tortoises” and “would not reduce the impact to special-status plant species.” For example, one CEC Staff witness testified that the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative were essentially “different points on the same habitat, and that “neither one [is] a significant improvement over the other.” The DEIS/FSA concluded that the Modified I-15 Alternative would have “*similar impacts*” to biological resources with respect to impacts to the desert tortoise, special-status plants, and animal species found at the Modified I-15 Alternative site. CEC Staff further testified that, above 2,800 feet, the quality of habitat on the Modified I-15 Alternative site and the Mitigated Ivanpah 3 Alternative site is “all pretty good [habitat].” Accordingly, the overwhelming weight of the evidence supports the conclusion that the Modified I-15 Alternative overall would have “*similar*” impacts on desert tortoise, desert plant species, and other biological resources.

Response: *The comparison of impacts between the two alternatives in the FEIS considered the information presented in this comment, as well as other information not presented in this comment, such as the findings related to the effects of roads on tortoise populations, and impacts to resources other than biological resources. No change in these conclusions was made as part of the selection of the Mitigated Ivanpah 3 Alternative as the Selected Alternative.*

Comment 5-7. Finally, three comments submitted on the SDEIS by other parties require a specific response.

First, the Sierra Club asserts that by providing a map which shows a location for the Modified I-15 Alternative, the Applicant has "admitted" that a project at that location is viable from a technological or economic perspective. The Sierra Club's assertion is incorrect.

The map provided by the Applicant during the CEC proceedings was a map of the so-called “Sierra Club” alternative --*not* a map of the Modified I-15 Alternative in the FEIS. The Sierra Club’s alternative was a concept. While the Sierra Club “concept” was the impetus for the BLM and CEC Staff to develop a NEPA and CEQA-compliant alternative known as the Modified I-15 Alternative, the map provided by the Applicant depicting the Sierra Club "concept" is separate and distinct from the fully developed Modified I-15 Alternative in the FEIS. The CEC Staff agreed that the Sierra Club alternative, and the map offered in rebuttal demonstrated that “the [Sierra Club’s concept for an] I-15 alternative becomes little more than an alternative configuration for Phase 1 of the project.” The map in the CEC process admits nothing more than the infeasibility of the Sierra Club’s alternative concept. It speaks not at all to the feasibility of the Modified I-15 Alternative in the FEIS.

For purposes of analysis, the Applicant also provided a theoretical map of a unit that could approximately, but not entirely, fit into the area indicated by the Sierra Club at its preferred location. However, the Applicant did not, and could not within the time constraints, determine if such a unit would be technologically feasible. From a business perspective, as pointed out in the Applicant's comments on the SDEIS, the Modified I-15 Alternative is not viable due to the extensive technical planning and engineering that would be required and the inability of the redesigned project under that alternative to meet power production objectives. Successful implementation of the project will require the financial incentives offered by the ARRA, which in turn depend on successful completion of financing. To qualify for those incentives, a renewable resource energy project must be "under construction" by December 31, 2010. As a result of the additional technical and engineering work needed to place the project on the Modified I-15 Alternative site, the Applicant would not be able to complete financing and assure financers of qualification for the financial incentives offered under ARRA, thus endangering the viability of the entire project.

Second, the Center for Biological Diversity (“CBD”) suggests that two other alternatives are superior to the Mitigated Ivanpah 3 Alternative. CBD asserts that a distributed solar energy alternative would be superior to the Applicant's project. There is no basis in the record for CBD's claim. As established during the evidentiary hearings held by the CEC, a distributed solar alternative would not meet the renewable resource energy goals that the ISEGS project is designed to meet. For example, the joint DEIS/FSA considered the installation of 400 megawatts of distributed solar photovoltaics, “Rooftop PV,” as an alternative technology to the Ivanpah Project and found the technology to be infeasible. The Rooftop PV alternative advocated by CBD fails to meet most of the project’s basic objectives and suffers from numerous constraints that make it an infeasible alternative to the Ivanpah Project. In response to arguments advanced by CBD, the Applicant in its Opening Brief (a copy of this document was attached to Applicant's June 1, 2010 Comments on the SDEIS) provided additional information as to why rooftop PV is not within the reasonable range of feasible alternatives to the Ivanpah Project. The detailed

discussion in the Opening Brief contains numerous citations to the record. In summary fashion, the infeasibility of this alternative includes the following constraints:

- Central station solar projects like the Ivanpah Project are necessary because rooftop PV alone will not allow California to satisfy its Greenhouse Gas ("GHG") and Renewable Portfolio Standard ("RPS") objectives.
- Rooftop PV faces technological uncertainty that makes investing solely in rooftop PV to the exclusion of central station renewable power uncertain and risky.
- Rooftop PV faces economic constraints that limit the technology.
- Rooftop PV does not provide the substantial reliability benefits of central station
  renewable power like the Ivanpah Project.
- Unlike central station power connected to the bulk transmission system, rooftop PV is not dispatchable, cannot be scheduled, and has no flexibility in targeting generation to changing transmission system needs, creating reliability issues

Rooftop PV requires additional "spinning" reserves to ensure reliability. Since spinning reserves tend to be conventional, fossil-fueled resources, the greenhouse gases and other pollutants associated with these firming spinning reserve resources need to be netted out of the Rooftop PV benefits. The record in this proceeding confirms that Rooftop PV advocated by CBD fails to meet most of the project's basic objectives and suffers from numerous constraints that make it an infeasible alternative to the Ivanpah Project.

CBD also argues that the BLM should have considered a "phased" alternative for the Ivanpah Project. This argument is somewhat perplexing given that the Ivanpah Project has three powerplants that will in fact be constructed in three phases over the estimated forty-two month construction schedule. CBD's phasing arguments are also premised on the erroneous argument that the BrightSource Power Tower technology is not a proven technology. This is simply incorrect, and, CBD's opinion of the technological viability of the Ivanpah Project is not supported by any citation to any authority.

In fact, there is nothing in the record to support CBD's opinion on the technological viability of BrightSource's Tower Power technology. The technology BrightSource would deploy for the Ivanpah Project was extensively tested by the Department of Energy approximately thirty years ago, and produced 38 million kilowatt-hours of electricity during its operation from 1982 to 1988, which "demonstrated the viability of power towers."

Third, Western Watershed Project suggests in its comment letter on the SDEIS that an "Ivanpah Dry Lake Bed" alternative should have been considered. In response to this comment, the BLM included a discussion of an "Ivanpah Playa" alternative in the FEIS. (FEIS at 3-81.)

The FEIS properly concludes that such an alternative is neither economically feasible nor compatible with the established management objectives for that area. As properly noted in the DEIS/FSA, the Ivanpah Dry Lake Bed has high recreational use: "The Ivanpah Dry Lakebed alone is visited by an estimated 5,000 visitors," and "…the Ivanpah Dry Lakebed is visited by an estimated 5,000 visitors annually for land sailing annually."

As noted in the DEIS/FSA, the Ivanpah Dry Lake has the following uses: Approximately 200 casual use permits are issued annually (these cover between 1 individual to 6 individuals) and approximately 5000 annual visitors. Approximately 12 Permitted and Organized events occur on the Dry Lake annually on both east and west sides. (Approximately 50% of these permitted and organized events occur on the west side and 50% on the east side, although the largest of the events tend to occur on the east side of the Dry Lake.) Permits are also given out that include use of both sides. Examples of such events include Championship Racing, Archery events, Kite buggying Similarly, the Recreation analysis in the DEIS/FSA notes the high recreational value of the Ivanpah Dry Lake. See Joint DEIS/FSA at p. 6.18-4.

In addition, the Ivanpah Dry Lake Bed is the low elevation point in the area, and is where most stormwater runoff ultimately collects during periodic rain events. Thus, the Ivanpah Dry Lake is not always dry. During precipitation events in the surrounding Clark Mountains, the storm water runoff transports down the mountains across the alluvial fan and deposits into the lake area. Ivanpah Dry Lake experiences extended periods of standing water up to several feet in depth several times per year. In order to make an electric power generating station viable in the lake bed, substantial damming of the area to prevent inundation and establishment of massive detention ponds, or diversion of storm water to another section(s) of the lake would be required, thereby reducing its recreation use for the above defined activities even further. Clearly, the existing uses of the Ivanpah Dry Lake Bed make it an infeasible alternative site for the Ivanpah Project. In contrast, the potential effects associated with stormwater run-off from the Ivanpah Mitigated 3 Alternative were found to be less than significant.

Response: *This comment summarizes and reiterates analyses and conclusions made by BLM in the FEIS, and contains no substantial additional information to be considered in the selection of a Selected Alternative in the ROD.*

Comment 6-7. We were encouraged by the addition of the Mitigated Ivanpah 3 and Modified 1-15 Alternatives for various reasons, including the potential to avoid the northern 433 acres of the proposed Project site, which has the highest concentrations of desert tortoise and rare plants and is the area that presents the greatest risk of potential stormwater damage. Additionally, Modified 1-15 Alternative's location closer to the highway would allow for the reconfiguration of the Ivanpah Unit 3 site, which would allow major project facilities to co-locate while avoiding impacts to the northern portion of the proposed Project area. As a consequence, movement corridors for wildlife between mountainous areas north of the Project area would remain broad and relatively undisturbed (pg. 4.3-1 3 1). We recommend that BLM reconsider the Modified 1-15 alternative as the preferred alternative because much of this alternative site is located below 2,750 feet in elevation and provides habitat that is less diverse and of lower quality than that of the proposed Project (pg. 4.3-71). Additionally, the Modified 1-15 Alternative would have fewer anticipated impacts to desert tortoise and maintain more connectivity than the proposed Project (pg. 4.3-80 and A.2-26), further reduce stormwater impacts (pg. 8-7), and potentially impact fewer washes (at pg. 4.3-27). We note that the FEIS indicates that the Modified 1-15 Alternative is outside BLM's jurisdiction to select (pg. A.2-29) and is not considered to meet the applicant's objective (pg. A.2-29). In light of the Council on Environmental Quality's guidance regarding consideration of alternatives outside the jurisdiction of the lead agency (Council on *i*

Environmental Quality's (CEQ) Forty Questions , #2a and #2b), we continue to recommend that off and 'near'-site alternatives (including off-site locations and environmentally preferable on-site alternatives) be given full consideration under NEPA. CEQ Regulations for implementing NEPA (40 CFR, Parts 1500 - 1508) state that the alternatives section of an EIS should "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly describe the reasons for their having been eliminated" (40 CFR, part 1502.14). *"In determining a reasonable range of alternatives, the focus is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical and feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.* " (CEQ Forty Questions, #2a)

Recommendation:

- Reconsider the Modified 1-15 Alternative as the preferred alternative for the Project and fully justify the elimination of any less environmentally damaging alternatives than the alternative ultimately selected.

Response: *BLM has considered this and other comments on the FEIS in the evaluation of the alternatives. The selection of the Mitigated Ivanpah 3 Alternative as the Selected Alternative is based on the entire impact evaluation, including the biological issues discussed in the comment, as well as visual and other resource impacts.*

22520 - No Action Alternatives

Comment 8-3. The Final EIS alternatives analysis is in adequate because it fails to properly provide for a no action alternative.

Response: *The No Action Alternative is analyzed in a separate subsection within each resource chapter of Section 4 of the FEIS.*

Comment 1-13. Conversely, while a BLM plan amendment is necessary to allow the proposed project to move forward; no consideration has been given to increasing protections and conservation species that will be impacted by the project in the translocation areas proposed to the west and north of the project site. The areas around the proposed project that are undisturbed, host additional rare species, and are proposed as relocation areas for desert tortoise and other species, should be preserved at the highest level for conservation – for example they should be designated as DWMA or other ACEC - and should preclude future disturbances and ensure that tortoises and other species will not be moved more than once, and to conserve other rare species that will be impacted by the project.

Response: *The analysis of a site specific location for a solar facility is not the appropriate forum to address a change to ACEC designations made during earlier programmatic planning processes.*

On June 25, 2009, outside of any public comment or protest period for the proposed Ivanpah solar project, and before the Notice of Availability of the DEIS was published, the Sierra Club submitted a letter to the BLM California Desert District Manager

nominating the public lands of the North Ivanpah Valley as an Area of Critical Environmental Concern. The North Ivanpah Valley encompasses the Modified I-15 alternative analyzed in the ISEGS EIS. In response to the request for nomination, the BLM noted that the CDCA Plan of 1980, while not recognizing the North Ivanpah Valley as an ACEC, provides a process for the public to seek to further amend the plan. In addition, the Desert District Manager explained that the 2002 Northern and Eastern Mojave Desert Management Plan (NEMO) amendment to the CDCA plan considered but rejected the area for inclusion as an ACEC. The NEMO amendment declined to designate this area because it (1) was not designated as critical habitat by USFW; (2) would not be included in a DWMA because it is relatively small (29,110 acres); (3) is separated from other desert tortoise populations in the NEMO Planning Area by I-15 and Ivanpah Dry Lake; and (4) is undergoing substantial development pressures particularly adjacent to I-15. (NEMO Amendment (2002) at A-4) In response to the nomination by the Sierra Club, the BLM rejected consideration of the North Ivanpah Valley as a potential ACEC as being untimely and because reevaluation of the area was not warranted. (Letter from Steven Borchard, July 2, 2009) Mr. Borchard explained that designation of an area as an ACEC would require a comprehensive re-evaluation of the CDCA Plan including an analysis of the "desert wide obligation to achieve and maintain a balance between resource use and resource protection". He found that there was no immediate need to re-evaluate the North Ivanpah Valley area for potential designation as an ACEC in the CDCA.

During the public comment period on the DEIS, and during the public comment period on the FEIS, certain parties raised this same concern. While the CDCA Plan of 1980, as amended, provides for site location for solar facilities within its boundary, that does not subject the ACEC portion of the CDCA plan to potential revision. A change to an ACEC designation is clearly a plan level decision. (BLM Land Use Plan Handbook, H-1601-1, App.C, p. 27-28)(2005) The request to create an ACEC within the North Ivanpah Valley was rejected by the Desert District Manager in accordance with the plan amendment process described in the CDCA Plan. In addition, the area had been previously and specifically considered, and rejected, during the NEMO land use plan amendment process. Designation of the North Ivanpah Valley as an ACEC through site specific project analysis is not a viable alternative to the ISEGS project inasmuch as the CDCA Plan identifies the process for the BLM to consider such a change, and other than site identification (as specifically called for in the CDCA land use plan), provides no land use plan decision-making considerations. The potential addition of an ACEC through a site specific project analysis is simply not in keeping with the CDCA Plan, was previously rejected in the NEMO amendment and more recently by the Desert District Manager, is a variation of the no-action alternative, which was fully addressed in the ISEGS EIS, and does not meet the purpose and need which was to approve, approve with modifications, or deny the ROW application. For all of these reasons, the protest point is dismissed.

Comment 18-1. You are about to devastate the tortoise population of the Ivanpah area. 214,000 heliostats? Located on 4,073 acres of public land? Digging up burrows and moving Tortoises? They tried this same idea at Fort Irwin with disastrous results. This kind of game playing needs to stop. Every square inch of public land is up for sale as far as you're concerned, and we're the ones paying for it. The corporation is attracted by free land and Stimulus law to underwrite their project so even if they go bankrupt, we, the American taxpayers will get stuck with the bill. We provide the public land, we underwrite the project, we take the risk, we pay the higher rates, we pay for the new

power lines, we live with the eyesore and health issues, and we eat the cost of lower property values. They get the profits and politicians get to point to all the new temporary construction jobs they created. What does the BLM get???
DON'T DO THIS!

Comment 15-1. I have visited Ivanpah Valley on several occasions. Each time I realize this valley is one of the most beautiful and significant landscapes I have seen in 20 year of enjoying the Mojave Desert.

The variety and multitude of desert cactus species surrounding a metamorphic hill is one of a kind visual experience in this Mojave Desert.

Completing this picture is the desert tortoise. Most of these will die as in other recent relocation of tortoise.

We need effective desert wide planning before we go down the road of ecosystem degradation and species extinction.

Clean energy can be attained without sacrificing this important place.

Do not allow the California desert plan to be amended

Comment 12-1. 1. This project is not an appropriate use of public land. The highest, best use of the land is for wildlife habitat, and that is what it should be used for. Extinction is FOREVER. Humans don't have the right to drive other species to extinction, or to deprive them of their homes, which amounts to the same thing. 2. It would cause unacceptable destruction of essential wildlife habitat for endangered and other species of plants, animals, and other living things, such as the Desert Tortoise.

Response: *The FEIS acknowledges that impacts associated with the selected Alternative will occur, and develops mitigation measures to avoid or minimize those impacts. BLM is legally required to consider the application in light of federal policies and objectives which encourage the development of renewable energy, as discussed in Section 2.1 of the FEIS, and to analyze, disclose, identify feasible alternatives, and develop mitigation measures to address environmental impacts. The decision made in the ROD concluded that the public benefit of the development outweighed the environmental impact, and that the environmental impact was appropriately reduced through siting, alternatives development, and application of mitigation measures.*

22700 - Comparison of Impacts by Alternative

Comment 1-22. Failing to adequately analyze the proposed alternatives in the EIS.

Response: *This comment is vague, and does not provide specific instances of inadequate analysis.*

22800 - BLM Preferred Alternative

Comment 19-30. We are in favor of the No Action Alternative and to amend the CDCA

Plan for No Solar in Ivanpah Valley. This portion of Ivanpah Valley should be made into an Area of Critical Environmental Concern and the grazing allotment retired.

Response: *The comment in favor of the No Action Alternative was considered in the development of the Selected Alternative in the ROD.*

Biological Components of the Human Environment
Biological Resources (30000)
30000 - Biological Resources Generally

Comment 1-9. Failing to prepare and maintain an inventory of public land resources, BLM also failed to adequately address the resources of this area in reviewing the proposed plan amendment. *See Center for Biological Diversity v. Bureau of Land Management*, 422 F.Supp.2d 1115, 1166-67 (N.D. Cal. 2006) (discussing need for BLM to take into account known resources in making management decisions); *ONDA v. Rasmussen*, 451 F.Supp. 2d 1202, 1212-13 (D. Or. 2006) (finding that BLM did not take a hard look under NEPA by relying on outdated inventories and such reliance was inconsistent with BLM's statutory obligations to engage in a continuing inventory under FLPMA). Failing to adequately describe the baseline condition of the environmental resources of this area.

Response: *Section 201 of the FLPMA (43 U.S.C. 1711(a)) states: "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." Section 202 states: "In the development and revision of land use plans, the Secretary shall... rely, to the extent it is available, on the inventory of the public lands, their resources, and other values." 43 U.S.C 1712(c)(4).*

The BLM has a baseline inventory of information for the ISEGS proposed project site that was prepared during the development of the CDCA Plan and the NEMO amendment to the CDCA Plan and is updated on an ongoing basis. Using these inventories, the BLM is able to protect and manage the public lands within the area of the proposed plan amendment consistent with its statutory directives.

The baseline data provided in chapter 4 and various appendices in the proposed plan amendment/FEIS is sufficient to support the environmental impact analysis of the plan amendment. Although BLM realizes that more data could always be gathered, the baseline data provides the necessary basis to make an informed decision regarding the plan amendment. Before beginning the land use plan revision process and throughout the planning effort, the BLM considered the availability of data from all sources, adequacy of existing data, data gaps, and the type of data necessary to support informed management decisions. During preparation of the plan amendment /EIS, the BLM consulted with and used data from other agencies and sources, including but not limited to the California Energy Commission, U.S. Army Corps of Engineers, National Park Service, U.S. Fish and Wildlife Service, California State Water Resources Control Board/Regional Water Quality Control Board, California Department of Fish and Game, and the County of San Bernardino. The BLM consulted on the analysis and the incorporation of available data into the proposed plan amendment/FEIS with its cooperating agencies and other agencies with jurisdiction or expertise. The FEIS describes the affected environment of the amendment site with regard to desert tortoise at section 4.3.1.4. The Biological Opinion for the plan amendment provides additional information. Specifically, the FWS has modeled that there are approximately 7,580 square miles of Desert Tortoise habitat in the Northeastern Mojave Recovery Unit with an average density of 4.4 tortoise per square mile. They further estimate that there are approximately 15,600 tortoises in the recovery unit. The FWS estimates that based on

the inventories of tortoises and burrows conducted in the project site, the project will displace up to 36 desert tortoises. A simple calculation indicates that 0.07 to 0.15 percent of the habitat within the Northeastern Mojave Recovery Unit will be impacted by the project. The BLM relied on up-to-date and adequate inventories of the resources of the public lands in compliance with FLPMA.

As the proposed plan amendment/FEIS states at Appendix A, Section 6.1, "[i]n support of this EIS, BLM has worked with the applicant to conduct the full scope of resource inventories necessary to support consultation with respect to biological and cultural resources for a Federal project. In addition, BLM has required the applicant to collect additional data and perform other site-specific analyses that are not required for formal interagency consultation, but that BLM deemed necessary to allow for a full evaluation of potential impacts in all resource areas. As part of the review of the public comments on the DEIS, BLM considered each specific item to determine if such an inventory was required, or would support the impact analysis in a way which could result in a clear distinction among alternatives. As a result of this review, BLM determined that the inventory of resources associated with the proposed project was sufficient to satisfy regulatory requirements and to allow for full resource impact evaluation."

30100 - Vegetation
30117 - Special Status Species

Comment 4-6. Rusby's Desert-Mallow (*Sphaeralcea rusbyi* var. *eremicola*) is a very rare plant and BLM sensitive species that occurs on the project site. The NEMO Plan set the goal for special status species as "Populations and their habitats are sufficiently distributed to prevent the need for listing" (NEMO Plan at 2-6). The FEIS provides too little analysis of impacts, ignores habitat fragmentation which can both isolate Rusby's Desert-Mallow occurrences and decrease the total available habitat for remnant occurrences, and fails to provide adequate information about the proposed mitigation strategies. Siting the project on Ivanpah Dry Lake playa would have avoided impacts to this rare plant.

As of the August 24, 2010 CEC Evidentiary Hearing, a final version of the Condition of Certification for Special-Status Plant Impact Avoidance and Minimization (BIO-18) remains unresolved. This adds more uncertainty to the adequacy of proposed mitigations for the impacts of this project.

Comment 3-1. The FEIS's assessment of the Affected Environment and Consequences for special-status plant on the project, as presented in FEIS Chapters 4.3.1.1-4.3.1.2, and 4.3.2 is informationally inadequate because it does not provide accurate information on the presence of rare plants that sprout and bloom following desert rains in the late summer and early fall. Without this information, neither BLM, the California Energy Commission (CEC) nor the public has any understanding of the affect of this project on late summer species and certainly the project contains no mitigation that specifically addresses these affects. Without survey information, the project's NEPA review process lacks an adequate description of the affected environment of the project.

Comment 3-2. The result of this process is that the BLM and CEC lack adequate information to determine whether or not the impacts of this project are significant on

these summer/fall plant species. The FEIS concludes that mitigation measures will in fact avoid significant impacts to rare plant species. As to summer/fall plants, this is just a post-hoc rationalization not based on any analysis in the environmental review documents. Here the proposed mitigation measures were not formulated based on any information regarding the project's potential to harm these species. For example, in the Condition of Certification BIO-18, the CEC included the requirement for pre-construction floristic surveys to be performed and to include surveys for summer/fall blooming rare plants. However, the added requirement is flawed because it limits the extent of surveys for summer/fall blooming plants, as per Bio 18 condition #3,

"*to 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."*

What's more, the FEIS indicates that the need for an assessment of impacts to summer/fall blooming plant taxa (BIO-18 item #3) is not necessary, as the FEIS states: *"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."*

The BLM's apparent non-concurrence with even the insufficient amount of summer/fall survey required by BIO-18 #3 indicates that summer/fall blooming special-status plants that might occur across the vast majority of the project area within active construction and operation areas throughout the remaining proposed project acreage, as well as project impacts to these species, will be ignored.

In sum, the FEIS conclusion that plant impacts have been adequately addressed fails to include a full assessment of potential impacts to summer/fall plants because it is not possible to develop mitigation measures that reduce impacts to these species where no information is provided as to how the project actually affects them in the first place. CNPS request that BLM require supplemental late summer/early fall botanical surveys be performed and results assessed for the entire project site so that additional rare plant findings, should they occur, can be incorporated into the existing Bio-18 Conditions of Certification so the BLM can fulfill their obligations to fully assess the affected environment pursuant to NEPA.

Comment 3-3. The FEIR lacks adequate information to support its proposed finding that the rare plant mitigation measures for spring blooming plant species are adequate to avoid significant impacts as described in FEIS Chapter 4.4.

BLM should not consider the "impact minimization" or "halo" approach to rare plant impacts as on-site avoidance, or as an on-site mitigation measure that will result in long-term, self-sustaining populations of rare plants. Mitigation practices certified on this project could be precedent-setting for subsequent project applications and therefore should be based on sound scientific information. The extent of protection afforded to plants within the proposed "halos" remains untested, and speculative at best.
The revised project presented in the Applicant's Mitigated Ivanpah 3 design still relies on the fenced "halo" method of addressing impacts to rare plant occurrences within the heliostat fields, as described in Applicant's Exhibit #81, and as required in the CEC's Condition of Certification BIO-18. Mojave Milkweed and Desert Pincushion are

especially reliant upon Exhibit #81's "halo" design since both species are distributed widely across the project site and benefit little from the Block 3 avoidance area. In order for impacted plant populations to remain viable in the long-term, we must assume that proposed mitigation measures for plant populations for which we know little to nothing about their physiological and ecological needs, will successfully achieve the following: a. the plants will survive in the shade of hundreds of thousands of heliostats, where they will experience more water more often (from mirror washing), where above and below ground nutrient conditions have changed (from regular mowing, mulching above and reduced nutrient uptake of stunted plants from below), where surrounding soil compaction has occurred (from construction and maintenance vehicles and activity), and where invasive plant competition has increased, b. the plants will survive transplantation in the desert, c. additional plants will be found *and* provided protection on off-site lands. No biologically defensible data has been presented during these proceedings or in the FEIR to support the assumptions being made regarding both the "halo" plant mitigation measures, and the probability of locating *and* protecting in-lieu off-site plant habitat. Should the highly-improbable "halo" approach fail to preserve self-sustaining populations of the rare plants occurring on site, and no requirement to locate and protect off-site occurrences be required, then the proposed project will have a significant impact on the continued existence of these plants in the state.

Comment 1-8. The inadequacies in the environmental review for the project required by NEPA include, but are not limited, to the following: Deferring identification and analysis of impacts to resources including late summer/early fall blooming plants including rare species.

Response: *In support of this EIS, BLM has worked with the applicant to conduct the full scope of resource inventories necessary to support consultation with respect to biological resources for a Federal project. In addition, BLM has required the applicant to collect additional data and perform other site-specific analyses that are not required for formal interagency consultation, but that BLM deemed necessary to allow for a full evaluation of potential impacts in all resource areas. The rare plant surveys at the ISEGS site were conducted according to required protocols, were extensive, covered multiple years, and were planned and conducted by an experienced professional botanist in consultation with local experts. Based on the identification of impacts in the DEIS, the Energy Commission staff developed a mitigation measure to require that the applicant avoid areas of the highest rare plant density and diversity, and in a way that ensured long-term sustainability and connectivity with adjacent undisturbed populations and the Clark Mountains. Energy Commission staff rejected the Applicant's first mitigation proposal; this ultimately led to the development of the Mitigated Ivanpah 3 proposal.*

Section 4.3.2.1.2 of the FEIS acknowledges that construction and operation would impact the individuals of the species that are present. This fact was one of the primary reasons for the development of the Mitigated Ivanpah 3 Alternative by the applicant. The revised footprint of the Mitigated Iivanpah 3 Alternative, now the Selected Alternative, was specifically designed to avoid most of the identified occurrences of the Rusby's Desert-Mallow and other rare plants. Finally, the ROD incorporates the final version of mitigation measure BIO-18, which requires strict avoidance measures for the Rusby's Desert-Mallow. The text of BIO-18 in the FEIS, which stated that BLM only adopted specific items in the measure, is modified in the ROD. The modification states

that BLM adopts all of the specific items, but only with respect to those species listed as BLM sensitive species, i.e., the Rusby's Desert-Mallow.

Comment 6-3. We also remain concerned that additional botanical surveys have not been conducted to sufficiently compare and contrast the proposed alternatives. As the FEIS states, "the recent push for renewable energy development on private and public lands in the Mojave Desert region has put many of its special-status plants under far more immediate threat of local extinctions" (pg. 4.3-32). From our review of the SDEIS, it was apparent that sufficient survey information was not available to adequately compare alternatives, and it appears this is still the case in the FEIS. Detailed botanical surveys have still not been conducted on the Modified 1-1 5 Alternative site (pg. 4.3-72), and uncertainty regarding the extent to which sensitive plants would be avoided on the entire Project site still exists (pg. 4.3-36). In the absence of the needed surveys, the FEIS indicates that, based on available information, the Modified 1-15 Alternative includes fewer acres capable of sustaining rare plant communities, as compared to the proposed Project (pg. 4.3-72). Field surveys should be completed to confirm this assessment, and any additional avoidance or mitigation measures identified as a result of the new findings should be incorporated into the ROD.

***Response**: Although detailed biological surveys of the reconfigured location of Ivanpah Unit 3 in the Modified I-15 Alternative have not been performed, a large amount of data exists upon which to base an analysis. This includes:*

- *Information from reconnaissance-level surveys provided by the applicant, CEC, and intervenors;*
- *Information on the geologic and topographic setting of the area (including the relation of the location to the mountains, Ivanpah Dry Lake bed, and I-15);*
- *Site-specific literature, much of it supplied by the intevenors, discussing the specific density of tortoises and plants on the property; and*
- *More general literature, again supplied by intervenors, discussing the expected impact of the highway on wildlife and vegetation in the area.*

The location is not remote from that of the proposed project – it is directly adjacent and closer to I-15, and is therefore very familiar to project staff. Based on the familiarity of the project staff with the site, and the large amount of other available information, BLM concludes that the level of information is sufficient to allow an evaluation and comparison of impacts associated with the alternative site.

Comment 6-5. Fully incorporate into the ROD any mitigation measures for avoidance of rare plants during Project construction and operation that result from recent or pending botanical surveys.

***Response:** The ROD includes an updated version of mitigation measures BIO-18, which requires such avoidance.*

30160 - Environmental Consequences

Comment 5-2. FEIS BIO-21: BLM Should Not Incorporate BIO-21 into the ROD as the Applicant has Completed Two Years of Rare Plant Surveys, Fully Satisfying Protocols in Place at the Time Surveys Were Completed; Submittals are Data Adequate; and CEC Staff Has Determined "Fall Surveys Would be Nice But Are Not Necessary."
Applicant requests that BLM not incorporate FEIS Mitigation Measure BIO-21 into the ROD. The existing rare plant survey data are sufficient. Rare plant surveys of the entire site including the one mile buffer were conducted in 2007, and again in 2008. As CEC Staff stated, these surveys "were of the highest professional quality and met all applicable guidelines" in place at the time surveys were conducted. (*CEC Staff's Reply Brief dated 4/16, page 24*.) Additionally, Applicant's submittals have been found to be data adequate.

FEIS BIO-21 states that additional mitigation could be imposed upon the Applicant. Rare plant mitigation described in the Applicant's February 2010 Biological Mitigation Proposal ("Mitigated Ivanpah 3") (*Ex. 88*), includes removal of 476 acres from the project, the establishment of three Rare Plant Mitigation Areas, the salvage/transplantation of rare cactus located outside the Rare Plant Mitigation Areas, and the installation of protective fencing around Mojave milkweed and Rusby's desert mallow localities within the heliostat array. Rare plant mitigation will be monitored by the Applicant over the long-term, to document that rare plant mitigation is functioning successfully. Should mitigation be found unsuccessful, remedial measures will be implemented as described in the Rare Plant Avoidance and Protection Plan. Mitigation proposed by the Applicant for this project is in proportion to the magnitude of the impact and is adequate to offset rare plant losses.

The request for more consultation and coordination, the potential need for yet more rare plant surveys of the project area, and the uncertainty of additional open-ended mitigation requests that the FEIS suggests may occur are overly burdensome to the Applicant. Further, implementation of FEIS BIO-21 has the potential to result in substantial project delays that could undermine ARRA economic stimulus goals and jeopardize the federal funding for the project, thus threatening the viability of the project and its potential to contribute toward the Secretary's and California's renewable energy objectives.
In reconciling the BLM and CEC decisions, it is important for the BLM to distinguish between (1) the recommendations of the CEC Commissioners as the decision makers, set forth in the PMPD and (2) the non-binding, post-PMPD recommendations of the CEC Staff for new or revised conditions in Staff filings dated 7/30, 8/27, and 9/4. In the CEC proceedings, CEC Staff advocates as a party to the CEC proceeding, like the Applicant and does not represent the decisionmaker. In fact, CEC Staff is barred under ex-parte rules from substantive communications regarding the proceeding with the decision-making CEC Commissioners. Only the recommendations of the CEC Commissioners in the PMPD and any errata filed thereto constitute the official positions of the Commission, as opposed to advocacy documents presented by parties. Clearly, the focus needs to be on the decision makers and their final recommendations.

Response: *BLM has reviewed the comments related to the sufficiency of the completed vegetation surveys in identifying the presence of species that could be impacted, and for which mitigation measures would be required to maximize avoidance. Based on this evaluation, BLM continues to believe that BIO-21 is necessary to verify that no late summer/fall sensitive species would be impacted.*

30200 - Wildlife
30213 - Special Status Species

Comment 19-16. There is no final desert tortoise translocation plan.

Response: *The translocation requirement was revised by the U.S. Fish and Wildlife Service following publication of the FEIS. The revised requirement is incorporated into the ROD.*

Comment 19-17. The final number of 25 tortoises is debatable and not enough surveys have been conducted.

Comment 11-2. For instance, the applicant only knows that at least 25 tortoises inhabit the site. With more extensive surveys, there may be twice or three times that many tortoises, making this higher-quality tortoise habitat than most of the BLM-designated DWMAs. This is an unacceptable loss for this federally-threatened species, and should not be allowed to go forward. BLM and CEC should only further consider the applicant's proposal when a complete tortoise survey has been conducted. Then we will have all the facts to make a more informed decision. BLM and CEC need to make a stand now, and make the statement that solar projects will not be allowed on sensitive habitats.

Comment 4-2c. The NEPA documents remain unclear as to how many tortoises will be directly affected the proposed action. The FEIS states without further documentation, "some estimates suggest that up to 50 tortoises may reside in the project area." FEIS at 4.3-44. No clarification is given as to whether this is an estimated number of adult tortoises or includes desert tortoises of all age classes.

Response: *BLM and USFWS have both evaluated the methodology and completeness of the surveys, and USFWS has concurred with BLM regarding the adequacy of the information obtained from the surveys. According to the Biological Opinion for the project, the FWS has modeled that there are approximately 7,580 square miles of Desert Tortoise habitat in the Northeastern Mojave Recovery Unit with an average density of 4.4 tortoise per square mile. They further estimate that there are approximately 15,600 tortoises in the recovery unit. The FWS estimates that based on the inventories of tortoises and burrows conducted in the project site, the project will displace up to 36 desert tortoises. The project and translocation areas have been subject to substantial study, including consideration for a DWMA as part of the NEMO amendment process, and the conduct of extensive surveys in association with the ISEGS project. There is no evidence that the project area could be better quality habitat than DWMA areas. As noted in public comment number 4-2e (below), the northern portion of the project area becomes rockier, with less friable soils that are potentially less suitable for burrowing, implying that the project location is of lower quality, not higher quality.*

Comment 19-18. The project would significantly affect a genetically distinct subpopulation of desert tortoise, the northeastern Mojave Evolutionarily Significant Unit (ESU). This ESU only occurs in California in the Ivanpah Valley and is the most

genetically distinct of the California populations. The cumulative impacts of development in the North Ivanpah Valley threaten the degradation of a quarter of California's Ivanpah Valley desert tortoise habitat. The Northeast Mojave Population in protected under the California Endangered Species Act. This potentially could result in the listing of this population under the Federal Endangered Species Act.

Comment 4-2b. Mitigating for direct impacts on this scale is daunting. However, other major projects are also being proposed in the North Ivanpah Valley not the least of which are an additional power plant next to ISEGS and the DesertXpress railway. In the face of the massive cumulative habitat loss and fragmentation that will occur if all three projects proceed, it is difficult to imagine how a viable tortoise population could persist in the North Ivanpah Valley. As such, the cumulative impacts threaten to eliminate nearly a quarter of the range of the Northeastern Mojave ESU in California.

Comment 19-28. In addition, cumulative impacts to the Northeastern Recovery Unit and genetic lineage of the Desert tortoise was not analyzed at all. Without this level of analysis in narrative form looking at the impacts across the desert, it cannot be said that BLM has truly taken these impacts and effects into account.

Response*: BLM has reviewed the comments, and the associated text in the DEIS and SDEIS. In the FEIS discussion of the affected environment, a more detailed description of the tortoise protection status of this particular property was added. Also, the FEIS included a substantially revised analysis of cumulative impacts, including quantitative estimates of the amount of habitat that would be affected by ISEGS, past projects, and all other reasonably foreseeable future projects. However, these discussions do not change the conclusion regarding acceptable land uses, mitigation measures, and compensation associated with Category III habitat and MUC-L land use designation.*

Comment 19-19. There is no requirement to acquire tortoise habitat in the Northeast Recovery Unit as mitigation land.

Comment 4-2f. Although the Northeastern Mojave ESU desert tortoises will be impacted, the proposed mitigation for the proposed action does not require acquisition of replacement habitat within the Northeastern Mojave recovery unit. This contradicts longstanding BLM policy to "Mitigate the impacts of energy and mineral development in tortoise habitat to the extent possible".7 The FEIS leaves open the question of whether the proposed mitigations merit the concurrence of California Department of Fish and Game ("CDFG has not yet provided concurrence that this proposed approach and level of mitigation funding would be adequate to fulfill their full mitigation standard." FEIS at 4.3-3.

Response: *BLM has no authority to direct the acquisition of tortoise habitat associated with the CDFG's portion of the desert tortoise compensation. The requirements of BLM's compensatory mitigation plan in BIO-17 specify that the habitat enhancement and restoration efforts must occur within the Northeastern Mojave Recovery Unit.*

Comment 19-20. Connectivity will be blocked over Mountain pass.

Response: *The reconfiguration of Ivanpah Unit 3 in the Selected Alternative will substantially increase the available space for tortoises to move between the facility and Clark Mountain. However, given the high altitude and steep rocky terrain, it is unlikely that tortoises migrate over Mountain Pass.*

Comment 19-21. Major risks of translocation were clearly delineated in the 1994 Recovery Plan and include: (1) the tendency of the released desert tortoises to travel or wander from the site or attempt to return home; (2) increased vulnerability to predators; (3) the potential for agonistic responses from resident or host desert tortoises; (4) the potential for introducing or spreading diseases; and, (5) genetic pollution.

1. Predators: Tortoise translocation and relocation often results in an increase in predation, mostly by coyotes and ravens. Disruption of home range can cause desert tortoise to roam and stay above ground for a greater duration of time; leaving them more vulnerable to predation.

2. Disease: If a relocated tortoise wanders very far, it potentially could wander into an area that supports a diseased population. The ELISA test for the microplasma that is responsible for Upper Respiratory Tract Disease in desert tortoise is often not accurate. Stress from the disturbance of relocation could potentiate symptoms in tortoises that carry the microplasma responsible for URTD. An outbreak of URTD can crash a tortoise population. There are also other diseases that can be spread that biologists are just now studying (and that no tests are done during translocation/relocation), two species of Mycoplasma that infect tortoises.

3. Carrying Capacity: Removal of substantial acreage leaves less habitat available for the population as a whole. Relocation would cause the same number of desert tortoise to compete for resources on approximately 4,000 acres less of habitat.

4. Home Range: tortoises have familiar areas to find shelter, burrows, food sources, and drinking areas. This last behavior is often overlooked: tortoises need to drink once in a while, and they may have one drinking depression in the ground where rainwater collects that they go to over and over to drink. We have watched relocated tortoises walk back to the fence and push against it for days trying to get to their known drinking spot . Tortoises have good eyesight and may orient using mountains, and they will travel 10 to 20 miles in a few weeks to get to a place or in wandering.

5. Ft. Irwin Failure: the translocation project that took place on the Ft. Irwin National Training Center in 2008 resulted in a 49 percent failure largely due to predation. Over 80 tortoises were killed by predators and some individuals developed symptoms of URTD after they were moved. The tragedy of Ft. Irwin has revealed several unresolved problems with desert tortoise translocation and relocation.

Comment 1-11. Failing to adequately identify and analyze the likely impacts to desert tortoise from the project and the new proposed translocation “plan”. The FEIS proposes a significantly new and problematic translocation process, whereby desert tortoise found within the CLA, Ivanpah 1, and Ivanpah 2, but greater than 500 meters from the western boundary, would be translocated to the Mojave National Preserve.3 The very first guideline presented in the current Desert Tortoise Recovery Plan (1994) on translocation

states “No desert tortoises should be introduced into DWMAs—at least until relocation is much better understood.” However, this is exactly the scenario that is now proposed – to move desert tortoise into the Mojave National Preserve, which is regarded as DWMA because of its management mandate. Relocation is still not well understood.

Translocation to date has an unsuccessful track-record. A more comprehensive report from the most recent Fort Irwin translocation effort4 documents that within 2 years of translocation, 70 tortoises of the 158 that were translocated, were known dead – an unacceptable 44%. In addition 20 of the remaining 88 tortoises were “missing”. Lastly, although all translocated tortoise in that group had tested negative for deadly diseases prior to being translocated, when retested post-translocation, 11% tested positive.
The new proposal to move most of the desert tortoise from Ivanpah 1 & 2 and the CLA into the Mojave National Preserve could actually have grave impacts on the tortoises currently living within the Mojave National Preserve. No analysis of the impacts to the existing tortoise community on the Preserve is included, and in fact, no translocation areas have actually been identified, just a generalized area bounded by Nipton Road, Ivanpah Road, Morning Star Mine Road, and the Ivanpah Mountains. (FEIS at 4.3-48).

Despite the requirement for disease testing, which is an improvement over the previous plan, translocation of desert tortoise could still introduce disease into the existing population on the Preserve, as Gowan and Berry5 found. Additionally the strategy does not identify any data that indicates that the habitat on the Preserve can actually support additional desert tortoise. In fact, genetic studies actually identify and map different genetics between tortoises north and south of Nipton Road. Clearly more data on both the tortoises proposed to be translocated and the “recipient” population needs to be collected before a decision can be made on the appropriateness of translocating the desert tortoise from the proposed project site into the Mojave Preserve.
Moreover, in discussions with the Mojave National Preserve (D. Hughson personal communication 8/20/10), at this time, the Preserve has not agreed to receive the ISEGS translocated tortoises. In addition, no NEPA has been done on this new strategy and its effects on the Mojave National Preserve and its flora and fauna.

As part of the Desert Renewable Energy Conservation Plan (DRECP), an Independent Science Advisor committee was convened, and they have recently produced Draft Recommendations for the DRECP. In that document the independent scientists state “One action that we generally do *not* endorse as mitigation per se—except perhaps under certain rare circumstances where scientific evidence suggests it may be warranted—is animal translocations out of proposed development areas into reserve areas. This is often done but rarely effective—a “feel-good” measure that has dubious ecological benefits and potential to do more harm than good.”[original emphasis]7. Because so many of the proposed mitigations for badger, Gila monster and other species depend upon translocation and there is a lack of evaluation of impacts from translocation, as described in our prior comments, a re-evaluation of impacts needs to be included.

The Independent Science Advisors also offer a desert tortoise specific recommendation on pg. 77 - “As with the Mohave ground squirrel, the advisors do *not* recommend translocation of desert tortoise as effective mitigation or conservation action, in part because translocated tortoises suffer high mortality rates” [original emphasis]. This important recommendation is additionally noteworthy because the two desert tortoise advisors on the ISA, were both independent researchers on the Fort Irwin translocation

effort, as well as other translocations. Their recommendations strongly suggest that translocation may do more harm than good.

Comment 1-12. Failing to evaluate if the Preserve's desert tortoise research center near the Nipton Road and Ivanpah Road junction has the capacity to "quarantine" desert tortoises from the Ivanpah 1 site. This facility is a "head-starting" facility, which has a very different purpose than potentially holding diseased tortoises and keeping each separated during the time they are over-wintered at the facility as would be required to quarantine these tortoises before the healthy tortoises could be moved onto the Preserve if possible.

Comment 1-14. Failing to establish success criteria for desert tortoise translocation and a phased approach to ensure that any incidental "take" of tortoise could be minimized as required under the ESA.

Comment 1-15. Failing to address the potential impacts from changes in the grazing regime on the translocated desert tortoises that are proposed to be moved into the area north and west of the proposed project and the impact to the existing tortoise population in the same area from competition with additional tortoises and cattle.

Comment 7-4. D. A significant component of the proposed project, the Desert Tortoise Translocation Plan, has not been finalized although a basic framework and conceptual plan was addressed briefly in the DEIS and FEIS. The translocation plan that is in preparation will propose the capture, manipulation, release and monitoring of up to 50 Desert Tortoises on public lands managed by BLM and federal lands within the Mojave National Preserve that are under jurisdiction of the National Park Service. To date the National Park Service has not consented to or approved the use of federal lands within the Mojave National Preserve for release and monitoring of translocated Desert Tortoises. Thus, the proposed translocation plan as described in the FEIS is in error and should be withdrawn. A proposed translocation plan should be released for public review after the regulatory agencies have resolved the issue of where the long-distance translocation release site or sites are located. Until such a proposed plan is developed and released for public review and comment, the BLM's responsibilities under NEPA for the proposed action cannot be met.

Desert Tortoise translocation is considered by the U.S. Fish and Wildlife Service an experimental procedure intended to minimize "take" of this threatened species due to documented high rates of mortality due to increased predation associated with the procedure. By definition it is not a mitigation measure as described in the FEIS (Measure BIO-10). The FEIS does not adequately address the issue of mortality to both resident and translocated Desert Tortoises, and the impacts to public land habitat or this species associated with anticipated mortality due to predation by Coyotes and other predators such as the Common Raven. The issue of increased mortality has been the subject of extended study and debate, especially after unanticipated high mortality was documented at nearby Fort Irwin, also located in the western Mojave Desert. The Fort Irwin desert tortoise translocation project was halted by the Army because they were required to reinitiate Section 7 consultation with the U.S. Fish and Wildlife Service. The issue of mortality of translocated Desert Tortoises was discussed at length at the California Energy Commission continuation hearing on the proposed Calico Solar Project held on August 25, 2010. At that hearing, Dr. Kristin Berry of the U.S. Geological Survey reported that to date, 49% of the 158 Desert Tortoises involved in the Fort Irwin

translocation project have died due to predation largely by Coyotes and Ravens. The FEIS for the proposed ISEGS Project identifies that mortality associated with Desert Tortoise translocation in general is concern, but does not include any analysis of such mortality from any translocation projects and monitoring reports, including those associated with the Fort Irwin translocation. Dr. Berry, considered among the most qualified scientists involved with Desert Tortoise biology, ecology and translocation, should be a key participant in discussions on Desert Tortoise translocation ecology by the regulatory agencies. Lastly, the Independent Science Advisors to the Desert Renewable Energy Conservation Plan (DRECP) recently issued their draft recommendations for the DRECP in August 2010, and they stated "…the advisors do *not* recommend translocation of desert tortoise as effective mitigation or conservation action, in part because translocated tortoises suffer high mortality rates."

Assessment of conditions of the Desert Tortoise translocation sites proposed by the project applicant and contained in the Draft Desert Tortoise Translocation Plan in the FEIS have not been completed to the standards established in BLM Manual 1745 regarding ecological condition, and disease occurrence among the translocation sites "host population" of Desert Tortoises has not been established.

Comment 17-1. Species the project will most significantly impact include desert pincushion, mojave milkweed, rusby's globemallow, and desert tortoise. The length and width of the project pose a significant barrier to the migration and establishment of new populations of these species as well as many others. Many of the rare plants are located at the extremes of their ranges and the loss of individuals and habitat may diminish genetic variability in these species. This is particularly true given the threat of effects of climate change this project is supposed to diminish. Genetic variability is also an issue of concern for desert tortoises.

The proposed mitigation measures, while an improvement on the original proposal, are generally inadequate. Mitigation should account for the fact that the site will likely remain developed beyond the projected life-span of the project, since the reasons for selecting this site will remain the same for a replacement project, with the added pull of in-place infrastructure and prior site disturbance. With continuing development on the site, mitigation through avoidance of individual plants is unlikely to be effective because once these plants die, new recruits are unlikely to re-establish within an area so small. This is also likely to occur in many cases during the life-span of the current project. Long-term transplants should be placed in areas away from development so new plants can establish. This is difficult without causing new disturbance which would be necessary to monitor and maintain them.

The purchase of mitigation lands for desert tortoise habitat may be limited by the lack of suitable sites or willing sellers. Also, the relocation of tortoises often has not been very successful.

Comment 14-1. Please consider this letter in opposition to the planned project site for the Ivanpah Solar Power Project. My concerns rest with the potential impact on the desert tortoise. At minimum some 36 tortoises will need to be translocated, although no final translocation plan is available.

These tortoises probably will die as a result of translocation. The desert is a severe environment and if the number of individuals exceeds the carrying capacity of the

habitat, the excess will die from predation, exposure, or competition for food with resident tortoises

Convincing scientific data are now available to demonstrate that, with few exceptions, translocation as a mitigation procedure is usually a failure. For example, during the last 15 years some 10,000 desert tortoises have been moved to the Large Scale Translocation Site (LSTS) in Clark County, Nevada. Yet based on surveys, there has been no measurable increase in numbers at the site. This is a clear indication that thousands of tortoises have died as a result of translocation. Observations by at least two field biologists reveal that dry washes in the higher areas of LSTS are a virtual graveyard, littered with the bleached bones and empty shells of numerous tortoises. Over the past several decades, tortoises have been moved around the Mojave Desert like pawns on a chessboard to accommodate one destructive project after another, and overall there has been a steady decline in tortoise populations due to habitat loss. The Ivanpah population of tortoises is part of a genetically distinct assemblage of tortoises known to scientists as the Northeastern Mojave Evolutionarily Significant Unit (ESU). The cumulative impacts of projects in the North Ivanpah Valley would threaten about 25 percent of the tortoise habitat and would further imperil this ESU. It is important to protect this population segment in order to maximize survival chances of the species as a whole. I would welcome plans for alternate siting of this project in order to protect the tortoise and other wildlife species.

Comment 4-2e. The FEIS describes a new desert tortoise translocation proposal for the ISEGS project that has had no public review whatsoever. Tortoises on the ISEGS site that need to be moved more than 500 meters would be translocated to the National Park Service's Mojave National Preserve. This will apparently involve a two-step process in which tortoises will be moved to a holding facility and eventually released on yet-to-be identified sites on the Preserve. Translocation of desert tortoises is controversial and carries a high risk not just to the translocated animals but to resident tortoises at the recipient sites. The DRECP's Independent Science Advisors consider translocation of desert tortoise to be an ineffective mitigation action in their recent draft recommendations. Major risks of translocation were clearly delineated in the 1994 Recovery Plan and include: (1) the tendency of the released desert tortoises to travel or wander from the site or attempt to return home; (2) increased vulnerability to predators; (3) the potential for agonistic responses from resident or host desert tortoises; (4) the potential for introducing or spreading diseases; and, (5) genetic pollution.
All of these risk factors need careful consideration especially given the critical importance of conserving the Mojave National Preserve's Ivanpah Valley tortoises in the light of the cumulative effects of ISEGS and other solar projects on the rest of California's small Northeastern Mojave desert tortoise population.

The Recovery Plan recommends "All translocatees should be genotyped unless the desert tortoises are to be moved only very short distances or between populations that are clearly genetically homogeneous" (FWS 19945). The Northeastern Mojave Recovery Unit is the most heterogeneous of the recovery units and includes at least three mtDNA haplotypes (FWS 1994 at 21; Britten et al, 19976; Hagerty 2008). Most of the tortoises in the Ivanpah Valley are South Las Vegas subtype; however, at least one tortoise of the Amargosa subtype was found in the project vicinity. It is unclear if this anomaly is through natural or human agency. The new translocation proposal adds the increased risk of genetic pollution to the impacts the ISEGS project will have on the threatened desert tortoise.

The Mojave National Preserve's General Management Plan does not consider using preserve lands as recipient sites for translocated desert tortoises. 36 CFR 2.1 generally prohibits "Introducing wildlife, fish or plants, including their reproductive bodies, into a park area ecosystem". It is therefore unclear how the National Park Service could accept the tortoises without doing its own National Environmental Policy Act analysis. This new proposal involving an additional government agency raises new issues that have not been addressed or analyzed in his or any other NEPA document for the project. Desert tortoises that are less than 500 meters from the western and northern project boundary will be moved outside the project area to the west and north, respectively. FEIS at 4.3- 48. No tortoises would be moved to the east or south of the ISEGS project area, "due to anticipated future projects, and the desire to avoid the potential of needing to relocate tortoises twice (once for ISEGS and then again associated with proposed future projects)." FEIS at 4.3-48. Yet, as the BLM is well aware the DesertXpress railway is proposed north of the project site. Relocating tortoises north of the project would thus not avoid the potential need to relocate those tortoises a second time. Further, this northern area is rockier with less friable soils that are potentially less suitable for burrowing which would further reduce the suitability of this area for desert tortoise translocation.

Response: *In an attempt to satisfy the request of the State agencies, the FEIS modified the translocation strategy to move tortoises to lands within the Mojave National Preserve. These National Park Service (NPS) administered lands would not be subject to the kinds of disturbance that can occur on BLM administered public land. Soon after release of the FEIS, it became evident to the National Park Service that the Preserve was not in a position to meet project specific timelines and requirements. The State wildlife agencies concluded that it was of higher priority to have translocation sites in good habitat as close to the project site as feasible than to have long-distance translocation sites on "protected" lands. With the clarification of priorities, BLM reverted back to translocations sites north and west of the project. The translocation requirement was revised by BLM and approved by the U.S. Fish and Wildlife Service following publication of the FEIS. The revised requirement is incorporated into mitigation measure BIO-9 in the ROD.*

Comment 19-22. In addition, Tortoise compensatory mitigation land amounts are not decided and vague. P. 3-28 of the FEIS states that the Mitigated Ivanpah 3 alternative has a type of land in ROW for which BLM cannot figure out what the applicant will use it for and if it will be disturbed or not. "Long-term status is uncertain," admits the FEIS. 109 acres will include a Succulent Nursery, Rare Plant Transplantation area, and unknown "mitigation areas." BLM assumes the 109 acres will have some sort of traffic and disturbance, as it will be fenced. It is admitted that the applicant is still finalizing detailed plans. But in questionable logic, BLM allows the applicant to remove this area from tortoise mitigation because even though it has "unknown long term status." BLM claims the disturbance maybe temporary, and that the area could remain viable tortoise habitat. But with digging and driving going on, we would consider this habitat to be disturbed. "The acreage required for mitigation for Desert Tortoise can be updated at a later time subject to BLM and Energy Commission approval." When will the public be able to see this update?

Response: *The ROD incorporates the final modification of the configuration and acreage of the Construction Logistics Area. The final area is smaller in size, and entirely within the footprint which was analyzed in the FEIS. The ROD includes the final acreage, all of which is assumed to be permanently disturbed for compensation purposes. Therefore, there are no lands associated with the Selected Alternative for which the required compensation cannot be determined.*

Comment 4-2a. The FEIS, fails to provide crucial baseline information such as the amount of desert tortoise habitat in the Northeastern Mojave Recovery Unit in California, and fails to adequately document the project's impacts on this resource. Without an adequate description of the ESU, a full analysis of the impacts of the proposed project is impossible. Nor is a meaningful comparison of alternatives or the development of adequate mitigation measures possible.

The North Ivanpah Valley accounts for about 24% of Northeastern Mojave desert tortoise ESU habitat in California. The NEMO Plan identifies that there are 27,300 acres of BLM managed public lands in the North Ivanpah Valley. The proposed action would develop 3,564 acres which is 13% of the public land in the North Ivanpah Valley. Thus, the direct footprint of the proposed project would consume 4-5% of the Northeastern Mojave ESU desert tortoise habitat in California.

Response*: The comparison of the project site to the California portion of the Northeastern Mojave Recovery Unit in California, and to the amount of BLM-managed public land, tend to overstate the impact of the project on the desert tortoise habitat. In general, the focus on the portion of the Recovery Unit habitat in California does not include the adjacent acreage in Nevada, and the focus on the habitat on BLM-managed public lands does not include the portion of the recovery unit on the Mojave National Preserve. Based on the BO issued by USFWS, the project would eliminate 0.07 to 0.15 percent of the tortoise habitat within the Northeastern Mojave Recovery Unit. The habitat in the Ivanpah DWMA and the Preserve will remain intact, and in fact be improved through habitat improvement measures in BIO-17.*

Comment 4-2d. Connectivity between desert tortoise populations is essential to maintain gene flow and genetic heterogeneity (Hagerty, 20083). Disruption of this connectivity poses a threat to the genetic diversity of the Mojave population as a whole. The FEIS mentions connectivity but provides no discussion or analysis. The FEIS provides no analysis of impacts to connectivity between the Northeastern Mojave and Eastern Mojave desert tortoise ESUs, which as we pointed out is believed to be via Mountain Pass. The FEIS provides no analysis of connectivity between Californian and Nevadan Northeastern Mojave populations. California's Ivanpah Valley desert tortoise population is increasingly threatened with isolation from desert tortoises in the rest of the Northeastern Mojave Recovery Unit to the north by existing and proposed solar power plants and other developments in Nevada's Primm Valley.

Fragmentation of occupied desert tortoise habitat results in smaller, isolated desert tortoise populations that become increasingly susceptible to negative effects and have decreased viability. Fragmentation is particularly problematic when population densities are low. The FEIS recognizes that the proposed action will fragment desert tortoise habitat but does not quantify the degree of fragmentation nor does it provide an analysis

of the viability of the fragmented desert tortoise populations. Nor does the FEIS address cumulative fragmentation effects.

Response: *BLM agrees that the northern portion of Ivanpah Valley is isolated, and that this is one of the reasons that this area was not designated as DWMA as part of the NEMO analysis. However, that isolation is caused by the presence of the Clark Mountains to the west, and I-15 to the east, and will not be substantially affected by the Selected Alternative. In guidance recently provided to BLM by the USFWS with respect to another solar project, USFWS evaluated the spatial requirements for providing connectivity corridors for desert tortoises, and concluded that a corridor of 4,000 feet would be sufficient to maintain continuity from one side to the other of a large-scale solar project. The northern boundary of the originally-proposed ISEGS project was located 4,000 feet from the Clark Mountains, leaving a corridor that met the recommended 4,000-foot width. The northern boundary of the Selected Alternative, which was specifically designed to reduce impacts to the tortoise and habitat, is located 5,900 feet from the Clark Mountains. Therefore, there is sufficient passage for tortoise around this project.*

The North Eastern Recovery Unit and Eastern Recovery Unit boundaries for the desert tortoise were based on geographic features -- primarily mountain ranges that either preclude tortoise movement or substantially reduce tortoise movement. The dividing "line" between these two units within California are: on the north side of the Ivanpah Valley -- the Clark Mountain range, to the west the Mescal Range and Ivanpah mountains and to the south Mid Hills and New York mountains. The location of Mountain Pass between the Mescal and Clark Mountains could potentially be used by tortoises. However, given the size of Mountain Pass, and it being the location of I-15 and a major mining operation, BLM does not agree that it is the primary means of connectivity between NE and E ESU's. Connectivity for tortoise is not like connectivity for deer or mountain lions... tortoise need "live in" connectivity zones, their movement across the landscape is "generational" the amount of habitat provided at Mountain Pass, especially considering the fact this has a major interstate freeway in the middle of it, make it unlikely to provide sufficient connectivity. This lack of connectivity thru Mountain Pass has nothing to do the ISEGS project and instead is all about the width of the pass and that it is a primary travel corridor for humans. In addition, the location of the project (being more than 8 miles from this pass) would not prevent tortoise from accessing this area.

The widest gap between the mountains is where Ivanpah Valley connects to shadow Valley in the vicinity of Cima. This area is sufficient to provide "live in habitat and is known to support robust populations of tortoise. Due to the size of this area and the quality of the habitat where these two valleys meet, this is the primary connectivity corridor between these two units and it is within the Mojave NP, not near this project. The protected landscape of the Mojave Preserve should ensure that this region remains an open and viable connectivity corridor between the Ne and E recovery units of the desert tortoise.

Finally, the FEIS describes mitigation measures (fencing I-15 and enhancing undercrossings, habitat restoration and reclamation of closed routes in the DWMA) that would enhance connectivity for desert tortoise within the Northeastern Mojave Recovery Unit and offset project impacts to connectivity.

Comment 4-5. The NEMO Plan set the goal for special status species as "Populations and their habitats are sufficiently distributed to prevent the need for listing" (NEMO Plan at 2-6). The FEIS fails to document how impacts to sensitive and rare wildlife such as gila monsters, burrowing owl, golden eagles, other bird species, bats, and other wildlife will be mitigated. This is particularly problematic for species such as the gila monster which has such a limited distribution in the area.

Response: *Mitigation measures for the species mentioned in this comment are included within mitigation measures BIO-6 and 11 (gila monsters), 16 (burrowing owl), 19 (bighorn sheep), 22 and 23 (migratory birds and bats), and 28 (golden eagle).*

Comment 4-8. Section 2(c) of The Endangered Species Act (ESA) explicitly and clearly states, "It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." As a Federal agency, the BLM is bound by this policy. It is therefore the BLM's job to ensure that it considers and evaluates all data relating to impacts to listed species from the projects it is evaluating. In response to ours and others concerns relating to desert tortoise translocation, the BLM responded, "The Biological Assessment includes an evaluation of impacts to desert tortoises, including those associated with the translocation of individuals. It is the responsibility of the USFWS to review the document and determine, based on their expertise, whether the conclusions reached within the Biological Assessment are valid. If the USFWS agrees with the findings of the Biological Assessment, they will issue a Biological Opinion, which may include additional mitigation or conservation measures. Alternatively, if the USFWS determines there are substantive residual impacts, even with the application of additional mitigation measures, they will issue a jeopardy opinion in the Biological Opinion that would prevent the Project from moving forward as proposed." FEIS at A.1-133. It is the BLM's job to seek to conserve listed species and thus to ensure that impacts are mitigated to the extent practicable and that the Fish and Wildlife Service are fully informed with respect to a project's impacts. It is not appropriate for the BLM to simply dismiss valid and significant concerns on the grounds that the USFWS is the one making the jeopardy/nonjeopardy call.

Response: *The quoted text describes the role of the USFWS in the assessment of impacts to listed species. However, this does not imply that BLM has dismissed concerns related to the listed species. The FEIS acknowledges and quantifies the direct, indirect, and cumulative impacts to desert tortoises and their habitat as a result of the Selected Alternative, and established both mitigation measures and compensation in response to the impacts.*

Comment 5-1. FEIS BIO-17: The Substance of BIO-17 in the ROD Should Reflect the Clarification by the State of California's Department of Fish & Game Regarding Biological Resources Mitigation and the Impropriety of Using Draft REAT Working Draft Formulas.

The Final EIS should reflect a recent clarification by the State of California's Department of Fish & Game ("CDFG") on biological resources mitigation. This clarification, which is based on information already in the record for this proceeding, affects the details of and

the language for Condition BIO-17. A copy of the September 1, 2010 letter to the CEC from Kevin Hunting, Chief Deputy Director of CDFG, providing this clarification, is attached to the Applicant's PMPD Comments (as Attachment 2 thereto) and is referred to hereinafter as the "CDFG Clarification Letter."

The FEIS references a working draft table from the California "Renewable Energy Action Team ("REAT"). The July 23, 2010 working draft table is entitled "Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account." Condition BIO-17 in the FEIS has a formula based on this REAT working draft table. In the CDFG Clarification Letter, Kevin Hunting explains that the REAT document used in the FEIS' BIO-17 is a "working draft" that should not and does not apply to the Ivanpah Project. Chief Deputy Director Hunting states:

The document is a working draft that does not yet reflect the position of all of the REAT agencies with respect to biological mitigation implementation and it lacks the context of representing only one of several available mitigation options. As such it does not reflect the Department's approach to securing mitigation costs and includes costs that may not be relevant for the state to exact.

We therefore recommend either removal of the table from any official decision-making document or clarify that it is a working draft REAT document and should not be relied upon for this specific project. (CDFG Clarification Letter, September 1, 2010, p. 1; see Applicant's PMPD Comments, Exhibit 1 hereto at pp. 6-7 and Attachment 2 of the Applicant's PMPD Comments.)

Accordingly, Condition BIO-17 should be revised in the ROD to reflect this significant clarification from the CDFG which explains why the table set forth in the BLM and CEC versions of BIO-17 is inapplicable to the Ivanpah Project and is inappropriate to be incorporated in the ROD. The specific revisions to the text of BIO-17 that the Applicant believes the BLM and the Commission should incorporate into the ROW grant and the CEC's Final Decision, consistent with the fact that the REAT draft working table is inapplicable to the Ivanpah Project, are set forth in Exhibit 1 (Applicant's PMPD Comments) and repeated for your convenience in Exhibit 3 hereto.

Response: *The ROD contains a revised version of BIO-17 as it applies to the BLM. The issues in this comment were considered in that revision. The BLM BIO 17 mitigation measure describes the options for applicants to voluntarily use the REAT NFWF formula and account or perform the compensation requirements within 2 years of the BLM decision.*

Comment 6-2. Detailed compensatory mitigation measures are determined on a project-specific basis, and must be contained in each project's environmental analyses and decision documents. The ROD should describe the final biological resources mitigation commitments and how they would be funded and implemented. The FEIS indicates the applicant could contribute to the National Fish and Wildlife Foundation (NFWF) Account to compensate for loss of desert tortoise habitat (pg. 4.3-1 11). For each species requiring compensatory mitigation, the ROD should state whether and how the Project applicant would use the NFWF Account, an in-lieu fee strategy, or an applicant-directed implementation strategy.

We understand CDFG has not yet provided concurrence on desert tortoise mitigation (pg. 4.3-3) and that the translocation plan is pending approval by CDFG and U.S. Fish and Wildlife Service (USFWS) (pg. A.I-128). Also, the Biological Opinion for desert tortoise has not been finalized and a jeopardy opinion could be issued if USFWS determines that substantial residual impacts remain, even with the application of additional mitigation measures (pg. A. 1 - 134). These final determinations should play an important role in informing the decision on which alternative to approve and what commitments, terms, and conditions must accompany that approval.

Comment 6-4. *Recommendations:*

- Incorporate final information on the compensatory mitigation proposals (including quantification of acreages, estimates of species protected, costs to acquire compensatory lands, etc.) for unavoidable impacts to waters of the State and biological resources such as bighorn sheep, desert tortoise and golden eagles.
- A clear commitment to implement mitigation measures that result from consultation with the USFWS and CDFG to avoid and minimize adverse effects to sensitive biological resources, including habitat for desert tortoise, bighorn sheep, and golden eagles, should be included in the FEIS and, ultimately, the ROD.
- Clarify the rationale for a 3: 1 mitigation ratio for tortoise habitat and how this relates to the mitigation ratio being applied for other renewable energy projects mitigating for desert tortoise impacts in California and Nevada.
- If the applicant is to acquire compensation lands, the location(s) and management plans for these lands should be fully disclosed in the ROD.
- Provide additional supporting documentation, in the responses to FEIS comments, for the final acreage identified as habitat for the bighorn sheep and golden eagles on the Project site, as well as compensation habitat acreage. Update BIO-19 and 28 as appropriate.
- Include the provisions or mechanism(s) in the ROD that will ensure that habitat selected for compensatory mitigation will be protected in perpetuity.

Response: *The Biological Opinion was issued by USFWS on October 4 2010.*

In the BO, the USFWS conducted analysis of the impact of the Selected Alternative on the desert tortoise and its habitat, including:

- *Scope of the proposed action;*
- *Environmental baseline, including evaluation of habitat characteristics and estimation of the number of tortoise present by various methods;*
- *Status of the tortoise populations in the area;*
- *Translocation strategy;*
- *Impacts due to construction, operations, and restoration;*
- *Impacts due to loss of habitat; and*
- *Effects of compensation measures.*

Based on this analysis, the USFWS stated "it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise." This conclusion was reached for a variety of reasons, including:

1. *Project activities are likely to directly kill few subadult/adult desert tortoises because BrightSource will implement numerous measures to reduce the potential that desert tortoises will occupy project work sites (i.e., clearance surveys, exclusion fencing, translocation, qualified biologists, desert tortoise monitors).*
2. *The number of desert tortoises injured and killed as a result of translocation will likely be small relative to the number of desert tortoises that occur within the Northeastern Mojave Recovery Unit, and across the range of the species.*
3. *BrightSource will implement numerous measures to reduce the potential for increased predation by common ravens and spread of non-native plant species.*
4. *Current information from permanent study plots and line distance sampling does not document a statistical trend in adult desert tortoise densities in this recovery unit. Therefore, we have no information to indicate that the loss of a small number of individuals as a result of this project would appreciably reduce our ability to reach population recovery objectives for the desert tortoise in the Northeastern Mojave Recovery Unit.*
5. *This project would not result in loss of desert tortoise habitat in areas that the Bureau or other agencies have designated for intensive management to achieve conservation of desert tortoises.*
6. *Compensation requirements through the Bureau and California Department of Fish and Game will result in an increase in the amount of existing habitat that is managed for the conservation of the desert tortoise and will likely lead to restoration of lost or degraded habitat within these areas.*
7. *Regional management actions, proposed by the Bureau, are likely to aid in reducing common raven predation in a portion of the desert tortoise's range.*

The ROD incorporates the results of the BO, including a condition of approval requiring the applicant to comply with the reasonable and prudent measures and required terms and conditions.

30230 - Effects of project operations

Comment 4-4. The proposed ISEGS project will remove 3,564 acres of bajada foraging habitat for bighorn sheep, and may impact migration and long distance movements between mountain ranges. The FEIS discusses creation of a new water source in the eastern part of the Clark Mountain range or in the State Line Hills outside of designated wilderness as mitigation. "This artificial water source would supplement existing supplies that may be a limiting factor to local bighorn sheep populations. Further, the water source likely would shift foraging opportunities into other areas within the lower elevations of the mountains, and away from areas of the bajada lost to ISEGS facilities and the zone of disturbance on the north. This water source would also serve to attract the bighorn during seasonal movements and keep them in the mountainous portion of the wildlife corridor." FEIS at 4.3-70. Nowhere in the FEIS is it explained how creation of this new water source will mitigate for loss of foraging habitat (other than speculation that a new water source might make other areas available for foraging) or how it would mitigate impacts to migration. Nor does the FEIS review the potential negative impacts that creating a new water source may have on desert tortoise through providing a new foraging area for predatory ravens.

Comment 1-16. Failing to adequately identify and analyze the impacts to bighorn sheep from loss of forage habitat and impacts to movement corridors. The mitigation measure of requiring a guzzler has no connection to the loss of forage habitat and will itself cause additional impacts to biological resources that have not been addressed in the environmental review documents. Simply put, *a guzzler is not a proper mitigation measure for the impacts of this project and should not be required*. The BLM should have revised the FEIS to adequately identify and analyze the impacts to bighorn and should have provided mitigation measures that actually address the impacts to foraging habitat and movement corridors.

Response: *BIO-19 is a requirement of the Energy Commission. Because it is an off-site mitigation measure, the placement of the water source would be subject to a site-specific environmental analysis to identify a suitable location which would not generate adverse impacts.*

Comment 1-17. Failing to adequately identify and analyze the impacts to migratory birds, golden eagles, burrowing owls, Gila monsters, badgers and other wildlife, rare insects, rare plants, and rare plant communities.

Response: *Analysis of impacts of the Selected Alternative on the species can be found in the following locations in the FEIS: migratory birds (pages 4.3-40 to 4.3-43), golden eagles (pages 4.3-66 to 4.3-67), burrowing owls (4.3-65 to 4.3-67), gila monsters (4.3-63 to 4.3-64), badger (4.3-68 to 4.3-69), insects (4.3-39), and rare plants and rare plant communities (pages 4.3-59 to 4.3-62).*

Physical Components of the Human Environment
Air Quality (40000)
40410 - PM10

Comment 1-18. Failing to adequately address impacts to air quality particularly regarding PM10 emissions in an already impaired basin and provide for adequate mitigation.

Response: *Section 4.1 of the FEIS analyzes impacts and develops mitigation measures for all criteria air pollutants. Specific analysis of PM10 emissions and impacts are provided in Table 4.1-9 (construction emissions), Table 4.1-10 (operations emissions), Pages 4.1-25 to 4.1-27 (applicant-proposed mitigation measures), Page 4.1-27 (other mitigation measures), Page 4.1-34 (discussion of current PM10 attainment status). Mitigation measures designed to address PM10 impacts include AQ-SC3, AQ-SC4, and AQ-SC7.*

40500 - Climate Change

Comment 19-14. Page 2-7 of the FEIS states that the DOE Purpose and Need says to sequester anthropogenic greenhouse gases and avoid environmental degradation, but the project will do neither. Biological soil crusts (cryptobiotic crusts) and vegetation that have been shown to store carbon in the Mojave Desert will be dug up, disturbed, and removed in large quantities, with no guarantee that revegetation after decommissioning will succeed. Environmental degradation will occur on a large scale: the Proposed Action would permanently disturb 3,713 acres of natural desert (FEIS, p. 3-9).

Response: *An evaluation of the natural carbon uptake is presented on page 4.2-10 of the FEIS. That analysis concluded that natural carbon uptake was negligible compared to the reduction in GHG emissions associated with fossil fuel power plants.*

Comment 1-26. Failing to discuss any mitigation measures for greenhouse gas emissions (GHG) from the project. The FEIS still fails to discuss, no less adopt, any mitigation measures for the GHG created from construction or operations of the proposed project which are significant. There is no discussion of reducing GHG by using alternative fuels or highly efficient vehicles and equipment.

Response: *The analysis in Section 4.2 of the FEIS found that impacts of the Selected Alternative with respect to GHG would be beneficial. It also stated that the applicant would be subject to any future GHG regulations, including reporting, capping emissions, and participation in trade markets.*

Comment 10-1. Greenpeace USA supports analysis that shows the United States can transition to an economy run by renewable energy. This energy revolution can occur simultaneous to economic development, and can prove more positive for the economy than growth that continues to rely on fossil fuels for transportation and electricity. By 2050 about 90% of our primary energy demand can be met without fossil fuels. Solar energy must be a part of this national renewable energy portfolio.

Brightsource's Ivanpah Solar Electric Generating System (ISEGS) can help the country begin retiring some of the 600-plus coal-fired power plants, which are the largest source of global warming pollution among a host of pollutants undermining public health. Dry-cooling concentrating solar power plants like ISEGS should be supported upon satisfactory completion environmental risk assessments required by federal and state regulations.

Greenpeace urges that ISEGS, and other renewable energy project that require thorough environmental review, be given adequate attention so that required safeguard measures or permitting issues are articulated and/or resolved. Right now California imports electricity from coal-fired plants outside the state. ISEGS may be an important part of California's leadership as a state economy embracing clean energy.

Response: *The information in this comment was considered in the selection of the Selected Alternative.*

Comment 13-1. In particular, I am shocked that BLM and CEC are just blithely stating the "fact" that Ivanpah will "reduce greenhouse gas emissions," because (a) nobody has identified a single fossil fuel source that will be shut down or reduced because of Ivanpah and (b) the emissions from the manufacturing, construction, transmission and operations are ENORMOUS, almost certainly greater than any fantasy the BLM and CEC have of emission reductions.

It is absolutely Imperative that if BLM and CEC wish to "override" the absolutely crucial environmental protections we, the people, have supported for the past 40 years, that there be a CONCLUSIVE SHOWING OF ACTUAL NET GHG REDUCTIONS from cradle to grave before this permit is issued. Otherwise, it's all just a big LIE and excuse to hand over more of our tax dollars and public land to mercenary energy companies. The comparison that must be made is to (1) existing natural gas plants for the same net MWh of power (since solar cannot offset baseload like coal) and (2) to the equivalent amount of power produced by PV within the built environment (which is the same or lower cost per MW) and must include major penalties for water use, since water is the next crisis. An actual existing power plant must be permanently decommissioned in order for any "offset" to count, otherwise it's just "more power," which leads to a dramatic INCREASE in GHG emissions.

Response: *Table 4.2-5 lists fossil-fuel plants which have long-term contracts which will have to be replaced by 2020 pursuant to SB 1368. The discussion of Solar Energy Payback Time, on page 4.2-10, specifically states that the analysis incorporates direct and indirect emissions associated with manufacturing and transportation.*

40800 - Cumulative Effects Analysis

Comment 6-6. We recognize the FEIS has included a discussion of the localized cumulative impacts of projects that may have overlapping construction periods; however, the scope of the cumulative impact analysis in the FEIS remains geographically limited to focus on cumulative impacts within six miles of the Project. Determination of the affected environment should not be based on a predetermined geographic area, but rather on perception of meaningful impacts for each resource at issue. EPA disagrees

that there is never overlap for sources separated by six miles. This would depend on the emissions, size of the source, and release height, among other criteria. For example, in our air permitting process, we require modeling of the significant impact area plus 50 kilometers out. Due to the serious nature of the PM10 and 8-hour ozone conditions in the Mojave Desert Air Basin, the cumulative effects study area could be the entire air basin because ozone precursors are reactive over hundreds of miles.

Recommendation:

- The response to comments on the FEIS should provide the rationale for limiting the scope of the cumulative impacts analysis to the specified local area. If the Project would affect the ability of other foreseeable projects to be permitted, the ROD and responses to comments on the FEIS should discuss this.

Response: *The discussion of the affected environment for air quality, which is the baseline for the cumulative impact analysis, is not limited geographically. The measured air quality used to establish that affected environment includes, by definition, all point source and non-point source emissions that may be detected in the project area. The discussion of the survey for potential air emissions sources within six miles in the first paragraph under localized cumulative impacts is specific to the Energy Commission's analysis. The remainder of that section evaluates all known projects in a much wider area, and is not limited to a six-mile radius. Because each of the new projects, including ISEGS, would be subject to strict mitigation measures, the construction and operation of ISEGS is not expected to affect the ability of other projects to be permitted.*

Soil Resources (42000)
42500 - Loss in Productivity

Comment 1-19. Failing to adequately assess the impacts to soils, particularly the loss of intact cryptobiotic soil crusts and other stable soils. These impacts were not adequately identified and no final grading plan has been provided to show the actual amount of grading or the impacts to soils from the project as a whole. The impacts to soils are also closely tied to the increase of PM10 due to the project and these issues have not been adequately addressed or mitigated.

Response: *The modeling of PM10 emissions used to estimate impacts in Table 4.1-9 of the FEIS were conducted using an assumption of 100 percent site grading and soil disturbance. The final grading plans (submitted on June 15, 2010) include grading only in the power block areas, every fifth row of heliostats, and in very limited areas of rough terrain. Therefore, the impact analysis of site grading and soil disturbance on air quality has been conservatively estimated. Also, these emissions are aggressively mitigated through the applicant's selection of the Low Impact Development method, and through fugitive dust control mitigation measures AQ-SC3 and AQ-SC7.*

Water Resources (43000)
43140 - Ground Water Quantity

Comment 19-23. We believe the FEIS underestimated the amount of water that will be needed for construction and operation of the project. Dust control during construction will often be more than estimated, as will mirror washing. The applicant estimates project water consumption would not exceed a maximum of 100 acre-feet per year. But the applicant doubled the proposed what was originally proposed, and then wanted more water (FEIS 4.10-6). Will more water eventually be needed, and how will BLM work with the applicant of this happens after approval? The FEIS admits that local groundwater declines may occur from project pumping from new wells (p. 4-10-29), and says "This reduction in basin storage and water levels could translate into basin-wide impacts." Independent groundwater basin analysis should be undertaken, as other sources indicate overdrafts which are not discussed in the FEIS. Precipitation recharge in this basin is low: the Environmental Protection Agency, when analyzing the Ivanpah Valley Aquifer for the Coliseum Mine in the 1990s, was concerned about overdrafts from any water extractions, see: http://epa.gov/waste/nonhaz/industrial/special/mining/techdocs/gold/goldch3.pdf).

This is too risky to allow more groundwater pumping, especially considering cumulative impacts. The project should not be approved until more study is done on the basin recharge.

Response: *There is no reason to assume that water use for construction and mirror washing will be more than estimated. All water use calculations were based on conservative assumptions, and actual use will certainly be lower than estimated. In addition, BLM and the Energy Commission included caps on groundwater withdrawal of 200 ac-ft/yr for construction and 100 ac-ft/yr during operations in Soil & Water-4. Under this mitigation measure, the applicant is required to monitor and report water usage. Should the need to exceed these limits be identified, BLM's consideration of a request to increase the limits would require a separate environmental analysis.*

Comment 4-7. The project will draw on ground water, most of which will be used for mirror washing. The project will substantially alter the existing drainage pattern of the project site. The project site is in an area of the Ivanpah Ground Water Basin where substantial declines in groundwater levels have already been observed. Groundwater discharge from the Ivanpah Ground Water Basin occurs mainly through pumping and underflow towards the Las Vegas Valley. FEIS at 4.10-12. Although the FEIS claims that the project's ground water draw is exceeded by the natural recharge rate of the Basin, the FEIS fails to examine any cumulative effect on the underflow to the Las Vegas Valley, which is in a serious overdraft.

Response: *The analysis of groundwater recharge and usage by all current and reasonably foreseeable future users is presented on pages 4.10-26 through 4.10-33 of the FEIS. This analysis uses the results from all previous studies of groundwater in the Ivanpah Basin, and the impact of the water withdrawal for the Selected Alternative is based on conservative assumptions.*

Comment 8-11. In a desert, which some claim as part of the Colorado River Basin drainage, the project would use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, and other industrial uses such as mirror

washing would be supplied from on-site groundwater wells. Project cooling water blowdown will be piped to lined, on-site evaporation ponds. Electrical power would be produced using steam turbines fed from solar steam generators. The solar steam generators receive heated transfer fluid from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. The applicant has no entitlement to Colorado River water but our neighbor Mexico is entitled to one point five million acre feet annually and the United States has failed to deliver on its allocation under a Treaty with Mexico.

Response: *The Selected Alternative would use dry cooling condensers, which use substantially less water than wet cooling towers.*

Comment 1-23. Failing to adequately address impacts to groundwater resources from the project and impacts to federal reserved water rights. The BLM must ensure that if the ISEGS project goes forward in any form, the project applicant or ROW holder does not accrue new water rights on federal lands --- BLM should require that any rights *arguably* created by use of groundwater on this site for the project are quit claimed back to the BLM at no cost at the end of the project term. In no case should the ROW holder be able to transfer or sell any water rights that *arguably* could be created by use of groundwater for the proposed project to any third party or off site. In addition, the ROW holder must expressly agree not to seek any compensation for returning and such water rights to the BLM in favor of the public at the end for the project term.

Response: *The use of water would be approved as part of the ROW grant. The grant does not confer any water rights on the applicant. This approval would cease at the expiration of the grant.*

43500 - Environmental Consequences

Comment 19-13. The Applicant seeks to put heliostat poles directly into active and ecologically functioning desert washes that provide habitat for both terrestrial and avian species of fauna. Creating hundreds of miles of roads and pounding poles into washes will cause profound changes to the streambed and offsite resources. To date, no results of various pole-driving methods for placing poles into the stony substrate have been released to the public, and thus the public has no way to understand the impacts to desert soils and ephemeral washes, as well as how flood events will potentially scour and knock down heliostats, adding costs to the project. Construction, maintenance and grading at the ISEGS Project site will destroy desert pavement and cryptobiotic crusts, features on the site that naturally prevent soil erosion and sedimentation. The destruction of these natural soil stabilizers will have far ranging impacts to an already impaired air and water basin and all living organisms both on-site and off-site downwind.

Comment 1-24. Failing to adequately address the impacts to surface waters from the loss of natural washes and other features as well as increased erosion.

Comment 6-1. EPA remains concerned about the potential impact to approximately 2,000 ephemeral water segments on the site, which could result in direct or indirect impacts to wildlife functions and values provided by 198 acres of waters of the State. All drainage from surrounding mountains and alluvial fans collects in closed basins in the

Ivanpah Valley. Ivanpah Dry Lake, a water of the Unites States, is located approximately 2 miles east and downslope of the Project area. Numerous ephemeral washes occur throughout the broad, coalescing alluvial fans that convey storm water runoff from the mountains toward Ivanpah Lake. As noted in our previous comments, natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Project design should minimize disruption to downstream flows by avoiding, to the maximum extent possible, changes to natural washes, excavating sediment, vegetation clearing, and grading of surface irregularities.

Although the proposed Project construction method, Low Impact Development, would be designed to minimize direct impacts to drainages, the FEIS indicates that all 2,000 ephemeral drainages are assumed to be impacted (pg. 4.3-130). Further, a scour analysis conducted to evaluate the potential of heliostat failure predicted the failure of more than 4,000 heliostats in a 10-year storm, and over 32,000 in a 100-year storm (pg. 4.10-24). While the FEIS indicates potential impacts from storm water and sedimentation are uncertain (pg. 1-29), it appears that some such impacts are expected, given the inclusion of measure Soil&Water-5 to monitor these potential impacts to equipment in the drainages.

EPA remains concerned about the increased erosion, migration of channels, local scour, and potential destabilization and damage that could result from installing equipment in drainages, and we strongly recommend maximum avoidance of these waters and high risk flood hazard zones. Heliostats placed in flood hazard areas are subject to scour, and could become unstable if the scour undermines their structural foundation, resulting in collapse and potentially damaging and polluting the washes and ground surface with, mirror fragments and other debris.

We reiterate our DEIS recommendation to minimize direct and indirect impacts, such as erosion, migration of channels, and local scour, by not placing heliostats in washes. The California Department of Fish and Game (CDFG) has not provided concurrence on compensatory mitigation for waters of the State (pg. A. 1-128 and A. 1-1 96). Their final determination should play an important role in informing the decision on which alternative to approve and what commitments, terms, and conditions must accompany that approval.

Recommendations:

- The ROD and responses to comments on the FEIS should discuss all measures to avoid washes and placement of heliostats in drainages for the proposed Project and include the final details and requirements of a compensatory mitigation plan.
- In responses to FEIS comments and in the ROD, confirm removal of stormwater storage and containment areas and demonstrate that downstream flows will not be disrupted due to proposed changes to natural washes, excavation of sediment, or increased sedimentation due to increased vegetation clearing and grading of surface irregularities.
- Integrate fencing design into the ROD to ensure unimpeded hydrologic flow and sediment transport through the site.
- Minimize the number of road crossings over washes in order to minimize erosion, migration of channels, and scour. Road crossings should be

designed to provide adequate flow through during large storm events. Commit to these measures in the ROD.

- Locate any remaining facilities outside of waters and commit to these measures in the ROD. Estimate acreages and number of species protected as a result of alternative design configurations.
- Incorporate vegetation removal and re-establishment conditions for construction into the ROD that minimize vegetation removal in drainages, avoid impacts to drainage bank contours, and require restoration using low-lying native species, as appropriate, that would not require trimming nor impede the Project's operation.
- Fully discuss, in responses to FEIS comments, how many heliostats will be installed in drainages for the final design. Impacts from such construction to waters of the State should be quantified. All analyses should be updated to include a full evaluation of impacts to waters, sedimentation, scouring, etc. from locating heliostats in flood hazard areas.
- Responses to FEIS comments should fully describe and quantify the benefits of the Low-Impact Development design that is described in the responses to comments (pg. A.l-190 and A.l-192).
- Discuss the availability of sufficient compensation lands to replace desert wash functions lost on the Project site.

Response: *The analysis of the effect of stormwater on the facility, and the effect of facility development on downstream stormwater flow and sedimentation, is included on pages 4.10-19 through 4.10-25 of the FEIS. The means of analyzing and mitigating potential stormwater impacts was one of the more substantial issues on which BLM, the applicant, the Energy Commission, and their hydrologic analysis experts studied in detail for more than two years. This process resulted in the applicant completely modifying their initially-proposed stormwater management system, and replacing it with the Low Impact Development system. In evaluating this issue, BLM not only performed a technical review of documentation provided by the applicant, BLM conducted independent stormwater modeling using more conservative assumptions, and generated results that implied that impacts were greater than those estimated by the applicant.*

An attempt to reduce potential impacts by not placing heliostats in washes is complicated by the ability to define what is and is not a "wash" on an alluvial fan environment. The stormwater flows on alluvial fans create washes that migrate over time. Over the 30-year span of the ROW grant, all areas of the project would likely receive stormwater flow at one time or another. The Mitigated Ivanpah 3 Alternative was developed, in part, to avoid placing heliostats in the northern areas of the site which generally have the highest current volumes of stormwater flow, as is evidenced by the larger width and depth of the active washes in that area. However, even these washes could migrate into the active heliostat areas after project construction.

Instead of avoiding placing heliostats in ephemeral washes which will change over time, the analysis of this impact focused on using conservative assumptions to identify the maximum possible depth of scour across the areas of the facility, and then developing a heliostat installation plan to ensure that heliostats were installed deep enough to withstand the potential scour. In addition, BLM worked with the Energy Commission to develop Soil & Water-5, which requires monitoring or the site following stormwater flows, and response actions if damage to fencing or heliostats is identified.

BLM Program Areas (50000)
50320 - Herd Management Areas (HMAs)

Comment 4-3. Although the BLM has established the AML for burros in the Clark Mountain HMA at zero, there are many burros (and at least one wild horse) that use the proposed project site. If the project site is fenced the burros and wild horse will be displaced. They may concentrate in other areas resulting in impacts to other resources offsite. BLM cannot simply pronounce that because they have established a zero AML, wild horses and burros will not be impacted by any of the alternatives. BLM must address the actual impacts caused by the project.

Response: *The BLM analyzed the impact of the plan amendment on wild horses and burros in section 4.18 of the FEIS. The NEMO plan amendment reduced the AML for burros in this area of the HMA from 44 to 0. Pursuant to this amendment, the BLM has been actively removing burros, which are still protected by the provisions of the Wild and Free-Roaming Horses and Burros Act. Ninety six burros were removed from the Herd Area in January 2007. The approximately 20 remaining burros are expected to be removed in the near future. The future removal of these burros to meet the AML will be accomplished with additional NEPA review. Due to ongoing burro removals from the area pursuant to the NEMO amendment, the FEIS stated that the impact of the proposed project on burros would not be considered adverse. As cited in the FEIS, the mitigation measures would prevent injury to burros that may still be in the project area or vicinity.*

50600 - Recreation
50660 - OHV Area Designations (Open, Limited, and Closed)

Comment 1-7. The proposed amendment as discussed in the FEIS now includes replacing three existing designated routes with "replacement routes" which "would be part of the ROW grant for the project and would remain open and maintained by the applicant for the life of the facility" (FEIS at 3-17). Although no map is provided clearly showing the replacement routes, it appears that the perimeter roads around the facility would be the primary replacement routes. (See also FEIS at 4.19-4) However, the impacts on the resources of our public lands from these "replacement routes" and the likelihood that they will be used by off-road vehicles (ORVs) was not analyzed. As the Center has previously commented, there is a high likelihood that ORV users would not ride around the perimeter but will instead create new cross country routes to avoid the industrial site. The FEIS dismisses these concerns without response (FEIS at A.1-179), and the FEIS notes only that "the development of the power generation plant would change the experience from that of a primitive driving experience to the experience of driving around a commercially developed urban area." FEIS at 4.19-4. Moreover, portions of the existing routes that will remain in place traverse the areas that are proposed for desert tortoise translocation west of the proposed project. The impacts to the translocated tortoises and the existing population in these areas is not identified or analyzed. Recent studies correlate higher desert tortoise mortality with density of roads.

Comment 1-10. Failing to address the potential impacts of closing some off-road vehicle routes on resources causing increased use of other routes.

Response: *It is correct that the perimeter roads would be the replacement routes. There is no evidence that the presence of the facility would increase the amount of cross-country travel by OHV users. Also, the revision of the location of the roads will not increase the number of recreational vehicles, the length of their travel, or place the routes in a location with a higher tortoise population than is currently the case.*

Social Components of the Human Environment
Cultural Resources (60000)
60000 - Cultural Resources generally

Comment 19-26. We believe the archaeological site ISEGS-01 (discussed in the FEIS, pages 4.4-44 to 4.4-55) to be eligible for NRHP, based on our own discussions and site visits with Chemehuevi elders who have seen the site. No mitigation or protection has been proposed for this unique feature, which needs more study and cultural consultation.

Comment 8-12. The land is home to various endangered species of plants and wildlife, and to the Desert Tortoise. But human beings have also lived at the foot of these peaks for a very long time. The Palen Mountains are sacred to the Native Americans and in Nahuatl they are called "Hue-Hue-Talpallan" which means Hue (Ancient), Hue (Ancient), Talpallan (Reddish Earth) altogether this means "The Ancient, Ancient Reddish Earth". The area is also home to Native petroglyphs, ancient trails, springs and a way of life and cosmological orientation that derives its symbolism and power from the very mountains which ring the valley to be paved over by the plant. The tribal community whose heritage is at state is the Chemehuevi, or NuVuu. The NuVuu are Ute Aztecan, and this is where it gets interesting. The area is known as La Cuna de Atzlan, or the Cradle of Atzlan Local indigenous leaders proclaim the landscape itself to be the source of the imagery of the Aztec calendar.

Response: *See the Native American Consultation subsection of the Cultural Resources section (Pages 4-4.23 to 4.4-25 of the FEIS), and Tables 4-4.4 and 4-4.5 in the Cultural Resources section of the FEIS. This information in the FEIS was updated to include the additional government-to-government consultation that occurred subsequent to the publication of the DEIS. No concerns were expressed by any of the Tribes consulted. Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes. Extensive research including contacting tribal representatives went into the determination that ISEGS -01 was not eligible for listing on the NRHP (page 4.4-54).*

60020 - Ethnographic Resources

Comment 9-1. The Native American Heritage Commission withholds a determination of opposition or support of this project subject to the completion by the Bureau of Land Management of the Tribal Consultation required by the National Historic Preservation Act, Section 106 process. The NAHC did perform a Sacred Lands File (SLF) search in the NAHC SLF Inventory, established by the Legislature pursuant to Public Resources Code §5097.94(a) and Native American Cultural Resources were not identified within

one-half mile of the APE identified for the project. However, Native American cultural resources are in close proximity to the APE.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the culturally affiliated tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. A Native American Tribe or Tribal Elder may be the only source of information about a cultural resource. Also, the NAHC recommends that a Native American Monitor or Native American culturally knowledgeable person be employed whenever a professional archaeologist is employed during the 'Initial Study' and in other phases of the environmental planning processes.

Furthermore the NAHC recommends that you contact the California Historic Resources information System (CHRIS) at the Office of Historic Preservation (OHP) Coordinator's office (at (916) 653-7278, for referral to the nearest OHP information Center of which there are 10.

Response: *No specific concerns were expressed by any of the Tribes consulted.*

Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes. One Tribal elder from Needles did note that 'Ivanpah' meant 'good water' in Chemehuevi. The project is within the homeland of the Chemehuevi and Southern Paiute. The Timbisha Shoshone Tribe was added to the consultation/coordination list in November 2009, at their request. Numerous letters as well as phone calls and face to face meetings occurred with Tribes on this project:

Letters submitted on:

Letter #1: October 4, 2007 or December 6, 2007 (for Tribes on NAHC list, not on original BLM list) and December 2, 2009 for the Timbisha Shoshone Initiating coordination/consultation with results of archaeological survey

Letter #2: March 5, 2009 Follow-up and results of additional survey

Letter #3: December 16, 2009 Draft EIS

Letter #4: April 16, 2010 Supplemental Draft EIS

The Needles Field Office Manager and archaeologist had short face-to-face meetings with both the Pahrump Chairman and Chemehuevi Cultural Lead about ISEGS at an OHV conference at Chemehuevi Reservation, 4 April 2009, but no concerns were expressed. BLM was contacted by the Colorado River Indian Tribes on October 21, 2009. The only specific comments given were that the Chemehuevi used to live in and use the mountains surrounding the Ivanpah Valley for hunting and collecting, that a spring was named "Ivanpah" meaning 'good water' in Chemehuevi (not near the project area) and that he wanted to be included on future mailings.

BLM was contacted via phone by the Chairman of the San Fernando Band of Mission Indians. BLM returned his call on May 4, 2010. He wanted to know if the project lands had been surveyed and if any prehistoric or Tribal sites had been found. BLM assured him that only historic period sites had been identified to date and that the agency would let him know if any were identified. His concern was that prehistoric sites indicating tribal activity might be destroyed.

Tribes contacted by BLM included:

Chemehuevi Indian Tribe
Colorado River Indian Tribes
Fort Mojave Indian Tribe
Las Vegas Paiute Tribe
Pahrump Paiute Tribe
**Cahuilla Band of Indians*
**Morongo Band of Mission Indians*
**Ramona Band of Mission Indians*
**San Fernando Band of Mission Indians*
**San Manuel Band of Mission Indians*
**Serrano Nation of Indians*
Timbisha Shoshone Tribe
** - On NAHC list*

The only site eligible for inclusion on the National Register of Historic Places that will be affected is the transmission line, CA-SBr-10315H. No prehistoric sites were identified in the project footprint.

Coordination with tribes is ongoing and does not necessarily stop when the FEIS is singed or ROD is signed. No tribe or representative identified any sacred sites or expressed concerns during contacts regarding this project.

Comment 9-3. Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

Response: *Mitigation measures CUL-1 through CUL-7, and CUL-10, stress identification, assessment, and avoidance as the preferred means of addressing significant cultural resources. Table 4.4-1 describes the California-state requirements for addressing human remains.*

60300 - Cumulative Effects Analysis

Comment 19-27. The FEIS does not adequately analyze cumulative impacts to cultural, biological, water, traffic, and visual resources, instead laying out standard treatment measures at FEIS 5.2. There is no analysis of the cumulative loss of specific cultural values across the traditional homeland of the Chemehuevi Tribes of the resources, traditional practices, belief systems that could be destroyed piecemeal and the affect that would have on the sustainability for these indigenous cultural life ways and beliefs.

Response: *In BLM's Native American Consultation efforts, no concerns were expressed by any of the Tribes consulted. Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes. Therefore, no cumulative analysis is necessary.*

Environmental Justice (61000)
61000 - Environmental Justice generally

Comment 8-1. I wish to file a complaint and protest against the California-based concentrating solar power (CSP) developer BrightSource Energy, the California Energy Commission (CEC), the United States Department of Interior Bureau of Land Management (BLM) and the United State Department of Energy (US DOE) for violating my human rights to fast track the development of large industrial solar thermal electric projects that will literally pave over hundreds of square kilometers of undeveloped wilderness whose entire landscape (including this project's site) is considered sacred to the Mojave, Paiute, and Chemehuevi peoples.

Response: *In BLM's Native American Consultation efforts, no concerns were expressed by any of the Tribes consulted. Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes. In addition, BLM conducted an Environmental Justice evaluation to determine whether the project would disproportionately affect low income or minority populations.*

Comment 8-13. These actions by the CEC, BLM, and US DOE all violated the civil rights of US workers based on their national origin and Native Americans in particular since the project is to be located on what is a sacred wilderness area to the local indigenous tribes, the Mojave, Paiute, and Chemehuevi.

My complaint alleges these actions by the CEC, BLM, and US DOE violate Title VI of the Civil Rights Act of 1964 that no person in the United States shall be excluded from participation in or otherwise discriminated against on the ground of race, color, or national origin under any program or activity receiving Federal financial assistance.

Comment 8-14. I attended the U.C. Berkeley's Cleantech Institute in June 2010. BrightSource made a presentation (attached) that I believe supports my Complaint against the project discriminating against me personally as an unemployed Sr. Manufacturing Engineer since my national origin is in the United States. Slide 4 of the attached shows that BrightSource currently employees 55 FTEs in the US and 135 FTEs in Israel. Slide 16 shows that BrightSource based in Israel is the major supplier of the mirrors, sun trackers, software and integration hardware for the project except for the steam turbines whose manufacturer is Siemens a German manufacturer. I wish to object to Slide 17 specifically since it demonstrates more than 75% of the debt to finance

Ivanpah project is backstopped by taxpayer stimulus funds... with a 30% tax grant up front.. but, the Civil Rights Act of 1964 prohibits the use of federal funds by entities that would clearly discriminate against American workers since less than 30% of the jobs involved for the Ivanpah project go to US workers. I note that a presenter at the Cleantech Institute event working for ARPA-E said that no more than 10% of their funds could be spent outside the United States.

In behalf of the Mojave, Paiute, and Chemehuevi peoples I complain that the project adversely impacts Native American cultural resources and sacred sites and that the federal government has a duty to conduct government to government consultations with Native American tribes impacted by the project and the BLM has failed to do so which violated Title VI of the Civil Rights Act of 1964. I also complain that the project would not provide any jobs to Native Americans.

Response: *In BLM's Native American Consultation efforts, no concerns were expressed by any of the Tribes consulted. Although information was requested, no sites of traditional or religious use were identified in the area by the Tribes. BLM's approval of the ROW grant does not exclude the participation of anyone in the project. Employment on the project would be managed by the applicant, and they would be subject to all laws and regulations regarding employment and discrimination.*

Multiple Use Classes (62000)

Comment 19-12. Project would allow industrial scale intensive solar development which will have adverse impacts to washes and ephemeral streams and is inconsistent with the CDCA resource objectives of MUC L.

Comment 19-29. No amendment to the CDCA Plan should occur to accommodate a project that causes so many environmental harms to our special places and local peoples, as enumerated above, especially on Class L (Limited Use) lands which were designated to protect sensitive, natural, scenic, ecological and cultural resource values. This would set a precedent for other valued areas of the California Desert. Renewable energy should be sited following the recommendations of the Independent Science Advisors for the Desert Renewable Energy Conservation Plan, on disturbed brownfields and old mine sites, and an allowance made for Distributed Generation in California's RPS.

Comment 1-3. Adoption of a plan amendment to allow a large-scale industrial facility on MUC class L lands is inappropriate. Under the CDCA Plan, Multiple-use Class L (Limited Use) "protects sensitive, natural, scenic, ecological, and cultural resources values. Public lands designated as Class L are managed to provide for generally *lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished*." CDCA Plan at 13 (emphasis added). While the CDCA Plan does allow for amendments to the plan to accommodate solar energy production where appropriate, the environmental review for this project shows that clearly this site is inappropriate and that the site configuration will maximize impacts to surrounding public lands and resources due to fragmentation and edge effects. The proposed project is a high-intensity, single use of resources that will displace all other uses and that will significantly diminish over 4,000 acres of excellent occupied desert tortoise habitat and destroy habitat for many rare plants among other direct and indirect impacts of the

proposed project. Moreover, the project is connected to a powerline upgrade and the Silver State solar projects which, taken together, will become a magnet for even more industrial-scale solar projects in the area leading to even more destruction of desert tortoise habitat due to direct effects, fragmentation, and edge effects. This larger question—the creation of a *de facto* solar industrial zone in the Ivanpah Valley—has not been adequately considered by BLM in the environmental review for this proposed CDCA Plan amendment nor for either of the other connected projects currently undergoing environmental review. The Center protests that the proposed project is inappropriate for a Limited Use area such as this one and the terms of the proposed plan amendment are inconsistent with the CDCA Plan.

Comment 7-6. B. The impacts to Multiple Use Class L lands and their sensitive natural and cultural resources, and the loss of multiple uses on those lands that will result if this project is permitted to go ahead have not been addressed. Although the CDCA Plan allows for consideration of wind and solar energy generation facilities within Multiple Use Class L lands, any proposed facility, such as the proposed ISEGS, must conform to the management principles guidelines for such activities within the context of Multiple Use Class L lands. According to the CDCA Plan, as amended, "Multiple-Use Class L (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished." (CDCA Plan at 13). There has been no meaningful analysis of how construction and maintenance of the proposed 4,000 acre fenced industrial project will or could conform to the Multiple Use Class L management principles and guidelines. In its pre-application communications with the project applicant, BLM should have clearly indicated that industrial-scale solar energy and transmission projects, and specifically the proposed ISEGS Project, are more suitable in Multiple Use Class M and I, based on the management policies associated with Class L.

Response: *The proposed plan amendment is consistent with the BLM's multiple use and sustained yield mandate pursuant to the FLPMA.*

FLPMA (Section 103(c)) defines "multiple use" as the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. Accordingly, the BLM is responsible for the complicated task of striking a balance among the many competing uses to which public lands can be put. The BLM's multiple use mandate does not require that all uses be allowed on all areas of the public lands. The purpose of the mandate is to require the BLM to evaluate and choose an appropriate balance of resource uses, which involves tradeoffs between competing uses. The CDCA Plan recognizes the potential compatibility of solar generation facilities on public lands and requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan for a project site to be considered through the Plan Amendment process.

The CDCA Plan outlines a framework for balancing use and protection in the context of the entire CDCA, but recognizes that certain sites will strike the balance one way or another depending on relevant factors. The CDCA Plan specifically cites energy development and transmission as a "paramount national priority" to consider in striking that balance (CDCA Plan, p. 13). The CDCA Plan originally included, has been amended several times to include, and contemplates including industrial uses analogous to the use analyzed by the proposed plan amendment, including utility rights of way

outside of existing corridors, power plants, and solar energy development and transmission (CDCA Plan, p.95).

Section 4.20 of the FEIS analyzed the proposed action and alternatives, including the Selected Alternative, with respect to conformance with the specific activities that are consistent with Multiple Use Class L guidelines.

Public Health and Safety (63000)
63180 - Private and Public Airfields/Airstrips

Comment 2-1. CCDOA appreciates that the FEIS now explicitly recognizes that solar radiation and light reflected from proposed project heliostats "could cause a human health and safety hazard to . . . air traffic flying above the site, and could cause a distraction . . . to pilots of aircraft flying over the site." See FEIS at pp. 1-30 to 1-3 1. CCDOA also appreciates the adoption of mitigation measures to address the potential safety impacts associated with glare from the proposed heliostats. Nevertheless, given that the FEIS openly recognizes that the degree of potential impacts cannot be determined, see FEIS at Table 8-1, p. 8-8 ("Unable to determine impact from potential glare") and p. A.l-202, (24.0 TRAFFIC, Response), CCDOA continues to have serious concerns regarding potential impacts to pilots approaching or departing from existing or planned CCDOA facilities.

First, it is simply incorrect to assume, as the FEIS does, that "the changing altitude of departing or arriving aircraft at the Southern Nevada Supplemental Airport would .. severely limit the potential for any potential exposure to pilots." See FEIS at p. 4.1 1-17. At the most basic level, this assumption is inconsistent with the later conclusion in the FEIS that BLM is unable to determine impacts from potential glare. *Id.* at p. 8-8. More importantly, pilots could be exposed to the glare from *each* heliostat, possibly in sequence, which could dramatically increase the duration. The fact that pilots would be ascending or descending is irrelevant. As CCDOA has previously noted, pilots operating under both visual flight rules and instrument flight rules have a legal and safety obligation to vigilantly observe the entire sky to see and avoid other aircraft, as well as to maintain adequate separation from obstacles on the ground. See e.g., 14 C.F.R. *5* 91.1 13(b) ("vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft"). This is especially relevant during take-off and landing.

Second, there is no guarantee that the mitigation proposed will be sufficient to avoid impacts. Compare FEIS at p. 4.1 1-15 ("if impacts are found or reported, [verify] that they are investigated and appropriate mitigation proposed and implemented"). Moreover, the details provided in the FEIS are so limited that it is not even clear to the reader if the Heliostat Monitoring Plan (TRANS-3, paragraphs 3 and 4) would cover all potential glare impacts, including, for example, what the applicant would be obligated to do to ensure that heliostats remained in alignment. To that end, CCDOA reiterates that safety and protection of the public health require that the Heliostat Positioning Plan actually be drafted and circulated for comment prior to the issuance of any relevant federal approvals. This is particularly relevant given that BLM has failed to secure any feedback on this critical issue from the Federal Aviation Administration (FAA), which is the single federal agency with expertise in this regard, compare FEIS at pp. 1- 15 and 2-15 (FAA not included in list of federal agencies consulted during the EIS process) and p. 9-5

(recognizing that BLM "sent a letter to FAA" but that FAA "did not respond in time to incorporate a revision in the FEIS").

Third, the very success of the proposed mitigation depends on good communication with potentially affected parties - i.e., pilots, airlines, air traffic officials and industry groups - and the ability to capture information about actual impacts. Therefore, when developing the details of the plan, BLM should ensure that pilots, aircraft owners and local air traffic officials are all informed about the monitoring plan and that comments from these parties about impacts and incidents are actively sought. This may involve coordination with FAA and relevant interest groups, e.g., the Aircraft Owners and Pilots Association, Airline Pilots Association, Air Transport Association, National Business Aviation Association, and notices to owners of locally based aircraft.

Fourth, the FEIS is silent on the practical impacts if the mitigation measures do not protect against safety hazards to aircraft operations. Therefore, prior to issuing any final decision, BLM should make clear to the applicant that these mitigation measures are not necessarily sufficient to protect the applicant from potential liability in the event of aviation accidents caused by pilot distraction due to the glare from the project. For these reasons, CCDOA strongly encourages BLM to adopt enforceable provisions in the Record of Decision that are adaptable to potentially changing conditions as the agency learns more about the potential adverse effects to aviation from the ISEGS project and as operational characteristics of the Southern Nevada Supplemental Airport are refined and better understood.

***Response**: Throughout the EIS process, BLM has continued to solicit input, respond to specific comments, consider the potential impacts, and develop monitoring and mitigation measures to address potential glare and safety issues. In response to comments on the DEIS and SDEIS, BLM added information on FAA's participation in the scoping process, and their regulatory authority, into the FEIS. Also, in response to the comments, BLM solicited additional input from FAA, and has not received a response. The potential for these glare impacts is uncertain, and detailed analysis by BLM, the Energy Commission, and the applicant concludes that they are unlikely to occur. However, in recognition of the uncertainty and the possibility they could occur, BLM has included a Mitigation Measure (TRANS-3) requiring a Heliostat Positioning Plan, and another measures (TRANS-4) to monitor the brightness.*

Comment 2-2. a. The FEIS is inconsistent in its references to the status of the Southern Nevada Supplemental Airport. Compare, FEIS at p. 5-7 (Draft EIS was suspended in June 2010), p. 5-20 (CCDOA suspended the project indefinitely) and p. 5-21 (EIS has an expected completion date of late 2012 and airport will be complete in 2017). To be clear, Clark County has not terminated the project or placed it on hold. Rather, because of the current economy and the downturn of traffic at McCarran International Airport, Clark County has temporarily postponed its share of holding for the Ivanpah EIS.' However, the CCDOA is continuing planning efforts for the Southern Nevada Supplemental Airport, just at a slower pace. This delay does not affect BLM's obligation to include the SNSA as a reasonably foreseeable project. For that reason, BLM is correct in continuing the cumulative analysis of the project. Compare, FEIS at p. 5-20.

***Response:** BLM is aware that the FEIS may not reflect the exact status of CCDOA's progress on the airport. As reflected in CCDOA's letters of June 29, attached to their*

FEIS comments, the status has been in flux at the same time the FEIS was being developed. CCDOA notified contractors to cease work on June 3, and then notified them to continue work on June 29, but with the stipulation that work will cease again on October 3. BLM agrees that, within the uncertainty associated with this information, the airport should continue to be considered and analyzed as a reasonably foreseeable future project.

Comment 2-3. b. BLM should consistently refer to the 17,000-acre Airport Environs Overlay District or the Noise Compatibility Area **(NCA),** not to an undefined "sphere of influence." Compare, FEIS Table 5-1, Project "B" at p. 5-7.

Response: *BLM agrees that NCA is the better term. The term "sphere of influence" was used once, in Table 5-2. However, the term NCA was used in the entire narrative discussion of the airport on pages 5-19 to 5-21.*

Comment 2-4. c. There is no current plan for the DesertXpress train to stop at the Southern Nevada Supplemental Airport. Compare, FEIS at p. 5-16 ("Tentative plans call for . .. possible stops in Prirnrn and the proposed Southern Nevada Supplemental Airport Ivanpah Site."). See DesertXpress Draft Environmental Impact Statement (March, 2009) at p. 1-8 ("Construction of a link to the proposed Southern Nevada Supplemental Airport is not part of the current DesertXpress proposal and is not evaluated in ths EIS. Construction and operations of such a link would require separate environmental review.")

Response: *BLM will incorporate this information into any future discussions regarding the DesertXpress project.*

Comment 2-5. d. Access to the Southern Nevada Supplemental Airport would be through a new "super arterial" highway that would provide exclusive access from 1-15 to the airport site at a new interchange near Sloan, NV. The only "modifications" to I-15 caused by the Southern Nevada Supplemental Airport would be the addition of two interchanges (a north and south interchange). Compare, FEIS at p. 5-20 ("I-15 would be modified from the airport to south Las Vegas to accommodate site access."). These interchanges are depicted in plans, which are on file with the BLM Las Vegas Field Office.

Response: *BLM will incorporate this information into any future discussions regarding the modifications to I-15.*

Comment 2-6. e. No environmental consequences work has commenced for the Southern Nevada Supplemental Airport EIS.

i. It is therefore premature for BLM to quantify the direct and secondary impacts that the Southern Nevada Supplemental Airport would have on desert habitat. Compare, FEIS at p. 5-21 ("Construction of the new airport . . . would result in direct loss and secondary impacts to relatively undisturbed desert habitat totaling 6,787 acres. . . . The airport would result in habitat fragmentation and loss of desert tortoise habitat . . ."); see also

FEIS at p. 5-54 ("Development of the Southern Nevada Supplemental Airport could affect an additional 17,000 acres of native desert, if Clark County were to develop the NCA for industrial use").

ii. Similarly, it is premature and totally unfounded for BLM to make assertions about the degree of impacts to public health and safety from the proposed airport project. The FEIS includes a statement that: " ... the proposed Southern Nevada Supplemental Airport likely would present a greater hazard to public health and safety than that of ISEGS or other reasonably foreseeable projects". FEIS at p. 5-35. This is not just conclusory, but also legally inappropriate. The role of this FEIS is to document the potential impacts of the ISEGS project, not to make unsupported comparisons as to the relative impacts of solar projects versus public transportation projects for which environmental review documentation has not been completed and approved.
iii. It is also premature for BLM to make conclusions about induced growth. Compare, FEIS at p. 5-36 (". . . the Southern Nevada Supplemental Airport would likely result in an increase in population and require the need for new housing and expanded public service facilities.") Instead, BLM should follow the standard procedures when information is incomplete or unavailable. See 40 C.F.R. 8 1502.22. Specifically, when evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall: (1) obtain and include such information if the overall cost of obtaining the information is not exorbitant; and (2) if the overall costs of obtaining such information is exorbitant or the means to obtain it are unknown, the agency shall include in the EIS a statement that the information is incomplete or unavailable, an analysis of the relevance of the unavailable information, and an evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community. *Id.*

Response: *CCDOA's comments agree that inclusion of the SNSA in the cumulative analysis is appropriate. However, as is commonly the case in EISs, completed documentation regarding the environmental impacts for future proposed is often not available. In these cases, it is appropriate and necessary for the technical experts to use the available information regarding the future project to estimate the potential impacts. Failure to do so would certainly result in comments from other reviewers that the cumulative analysis has failed to attempt to estimate or quantify the cumulative impacts. BLM agrees that a statement in the FEIS would have been appropriate, such as "The FAA's environmental review for the SNSA has not been completed. Therefore, BLM's technical staff has developed a preliminary estimate of the potential impacts, based on existing information and their technical judgment."*

Comment 2-7. f. Section 501(a)(5) of Public Law 107-282 directed BLM to withdraw the 17,000- acre Airport Environs Overlay District from location and entry under the federal mining laws; therefore, mining is currently not permitted in this area. Moreover, Clark County does not currently own these lands. Therefore, the statement in the FEIS at p. 4-49 that: "Although mining could be carried out in an additional 17,000-acre Southern Nevada Supplemental Airport NCA, it is unlikely that Clark County would permit such operations" is both misleading and incorrect.

Response: *BLM agrees that this clarification of the FEIS text is appropriate.*

Comment 2-8. g. The FEIS correctly states that "The recently constructed Intermountain 500-kV Direct Current Transmission Line extends across a portion of the Ivanpah Playa (Nevada), near the proposed Southern Nevada Supplemental Airport site. At the present time, it appears that all existing transmission lines (including the Eldorado-Ivanpah Transmission Line), except the Intermountain Line, would remain along current alignments." FEIS at p. 5-43. The conclusion that all existing transmission lines would remain along current alignments is premature and misleading. CCDOA and FAA are still in the process of 'evaluating the degree to which existing and proposed transmission lines may impact the proposed Southern Nevada Supplemental Airport and the degree to which some infrastructure may need to be realigned.

Response: *BLM agrees that this clarification of the FEIS text is appropriate.*

Scenic/Visual Resources (64000)
64000 - Scenic/Visual Resources generally

Comment 19-24. Visual impacts are not adequately or consistently shown in the FEIS, likely in an effort to downplay their effects. Digital images of the project do not show the true amount of glare that will be caused by the sun-like tower receivers when lit up by the 173,000 heliostats each with two mirrors. The vast industrial landscape and height of air-cooled condensers was not well illustrated by any image to date. These visual impacts to the landscape are unmitigable and unacceptable. The air-cooled condensers, size, height, shape, number need to be described. These will be a large visual impact on the landscape and are not described at all.

The Bureau of Land Management and the California Energy Commission have both come to the conclusion that the impacts to visual resources from the ISEGS project cannot be mitigated. While we are in agreement with this statement, we do not believe that the agencies are taking this impact seriously enough. The project ROW and Plan Amendment could be denied based on Visual Resources alone.

We are concerned with three primary conflicts in this category.

1. Impacts to the Mojave National Preserve. Neither the CEC nor the BLM spent enough time analyzing the impacts that would impair the recreational opportunities and wilderness character of the preserve. The impacts would impair long distance views during different times of day and year. Depending on time of day and time of year, “flash-glare” events could significantly degrade the wild quality of any given visitor experience. Flash glare intrusions would be visible from prominent preserve locations such as Cima Dome, Teutonia Peak, New York Peaks, Fourth of July Canyon, Ivanpah Mountains, Clark Mountain as well as countless other view points. Industrial night lighting will also remove the wilderness quality of many of these locations. Mojave National Preserve is recognized for having relatively undisturbed night skies for being in a region that is centrally located between major urban populations.

2. Safety for Recreationists, Public Land Users and Highway Drivers. Flash glare events can potentially damage the eyes of anybody who happens to be looking in the direction of the mirrors. Very few, if any, power tower developments in the world are as big as the projected size of the ISEGS project. We are concerned that flash glare events could

damage the eyes of recreationists using Clark Mountain, Coliseum Gorge, The Stateline Wilderness and the North Mesquite Mountains Wilderness. We also do not believe that neither the CEC nor the BLM has resolved issues of potential for flash glare events to cause accidents on adjacent Interstate 15. The project will literally use hundreds of thousands of heliostat mirrors, some that will be located less than one mile from the Interstate. As the Highway climbs over Mountain Pass, complex changes in topography have the potential to disrupt drivers.

3. Potential Loss of Future Tourism Dollars. Visitation statistics for the Mojave National Preserve have slowly risen since its establishment under that California Desert Protection Act in 1994. Tourism has withstood the test of time and proven itself to be economically sustainable even during economic recession. Poorly planned siting of industrial utility scale energy will impair any future tourism growth potential of the Ivanpah Valley and the northeast portion of the Mojave National Preserve. As human population continues to encroach on wilderness, wilderness becomes more popular and as a result, can provide economic stimulus.

Response: *The visual analysis in Section 4.13 of the FEIS included evaluation of all items mentioned in this comment, including the air cooled condensers, the potential for glare, the impacts to viewers in the Mojave National Preserve, and the effect of the visual character on recreation. The FEIS acknowledges that the visual impacts will be adverse and unmitigable. However, mitigation measures VIS 1, 2, and 4 have been developed to reduce the visual contrast that would be presented by the facility. Mitigation measures TRANS-3 and 4 have been developed to address possible impacts of glare on aircraft and vehicles on I-15.*

Socio-Economic Considerations (65000)
65300 - Net public benefit

Comment 16-1. I am very pleased to hear of the step forward that the Ivanpah project has taken. This critical step that the CEC has taken gives myself lots of hope for a number of reasons. I am happy to know that our state is taking the necessary steps to produce clean energy. I am aware that the size of this project can have a slight impact on local environments, but, as the committee concluded, in the long run, the good that this project will produce definitely out-weighs the bad. I am happy to know that the men and women constructing this project will be, for the most part, Californian. That means that people like myself, living in southern California, will have an opportunity to take on a long-term, good paying job, enabling us to purchase property such as homes and new vehicles. The money put into the pockets of most of the craftsmen constructing the project will also be spent here in California.

After feeling and witnessing the effects of the recession, I would like to encourage more and more companies to construct clean energy facilities, not only here in my area, but all over the country. As long as the local environments do not get devastated, projects like Ivanpah will put people to work, generating revenue in the areas in which the projects are being constructed. In the wake of energy disasters like the oil spill in the gulf, I believe the time is right to get projects like Ivanpah up and running, so our way of life can continue normally, under renewable sources. A solar plant cannot cause an oil spill.
I, myself, am ready and willing to show up to the Ivanpah project and give 100% effort, 100% of the time. If our local building trades can produce on a project of this magnitude,

it will only open more doors, for more approved projects, keeping men and women employed, and taking the necessary steps towards a state that is running off of renewable sources. I, like many others, will be very proud to put in a days work, for a days pay, and being a crucial part of California's economic and environmental recovery.

Response: *The net public benefit of the Mitigated Ivanpah 3 Alternative was considered in its selection as the Selected Alternative.*

Wildland Fire Ecology (67000)
67120 - Fuels Management

Comment 1-25. Failing to adequately address the potential for wild-land fire due to project construction and operations. In addition, failing to adequately address the fire hazard potential from the proposed project.

Response: *Potential fire hazards are addressed on Pages 4.12-7 and 4.15-1 through 4.15-2 of the FEIS.*

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-F-0096
8-8-10-F-24

October 1, 2010

Memorandum

To: District Manager, California Desert District, Bureau of Land Management, Moreno Valley, California

From: Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion on BrightSource Energy's Ivanpah Solar Electric Generating System Project, San Bernardino County, California [CACA-48668, 49502, 49503, 49504] (8-8-10-F-24)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Bureau of Land Management's (Bureau) proposed issuance of a right-of-way grant to Solar Partners I, LLC, Solar Partners II, LLC, and Solar Partners VIII, LLC for the Ivanpah Solar Electric Generating System (ISEGS) and its effects on the federally threatened desert tortoise (*Gopherus agassizii*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). Because BrightSource Energy is a parent company for all Solar Partner Companies, this biological opinion refers to the project proponents collectively as BrightSource. The proposed project involves construction, operation, maintenance, and decommissioning of a 370-megawatt solar thermal power plant and associated infrastructure and facilities on 3,582 acres of public land managed by the Bureau. Your December 7, 2009 request for formal consultation was received on December 8, 2009.

This biological opinion is based on information that accompanied your December 7, 2009 request for consultation and additional information regarding changes in the project description and translocation strategy obtained from Bureau staff during the formal consultation process. This information includes the biological assessment (CH2MHill 2009a), revised biological assessment (CH2MHill 2010a), draft environmental impact statement and final staff assessment (Bureau and California Energy Commission 2009), supplemental draft environmental impact statement (Bureau 2010), desert tortoise survey report for the project site (CH2MHill 2008a), biological survey report for the proposed desert tortoise translocation areas (SNEI 2009), desert tortoise translocation plan (CH2MHill 2009b), the management plan for common ravens (CH2MHill 2008b), project site reclamation plan (CH2MHill 2009c), the site plan for management of weeds (CH2MHill 2008c), and additional correspondences regarding modifications to the desert tortoise translocation strategy and mitigation framework (Fesnock

2010a and 2010b, CH2MHill 2010b). A complete record of this consultation is on file in the Ventura Fish and Wildlife Office.

Construction, operation, maintenance, and decommissioning of the ISEGS facility and translocation of desert tortoises do not require activities that would adversely affect the primary constituent elements of critical habitat for the desert tortoise because the actions will not take place within critical habitat or affect the primary constituent elements. Therefore, we do not address critical habitat in this biological opinion.

Consultation History

On December 7, 2009, the Bureau initiated consultation for construction, operation, maintenance, and decommissioning of the ISEGS facility. Following public comment on the Bureau's draft environmental impact statement and the California Energy Commission's final staff assessment, BrightSource modified its project to reduce adverse effects to desert tortoises and rare plant species. On April 26, 2010, we issued a draft biological opinion to the Bureau (Service 2010c). We revised the draft biological opinion based on comments from the Bureau and BrightSource. On July 21, 2010, the Bureau provided us with a revised translocation strategy that required significant revisions to the draft biological opinion (Fesnock 2010c). On September 21, 2010, the Bureau provided additional changes to the translocation strategy, requiring further revisions of the draft biological opinion (Fesnock 2010a). This biological opinion analyzes the effects associated with the reduced project footprint, the revised translocation strategy, and the comments received from the Bureau and BrightSource.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Introduction

BrightSource Energy is proposing to construct and operate a solar energy plant approximately 4.5 miles southwest of Primm, Nevada and 1.6 miles west of Ivanpah Dry Lake. The proposed site is 0.5 mile west of the Primm Valley Golf Club. The facility would consist of 3 solar electric generating plants, constructed over a 4-year period as follows: (1) Ivanpah 1 – construction of the Ivanpah 1 plant (southernmost site; 914 acres), construction of shared facilities (i.e., power substation, administrative facilities, water line, power lines, and construction logistics area), and improvement of Colosseum Road ; (2) Ivanpah 2 – construction of the Ivanpah 2 plant (middle site; 1,097 acres); and (3) Ivanpah 3 – construction of the Ivanpah 3 plant (northern site; 1,227 acres). BrightSource Energy would also install a 5.7-mile natural gas distribution line, install a 9.5-mile fiber optic line, and re-route several dirt roads/trails that currently cross the proposed ISEGS site. We summarized the description of the proposed action from your request for consultation, the revised biological assessment (CH2MHill 2010a), and the supplemental environmental impact statement (Bureau 2010).

Construction

Construction of the ISEGS facility would require an average workforce of 474 and a peak workforce of 959. Below, we have provided a detailed description of each stage of project development for the three project sites, the construction logistics area, and other associated infrastructure (i.e., access roads, water wells, water line, gas line and tie-in facility, fiber optic line, etc.). We have described the measures that BrightSource will implement to avoid or minimize adverse effects to the desert tortoise in a later section.

Construction Logistics Area

BrightSource would develop a construction logistics area (CLA) between the Ivanpah 1 and 2 project sites to accommodate construction support facilities (e.g., temporary construction trailers, construction tool sheds, construction lay down areas, and construction parking), the electrical tie-in substation, water wells, permanent facility parking areas, permanent administrative and warehouse facilities, and wheel wash areas. In addition, the CLA would accommodate a segment of Colosseum Road that BrightSource would re-route through the CLA to avoid the Ivanpah 2 project site.

CLA development would begin with surveying and staking the CLA boundaries and grading of a 10-foot-wide perimeter road along the boundary of the CLA to facilitate fence installation. BrightSource would then install an 8-foot high chain-link security fence with desert tortoise exclusion fencing attached to the bottom around the perimeter of the CLA. Alternatively, BrightSource may install desert tortoise exclusion and security fencing separately. Regardless of the method for fence installation, all site development and construction activities described for the CLA would occur within this fenced boundary. This includes grading of selected locations and construction or installation of all construction support facilities and permanent operational facilities.

Ivanpah 1, Ivanpah 2, and Ivanpah 3 Project Sites

Each project site would consist of one heliostat (mirror) array constructed around a 459-foot-tall centralized solar power tower. Ivanpah 1 would contain approximately 53,500 heliostats and Ivanpah 2 and 3 would contain approximately 60,000 heliostats each. Each heliostat consists of two 75.8-square-foot mirrors. All three units (Ivanpah 1, 2, and 3) would have their own individual power block; the biological assessment describes the components of the power blocks.

Prior to site development and construction activities for each phase, BrightSource would install a desert tortoise exclusion fence or a combined exclusion fence and security fence around the entire perimeter of the phase. BrightSource would use the same methods described above for the CLA in installation of this fence. Following fence installation, BrightSource would mow all vegetation on the project sites to within 12 to 18 inches of the ground surface, grade a site for the power block, and grade additional areas within the project site for parking areas, construction lay down areas, building pads, and internal roads. During the construction stage, BrightSource

would improve internal project-site roads, construct the power block, install the heliostat field, install underground piping and wiring, install the generation tie-line, and erect fabrication shops and other construction and administrative buildings. In addition, BrightSource would re-route existing dirt roads/trails around the perimeter of the project site.

Gas Line

In addition to the CLA and the three project sites, BrightSource would construct a 5.7-mile natural gas distribution pipeline. The pipeline would connect to the Kern River Gas Transmission line that traverses Ivanpah Valley 0.5 mile north of the Ivanpah 3 project site. At the point of connection with the Kern River Gas Transmission line, BrightSource would construct a permanent gas metering station (100 feet by 150 feet), requiring a 200-foot by 200-foot temporary construction area. From this metering station, the natural gas line and an 8- to 12-foot-wide access road would head south along the eastern edge of Ivanpah 3 to a metering station (10 feet by 40 feet) near the middle of its western side. From the metering station at Ivanpah 3, the gas line and access road would continue along the eastern edge of Ivanpah 2 to another metering station (20 feet by 40 feet) on the east side of Ivanpah 2. From the Ivanpah 2 metering station, the gas line would continue along the west side of Ivanpah 2 following the asphalt access road to Ivanpah 1. Gas line installation would require a 50-foot-wide construction corridor for access, storage of excavated soil, and pipefitting. In addition, construction of the Ivanpah 3 metering station would require a temporary lay down area within the Ivanpah 3 project site. The Ivanpah 1 and 2 metering stations would use a portion of the Ivanpah 2 solar field for construction lay down.

To allow for gas company access, BrightSource would construct the gas line, access road, and metering stations outside of the fenced project sites for Ivanpah 1, 2, and 3. A portion of the gas line to the Ivanpah 1 project site would be located within the fenced CLA. BrightSource would construct additional spur lines within the fenced project sites to carry gas from the edge of the respective project site to the main power block.

Construction activities related to the metering stations would include grading a pad and installing aboveground and underground gas piping, metering equipment, gas conditioning, pressure regulation, and pigging facilities. The construction contractor would determine which method to use to install the natural gas pipeline. The most common method of pipeline construction includes installation of the pipeline into an open trench approximately 36 inches wide and 3 to 10 feet deep.

Fiber Optic Line

To allow for remote monitoring of the new electrical substation, Southern California Edison (SCE) would construct an 8-mile fiber optic line from the Ivanpah substation to an interface point designated by the local telecommunication carrier in Mountain Pass. SCE would use existing distribution line poles for installation. Installation would require use of a bucket truck, four people, and two pick-up trucks. SCE would string out fiber optic cable between the existing

poles. Every 10,000 to 20,000 feet, SCE would establish a 40-foot by 60-foot line stringing set. Crews would work within this area to raise the cable and string it tight over the existing poles. SCE estimates that approximately 20 poles are not accessible from the existing dirt service roads. Workers on foot would install the fiber optic line on these poles.

Operation

The ISEGS facility would have an operating life of up to 45 years and would operate 7 days a week for up to 14 hours a day. During operation, approximately 90 full-time employees would work at the site. ISEGS would use a maximum of 100 acre-feet of water per year for operational purposes. Heliostat washing is the only identified activity that we have described in this section because it is the only operational activity with the potential to have some effects on desert tortoise.

To keep heliostats clean, BrightSource would wash some portion of the heliostat field on a nightly basis, so that every heliostat within the 3 project sites is washed once every 2 weeks. The application rate per heliostat would be about 2.5 gallons per washing for a total use of 10.97 acre-feet per year for Ivanpah 1 and about 12 acre-feet per year for Ivanpah 2 and 3. However, the application rate on Ivanpah 1 may double during construction of Ivanpah 3 due to increased amounts of construction- related dust. During each washing, approximately 0.17 gallon per linear foot of mirror would run off onto the ground beneath the mirror.

Maintenance

In addition to regular, day-to-day operation of the ISEGS facility, BrightSource would need to perform a variety of maintenance actions. BrightSource has grouped these anticipated maintenance activities into three classes. Any maintenance activities that are outside the approved right-of-way boundary (i.e., the fenced boundary of the project site and the associated perimeter road) for the project will require additional authorizations from the Bureau and additional section 7 consultation.

Class I activities are those maintenance actions that do not result in new surface disturbance. BrightSource would perform these activities by hand or with the use of tools, equipment, and/or vehicles. Class I activities would take place on existing structures or would be staged from existing roads or other disturbed areas. These activities would not include off-road travel. Vehicles used during these activities might include low-boy tractor and trailer, flat bed, utility trucks, forklifts, scissor lifts, cherry pickers, and mechanical hoists. Labor may involve several workers confined to the area in need of maintenance. BrightSource may need to perform these activities on a daily basis.

Class II activities would result in minimal surface disturbance, but would likely require heavy earth-moving equipment including motor graders, bulldozers, front-end loaders, backhoes, water trucks, asphalt pavers, and dump trucks. Typical Class II activities would include: 1) underground utility (e.g., water, gas, sewage, electrical, communication, etc.) repairs, upgrades

and tie-ins to structures; 2) motor grading and repairs of existing dirt roads, shoulders, and berms; 3) cut or fill of soil surface to re-establish appropriate cover due to soil erosion after rainfall events; 4) maintenance of drainages, fords and culverts for proper flow of water runoff; 5) maintenance of asphalt roads, shoulders and parking lots; 6) security and desert tortoise exclusion fence repairs; and 7) minor natural gas pipeline repairs that require excavation.

Class III includes maintenance activities that result in major surface disturbance. Typical Class III activities would include: 1) installation of a new underground pipeline a distance of 1,000 feet or more and 2) disturbance of an acre or more for construction of new storm water drainage features.

Decommissioning and Restoration

BrightSource would perform restoration work on all sites disturbed during construction, operation, maintenance, and decommissioning of the ISEGS facilities. For short-term disturbances, BrightSource would begin restoration following completion of ground disturbance and would implement the following general steps: 1) decompaction of soils, 2) spreading of topsoil salvaged prior to construction, and 3) seeding of the disturbed area with native plant species. BrightSource would time seeding to avoid drought periods to the extent possible.

Decommissioning of the facility would occur sequentially in the order of construction (i.e., Ivanpah 1, followed by Ivanpah 2, Ivanpah 3, and the shared facilities). Following decommissioning of the ISEGS facility, BrightSource would remove all structures from the project area and begin restoration of all long-term disturbances. Decommissioning and restoration/reclamation would involve the following general activities: 1) rehabilitate access roads by removing asphalt, decompacting soil, and revegetating, 2) remove all structures and foundations less than 6-feet deep from the project area, 3) remove all physical components of the generation facility except for the SCE substation, the diversion structure, and asphalt access road, 4) re-contour and decompact soils associated with disturbed areas, 5) implement revegetation procedures using native species, 6) remove all exclusion and security fencing, and 7) monitor revegetated areas for success and control non-native weeds.

Minimization Measures

General Protective Measures

To minimize adverse effects to the desert tortoise, BrightSource will implement the following protective measures during construction, operation, maintenance, and decommissioning activities. The wording of some measures differs from those proposed by the Bureau and BrightSource. We have changed the wording of some measures to improve clarity, but we have not changed the substance of the measures that BrightSource and the Bureau have proposed.

1. BrightSource will employ authorized biologists, approved by the Service, and desert tortoise monitors to ensure compliance with protective measures for the desert tortoise.

Use of authorized biologists and desert tortoise monitors will be in accordance with the most up-to-date Service guidance and will be required for monitoring of any construction, operation, or maintenance activities that may result in take of the desert tortoise. The current guidance is entitled *Desert Tortoise – Authorized Biologist and Monitor Responsibilities and Qualifications* (Service 2008a).

2. BrightSource will provide the credentials of all individuals seeking approval as authorized biologists to the Bureau. The Bureau will review these and provide the credentials of appropriate individuals to the Service for approval at least 30 days prior to the time they must be in the field.

3. BrightSource will designate a field contact representative who will oversee compliance with protective measures during construction, operation, maintenance, and decommissioning activities that may result in injury or mortality of desert tortoises. If the field contact representative, authorized biologist, or desert tortoise monitor identifies a violation of the desert tortoise protective measures, they will halt work until the violation is corrected.

4. Individuals approved to handle desert tortoises (i.e., authorized biologists and supervised desert tortoise monitors) will do so in compliance with the most up-to-date guidance from the Service. The Service is currently using the *Desert Tortoise Field Manual* (Service 2009a).

5. BrightSource will develop and implement an environmental awareness program for all workers (construction, operation, maintenance, and decommissioning) that will address the following: a) types of construction activities that may affect the desert tortoise, b) the required desert tortoise protective measures, c) desert tortoise life history and threats, d) legal protections and penalties, and e) reporting requirements.

6. Bright Source will fence the boundaries of the Ivanpah 1, 2, and 3 project sites, the CLA, and Colosseum Road and clear these areas of all desert tortoises prior to construction. We have provided a description of the procedures for clearance, translocation, and monitoring of these animals below.

7. Authorized biologists will perform clearance surveys of unfenced work areas outside of the main project sites and CLA (e.g., gas distribution line, utility right-of way, etc.) immediately prior to the onset of construction, operation, or maintenance activities.

8. BrightSource will employ an appropriate number of authorized biologists and desert tortoise monitors to monitor construction, operation, maintenance, and decommissioning activities that occur in any unfenced work areas. Authorized biologists or desert tortoise monitors will flag all desert tortoise burrows for avoidance in areas adjacent to construction work areas.

9. BrightSource will confine all construction activities, project vehicles, and equipment within the delineated boundaries of construction areas that authorized biologists or designated desert tortoise monitors have identified and cleared of desert tortoises. BrightSource will confine all work areas to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. BrightSource will use previously disturbed areas to the extent feasible.

10. Any non-emergency expansion of activities into areas outside of the areas considered in this biological opinion will require Bureau approval and desert tortoise clearance surveys. These expanded activities may require re-initiation of consultation with the Service.

11. BrightSource will prohibit project personnel from driving off road or performing ground-disturbing activities outside of designated areas during construction, operation, maintenance, or decommissioning except to deal with emergencies.

12. During operation and maintenance activities at the completed project site, BrightSource will confine all vehicle parking, material stockpiles, and construction-related materials to the permanently fenced project sites and CLA.

13. BrightSource will confine project access to Colosseum Road for construction, operation, maintenance, and decommissioning of the facility. BrightSource will permanently fence this road with desert tortoise exclusion fencing prior to the onset of construction. To reduce the potential for vehicle strikes of desert tortoise on unfenced access roads (i.e., gas line road, fiber optic right-of-way road, etc.), BrightSource will enforce a 20-mile-per-hour speed limit for project related travel (i.e., construction, operation, maintenance, and decommissioning) in these areas. BrightSource will post speed limit signs along all access routes.

14. With the exception of security personnel, BrightSource will prohibit firearms on the project site.

15. Project personnel who are working outside fenced areas will check under vehicles or equipment before moving them. If project personnel encounter a desert tortoise, they will contact an authorized biologist. The desert tortoise will be allowed to move a safe distance away prior to moving the vehicle. Alternatively, an authorized biologist or desert tortoise monitor may move the desert tortoise to a safe location to allow for movement of the vehicle.

16. An authorized biologist or desert tortoise monitor will inspect all excavations that are not within desert tortoise exclusion fencing on a regular basis (several times per day) and immediately prior to filling of the excavation. If project personnel discover a desert tortoise in an open trench, an authorized biologist or desert tortoise monitor will move it to a safe location. BrightSource will cover or temporarily fence excavations that are

outside of the permanently fenced project areas at the end of each day to prevent entrapment of desert tortoises during non-work hours.

17. When outside of the fenced project areas, project personnel will not move construction pipes greater than 3 inches in diameter if they are stored less than 8 inches above the ground until they have inspected the pipes to determine the presence of desert tortoises. As an alternative, BrightSource may cap all such structures before storing them outside of fenced area.

Management of Common Ravens

BrightSource will implement the following project design features and protective measures to reduce the adverse effects associated with predation of desert tortoises by common ravens (*Corvus corax*). The draft management plan for common ravens (CH2MHill 2008b) contains more detailed information on the following actions:

1. BrightSource will contain all trash associated with the project that could provide subsidies to predators in secure, self-closing receptacles to prevent the introduction of subsidized food resources for common ravens.

2. BrightSource will promptly remove and dispose of all road-killed animals on the project site or its access roads.

3. BrightSource will use water for construction, operation, maintenance, and decommissioning (e.g., truck washing, dust suppression, heliostat washing, landscaping, etc.) in a manner that does not result in puddling.

4. BrightSource will use closed tanks to store water for all project site water needs to eliminate an open water source for common ravens.

5. BrightSource will use closed tanks to store water associated with boiler commissioning and emergency outfalls. BrightSource will not use storm-water detention basins in its project design.

6. BrightSource will install generation tie-lines on utility poles designed to be incompatible with nesting of common ravens in accordance with Avian Power Line Interaction Committee guidelines (2006) and will monitor the effectiveness of these deterrence measures. BrightSource will implement alternative measures if the current effort is unsuccessful.

7. All transmission lines associated with the ISEGS facility will be designed in a manner that will reduce the likelihood of nesting by common ravens. BrightSource will monitor all utility lines and other potential nesting structures and remove common raven nests that it identifies following authorization by the Bureau and the Service.

8. BrightSource will monitor the ISEGS facilities to identify frequently used perching locations for common ravens. If it identifies such locations, BrightSource will install bird barrier spikes or other functional equivalent following specific discussion with the Bureau and the Service.

9. BrightSource will coordinate with the Bureau and the Service to implement or fund hazing or lethal removal of problem common ravens. Problem common ravens are individuals that have been shown to prey on desert tortoises through monitoring.

10. BrightSource will monitor the effectiveness of its management plan for common ravens during all 3 phases of construction and for 2 years following completion of the final phase. BrightSource will implement adaptive management measures if monitoring shows that the management plan is not effective in controlling common raven use of the project site. BrightSource will consult with the Bureau and the Service prior to implementing adaptive management changes.

Weed Management

BrightSource will implement the following weed management measures to reduce adverse effects to desert tortoises and their habitat during construction operation and maintenance of the ISEGS facilities:

1. BrightSource will designate an environmental compliance manager to provide oversight of construction practices and ensure compliance with weed management provisions.

2. BrightSource will provide training to all personnel charged with environmental management responsibilities that will include the following: a) weed plant identification, b) impacts of noxious weeds on native vegetation, wildlife, and fire activity, and c) required measures to prevent the spread of noxious weeds on the site.

3. During construction, BrightSource will perform weekly inspections during the growing season of all construction areas, access routes, and equipment cleaning facilities for the presence of noxious weeds and weed seed. Following the completion of construction activities, from March through August, BrightSource will continue monitoring according to the following schedule: 1) once a month during the first 2 years of the revegetation, 2) quarterly for the third and fourth years, and 3) semi-annually for year 5 through 10.

4. During operation of completed facilities, BrightSource will perform general site monitoring according to the schedule described above (Measure 3) and perform weed control at least every other week during the growing season (March through August) and once a month during the remainder of the year. Weed control will consist of physical control methods (e.g., hand pulling, hoeing, etc.) or herbicide application.

5. BrightSource will apply all herbicides used in weed treatments according to a plan approved by the Bureau and in accordance with the herbicide labels. BrightSource will only use qualified individuals for herbicide application and will suspend herbicide use when any of the following conditions are met: a) wind velocity exceeds 6 miles per hour during application of liquids or 15 miles per hour during application of granular herbicides, b) snow or ice covers the foliage of noxious weeds, c) precipitation is occurring or is imminent, or d) air temperatures exceed 90 degrees Fahrenheit.

6. BrightSource will monitor all locations of weed treatment to ensure that treatments are effective.

7. BrightSource will limit disturbance areas during construction to the minimal required to perform work and will only use defined routes when accessing work areas.

8. BrightSource will use vehicle wash and inspection stations and closely monitor all material brought onto the site to minimize the potential for weed introductions.

9. BrightSource will identify and flag all areas of noxious weed infestation and minimize use of these areas by project personnel until weed treatment of the area has occurred.

10. BrightSource will preferentially perform native seed collection for restoration work from areas adjacent to the project site. When it is necessary to use native seeds from commercial vendors, BrightSource will only accept seed that is free of non-native weed seeds.

Desert Tortoise Translocation

The following description of the desert tortoise translocation strategy for the ISEGS project is taken from BrightSource's translocation plan (CH2MHill 2009b) and from modifications made by the Bureau during the formal consultation process (Fesnock 2010a).

Fencing and Clearance Surveys

To minimize adverse effects to the desert tortoise, BrightSource will fence the boundary of the Ivanpah 1, 2, and 3 project sites, the portions of the CLA where ground disturbance would occur, and Colosseum Road from the Primm Golf Club to the CLA with desert tortoise exclusion fencing. BrightSource will install desert tortoise guards, as described in attachment B of the biological assessment (CH2MHill 2009a), at gated entries to prevent desert tortoises from gaining entry to the project sites or CLA. BrightSource will also fence the construction area for the utility right-of-way (e.g., gas distribution line) with temporary desert tortoise fencing prior to clearance surveys and ground disturbance. BrightSource may choose to fence all phases of the ISEGS project and the CLA at one time, or it may fence each phase at the time of construction on a given phase.

Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, BrightSource will conduct 2 complete desert tortoise clearance surveys of the fence line segment and associated disturbance right-of-way that will be fenced that day. During these surveys, an authorized biologist will inspect all burrows to determine occupancy and collapse all unoccupied burrows. To the extent feasible, BrightSource will make modifications in fence line alignment to fence occupied burrows out of the ISEGS project areas. If the fence line cannot avoid a given burrow, an authorized biologist will remove the desert tortoise and place it in a sheltered location outside of the ISEGS project area being fenced. If BrightSource fences a given project phase and does not plan on immediate clearing of that phase, it will leave gaps in the fence in locations where desert tortoise burrows are found in the path of the fence line right-of-way. These gaps will buffer the burrow by a distance of 54.6 yards (i.e., 27.3 yards on each side) and will remain open until the time that BrightSource is ready to commence with clearance surveys. BrightSource will not excavate and clear these burrows until it is ready to perform clearance surveys.

Following construction of the desert tortoise exclusion fence around a given portion of the ISEGS projects site (i.e., Ivanpah 1, 2, and 3 project sites, the CLA, or Colosseum Road), BrightSource will perform a full clearance survey of the fenced area during the spring (i.e., April 1 to May 31) or fall (i.e., September 1 to October 15). For fall clearance surveys, BrightSource may extend this survey window until October 31 for phases in which all desert tortoises will be placed into a quarantine facility (e.g., Ivanpah1 and the CLA) rather than translocated. Regardless of the method used to fence project site boundaries (i.e., at one time versus phased), clearance surveys would proceed according to the schedule described below.

In the fall of 2010, BrightSource intends to clear all desert tortoises from the CLA and Ivanpah 1. In fall 2010, BrightSource also intends to construct temporary desert tortoise exclusion fencing around the Ivanpah 2 power block and the power block access road and clear desert tortoises from these areas. BrightSource would place desert tortoises moved from the Ivanpah 2 power block and power block access route into adjacent habitat on the remainder of Ivanpah 2. BrightSource would not clear desert tortoises from the remainder of Ivanpah 2 or from Ivanpah 3 until construction is ready to commence on those phases.

When performing clearance surveys, authorized biologists and supervised desert tortoise monitors will conduct at least 3 complete clearance sweeps over a given phase with transects no wider than 30 feet. Surveyors will conduct transects for each sweep in different directions to allow for opposing angles of observation. BrightSource will consider the site clear after two complete passes have discovered no new desert tortoises. Authorized biologists will excavate all potential desert tortoise burrows by hand to confirm occupancy status. BrightSource will collect data on all desert tortoises handled and examine all individuals for clinical signs of disease. A detailed list of data that BrightSource will collect on each desert tortoise is provided in its translocation plan.

Disease Testing, Quarantine, and Translocation

CLA and Ivanpah 1

Desert tortoises that BrightSource locates during clearance surveys will undergo varying levels of disease testing and quarantine, depending on their location within the project site. In fall 2010, BrightSource intends to clear all desert tortoises from Ivanpah 1 and the CLA and quarantine them within a portion of the CLA that would not be disturbed by construction activities. BrightSource will collect blood, perform ELISA testing, and do visual health assessments on all project site desert tortoises quarantined at this facility.

The quarantine facility within the CLA will consist of a series of 65.6-foot by 65.6-foot) pens to allow separate quarantine of each individual cleared from the CLA and Ivanpah 1. BrightSource will construct each pen with permanent desert tortoise exclusion fencing or other materials that will prevent individuals from digging out or coming into direct contact with other quarantined or wild individuals. Each pen will contain at least two natural or artificially constructed burrows and should contain shrub cover that is similar to that found within the project site phases. In addition to the individual pens, BrightSource will construct a security fence around the entire quarantine facility and install netting over the facility or over the individual pens that contain juvenile desert tortoises to prevent access by desert tortoise predators. BrightSource will use a portable irrigation system and water all desert tortoise pens at a sufficient frequency, duration, intensity, and timing to mimic the rainfall patterns of a good rainfall year for this portion of the Mojave Desert. In addition, BrightSource will maintain a sufficient stock of supplemental feed to allow for additional feeding of quarantined animals, if necessary. BrightSource will develop an animal husbandry plan for the quarantine facility that the Service will review and authorize prior to placement of individuals in the quarantine facility.

Prior to release of the CLA and Ivanpah 1 desert tortoises from the quarantine facility, BrightSource will perform surveys of translocation areas west and north of the ISEGS project to determine density and disease prevalence within the resident population. Surveys would include full coverage surveys of a 500-meter buffer along the western and northern boundaries of the project site and full coverage surveys of the 4 translocation sites identified in the BrightSource's translocation plan (i.e., N1, N2, N3, and N4; CH2MHill 2009b). BrightSource will collect blood for ELISA testing and perform visual health assessments on all desert tortoises identified within these areas. In addition, BrightSource will perform sampling transects of a 3.7-mile buffer of contiguous desert tortoise habitat around these areas. All desert tortoises located during this sampling will be tested for disease using visual health assessments and ELISA testing. BrightSource will transmitter a subset (i.e., at least equal to the estimated project-site population) of the individuals located during these surveys to facilitate post-translocation monitoring of the resident population. Surveys of the 3.7-mile buffer will determine population density and disease prevalence. BrightSource will locate and test a sufficient number of individuals to predict, with a confidence interval of 95 percent, that 5 percent or less of the desert tortoises in this buffer are infected with upper respiratory tract disease. If BrightSource determines that this area has an upper respiratory tract disease prevalence of more than 5 percent among the resident

animals, it will not release individuals into the area west or north of the project site. If BrightSource determines through pre-translocation surveys that the post-translocation density in the translocation area would be more than 21 subadult and/or adult desert tortoises per square mile, it will not release individuals into the area west or north of the project site. If either of these scenarios occurs, BrightSource will contact the Service to address necessary changes in its translocation strategy prior to clearance surveys of additional phases.

Following receipt of ELISA testing results and completion of visual health assessments for the resident and quarantined population, BrightSource will contact the Service regarding the proposed release of each quarantined desert tortoise. The Service will work with BrightSource to identify an appropriate facility to house any quarantined desert tortoises that test ELISA-positive. In addition, the Service may require BrightSource to perform additional testing to confirm disease status of any ELISA-positive desert tortoises before final disposition. Prior to release of individuals into the translocation area, BrightSource will fence Interstate 15 between Nipton Road and Yates Well Road with desert tortoise exclusion fencing to prevent translocated desert tortoises from entering the roadway during long-distance, post-translocation movements.

BrightSource intends to translocate all ELISA-negative desert tortoises from quarantine to the translocation area in spring 2011, but timing of disease testing may push the translocation to the fall 2011. For Ivanpah 1 and the CLA, BrightSource will release all desert tortoises, originally located within 500 meters of the western fence, in areas adjacent to the western fence line. This release will be done in a manner that does not place a translocated individual more than 500 meters from its original capture location. In addition, BrightSource will not translocate a desert tortoise in this category within 1500 meters of a resident individual that has tested positive for disease through ELISA testing or visual health assessments. If BrightSource cannot comply with this buffer without moving the individual more than 500 meters from its original capture location, it will translocate the individual to the translocation area it has identified for Ivanpah 1 and CLA (i.e., N4; CH2MHill 2009b).

BrightSource will release all other desert tortoises into the translocation area that it identified for Ivanpah 1 and the CLA in its translocation plan (i.e., N4; CH2MHill 2009b). BrightSource will attach transmitters to all translocated desert tortoises to facilitate post-translocation monitoring. BrightSource will not translocate a desert tortoise in this category within 3.7 miles of a resident individual that has tested positive for disease through ELISA testing or visual health assessments.

Ivanpah 2

In fall 2010, BrightSource intends to construct a temporary desert tortoise exclusion fence around the Ivanpah 2 power block and the power block access. It will then move all desert tortoises that occupy this enclosure into adjacent habitat on the remainder of Ivanpah 2. BrightSource will ensure that it does not move these desert tortoises more than 500 meters during this clearance.

In spring 2010, BrightSource intends to clear all desert tortoises from Ivanpah 2 that are more than 500 meters from the western fence line and quarantine them within the facility described above for Ivanpah 1 and the CLA. If necessary, BrightSource will construct additional pens to facilitate the quarantine of these animals. BrightSource will collect blood, perform ELISA testing, and do visual health assessments on all project site desert tortoises quarantined at this facility.

Following visual health assessments, BrightSource will translocate all desert tortoises located within 500 meters of the western boundary fence of Ivanpah 2 to areas immediately outside the fence. BrightSource will not translocate a desert tortoise in this category within 1500 meters of a resident individual that has tested positive for disease through ELISA testing or visual health assessments. If BrightSource cannot comply with this buffer without moving the individual more than 500 meters from its original capture location, it will quarantine this individual. Following receipt of ELISA testing results and completion of visual health assessments for the quarantined population, BrightSource will contact the Service regarding the proposed release of each quarantined desert tortoise. The Service will work with BrightSource to identify an appropriate facility to house any quarantined desert tortoises that tests ELISA-positive. In addition, the Service may require BrightSource to perform additional testing to confirm disease status of any ELISA-positive desert tortoises before final disposition.

BrightSource will translocate all ELISA-negative, healthy desert tortoises from quarantine to the translocation area in spring or fall 2011 depending on the timing of ELISA test results. For Ivanpah 2, BrightSource will release all quarantined individuals in the translocation area it has identified for that phase of the project (i.e., N2 or N3; CH2MHill 2009b). BrightSource will attach transmitters to all translocated desert tortoises to facilitate post-translocation monitoring. BrightSource will not translocate a desert tortoise in this category within 3.7 miles of a resident individual that has tested positive for disease through ELISA testing or visual health assessments.

Ivanpah 3

Following or concurrent with clearance of desert tortoises from Ivanpah 2, BrightSource will perform a clearance level survey of Ivanpah 3 and attach transmitters to all desert tortoises that it locates to facilitate post-translocation monitoring and to allow easy location of individuals prior to translocation. In addition, BrightSource will perform visual health assessments of all desert tortoises on Ivanpah 3. During this survey, BrightSource will translocate all healthy desert tortoises located within 500 meters of the western or northern boundary fences of Ivanpah 3 to areas immediately outside of these fence lines. It will collect blood from all desert tortoises that are more than 500 meters from the western or northern fence line for ELISA testing. BrightSource will quarantine desert tortoises that are more than 500 meters from the western or northern fence line at the CLA quarantine facility. Alternatively, BrightSource may choose to perform *in* situ quarantine with these individuals. If *in situ* quarantine is chosen, BrightSource would attach transmitters to the quarantined animals and leave them at the location of their initial capture to await ELISA test results.

Following receipt of ELISA testing results for the quarantined desert tortoises on Ivanpah 3, BrightSource will contact the Service regarding the proposed disposition of each desert tortoise. If BrightSource chooses to quarantine the individuals in the CLA quarantine facility, it would translocate all ELISA-negative individuals into the translocation area it has identified for this phase of the project (i.e., N1; CH2MHill 2009b) or into the solar exclusion zone north of the Ivanpah 3 project site according to the procedures discussed with the Service. If BrightSource chooses *in situ* quarantine, all desert tortoises that test ELISA negative and are not within 500 meters of an ELISA-positive individual at the time of final clearance will be released into the translocation area it has identified (i.e., N1; CH2MHill 2009b) or into the solar exclusion zone (i.e, portion of the right-of-way excluded from future solar development for rare plant concerns) north of the Ivanpah 3 project site. The Service will work with BrightSource to identify an appropriate facility to house any desert tortoises that test ELISA positive. The Service may require BrightSource to perform or fund additional testing to confirm disease status of any ELISA- positive desert tortoises before final disposition. In addition, BrightSource will quarantine any individual that is located within 500 meters of an ELISA-positive desert tortoise on the Ivanpah 3 project site. This quarantine would occur at the CLA quarantine facility. While in quarantine, BrightSource will conduct an additional ELISA test to confirm disease status prior to translocation. If these individuals test negative on the second ELISA test, BrightSource will release these animals into one of the translocation areas described above.

Monitoring

BrightSource will provide for the monitoring of desert tortoises cleared from a given phase of the IESGS project site for a period of 3 years following its initial clearance. As discussed above, BrightSource will attach transmitters to all desert tortoises translocated from the project site and to an equal number of resident desert tortoises to facilitate monitoring. Following the completion of the first 3 years of monitoring, BrightSource will perform an additional 2 years of monitoring if directed by the Service.

BrightSource will also attach transmitters to and monitor desert tortoises in a population that will serve as a control group for translocation monitoring. BrightSource would establish the control group prior to release of translocated individuals. When establishing this control group, BrightSource will collect blood samples from all desert tortoises desert tortoises that it transmitters in the control population for ELISA testing. The number of desert tortoises monitored in this population will be equal to the number of desert tortoises translocated from the project site. The location of the control population will be within the Bureau's Ivanpah Desert Wildlife Management Area. The final boundaries of the control population monitoring area will depend on the number of desert tortoises that BrightSource has to transmitter to match the translocated population. BrightSource will ensure that only qualified biologists, authorized by the Service, perform monitoring of these populations.

During monitoring, BrightSource will collect information on survivorship, mortality rates, health status, body condition, movement of individuals, and predation in all three populations (i.e.,

resident, translocated, and control) to inform adaptive management of the translocation effort on future phases. If monitoring shows a mortality rate of 10 percent or higher among the desert tortoises moved from the project site, BrightSource will review all data collected to develop a remedial action plan in coordination with the Bureau and the Service prior to further phased translocation activities.

To minimize adverse effects to the desert tortoise, BrightSource will implement the following protective measures when implementing clearance surveys and desert tortoise translocation:

1. BrightSource will design all permanent desert tortoise exclusion fencing in accordance with the most up-to-date Service guidance. The Service is currently using guidance provided in the *Desert Tortoise Field Manual* (Service 2009a).

2. BrightSource will comply with the most up-to-date guidance for performing clearance surveys and handling desert tortoises. The Service is currently using the *Desert Tortoise Field Manual* (Service 2009a).

3. BrightSource will use authorized biologists for the performance of clearance surveys and for any other activities that require the handling of desert tortoises. If BrightSource uses desert tortoise monitors during clearance surveys or for other activities that require identification of sign or handling of desert tortoises, they will do so under the direct supervision of an authorized biologist.

4. BrightSource will ensure that health assessments and blood collection for disease testing of desert tortoises are conducted by individuals authorized by the Service to perform these tasks.

5. Following clearance of desert tortoises from the fenced project sites, CLA, and utility right-of-way, an authorized biologist will be onsite during initial clearing and grading to move any desert tortoises missed during the initial clearance surveys. If a desert tortoise is identified and found to have clinical signs of disease, BrightSource will contact the Service to determine appropriate disposition of the animal.

6. BrightSource will not perform any clearance surveys or translocation activities when the ambient air temperature is above 95 degrees Fahrenheit or is anticipated to exceed 95 degrees Fahrenheit before handling or processing can be completed. BrightSource will not perform any clearance surveys or translocation activities when ambient air temperature are below 65 degrees Fahrenheit or are anticipated to go below 50 degrees Fahrenheit during the week after release. BrightSource will not release any desert tortoises at translocation sites if the ambient air temperature is above or are expected to reach 90 degrees Fahrenheit within 3 hours of release. Ambient air temperature will be measured in the shade, protected from wind, at a height of 2 inches above the ground surface.

7. An authorized biologist will hydrate all desert tortoises scheduled for translocation within 12 hours prior to release.

8. An authorized biologist will assess all desert tortoises on the project site for clinical signs of disease prior to translocation regardless of whether these animals will receive additional ELISA testing. The authorized biologist will remove and temporarily quarantine any desert tortoises with clinical signs of disease that are encountered on the ISEGS project sites. Authorized biologists will use the descriptions of clinical signs of disease described in the available scientific literature (Berry and Cristopher 2001, Origgi et al. 2004, Ritchie 2006; all in CH2MHill 2009a), unless the Service provides more appropriate guidance. BrightSource will contact the Ventura Fish and Wildlife Office within 24 hours of collection of an animal to determine the appropriate disposition of animals showing clinical signs of disease. These animals may require more extensive disease testing (e.g., ELISA, Western Blot) prior to determination of their final disposition.

9. BrightSource will only perform clearance surveys during the spring (April 1 to May 31) and fall (September 1 to October 15). If all desert tortoises from a given phase would be placed in a quarantine facility, BrightSource may extend its fall clearance window until October 31 if conditions (i.e., air temperatures) allow. BrightSource will only perform release of cleared desert tortoises into a translocation area during the spring (April 1 to May 31) or early-fall (September 1 and October 1).

10. BrightSource will consider ELISA testing results valid for a period of 1 year on any individual desert tortoise. BrightSource will coordinate with the Service to determine the necessity for re-testing of individuals based on the circumstances of their quarantine and their proposed plan for disposition of the individual. BrightSource will only draw blood for ELISA testing between May 15 and October 31 to ensure accurate ELISA testing results.

11. BrightSource will maintain a record of all desert tortoises encountered and translocated during project surveys and monitoring. The record will include the following information for each desert tortoise: the location (narrative, vegetation type, and maps) and dates of observations, burrow data, general conditions and health, measurements, any apparent injuries and state of healing, the location from which it was captured and the location in which it was released, whether animals voided their bladders, diagnostic markings (i.e., identification numbers), results of health assessments, and ELISA-test results.

12. During temporary quarantine (i.e., desert tortoises held for less than one week), an authorized biologist will provide adequate food and water and a temperature-controlled holding area away from other desert tortoises.

13. BrightSource will only use Service-authorized individuals that have experience identifying the clinical signs of upper respiratory tract disease, herpes virus, and cutaneous dyskeratosis for the performance of health assessments. BrightSource will provide the Service with the qualifications of any authorized biologists that it will use to perform health assessments or blood collection on desert tortoises during clearance and translocation activities. The Service should receive these qualifications at least 30 days prior to the need for the health assessment and blood collection.

14. BrightSource will send all samples for ELISA to a laboratory qualified to perform these tests.

15. For monitoring activities, an authorized biologist will attach radio transmitters to adult desert tortoises using methods described in Boarman et al. (1998).

16. BrightSource will develop an animal husbandry plan for management of the CLA quarantine facility for the Service's review and approval prior to release of individuals into this facility.

17. BrightSource will not release project-site desert tortoises into the translocation area if it determines that post-translocation density will exceed 21 subadult or adult desert tortoises per square mile.

18. BrightSource will not release desert tortoises moved more than 500 meters from their point of capture within 3.7 miles of a resident desert tortoise that has tested ELISA-positive or has shown clinical signs of disease.

19. BrightSource will not release desert tortoises moved less than 500 meters from their point of capture within 1500 meters of a resident desert tortoise that has tested ELISA-positive or has shown clinical signs of disease.

Compensation

The following information was briefly discussed in the revised biological assessment (CH2MHill 2010a) and clarified with more detail in follow up communications with the Bureau (Fesnock 2010a and 2010b). The Bureau will require BrightSource to compensate for loss of desert tortoise habitat in accordance with the Northern and Eastern Mojave amendment to the California Desert Conservation Area (CDCA) Plan (Bureau 2002). The Bureau will apply a compensation ratio of 1:1, as described in this plan. This compensation will provide for acquisition of up to 3,582 acres of land in the Northeastern Mojave Recovery Unit, or desert tortoise habitat enhancement or rehabilitation activities on existing public land, or some combination of the two. The following is a list of potential habitat enhancement and rehabilitation actions, identified by the Bureau, that could be implemented solely or in combination with land acquisition to fulfill the Bureau's compensation requirements:

1. Install at least 50 miles of desert tortoise exclusion fencing along the following road segments: a) Interstate 15 between Nipton Road and Ivanpah Dry Lake, b) U.S. Highway 95 through Piute Valley from the California-Nevada state line to Goffs Road, c) Nipton Road, between the California-Nevada border and Interstate 15, and d) Ivanpah Road, from Nipton Road through portions of the Mojave National Preserve.
2. Restore habitat, including vertical mulching, of at least 50 routes that the Bureau has designated as closed in the Shadow Valley, Piute Valley, and Ivanpah Valley Desert Wildlife Management Areas.
3. Install three-strand fencing or other suitable fencing around the boundary of the towns of Nipton and Goffs.
4. Remove exotic plant species from areas important to desert tortoises.
5. Identify and clean up destroyed or damaged habitat areas, such as illegal dumpsites and illegal routes, in Shadow Valley, Piute Valley, Ivanpah Valley, and the critical habitat portions of Mojave National Preserve.
6. Fund desert tortoise head start research, if approved by the Service's Desert Tortoise Recovery Office.

The California Energy Commission has already approved the proposed action. In addition to the required compensation described above, the California Energy Commission will require compensation for loss of desert tortoise habitat at a ratio of 2:1. Lands acquired to meet the California Energy Commissions requirements would meet the following criteria:

1. must be as close as possible to the project site,
2. provide good quality habitat for desert tortoises with capacity to regenerate naturally when disturbances are removed,
3. 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,
4. be connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover,
5. not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible,
6. not be characterized by high densities of invasive species, whether on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration, and
7. not contain hazardous wastes.

To meet land acquisition requirements, BrightSource will either directly purchase lands, or it will deposit funds with the National Fish and Wildlife Foundation (NFWF). If BrightSource chooses to deposit funds with NFWF, a compensation fee will be assessed based on current fair market appraised value for the specific geographic area in which the acquisition occurs. If BrightSource chooses to provide funds to NFWF, the following conditions will be met: 1) funds will be provided prior to project construction, 2) lands will be acquired prior to completion of project

construction, and 3) lands will be conserved in perpetuity by a legal mechanism agreed to by the Bureau and California Department of Fish and Game. If BrightSource directly acquires the lands rather than providing funds to NFWF, it will acquire the lands prior to completion of project construction and will conserve these lands in perpetuity through a legal mechanism approved by the Bureau and California Department of Fish and Game.

Regardless of the acquisition method (i.e., directly or through NFWF), BrightSource will establish a management fund for the acquired lands to comply with requirements of the California Endangered Species Act. The management fund will consist of an interest-bearing account (as described in the memorandum of agreement between the Renewable Energy Action Team Agencies and NFWF) with the amount of capital commensurate to generate sufficient interest to fund all monitoring, management, and protection of the acquired lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and other actions designed to protect or improve the habitat values of the acquired lands. A Property Analysis Record (PAR) analysis, or comparable method, will be conducted by BrightSource, the Bureau, and the California Department of Fish and Game to determine the management needs and costs described above, which then will be used to calculate the amount of capital needed for the management fund. The management fund will be held and managed by NFWF or another entity approved by the Bureau, Service, and California Department of Fish and Game.

To mitigate this project's portion of the cumulative effect of increasing the number of common ravens in the desert region, the California Energy Commission will also require BrightSource to contribute $105.00 per acre for the 3,582 acres associated with the project site. These funds will contribute to an account established by the NFWF to carry out a regional management for the common raven. This account was established under a memorandum of agreement between Renewable Energy Action Team agencies (i.e., the Bureau, Service, the California Energy Commission, and the California Department of Fish and Game) and NFWF to manage funds to implement regional common raven management. Activities that would be carried out to reduce common raven predation on desert tortoises include reduction of human-provided subsidies (e.g., food, water, sheltering and nesting sites), education and outreach, removal ofcommon ravens and their nests, and evaluation of effectiveness and adaptive management. The total fee for this project of $376,110 will fund the project's portion of the regional raven management. BrightSource will make the payment within six months of final project approval.

Implementing control of common ravens and habitat enhancement and rehabilitation to fulfill some of the Bureau's compensation requirements may result in adverse effects to desert tortoises. These actions will require future site-specific Bureau authorizations and future project-specific consultation. Consequently, we will analyze the adverse effects of these actions in a general way, but cannot provide any site-specific analysis for these future actions in this biological opinion.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

The jeopardy analysis in this biological opinion relies on four components: (1) the status of the species, which describes the range-wide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the environmental baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the effects of the action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the cumulative effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the desert tortoise and the role of the action area in the survival and recovery of the desert tortoise as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE SPECIES

Basic Ecology of the Desert Tortoise

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the Creosote, Shadscale, and Joshua Tree Series of Mojave Desert Scrub, and the Lower Colorado River Valley subdivision of Sonoran Desert Scrub. Optimal habitat has been characterized as creosote bush scrub in areas where precipitation ranges from 2 to 8 inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but are occasionally occur in windblown sand or in rocky terrain (Luckenbach 1982). Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982, Schamberger and Turner 1986). Recent range-wide monitoring efforts have consistently documented desert tortoises above 3,000 feet (Service 2006).

Desert tortoises may spend more time in washes than in flat areas outside of washes; Jennings (1997) notes that, between March 1 and April 30, desert tortoises "spent a disproportionately longer time within hill and washlet strata" and, from May 1 through May 31, hills, washlets, and washes "continued to be important." Jennings' paper does not differentiate between the time desert tortoises spent in hilly areas versus washes and washlets; however, he notes that, although washes and washlets comprised only 10.3 percent of the study area, more than 25 percent of the plant species on which desert tortoises fed were located in these areas. Luckenbach (1982) states that the "banks and berms of washes are preferred places for burrows;" he also recounts an incident in which 15 desert tortoises along 0.12 mile of wash were killed by a flash flood. Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend most of their time during the remainder of the year in burrows, escaping the extreme conditions of the desert; however, recent work has demonstrated that they can be active at any time of the year. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein et al. (1987), and Service (1994a).

Food resources for desert tortoises are dependent on the availability and nutritional quality of annual and perennial vegetation, which is greatly influenced by climatic factors, such as the timing and amount of rainfall, temperatures, and wind (Beatley 1969, 1974, Congdon 1989, Karasov 1989, Polis 1991; all in Avery 1998). In the Mojave Desert, these climatic factors are typically highly variable; this variability can limit the desert tortoise's food resources.

Desert tortoises will eat many species of plants. However, at any time, most of their diet consists of a few species (Nagy and Medica 1986 and Jennings 1993 in Avery 1998). Additionally, their preferences can change during the course of a season (Avery 1998) and over several seasons (Esque 1994 in Avery 1998). Possible reasons for desert tortoises to alter their preferences may include changes in nutrient concentrations in plant species, the availability of plants, and the nutrient requirements of individual animals (Avery 1998). In Avery's (1998) study in the Ivanpah Valley, desert tortoises consumed primarily green annual plants in spring; they ate cacti and herbaceous perennials once the winter annuals began to disappear. Medica et al. (1982 in Avery 1998) found that desert tortoises ate increased amounts of green perennial grass when winter annuals were sparse or unavailable; Avery (1998) found that desert tortoises rarely ate perennial grasses.

Desert tortoise females typically produce one to two clutches of 1 to 7 eggs per year (Turner et al. 1986). On rare occasions, clutches can contain up to 15 eggs; most clutches contain 3 to 7 eggs. Multi-decade studies of the Blanding's turtle (*Emydoidea blandingii*), which, like the desert tortoise, is long lived and matures late, indicate that approximately 70 percent of the young animals survive each year until they reach adult size; after this time, annual survivorship exceeds 90 percent (Congdon et al. 1993). Research has indicated that 50 to 60 percent of young desert tortoises typically survive from year to year, even in the first and most vulnerable year of life. We do not have sufficient information on the demography of the desert tortoise to

determine whether this rate is sufficient to maintain viable populations; however, it does indicate that maintaining favorable habitat conditions for small desert tortoises is crucial for the continued viability of the species.

Desert tortoises typically hatch from late August through early October. At the time of hatching, the desert tortoise has a substantial yolk sac; the yolk can sustain them through the fall and winter months until forage is available in the late winter or early spring. However, neonates will eat if food is available to them at the time of hatching; when food is available, they can reduce their reliance on the yolk sac to conserve this source of nutrition. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter; these burrows are often shallowly excavated and run parallel to the surface of the ground.

Neonate desert tortoises emerge from their winter burrows as early as late January to take advantage of freshly germinating annual plants; if appropriate temperatures and rainfall are present, at least some plants will continue to germinate later in the spring. Freshly germinating plants and plant species that remain small throughout their phenological development are important to neonate desert tortoises because their size prohibits access to taller plants. As plants grow taller during the spring, some species become inaccessible to small desert tortoises.

Neonate and juvenile desert tortoises require approximately 12 to 16 percent protein content in their diet for proper growth. Desert tortoises, both juveniles and adults, seem to selectively forage for particular species of plants with favorable ratios of water, nitrogen (protein), and potassium. The potassium excretion potential model (Oftedal 2001) predicts that, at favorable ratios, the water and nitrogen allow desert tortoises to excrete high concentrations of potentially toxic potassium, which is abundant in many desert plants. Oftedal (2001) also reports that variation in rainfall and temperatures cause the potassium excretion potential index to change annually and during the course of a plant's growing season. Therefore, the changing nutritive quality of plants, combined with their increase in size, further limits the forage available to small desert tortoises to sustain their survival and growth.

In summary, the ecological requirements and behavior of neonate and juvenile desert tortoises are substantially different from those of subadults and adults. Smaller desert tortoises use abandoned rodent burrows, which are typically more fragile than the larger ones constructed by adults. They are active earlier in the season. Finally, small desert tortoises rely on smaller annual plants with greater protein content; the smaller plant size allows them to gain access to food and the higher protein content promotes growth.

Status of the Desert Tortoise

The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 *Federal Register* 32326).

In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 *Federal Register* 12178).

The Service listed the desert tortoise in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species.

Before entering into a discussion of the status and trends of the desert tortoise in the Northeastern Mojave Recovery Unit where the proposed action is located, a brief discussion of the methods of estimating the numbers of desert tortoises would be useful. Three primary methods have been widely used: permanent study plots, triangular transects, and line distance sampling.

Generally, permanent study plots are defined areas that are visited at roughly 4-year intervals to determine the numbers of desert tortoises present. Desert tortoises found on these plots during the spring surveys were registered; that is, they were marked so they could be identified individually during subsequent surveys. Between 1971 and 1980, 27 plots were established in California to study the desert tortoise; 15 of these plots were used by the Bureau to monitor desert tortoises on a long-term basis (Berry 1999). Range-wide, 49 plots have been used at one time or another to attempt to monitor desert tortoises (Tracy et al. 2004).

Triangular transects are used to detect sign (i.e., scat, burrows, footprints, etc.) of desert tortoises. The number of sign is then correlated with standard reference sites, such as permanent study plots, to allow the determination of density estimates.

Finally, line distance sampling involves walking transects while trying to detect live desert tortoises. Based on the distance of the desert tortoise from the centerline of the transect, the length of the transect, and a calculation of what percentage of the animals in the area were likely to have been above ground and visible to surveyors during the time the transect was walked, an estimation of the density can be made. This density only represents an estimation of the number of desert tortoises that are greater than 180 millimeters in size. Desert tortoises that are larger than this size are typically classified as subadult or adult desert tortoises.

Each of these methods has various strengths and weaknesses. In general, permanent study plots have been used to estimate the status of desert tortoises across large areas over time. Triangular transects were used to assess the density of desert tortoises on specific sites at a point in time; this method was commonly used to determine how many desert tortoises may be affected by a specific proposed action. In 2001, the Service initiated line-distance sampling to estimate the density of desert tortoises in desert wildlife management areas and critical habitat throughout the range.

Note that, when reviewing the information presented in the following sections, determining the number of desert tortoises over large areas is extremely difficult. The report prepared by the Desert Tortoise Recovery Plan Assessment Committee (Tracy et al. 2004) acknowledges as much. Desert tortoises spend much of their lives underground or concealed under shrubs, are not very active in years of low rainfall, and are distributed over a wide area in several different types of habitat. Other factors, such as the inability to sample on private lands and rugged terrain, further complicate sampling efforts. Consequently, the topic of determining the best way to estimate the abundance of desert tortoises has generated many discussions over the years. As a result of this difficulty, we cannot provide concise estimations of the density of desert tortoises in each recovery unit or desert wildlife management area that have been made in a consistent manner.

Given the difficulty in determining the density of desert tortoises over large areas, the reader needs to understand fully that the differences in density estimates in the recovery plan and those derived from subsequent sampling efforts may not accurately reflect on-the-ground conditions. Despite this statement, the reader should also be aware that the absence of live desert tortoises and the presence of carcasses over large areas of some desert wildlife management areas provide at least some evidence that desert tortoise populations seem to be in a downward trend in some regions.

The following paragraphs provide general information on the status and trends of the desert tortoise population in the Northeastern Mojave Recovery Unit, where the proposed action is located. We have not included detailed information on the status of the desert tortoise in the other recovery units throughout the range of the species in this biological opinion. This omission will not compromise the analysis in the biological opinion because our determination regarding whether a proposed action is likely to jeopardize the continued existence of a species must be conducted at the level of the listed taxon. When the range of the listed taxon is divided into recovery units, our level of analysis begins with the recovery unit; if the effects of the proposed action have the potential to compromise the ability of the species to survive and recover within the recovery unit, the next level of analysis considers how the compromised recovery unit would affect the listed taxon throughout its range (Service 2005a). Our analysis can therefore be conducted in a comprehensive manner through an iterative process. The Northeastern Mojave Recovery Unit comprises one of six recovery units for the desert tortoise; consequently, our level of analysis in this biological opinion will begin at this level.

The Northeastern Mojave Recovery Unit is located to the southwest of the Upper Virgin River Recovery Unit and extends through Nevada and into California in Ivanpah Valley. Several critical habitat units and four desert wildlife management areas are located within this recovery unit. Tracy et al. (2004) note that densities of adult desert tortoises for the overall region do not show a statistical trend over time.

The Beaver Dam Slope Desert Wildlife Management Area covers portions of Nevada, Utah, and Arizona. Based on various methods, the recovery plan estimates the density of desert tortoises in this desert wildlife management area as being from 5 to 56 animals per square mile (Service

1994). In 2007, the Desert Tortoise Recovery Office estimated a density for the Beaver Dam Slope Desert Wildlife Management Area of 3.11 desert tortoises per square mile based on line distance sampling transects (Service 2009b).

The Gold Butte-Pakoon Desert Wildlife Management Area covers portions of Nevada and Arizona, generally south of the Beaver Dam Slope Desert Wildlife Management Area. The recovery plan states that densities of desert tortoises in this recovery unit vary from 5 to 56 animals per square mile (Service 1994a). In 2007, the Desert Tortoise Recovery Office estimated a density for the Gold Butte-Pakoon Desert Wildlife Management Area of 3.11 desert tortoises per square mile based on line distance sampling transects (Service 2009b).

The Mormon Mesa Desert Wildlife Management Area is located entirely in Nevada, generally west and northwest of the Beaver Dam Slope and Gold Butte-Pakoon desert wildlife management areas, respectively. The recovery plan states that densities of desert tortoises in this recovery unit vary from 41 to 87 subadult and adult animals per square mile (Service 1994a). In 2007, the Desert Tortoise Recovery Office estimated a density for the Mormon Mesa Desert Wildlife Management Area of 8.55 desert tortoises per square mile based on line distance sampling transects (Service 2009b).

The Coyote Springs Desert Wildlife Management Area is located entirely in Nevada, generally west of the Mormon Mesa Desert Wildlife Management Area and east of the Desert National Wildlife Refuge. The recovery plan states that densities of desert tortoises in this recovery unit vary from 0 to 90 adult animals per square mile (Service 1994a). Kernel analysis for the Coyote Springs Desert Wildlife Management Area showed areas where the distributions of carcasses and living desert tortoises do not overlap (Tracy et al. 2004); this scenario is indicative of a higher than average rate of mortality. The Desert Tortoise Recovery Plan Assessment Committee used a kernel analysis to examine the distribution of live desert tortoises and carcasses over large areas of the range of the species (Tracy et al. 2004). The intent of this analysis is to determine where large areas with numerous carcasses do not overlap large areas with live animals. Regions where the areas of carcasses do not overlap areas of live animals likely represent recent die-offs or declines in desert tortoise populations. Because permanent study plots for this region were discontinued after 1996, recent declines in numbers would not be reflected in the kernel analysis if they had occurred. In 2007, the Desert Tortoise Recovery Office estimated a density for the Coyote Springs Desert Wildlife Management Area of 3.6 desert tortoises per square mile based on line distance sampling transects (Service 2009b).

The Ivanpah Desert Wildlife Management Area lies east of the Mojave National Preserve and covers approximately 36,795 acres. It is contiguous with National Park Service lands; note that the National Park Service did not designate desert wildlife management areas within the Mojave National Preserve because it considers that all of its lands are managed in a manner that is conducive to the recovery of the desert tortoise. The permanent study plot in the Ivanpah Valley is located within the Mojave National Preserve and provides information on the status of desert tortoises in this general region. Data on desert tortoises on this permanent study plot were collected in 1980, 1986, 1990, and 1994; the densities of desert tortoises of all sizes per square

mile were 368, 393, 249, and 164, respectively (Berry 1996). Numerous data sets are collected from the study plots and various statistical analyses conducted to provide information on various aspects of trends. We cannot, in this biological opinion, provide all of this information; therefore, we have selected the density of desert tortoises of all sizes per square mile to attempt to indicate trends. The number of juvenile and immature desert tortoises on the study plot declined, although the number of adult animals remained fairly constant. The notes accompanying this report indicated that the "ill juvenile and dead adult male (desert) tortoises salvaged for necropsy contained contaminants;" it also cited predation by common ravens and the effects of cattle grazing as causative factors in the decline in the number of juvenile and immature desert tortoises on the study plot (Berry 1996). In 2002, workers found 55 desert tortoises on this plot; this number does not represent a density estimate (Berry 2005). In 2007, the Desert Tortoise Recovery Office estimated a density for the Ivanpah Desert Wildlife Management Area of 16.84 desert tortoises per square mile based on line distance sampling transects (Service 2009b). However, the area sampled to determine this estimate includes all portions of the Ivanpah Critical Habitat Unit, which is primarily within the Eastern Mojave Recovery Unit. Only a small portion of the sample area for this estimate is located within the Northeastern Mojave Recovery Unit.

In 2007, the Desert Tortoise Recovery Office estimated an average density of desert tortoises in this recovery unit of 4.4 desert tortoises per square mile, which was a 9 percent decrease from previous estimates in 2005 (Service 2009b). However, this decrease was expected based on a change in sampling design and may not represent a true decline in density for the Northeastern Mojave Recovery Unit.

Recovery Plan for the Desert Tortoise

The recovery plan for the desert tortoise is the basis and key strategy for recovery and delisting of the desert tortoise. The recovery plan divides the range of the desert tortoise into 6 distinct population segments or recovery units and recommends the establishment of 14 desert wildlife management areas throughout the recovery units. Within each desert wildlife management area, the recovery plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The recovery plan also recommends that desert wildlife management areas be designed to follow the accepted concepts of reserve design and be managed to restrict human activities that negatively affect desert tortoises (Service 1994a). The delisting criteria established by the recovery plan are:

1. The population within a recovery unit must exhibit a statistically significant upward trend or remain stationary for at least 25 years;

2. Enough habitat must be protected within a recovery unit or the habitat and desert tortoises must be managed intensively enough to ensure long-term viability;

3. Populations of desert tortoises within each recovery unit must be managed so discrete population growth rates (lambdas) are maintained at or above 1.0;

4. Regulatory mechanisms or land management commitments that provide for long-term protection of desert tortoises and their habitat must be implemented; and

5. The population of the recovery unit is unlikely to need protection under the Endangered Species Act in the foreseeable future.

The recovery plan based its descriptions of the six recovery units on differences in genetics, morphology, behavior, ecology, and habitat use over the range of the Mojave population of the desert tortoise. The recovery plan contains generalized descriptions of the variations in habitat parameters of the recovery units and the behavior and ecology of the desert tortoises that reside in these areas (pages 20 to 22 in Service 1994a). The recovery plan (pages 24 to 26 from Service 1994) describes the characteristics of desert tortoises and variances in their habitat, foods, burrow sites, and phenotypes across the range of the listed taxon. Consequently, to capture the full range of phenotypes, use of habitat, and range of behavior of the desert tortoise as a species, conservation of the species across its entire range is essential.

The Service has released a revised recovery plan for public review (Service 2008c). The revised recovery plan includes a discussion of reducing the number of recovery units to four, based on information that has been generated since the release of the original document.

Relationship of Recovery Units, Distinct Population Segments, Desert Wildlife Management Areas, and Critical Habitat Units

The recovery plan (Service 1994a) recognized six recovery units or evolutionarily significant units across the range of the listed taxon, based on differences in genetics, morphology, behavior, ecology, and habitat use of the desert tortoises found in these areas. The boundaries between these areas are vaguely defined. In some cases, such as where the Western Mojave Recovery Unit borders the Eastern Mojave Recovery Unit, a long, low-lying, arid valley provides a fairly substantial separation of recovery units. In other areas, such as where the Eastern Mojave Recovery Unit borders the Northern Colorado Recovery Unit, little natural separation exists. Because of the vague boundaries, the acreage of these areas has not been quantified. Over the years, the Service has commonly referred to the areas as "recovery units;" the term "distinct population segment" has not been in common use.

The recovery plan recommended that land management agencies establish one or more desert wildlife management areas within each recovery unit. As mentioned previously in the Recovery Plan for the Desert Tortoise section of this biological opinion, the recovery plan recommended that these areas receive reserve-level management to remove or mitigate the effects of the human activities responsible for declines in the number of desert tortoises. As was the case for the recovery units, the recovery plan did not determine precise boundaries for the desert wildlife management areas; the recovery team intended for land management agencies to establish these

boundaries, based on the site-specific needs of the desert tortoise. At this time, desert wildlife management areas have been established throughout the range of the desert tortoise.

Based on the recommendations contained in the draft recovery plan for the desert tortoise, the Service designated critical habitat units throughout the range of the desert tortoise (59 *Federal Register* 5820). The 14 critical habitat units have defined boundaries and cover specific areas throughout the 6 recovery units.

The Bureau used the boundaries of the critical habitat units and other considerations, such as conflicts in management objectives and more current information, to propose and designate desert wildlife management areas through its land use planning processes. In California, the Bureau also classified these desert wildlife management areas as areas of critical environmental concern, which allows the Bureau to establish management goals for specific resources in defined areas. Through the land use planning process, the Bureau established firm boundaries for the desert wildlife management areas.

Finally, we note that the Department of Defense installations and National Park Service units in the California desert did not establish desert wildlife management areas on their lands. Where the military mission is compatible with management of desert tortoises and their habitat, the Department of Defense has worked with the Service to conserve desert tortoises and their habitat. Examples of such overlap include the bombing ranges on the Navy's Mojave B and the Chocolate Mountains Aerial Gunnery Ranges; although the target areas are heavily disturbed, most of the surrounding land remains undisturbed. Additionally, the Army has established several areas along the boundaries of Fort Irwin where training with vehicles is prohibited; desert tortoises persist in these areas, which are contiguous with lands off-base. The National Park Service did not establish desert wildlife management areas within the Mojave National Preserve, because the entire preserve is managed at a level that is generally consistent with the spirit and intent of the recovery plan for the desert tortoise.

The following table depicts the relationship among recovery units, desert wildlife management areas, and critical habitat units through the range of the desert tortoise.

Critical Habitat Unit	**Desert Wildlife Management Area**	**Recovery Unit**	**State**	**Size of Critical Habitat Unit (acres)**
Chemehuevi	Chemehuevi	Northern Colorado	CA	937,400
Chuckwalla	Chuckwalla	Eastern Colorado	CA	1,020,600
Fremont-Kramer	Fremont-Kramer	Western Mojave	CA	518,000
Ivanpah Valley	Ivanpah Valley	Eastern Mojave/Northeastern Mojave	CA	632,400
Pinto Mountain	Joshua Tree	Western Mojave/	CA	171,700

Critical Habitat Unit	Desert Wildlife Management Area	Recovery Unit	State	Size of Critical Habitat Unit (acres)
		Eastern Colorado		
Ord-Rodman	Ord-Rodman	Western Mojave	CA	253,200
Piute-Eldorado- CA Piute-Eldorado- NV	Fenner Piute-Eldorado	Eastern Mojave Northeastern Mojave/ Eastern Mojave	CA NV	453,800 516,800
Superior-Cronese	Superior-Cronese Lakes	Western Mojave	CA	766,900
Beaver Dam: NV UT AZ	 Beaver Dam Beaver Dam Beaver Dam	Northeastern Mojave (all)	 NV UT AZ	 87,400 74,500 42,700
Gold Butte-Pakoon NV AZ	 Gold Butte-Pakoon Gold Butte-Pakoon	Northeastern Mojave (all)	 NV AZ	 192,300 296,000
Mormon Mesa	Mormon Mesa Coyote Spring	Northeastern Mojave	NV	427,900
Upper Virgin River	Upper Virgin River	Upper Virgin River	UT	54,600

Nussear et al. (2009) modeled desert tortoise habitat across the range of the desert tortoise. This model, which is based on 3,753 desert tortoise locations, uses 16 environmental variables, such as precipitation, geology, vegetation, and slope. In addition, Nussear et al. used 938 additional occurrence locations to test the model's accuracy. Using this model, we estimate that the Northern and Eastern Mojave Recovery Unit contains approximately 4,853,368 acres of potential desert tortoise habitat (Darst 2010). Although this analysis likely omits some marginal desert tortoise habitat, it explains the occurrence of 95 percent of the 938 test points used in the Nussear et al. (2009) model. This modeling and mapping analysis does not consider habitat loss, fragmentation, or degradation associated with human-caused impacts; however, it provides a reference point relative to the amount of desert tortoise habitat within the Northeastern Mojave Recovery Unit.

Fire and Drought

Since December 2004, numerous wildfires have occurred in desert tortoise habitat across its range. Although we know that some desert tortoises were killed by the wildfires, mortality estimates are not available. We estimate that approximately 300,000 acres of potential desert tortoise habitat burned in the Northeastern Mojave Recovery Unit in 2005 (Burroughs 2005). This acreage includes approximately 109,000 acres of critical habitat (Clayton 2005). In total, approximately 136,447 acres of critical habitat in the Northeastern Mojave Recovery Unit burned in the 2005 fires (Clayton 2005). This loss of habitat has adversely affected the status of

the desert tortoise by reducing available habitat and likely reducing the distribution of individuals by eliminating them or greatly reducing their numbers in burned area.

In addition, drought has been implicated as a factor in reduced survival rates on desert tortoises in local areas (Longshore et al. 2003). In this 9-year study, researchers compared 2 "closely situated, but physiographically different, sites" in the Lake Mead National Recreation Area, Nevada. After a period during which survival rates were stable, the survival rate decreased on one of the sites that experienced drought conditions in 3 out of 4 years. The authors postulate that if such local incidents occur on a regular basis, "source-sink population dynamics may be an important factor" in determining the density of desert tortoise populations.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion, we consider the action area to include all areas of the proposed project, described in the Description of the Proposed Action, BrightSource's proposed translocation and control areas, and all contiguous desert tortoise habitat north and west of Interstate 15, east of the Clark Mountains, and south of Primm, Nevada (Croft 2010). By including all contiguous desert tortoise habitat west of Interstate 15, we are accounting for all areas that desert tortoises could move to following translocation based on the presence of movement barriers and the post-translocation distances observed in previous studies (Berry 1986, Field et al. 2007, Nussear 2004). The action area defined for this biological opinion is approximately 66,688 acres (Croft 2010).

Within this action area, adverse effects will occur primarily in the following areas:

1) Project Site – this portion of the action area consists of Ivanpah 1 and the CLA (913.5 acres), Ivanpah 2 (1,097 acres), and Ivanpah 3 (1,227 acres) (CH2MHill 2009a).
2) Solar Exclusion Zone Translocation Area (SEZ translocation area) – this portion of the action area consists of the 433-acre solar exclusion zone immediately north of Ivanpah 3 (Croft 2010).
3) Long-distance Translocation Sites (i.e., N1, N2, N3, and N4) – this portion of the action area consists of the four translocation areas identified by BrightSource in their translocation plan (i.e., N1, N2, N3, and N4; CH2MHill 2009b) and will accommodate all desert tortoises translocated more than 500 meters. The combined area of these translocation sites is approximately 495 acres (Croft 2010).
4) Control Area – this portion of the action area comprises all desert tortoises habitat within the Bureau's Ivanpah Desert Wildlife Management Area and is approximately 28,594 acres in size (Croft 2010). We have identified the entire Desert Wildlife Management Area within the action area because we do not know the precise size or location of the control population within this area. However, the final control area is likely to comprise

a small fraction of the total acreage identified here.

5) Short-distance Translocation Area – this portion of the action area consists of a 500-yard buffer strip, immediately west and north of the project site that will accommodate all short-distance translocations (i.e., less than 500 meters from capture site to release location). This portion of the action area is approximately 1,461 acres in size (Croft 2010).

In addition, some adverse effects are likely to occur along Colosseum Road and along the route of the fiber optic line. Of the approximately 66,688-acre action area, 4,741.5 acres would consist of areas that would be directly associated with aspects of the project or translocation release sites. The remaining 61,946.5 acres of the action area is composed of areas that have the potential for effects associated with desert tortoises that make long distance movements following translocation or effects associated with monitoring of the control population.

Past Consultations in the Action Area

The Service has issued numerous biological opinions for actions that have occurred or will occur within the action area for this consultation. In all cases, the Service determined that the proposed action was not likely to jeopardize the continued existence of the desert tortoise.

On December 2, 1992, the Service issued a biological opinion to the Bureau for leasing of oil and gas minerals at three sites in the Ivanpah Valley (1-6-92-F-58, Service 1992a). This biological opinion anticipated that project activities would kill or injure one desert tortoise due to use of access roads. One of the lease areas analyzed in the biological opinion is located within the action area covered in this biological opinion.

On July 13, 1993, the Service issued a biological opinion to the Bureau for cattle grazing on allotments in the Mojave Desert (1-6-92-F-19, Service 1993). This biological opinion anticipated the mortality of 3 desert tortoises and the harassment of 10 desert tortoises each year due to the development of range improvements on 25 cattle grazing allotments in the Mojave Desert. On March 19, 1994, the Service issued a new biological opinion on these allotments, in which it anticipated that 3 desert tortoises would be killed as a result of activities associated with cattle grazing on these allotments; the biological opinion also anticipated that range improvements would harass 10 desert tortoises (1-8-94-F-17, Service 1994b). This biological opinion superseded the 1993 biological opinion. The proposed project is located within the boundaries of the Clark Mountain Allotment, which was included in these consultations.

On February 9, 2001, the Service issued a biological opinion to the Bureau for issuance of a right-of-way for construction of the Level 3 fiber-optic line from Victorville to the California-Nevada state line (1-8-00-F-60, Service 2001). This biological opinion did not anticipate the amount of mortality associated with project activities, but it did require the Bureau to reinitiate consultation if project implementation killed or injured any desert tortoises. A portion of the project passed through the action area considered in this biological opinion.

On January 17, 2002, the Service issued a biological opinion to the Bureau regarding the effects to the desert tortoise of the implementation of the CDCA Plan (1-8-01-F-16, Service 2002). The biological opinion contained an analysis of the general management direction described in the CDCA Plan and deferred more detailed analysis to the future when the Bureau proposed specific projects. The biological opinion also contained an incidental take statement for ongoing actions, such as management of burros, entrapment of desert tortoises in managed waters and guzzlers, and casual use associated with recreation and mining. Although the biological opinion did not anticipate a specific level of injury or mortality that would likely occur due to these activities, it required the Bureau to reinitiate consultation if more than 5 desert tortoises were killed or injured during any 12-month period. Due to a court challenge, the Service issued another biological opinion on the CDCA Plan on March 31, 2005 (1-8-04-F-43R, Service 2005b). The new biological opinion did not change the threshold for reinitiation of consultation identified in the 2002 biological opinion. The entire action area for the ISEGS project is located within the planning area considered in both CDCA consultations.

On December 21, 1990, the Service issued a biological opinion for the Kern River and Mojave Pipeline projects (1-1-87-F-36R, Service 1990 in Service 2002b). The biological opinion anticipated that pipeline installation would kill or injure 45 desert tortoises in several states. A portion of the Kern River pipeline crosses the northern edge of the ISEGS action area. On July 9, 2002, the Service issued a biological opinion for expansion of the Kern River pipeline (1-5-02-F-476, Service 2002b). This biological opinion did not anticipate the number of desert tortoises that project activities would kill or injure, but it directed the Bureau to reinitiate consultation if more than 2 desert tortoises were killed on any 25-mile section of the pipeline. The Kern River expansion project also crossed the northern portion of the ISEGS action area.

On March 31, 2006, the Service issued a biological opinion to the Federal Highway Administration for construction of a joint port of entry along Interstate 15 between Nipton Road and Yates Well Road (1-8-06-F-20, Service 2006c). This biological opinion did not quantify the anticipated level of injury or mortality associated with project implementation, but it indicated that the number was likely to be small. As of this date, construction of this project has not moved forward.

Cumulatively the biological opinions listed above have authorized a very small amount of take within the areas that they cover. In addition, the take associated with all but one of these biological opinions is associated with projects that have action areas many times the size of the ISEGS action area. Therefore, it is unlikely that all take associated with these larger projects would happen to occur entirely within the ISEGS action area. Consequently, we conclude that take associated with these projects has not substantially affected the environmental baseline within the ISEGS action area.

Habitat Characteristics of the Action Area

We used the U.S. Geological Survey's model of desert tortoise habitat potential (Nussear et al. 2009) to define desert tortoise habitat within the action area. Within the action area,

BrightSource provided specific information on vegetation types for the project site, natural gas distribution line, fiber optic line, Colosseum Road, SEZ translocation area, and long-distance translocation sites. We summarized the information in this paragraph from the biological assessment (CH2MHill 2009a). All features for which we have specific vegetation or habitat survey information are located on a large, alluvial fan that slopes eastward from the Clark Mountains to Ivanpah Dry Lake at a 3 to 5 percent grade. Numerous ephemeral washes dissect the ISEGS project site with active channels that range in width from 1 to 15 feet. Elevations within the ISEGS project site range from 2,850 to 3,150 feet above sea level. Elevations along the route of the fiber optic line range from 2,850 feet to 5,320 feet. Creosote bush scrub is the dominant vegetation type on the ISEGS project site, western translocation area, SEZ translocation area, natural gas distribution line, Colosseum Road, and the lower elevation portions of the fiber-optic line. Mojave wash scrub also occurs on the ISEGS project site. Vegetation at higher elevations along the fiber optic line is characterized by blackbrush (*Coleogyne ramosissima*), Joshua trees (*Yucca brevifolia*), Utah juniper (*Juniperus osteosperma*), single-leaf pinyon (*Pinus monophylla*), and Mormon tea (*Ephedra* sp.). We do not have specific vegetation survey information for the remaining portions of the action area. However, all portions of the action area contain habitat features that the U.S. Geological Survey has mapped as conducive to desert tortoise occupancy (Nussear et al. 2009).

The portion of the action area west of Interstate 15 is within a Bureau-managed cattle grazing allotment (Clark Mountain) and a wild burro herd management area (Bureau and CEC 2009, Bureau 2002). In 2007, the Bureau removed most wild burros from the herd management area (Bureau and CEC 2009). However, given the recent nature of this removal and the persistence of some burros within the action area, adverse effects to habitat are likely to persist. The biological opinion for the CDCA Plan amendment for this area discussed the potential effects of cattle grazing on desert tortoises (Service 2005b). The remaining portions of the action area, south and east of Interstate 15, are within a desert wildlife management area managed for conservation of the desert tortoises.

During surveys of the project site, BrightSource identified numerous non-native plant species, such as Sahara mustard (*Brassica tournefortii*), salt cedar (*Tamarix ramosissima*), red brome (*Bromus madritensis*), Mediterranean grass (*Schismus* spp.), London rocket (*Sisymbrium irio*), and red-stemmed filaree (*Erodium cicutarium*) (CH2MHill 2009a, CH2MHill 2008c). Surveyors observed only one Sahara mustard and a few London rockets during assessment of the project site (CH2MHill 2008c). Surveyors located red brome, red-stemmed filaree, and Mediterranean grass throughout the project site with Mediterranean grass having a patchy distribution (CH2MHill 2008c). These species likely occur throughout the remainder of the action area. However, we expect the abundance of these species to be lower in portions of the action area that have not experienced cattle grazing in recent years (i.e., the Ivanpah DWMA).

In addition to cattle grazing, wild burro use, and non-native species, the habitat within the action area has also been affected by indirect effects associated with mining, a 640-acre golf course, various highways, electrical transmission lines, a natural gas transmission line, a fiber optic line, a railroad line, and private development along Nipton Road (CH2MHill 2009a, Bureau 1998,

1999, 2002). The remainder of the action area is crisscrossed by unpaved vehicle routes (Bureau 2002).

Status of the Desert Tortoise in the Action Area

From April 9 to June 5, 2007, CH2MHill conducted desert tortoise surveys over a 3,870-acre area that included the 3 project sites, CLA, natural gas distribution line, and the zone of influence (CH2MHill 2009a, CH2MHill 2008a). Because of a change in the project description, they surveyed an additional 726 acres from May 20 to May 25, 2008. The 2008 surveys also covered the proposed access route for the ISEGS facility. During the 2007 and 2008 surveys, CH2MHill located 25 live desert tortoises, 97 carcasses, and 214 burrows, with the greatest density of sign occurring on the Ivanpah 1 project site. Of the 25 desert tortoises identified, 7 were within Ivanpah1 and the CLA, 3 were within Ivanpah 2, 6 were within Ivanpah 3, 4 were within the SEZ translocation area, and 2 were in the area of the natural gas distribution line. The remaining desert tortoises were found on zone-of-influence transects that were outside of the proposed project footprint. The surveys were 100 percent coverage surveys in accordance with the pre-project survey protocols developed by the Service (1992b). BrightSource did not perform protocol level surveys of the fiber-optic line for desert tortoises, but it confirmed the presence of desert tortoise habitat along the entire route and incidentally found three individuals along the line (CH2MHill 2009a).

Based on the survey results and the Service's revised pre-project survey protocol (Service 2010), we estimate that Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3 contain approximately 14, 6, and 12 subadult and/or adult desert tortoises, respectively. In addition, we estimate that the SEZ translocation area contains approximately 8 adult/subadult desert tortoises. We emphasize that, although our estimate of the number of subadult and adult desert tortoises on the project site is based on the best available information, these numbers represent only an estimate; the overall number of individuals on site may be different. For example, based on the desert tortoise densities estimated through line-distance sampling for other portions of Ivanpah Valley (16.84 per square mile, Service 2009b), the actual number of subadult and/or adult desert tortoises on Ivanpah 1 and the CLA, Ivanpah 2, Ivanpah 3, and the SEZ translocation area could be as high as 24, 29, 33, and 12, respectively. Because the pre-project survey data represents the best available data and because the data collected through line-distance sampling were collected in areas that are currently managed for desert tortoise conservation (i.e., Bureau-designated desert wildlife management areas and the Mojave National Preserve), we do not expect that the actual number of subadult and adult desert tortoises will be as high in these portions of the action area.

In addition to subadult and adult desert tortoises, the ISEGS project site is likely to contain juvenile desert tortoises and desert tortoise eggs. Based on studies performed in Ivanpah Valley and the Goffs study site that identified a sex ratio of 1:1 (Turner et al. 1984, Turner et al. 1987) and the anticipated number of adult desert tortoises on the site, we estimate that Ivanpah 1 and the CLA, Ivanpah 2, Ivanpah 3, and the SEZ translocation area contain approximately 7, 3, 6, and 4 female desert tortoises of reproductive age, respectively. Based on a mean number of clutches of 1.6 per female per year, observed in a 2-year study in Ivanpah Valley (Turner et al.

1984), and a mean clutch size of 5.38 eggs per clutch observed at the Goffs study site (Turner et al. 1986 in Service 1994), we estimate that reproductive females on Ivanpah 1 and the CLA, Ivanpah 2, Ivanpah 3, and the SEZ translocation area produce approximately 61, 26, 52, and 35 eggs per year, respectively. Turner et al. (1987) observed that the proportion of the population composed of juvenile desert tortoises at the Goffs study site ranged as high as 51.2 percent over the course of 4 years. Based on this information and the anticipated population of subadults and adults on the project site, we estimate that Ivanpah 1 and the CLA, Ivanpah 2, Ivanpah 3, and the SEZ translocation area may contain as many as 15, 7, 13, and 9 juvenile desert tortoises, respectively.

We do not have desert tortoise survey information for the remainder of the action area described in this biological opinion. Given the proximity of the short-distance translocation area and the long-distance translocation sites to the surveyed areas, described above, the density of desert tortoises is likely similar (i.e., approximately 7 subadult and/or adult desert tortoises per square mile). This estimate is supported by a survey immediately east of the ISEGS project site that found 27 desert tortoises on a 5.75 square mile survey area (Ironwood 2009). Using these data and the Service's revised pre-project survey protocol (Service 2010b), we estimate a population density of approximately 6 desert tortoises per square mile for that survey area. Applying the higher of these density estimates to BrightSource's translocation sites, we estimate a population size of 15 desert tortoises within the combined area of the proposed translocation sites (i.e., short-distance, long-distance, and SEZ translocation areas). Using the same method described above for estimation of eggs and juveniles, we estimate that the reproductive females in the western translocation area produce approximately 65 desert tortoise eggs per year and the western translocation area population contains approximately 17 juvenile desert tortoises at any given time.

Because the Service has estimated the density of desert tortoises within the Ivanpah Desert Wildlife Management Area through line-distance sampling (i.e., 16.84 per square mile; Service 2009b), we have applied that density estimate to the control population areas. Using this density, we estimate that this 28,594-acre portion of the action area contains 753 subadult and/or adult desert tortoises. Using the same method described previously for estimation of eggs and juveniles, we estimate that the reproductive females in the control population area produce approximately 3,239 desert tortoise eggs per year and the population within this area may contain as many as 816 juvenile desert tortoises at any given time.

For the remaining portions of the action area (i.e., areas west of Interstate 15 that desert tortoises may move to following translocation), we estimate that densities are likely similar to those identified for the three phases of the project site and the translocation areas (i.e., seven desert tortoises per square mile). Consequently, we estimate that this portion of the action area, which include the project site areas and translocation areas discussed above, contain approximately 330 subadult and/or adult desert tortoises. We also estimate that these areas contain approximately 358 juveniles and produce approximately 1,421 eggs per year.

We emphasize that, although our estimates of the number of subadult and adult desert tortoises, eggs, and juveniles on the project site phases, translocation areas, control area, and remainder of the action area are based on the best available information, these numbers represent only an estimate; the overall number of animals and eggs on site may be different. We recognize that the survey data used for these estimates represents a single point in time and the number of individuals in these areas may change by the onset of construction. For example, some desert tortoises may leave or die. Alternatively, the number of desert tortoises present on the site may increase or decrease by the time construction commences. For example, one or more desert tortoises may not have been detected during the initial survey; other desert tortoises may have moved on to the site since the time of the surveys. Desert tortoises may have emerged from a nest on the site; this scenario could increase the overall number of individuals. For example, if a clutch of seven eggs (i.e., the number of eggs in a clutch that would be considered large) hatched, this increase would be much more than we would expect from individuals moving on to the site. In addition, the studies used to estimate juveniles and eggs are based on a single study site that may or may not have similar productivity and juvenile survival rates to that of our action area.

EFFECTS OF THE ACTION

The estimates of the number of desert tortoises and eggs derived from the pre-project survey data constitute the best available information regarding the number of desert tortoises in the action area. For this reason, we have used the estimates from the Environmental Baseline section of this biological opinion, which are based on these surveys, in the following analysis.

Effects of the Translocation Strategy

The primary effects of the proposed action on desert tortoise will result from the capture and translocation of desert tortoises prior to all ground disturbance associated with the proposed construction activities. We anticipate that BrightSource will capture and translocate all subadult and adult desert tortoises from the fenced project areas, and any other portion of the action area that is in harm's way due to project-related activities. Because of the difficulty in locating juvenile desert tortoises, BrightSource is likely to move some but not all juvenile desert tortoises from the project site.

Prior to translocation of individuals, BrightSource will perform surveys of the resident populations in each translocation area (i.e., short-distance, long-distance, and SEZ translocation areas). Within all portions of the translocation areas that are more than 500 meters from the western or northern fence lines of the project site, BrightSource will only perform visual health assessments. It will perform visual health assessments and ELISA testing in all other portions of the translocation areas and disease sampling (i.e, ELISA testing and visual health assessments) in the remaining portions of the action area north and west of Interstate 15 to assess population density and disease prevalence prior to translocation. In addition, BrightSource will perform surveys of the control area to identify and attach transmitters to control desert tortoises and to assess disease prevalence of the population to be monitored. During these surveys, BrightSource

will attach transmitters to an equal number of individuals in the resident and control areas to the estimated number that they will clear from the project site. We have analyzed the effects associated with attaching transmitters to these animals in a later section of this document. We cannot precisely predict how many desert tortoises that BrightSource would draw blood from in these areas, but we know that it would be at least 32 each in the resident, control, and project-site populations. However, BrightSource will need to draw blood from additional resident animals that are located in portions of the action area west and north of Interstate 15 to assess whether this area has disease prevalence above five percent. To determine whether this threshold has been reached, with a sufficient level of confidence (i.e., 95 percent confidence), we estimate that BrightSource may have to draw blood from as many as 98 desert tortoises (Averil-Murray 2010). Some potential exists that a subset of the animals tested could suffer mortality as a result of improper blood collection techniques. Because BrightSource will use experienced biologists, authorized by the Service, we expect that this number will be a small fraction of the total animals tested.

BrightSource has proposed numerous measures to minimize injury or mortality of desert tortoises and ensure success of the translocation effort. Because the project would be built in phases over several years, during which time desert tortoise numbers on the project site will likely change, we cannot predict exactly how many desert tortoises will be removed from the project site and other related work areas. However, based on current surveys that cover the project site, CLA, natural gas line, and Colosseum Road, we estimate that BrightSource will have to capture and translocate approximately 32 subadult and/or adult desert tortoises (14, 6, and 12 from Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3, respectively) from these areas. Although BrightSource would move some desert tortoises a relatively short distance (i.e., less than 500 meters), other desert tortoises are likely to be translocated outside of their existing home ranges. We have estimated that the project site may contain approximately 35 juvenile desert tortoises (15, 7, and 13 from Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3, respectively) and produces as many as 139 desert tortoise eggs (61, 26, and 52 from Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3, respectively) per year. However, because of the difficulty in finding desert tortoise eggs and juvenile desert tortoises, we anticipate that BrightSource will translocate few, if any, eggs or juveniles from the project site. Effects to juvenile desert tortoises and eggs that are missed on the project site are discussed later in this section.

Based on our current estimates of the resident population density in the translocation areas (i.e., 7 subadult and/or adult desert tortoises per square mile), the combined size of the translocation areas (i.e., 2.74 square miles), and the post-translocation density threshold identified in the project description (i.e., 21 subadult and/or adult desert tortoises per square mile), we anticipate that the proposed translocation areas can accommodate approximately 38 additional subadult and/or adult desert tortoises. Consequently, the proposed translocation areas appear to be large enough to accommodate all 32 subadult and/or adult desert tortoises that BrightSource needs to move. However, we will not be able to determine this until surveys of the translocation areas and the project sites are performed. At that point, we will know the precise number of individuals on the project site and have a more precise estimate of the number of individuals

within the translocation areas. If the translocation areas prove to be too small, BrightSource would have to identify a new translocation area for the additional desert tortoises. This action would constitute a significant change in the project description and would likely require re-initiation of consultation.

BrightSource has indicated that the 8-mile line to Mountain Pass will use existing poles and would require a 40-foot by 60-foot area of disturbance for every 10,000 feet of line. Consequently, we estimate that project work areas for installation of the fiber optic line would total 0.28 acre in size. Based on this estimate and the estimated density for this portion of the action area of approximately 7 subadult and/or adult desert tortoises per square mile, we anticipate that few, if any, desert tortoises or eggs are likely to be moved during installation of the fiber optic line. Because of the small size of work areas and the difficulty in locating juvenile desert tortoises and eggs, we do not anticipate the movement of any juvenile desert tortoises or eggs.

To prevent translocated desert tortoises from entering roadways following translocation, BrightSource will fence approximately 7 miles of Interstate 15 between Nipton Road and Yates Wells Road. BrightSource has indicated that it would require a 10-foot-wide area of disturbance to install desert tortoise exclusion fencing around the 3 phases of its project. We anticipate that it would require a similar disturbance right-of-way to install desert tortoise exclusion fencing along Interstate 15. Therefore, we estimate that fence installation will directly affect up to 9.1 acres (0.01 square mile). Boarman and Sazaki (2006) found that desert tortoise populations are depressed next to major roadways out to a distance of at least 400 meters (437.5 yards). Because the fence installation would occur along a major roadway and considering the estimated density of desert tortoises in this portion of the action area (i.e., 7 subadult and/or adult desert tortoises per square mile) and the small area of direct effects, we expect that fence installation will affect few desert tortoises or eggs.

Some potential exists that handling of desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids. Because BrightSource will use experienced biologists that are approved by the Service and approved handling techniques, collected desert tortoises are unlikely to suffer substantially elevated stress levels during handling.

Following release, we cannot predict the movement patterns that all translocated animals are likely to exhibit. Translocation studies, including a study performed in the Ivanpah Valley, have shown that straight-line movement distances following release can be over 3.73 miles in the first year for some desert tortoises (Berry 1986, Field et al. 2007, Nussear 2004). Mean dispersal distances observed on 3 study plots south of Fort Irwin ranged from 153.1 to 6,168 yards, with maximum dispersal distances of between 13,795 to 25,155.3 yards (Walde et al. 2008). For short distance translocations, data appear to indicate shorter post-translocation dispersal distances (79.8 to 1610.9 yards) (Walde et al. 2008). Translocated populations can also significantly expand the area they occupy in the first year following translocation (e.g., from 3.9 to 6.9 square miles at a Nevada site; from 0.2 to 10.3 square miles at a Utah site). The degree to which these

animals expand the area they use depends on whether the translocated animals are released into typical or atypical habitat; that is, if the translocation area supports habitat that is similar to that of the source area, desert tortoises are likely to move less (Nussear 2004).

Translocated animals appear to reduce movement distances following their first post-translocation hibernation to a level that is not significantly different from resident populations (Field et al. 2007, Nussear 2004). As time increases from the date of translocation, most desert tortoises change their movement patterns from dispersed, random patterns to more constrained patterns, which indicate an adoption of a new home range (Nussear 2004).

We cannot predict the direction that translocated animals are likely to move. In some studies, translocated desert tortoises have exhibited a tendency to orient toward the location of their capture and attempt to move in that direction (Berry 1986), but in other instances, no discernible homing tendency has been observed in translocated animals (Field et al. 2007). Information specific to short-distance translocations indicates that at least some individuals will attempt to return to their former home ranges after release (Stitt et al. 2003, Rakestraw 1997).

Based on this information, at least a portion of the translocated animals are likely to make extensive, long-distance movements during the first year following translocation and the area that the translocated population occupies is likely to increase significantly. Animals translocated more than 500 meters to the long-distance translocation areas or to the SEZ translocation area are most likely to exhibit this pattern. However, desert tortoises moved into the short-distance translocation area are more likely to move distances similar to that observed by Walde et al. (2008) because they will be translocated a relatively short distance. Some of the translocated desert tortoises are likely to attempt to return to the project site, where they would encounter the project site fence and either turn around or walk the fence line. Following the first hibernation period after translocation, individuals are likely to significantly reduce movement distances and establish new home ranges.

In one study, the majority of the dispersal movement away from the release site occurred during the first 2 weeks after translocation (Field et al. 2007). Desert tortoises that make long-distance movements following translocation can travel for 5 to 10 days and average 671.5 yards per day (Berry 1986). During this time and over the period prior to home range establishment, desert tortoises may suffer a higher potential for mortality because they are moving great distances through unfamiliar territory and are less likely to have established cover sites for protection. Studies have documented various sources of mortality for translocated individuals, including predation, exposure, fire, disease, crushing by cattle, and flooding (Nussear 2004, Field et al. 2007, Berry 1986, U.S. Army 2009, 2010). Of these, predation appears to be the primary source of mortality in most translocation studies (Nussear 2004, Field et al. 2007, U.S. Army 2009, 2010).

Based on the description of the action area in the Environmental Baseline section of this biological opinion, the potential exists for all six sources of mortality within the action area. However, fire is likely to be localized and highly dependent on the abundance of non-native

grasses and other weeds. The potential also exists for desert tortoises to die on roads during the period when translocated individuals are seeking new home range locations. However, because BrightSource will fence Interstate 15 prior to translocation, road kills are less likely to occur at this translocation site.

BrightSource has selected translocation areas in desert tortoise habitat that should serve as suitable recipient sites for these animals. It has also identified post-translocation density thresholds to ensure that the final translocation areas are large enough to accommodate all desert tortoises from the site. It has proposed numerous protective measures in its translocation plan that are likely to reduce the potential for mortality of translocated individuals. In addition, because construction and translocation will occur in phases and BrightSource has identified a 10 percent mortality threshold for the translocation effort, some potential exists that it can reduce the level of translocation-related effects through adaptive management. However, adaptive management measures are not available for our evaluation, so we cannot predict their effectiveness in this biological opinion.

Translocating desert tortoises may also adversely affect resident desert tortoises within the action area due to local increases in population density. Increased densities may result in an increased spread of upper respiratory tract disease or other diseases, an increased incidence of aggressive interactions between individuals, and an increased incidence of predation that may not have occurred in the absence of translocation. Saethre et al. (2003) evaluated the effects of density on desert tortoises in nine semi-natural enclosures at the Desert Tortoise Conservation Center in Nevada. The enclosures housed from approximately 289 to 2,890 desert tortoises per square mile. Saethre et al. (2003) observed a greater incidence of fighting during the first year of the experiment but did not detect any trends in body condition index, reproduction, or presence of the symptoms of upper respiratory tract disease among the enclosures. Body condition index and reproduction are important indicators of how translocation may affect resident desert tortoises; generally, stress suppresses body condition index and reproduction in desert tortoises. This study did not draw any conclusions regarding density-dependent effects on predation of desert tortoises. Additionally, as discussed previously in this section, desert tortoises tend to move substantial distances from the release sites; this behavior reduces the likelihood of overcrowding in smaller areas.

We anticipate that density-dependent effects on resident populations are likely to be minor for the following reasons: 1) current densities in the translocation areas are likely to be low based on our population estimates for the action area, 2) translocation will result in a dispersed release of individuals, 3) the translocation areas are not confined spaces, so released individuals would be able to disperse into other areas, and 4) BrightSource has identified a post-translocation density threshold for the translocation areas that is significantly lower than densities at which adverse effects were observed in previous studies.

Translocation has the potential to increase the prevalence of diseases, such as upper respiratory tract disease, in a resident population. Stress associated with handling and movement or due to density dependent effects could exacerbate this threat if translocated individuals with subclinical upper respiratory tract disease or other diseases begin to exhibit clinical signs of disease due to

the stress associated with handling and movement. This potential conversion of translocated desert tortoises from a non-contagious to contagious state may increase the potential for infection in the resident population above pre-translocation levels.

We cannot reasonably predict the increase in disease prevalence within the resident population that may occur due to translocation. However, the following mitigating circumstances are likely to reduce the magnitude of this threat: 1) BrightSource will use experienced biologists and approved handling techniques that are unlikely to result in substantially elevated stress levels in translocated animals, 2) desert tortoises on the project site are currently part of a continuous population with the resident populations of the translocation areas and are likely to share similar pathogens and immunities, 3) BrightSource will move some of the translocated desert tortoises a relatively short distance into the SEZ and western translocation areas, which is likely to reduce post-translocation stress associated with long-distance movements, 4) density dependent stress is unlikely to occur for the reasons discussed above, 5) BrightSource will not translocate any animal that either has clinical signs of disease or tests ELISA-positive, and 6) BrightSource has identified specific translocation buffers to prevent release of individuals within proximity of diseased resident animals.

Because ELISA testing can result in false positive results (i.e., an animal may test positive even though it is not a carrier of the disease) the potential exists for removal of healthy individuals from the translocated population due to concern over disease. These individuals would not be released into the wild and would no longer contribute to the environmental baseline for the action area. Because BrightSource would coordinate with the Service and perform follow-up testing of ELISA-positive individuals, the potential for removing false-positive individuals from the translocated population is low. Consequently, we conclude that few, if any, desert tortoises will be incorrectly removed from the population due to false positive results.

In a study conducted in Ivanpah Valley, 21.4 percent of 28 translocated desert tortoises died (Field et al. 2007). Other studies have documented mortality rates of 0, 15, and 21 percent in other areas (Nussear 2004, Cook et al. 1978 in Nussear 2004). Esque et al. (2010) observed mortality of 89 of 357 translocated desert tortoises (24.9 percent). Esque et al. (2010) and Nussear (2004) found that mortality among translocated animals was not statistically different from mortality observed in resident populations. In addition, Esque et al. (2010) found that mortality rates in resident (29 of 140 desert tortoises; 20.7 percent mortality), control (28 of 149 desert tortoises; 18.8 percent mortality), and translocated populations did not differ statistically and concluded that the translocation was not the cause of the observed mortality. With the exception of the Esque et al. (2010) study, none of the studies cited in this paragraph used controls to compare mortality rates in resident and translocated populations to the mortality rate experienced in populations not affected by translocation.

Based on the information that we have gathered and considering the uncertainty of site-specific applicability, we estimate that translocated, resident, and control desert tortoises are likely to experience mortality rates of approximately 30 percent due to predation, exposure, fire, disease, crushing by cattle and vehicles, and flooding. (We based our estimate of overall mortality in the

three populations on the work of Esque et al. (2010) and then buffered it to 30 percent to accommodate the additional mortality that would be likely to occur if all or most of the monitoring period occurs during years of low rainfall.) Consequently, we estimate that approximately 10, 87, and 226 translocated, resident, and control desert tortoises, respectively, may die during the 3-year post-translocation monitoring period. We conclude that mortality rates in the resident and translocated populations are unlikely to be elevated above levels that these populations would experience in the absence of translocation, based on the information provided in Esque et al. (2010). Therefore, we do not anticipate this mortality will be the result of translocation. The monitoring of a nearby control population will assist us in determining whether this prediction is realized. If monitoring shows this conclusion to be incorrect, this will constitute new information and require the re-initiation of consultation. One shortcoming of the proposed monitoring program is that, while it includes the observation of a control population that will not be affected in any manner by the translocation, it omits a mechanism to prompt the implementation of corrective actions if significant differences in mortality rates among the populations can be attributed to the translocation.

We have estimated that few, if any, desert tortoises are likely to be moved during installation of the fiber optic line. Because disturbance areas on this portion of the project are small, movement of desert tortoises immediately outside of the work area is not likely to remove them from their current home ranges. Consequently, any desert tortoise moved from the fiber optic line will likely continue to occupy familiar territory and use known shelter sites and is unlikely to suffer post-translocation mortality associated with displacement from the work area.

Many translocated juveniles will likely die due to their greater susceptibility to predation. Because we anticipate that BrightSource will move few, if any, juvenile desert tortoises, we do not anticipate a large amount of juvenile mortality associated with translocation because surveyors will miss most juvenile desert tortoises during clearance surveys. Consequently, most juveniles will likely die during construction. We have discussed this effect below.

Effects of Post-translocation Monitoring

Based on the description of the post translocation monitoring program and our estimate of the number of desert tortoises on the project site, we anticipate that BrightSource will attach transmitters to 96 desert tortoises to facilitate monitoring of the translocated, resident, and control populations. As a result, desert tortoises will carry transmitters and be monitored and handled periodically for visual health assessments. Some potential exists that handling of desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids. Because BrightSource will use experienced biologists, approved by the Service, and approved handling techniques, these desert tortoises are unlikely to suffer substantially elevated stress levels resulting from handling and monitoring activities.

Effects of Construction of the ISEGS Facilities

BrightSource will permanently fence all three project phases, Colosseum Road, and the CLA with desert tortoise exclusion fencing and clear all desert tortoises from the project site prior to ground disturbance. During construction of the permanent perimeter fencing and during other ground-disturbing activities that are outside of the permanently fenced facilities (i.e., fiber optic line, highway fence, natural gas distribution line), Bright Source will perform pre-activity clearance surveys and employ monitors to move desert tortoises out of harm's way if they re-enter work areas. For these reasons, we anticipate that construction, including construction access, is unlikely to kill subadult and adult desert tortoises. Some potential always exists that surveyors may miss an individual during clearance surveys and construction monitoring. We cannot predict how many subadult and adult desert tortoises that clearance surveys and construction monitoring would miss. However, because BrightSource will use qualified biologists, authorized by the Service for clearance surveys, we anticipate that the number is likely to be small.

In addition, juvenile desert tortoises and eggs are difficult to detect during clearance surveys and construction monitoring; therefore, the potential exists that surveyors may miss most of them and they are likely to remain in the work areas during construction. Juvenile desert tortoises and eggs that surveyors miss during clearance surveys or project monitoring are likely to be killed during construction. Based on the estimates in the Environmental Baseline section of this biological opinion, we estimate that as many as 35 juvenile desert tortoises (15, 7, and 13 from Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3, respectively) may be killed during construction. We have estimated that the reproductive females on the project site collectively produce as many as 139 desert tortoise eggs (61, 26, and 52 from Ivanpah 1 and the CLA, Ivanpah 2, and Ivanpah 3, respectively) per year. However, we cannot estimate how many of these eggs that construction activities would destroy because this number covers the entire year's total production, and we do not know what portion of this total will be present on site when construction activities are occurring on a given phase. In the Summary of Effects section (below) we discuss the significance of the loss of these individuals and eggs to the overall status of the species within the Northeastern Mojave Recovery Unit and range wide.

Effects of Operations and Maintenance Activities

Following fencing, operation and maintenance activities within permanently fenced areas are unlikely to directly injure or kill any desert tortoises. However, we have discussed additional indirect effects associated with operation and maintenance of this facility in the Miscellaneous Effects section later in this biological opinion.

Over the 45-year life of this project, BrightSource may conduct some ground-disturbing maintenance activities outside of fenced areas. These activities have the potential to injure or kill desert tortoises primarily as a result of vehicle strikes, as workers travel to and from work sites outside of the fenced areas; a limited possibility exists that desert tortoises could be injured or killed by equipment or workers moving around a work site. Because Class I maintenance

activities would not result in surface disturbance or loss of habitat and BrightSource would implement protective measures to reduce the potential for effects to desert tortoises, Class I maintenance activities would kill few, if any, desert tortoises.

Class II maintenance activities associated with repair of desert tortoise exclusion fencing would likely kill or injure few, if any, desert tortoises for the following reasons: 1) fence repairs are likely to result in minimal ground disturbance in localized areas, 2) at least a portion of the work area would be on disturbed areas within the fenced project site, 3) perimeter roads would exist that would allow access to most repair locations with minimal off-road travel, and 4) BrightSource would implement numerous protective measures to reduce the potential for injury or mortality of desert tortoises.

Because we do not have sufficient detail regarding the other types of maintenance activities discussed in the Description of the Proposed Action, we cannot adequately analyze the potential for injury or mortality of desert tortoises. Consequently, we are not analyzing Class III maintenance activities or any Class II maintenance activities that would occur outside of the fence and not be associated with repair of fencing. The Bureau has indicated that these actions would require future site-specific authorizations. At the time the Bureau considers authorization of these future activities, it will need to determine whether these future activities may affect desert tortoises. Some of these actions may require future site-specific consultation under section 7.

Effects of Restoration/Reclamation Activities

Decommissioning or restoration activities within the permanently fenced project area are unlikely to result in injury or mortality of desert tortoises. BrightSource will also need to perform restoration of long-term and short-term disturbance associated with the natural gas distribution line and fiber optic line. BrightSource would implement pre-activity clearance surveys and employ desert tortoise monitors to ensure that desert tortoises do not enter restoration work areas. Consequently, restoration activities will injure or kill few, if any, desert tortoises. These actions are likely to reduce the amount of time required to return disturbed areas to habitat suitable for desert tortoise occupancy. However, this process is likely to take several decades.

Effects of Accessing Worksites

BrightSource will fence the primary access road for the ISEGS facility (Colosseum Road) with desert tortoise exclusion fencing, so accessing the main fenced facilities is unlikely to result in injury or mortality of desert tortoises. In the event that the fence is damaged, a small number of desert tortoises could enter the roadway and be injured or killed. In addition, access of project work areas outside of the fenced facilities (i.e., natural gas pipeline, fiber optic line, highway fence) has the potential to injure or kill desert tortoises due to elevated use of existing routes. Because all workers will have undergone an education program about desert tortoises, workers may be less likely to strike desert tortoises than a casual user. We cannot predict how many

individuals will be killed or injured because of the variables involved, such as weather conditions, the nature and condition of the road, and activity patterns of desert tortoises at the time the roads are being used. However, we expect the number that would be injured or killed to be small and does not substantially change the number of desert tortoises that we anticipate may be killed or injured by the overall effects of the project.

Effects of Loss of Habitat

The biological assessment has defined permanent, long-term, and short-term disturbance as follows:

- Permanent Disturbance: project disturbance that would remain after the project's lifespan.
- Long-term Disturbance: project disturbance that would remain in place for the lifespan of the project, but would be restored following closure.
- Short-term disturbance: project disturbance restored within 5 years of the time of the disturbance.

Based on these definitions and the project description provided in the biological assessment, construction of the 3 project phases and the CLA, including installation of exclusion fencing, and improvements to Colosseum Road would result in 3,391.9 and 94 acres of permanent/long-term and short-term disturbance, respectively (CH2MHill 2009a). Installation of the natural gas distribution line and associated facilities will result in an additional 1.7 and 6 acres of new permanent/long-term and short-term disturbance. We anticipate that installation of fencing along Interstate 15 would temporarily disturb approximately 9.1 acres of desert tortoise habitat.

The following table, adapted from table 2.1-1 of the revised biological assessment (CH2MHill 2010a), provides details regarding the disturbance associated with each project feature.

Permanent and Long-term Disturbance	**Acres**
Ivanpah 1	913.5
Ivanpah 2	1,097
Ivanpah 3	1,227
CLA and SCE Substation	68.4
Gas Line	1.7
Colosseum Road	14.3
Total	**3,321.9**
Short-term disturbance	
CLA and SCE Substation	115.6
Gas Line	6.0
Construction areas for linear corridors	10.4
Credit for existing roads within project area	-9.9
Total	**122.1**

Based on the definitions above, we estimate that installation of the fiber optic line would result in approximately 0.28 acre of new short-term disturbance. In addition to the disturbances associated with construction of the ISEGS facility, Class II and III maintenance activities are likely to result in additional habitat disturbance over the 45-year life of the project. Based on the information provided, we cannot estimate the amount of disturbance associated with Class II and III maintenance activities over the life of the project. We are not analyzing these activities in the biological opinion because they will require future authorizations from the Bureau.

These disturbances are likely to result in desert tortoise habitat loss that will persist for various periods. Following extensive disturbance and compaction, Mojave Desert soils can take between 92 and 124 years to recover in the absence of active restoration (Webb 2002). In addition, recovery of plant cover and biomass in the Mojave Desert can require 50 to 300 years in the absence of restoration efforts (Lovich and Bainbridge 1999). Although active restoration, including decompaction, seeding, and planting, can reduce the time required to restore desert ecosystems, success is varied and dependent on numerous variables. Based on this information, 3,321.9 acres, currently characterized as permanent/long-term disturbance, are likely to be permanently lost or unsuitable as habitat for several decades following decommissioning of the facilities and commencement of restoration work. Because active restoration will occur, we estimate that BrightSource will restore 132 acres of short-term disturbance to desert tortoise habitat prior to decommissioning of the facility. Based on the information provided, we cannot estimate the amount or duration of habitat loss associated with Class II and III maintenance activities. Consequently, we are not analyzing the effects of these activities in this biological opinion. The Bureau has indicated that these actions will require future Bureau authorizations.

Based on the work by Nussear et al. (2009), we calculated that the Northeastern Mojave Recovery Unit contains approximately 7,583 square miles of modeled desert tortoise habitat. Because the model does not take into account existing human disturbance, we used a more conservative estimate in which we considered half of the modeled habitat was no longer suitable for desert tortoises because of development or degradation resulting from human activities; we also removed the 300,000 acres lost to fire in 2005. Therefore, based on this estimate, approximately 3,323 square miles of modeled desert tortoise habitat remain in the recovery unit. The habitat that would be disturbed on a long-term basis (i.e., approximately 3,322 acres) constitutes approximately 0.07 percent of the modeled habitat in the Northeastern Mojave Recovery Unit and approximately 0.15 percent of the modeled habitat if we use the conservative estimate. Although this percentage does not constitute a numerically substantial portion of the Northeastern Mojave Recovery Unit, we do not have the ability to place a numerical value on edge effects and overall fragmentation that the proposed action may cause or that occurs in the recovery unit as a whole. Given that, this low percentage of the recovery unit that would be lost likely underestimates the biological value of the area. However, the area where the ISEGS project is located is already substantially cut off from the remainder of the Northeastern Mojave Recovery Unit by Interstate 15, Ivanpah Lake, Primm, Nevada, and the Clark Mountains. Although the construction of the ISEGS facility will increase fragmentation and edge effect in

the area bounded by Interstate 15 and the Clark Mountains, it is unlikely to greatly increase fragmentation and edge effect when considered in the larger context of the recovery unit.

Effects of Compensation

The Bureau is proposing to require compensation for loss of habitat associated with this project at a ratio of 1:1 per the provisions of the Northern and Eastern Mojave Plan. Compensation will include acquisition of private lands containing desert tortoise habitat that will be placed under Bureau management and/or implementation of habitat enhancement and rehabilitation projects on public land. All acquisitions and habitat enhancements or rehabilitation actions associated with the Bureau's compensation requirements would be performed within the Northeastern Mojave Recovery Unit.

Potential habitat enhancement and rehabilitation actions that the Bureau has proposed, include highway fencing, fencing the boundary of two desert residential communities, non-native plant control, rehabilitation of closed routes, and identification and clean up of degraded sites (i.e., illegal dumps, illegal routes). All actions would occur within or would benefit Desert Wildlife Management Areas or other areas that are important to desert tortoise conservation in the Northeastern Mojave Recovery Unit or in nearby areas in the Eastern Mojave Recovery Unit. The mitigation that is ultimately implemented for the ISEGS project will involve implementation of some, if not all, of these actions solely or in some combination with land acquisition.

In addition to the Bureau's compensation strategy, the California Energy Commission has required BrightSource to compensate for the loss of desert tortoise habitat at a ratio of 2:1. Although these funds may be spent in locations outside of the Northeastern Mojave Recovery Unit, at least some funds are likely to be expended within the unit; we expect that these funds would be used to implement actions similar to those implemented by the Bureau and would also result in actions that would promote the conservation of the species. The California Energy Commission will also require BrightSource to provide funding for the implementation of regional management programs for the common raven.

Although acquisition of suitable desert tortoise habitat through these compensation requirements will not create new habitat within the Northeastern Mojave Recovery Unit, it will result in a net increase in the amount of desert tortoise habitat managed for the conservation of this species. In addition, the funding of management actions and regional management of common ravens is likely to result in restoration and rehabilitation of degraded habitat, protection of existing habitat from future sources of degradation, and a reduction in the direct mortality of desert tortoises. In general, the actions proposed for compensation are identified in the original and draft revised recovery plans (Service 1994, 2008) as being necessary for the recovery of the desert tortoise. These actions will increase the quantity and/or quality of habitat for the desert tortoise and reduce the number of existing threats and mortality sources in the areas where they occur. We cannot quantify the level of effects that these actions will have, but they are likely to reduce mortality of desert tortoises and improve habitat quality with the Northeastern and Eastern Mojave Recovery Units. Because habitat enhancement actions and land acquisition would occur

in Desert Wildlife Management Areas or other locations that are important to desert tortoise conservation, the proposed compensation requirements would provide a positive recovery benefit to the desert tortoise and offset loss of habitat and other adverse effects associated with the project.

Implementation of some habitat enhancement actions has the potential to result in adverse effects to the desert tortoise. Because we do not have specific information regarding future habitat enhancement and rehabilitation projects, we cannot perform a detailed analysis of these actions. The Bureau has indicated that these actions would require future project-specific authorizations prior to implementation. Consequently, we will address their adverse effects to the desert tortoise in future project-specific section 7 consultations.

Miscellaneous Effects

Indirect effects associated with construction, operation, maintenance, and decommissioning of the ISEGS facility may injure or kill desert tortoises. These effects include increased predation by common ravens that are attracted to the area because of increased human activity and modification of the habitat and diet of desert tortoises due to the spread of non-native plant species. Ivanpah Valley currently supports numerous facilities that subsidize common ravens (e.g., water sources, trash, road-killed animals, nest and roost sites, etc.); these facilities are associated with established communities (i.e., Primm, Nevada and Nipton, California), golf courses, an interstate highway, and utility lines that are likely to elevate the level of predation of desert tortoises by common ravens within the action area. Construction and operation of the ISEGS facility has the potential to attract additional common ravens and increase predation in the action area. BrightSource has proposed numerous measures to address predation by common ravens associated with the project site. These measures include subsidy control, a monitoring program, and contingencies for removal of problem common ravens. In addition, BrightSource will provide funds for implementation of regional management actions for common ravens.

We cannot reasonably predict the amount of predation by common ravens that construction and operation of this project is likely to add to baseline levels within the action area, but we anticipate that the program proposed by BrightSource is likely to be effective in eliminating some, but not all, common raven use of the project site. Depending on the location of specific control actions, funding of regional management of common ravens may also aid in reducing the amount of common raven predation on desert tortoises within the action area.

Non-native plant species currently occur on the proposed project site and are likely to occur in other portions of the action area at varying densities. Within Ivanpah Valley, numerous features serve as vectors for infestation of the action area by non-native plant species (e.g., highways, cattle allotment). However, construction and operation of the ISEGS facility has the potential to increase the distribution and abundance of non-native species within the action area due to ground-disturbing activities that favor the establishment of non-native species. In addition, access to the project site and other project features by construction and operations personnel is likely to increase the volume and distribution of non-native seed carried into the action area. The

increased abundance in non-native species associated with this project may result in an increased fire risk, which may result in future habitat loss.

BrightSource has proposed numerous measures to address control of non-native plant species within the project site. We cannot reasonably predict the increase in non-native species abundance that this project will create within the action area, but we anticipate that the program proposed by BrightSource will be reasonably effective in reducing the increase in some species. However, BrightSource has not proposed any measures to control species, such as red brome, that are ubiquitous in the area. Increases in the abundance of this species elevate the risk of fire, which, in turn, heightens the risk of future habitat loss, which could reduce the number and distribution of desert tortoises within the action area. We anticipate that BrightSource's use of herbicides in control of weeds would have minimal effects because these herbicides would be used within fenced areas that do not contain desert tortoises.

Summary of Effects

Prior to construction of the ISEGS facility, we estimate that BrightSource would capture and translocate approximately 32 subadult and/or adult desert tortoises from project worksites. We anticipate that they will translocate few, if any, juvenile desert tortoises. Because BrightSource will implement a variety of measures to reduce stress to these animals, we do not anticipate that injury or mortality will result from handling of these animals. We anticipate that disease screening associated with the translocation effort will result in the improper removal of few, if any, desert tortoises with false positive ELISA test results. Following release of translocated animals, we anticipate that approximately 30 percent (i.e., 10 subadult and/or adult desert tortoises) will die due to predation, exposure, fire, disease, crushing by cattle, road kills, or flooding. Most of this mortality is likely to occur in the first year after release, during the period that translocated animals are making long-distance movements and attempting to establish new home ranges. In addition, some resident desert tortoises in the translocation areas are likely to die due to the same causes of mortality. We have concluded that mortality rates within the resident and translocated populations are unlikely to be above what they would experience in the absence of translocation, and we do not anticipate that post-translocation mortality will actually be caused by the act of moving desert tortoises. If post-translocation monitoring indicates elevated levels of mortality in resident and translocated populations, re-initiation of consultation may be required to address this unanticipated effect.

We also anticipate that BrightSource may have to quarantine and collect blood from the 32 translocated animals and collect additional blood samples from 32 control animals and up to 98 resident desert tortoises to assess disease. Some potential exists that collection of blood from some of these individuals could result in injury, if done improperly. However, we anticipate that the number of desert tortoises that may be injured would be minimal because BrightSource would use experienced biologists authorized by the Service to perform these activities.

In addition to the 32 translocated desert tortoises that BrightSource would attach transmitters to and monitor following release, we estimate that they will attach transmitters to and monitor an

additional 32 resident and 32 control animals. We do not anticipate that placing transmitters on these animals or periodic handling for the purposes of monitoring will result in substantial adverse effects because BrightSource will use experienced biologists, approved by the Service, and approved handling techniques.

Because BrightSource will surround the majority of its work areas with desert tortoise exclusion fencing, perform clearance surveys on all work areas, and implement numerous measures to prevent injury and mortality of desert tortoises, we anticipate that construction of the ISEGS project site, including use of access routes, is likely to kill or injure few subadult and adult desert tortoises. Because of the difficulty detecting them, we estimate that project implementation may kill or injure up to 35 juvenile desert tortoises. We also anticipate that project construction will destroy any desert tortoise eggs within work areas; some eggs may be detected and moved to a translocation area, but most are unlikely to be found. Given the numerous variables discussed in this section, we cannot predict the precise number of eggs with any certainty.

Following construction, we do not anticipate that operations, maintenance, or restoration and reclamation activities within the permanently fenced portions of the ISEGS facility or regular access to the ISEGS facility along Colosseum Road will injure or kill desert tortoises. Because BrightSource would implement numerous protective measures, restoration activities in unfenced work areas are unlikely to injure or kill desert tortoises. We cannot accurately predict the number of desert tortoises that most Class II maintenance activities would kill or injure outside of the fenced project site because we do not have sufficient information to predict the location, frequency, or magnitude of these actions. However, Class I activities and Class II maintenance activities associated with fence repair would kill or injure few, if any, desert tortoises because of the nature of these activities and the protective measures that BrightSource would implement.

Project development will result in 3,297.03 acres of long-term/permanent disturbance to desert tortoise habitat. Although all of this area, except for the permanent facilities (i.e., SCE substation and gas metering stations), will undergo restoration/reclamation work, it is unlikely to serve as suitable desert tortoise habitat for many years following facility closure. We cannot predict the amount of time required to return areas of long-term disturbance to suitable desert tortoise habitat because of numerous variables associated with restoration success, including the timing and amount of rainfall. We estimate that BrightSource will return an additional 285.4 acres of short-term disturbance to suitable desert tortoise habitat by the end of the 45-year project lifespan.

Construction, operation, maintenance, and decommissioning of the ISEGS facility have the potential to increase common raven predation on desert tortoises within the action area. In addition, this project is likely to result in an increased abundance of non-native plant species and a subsequent increase in fire frequency within the action area. The measures proposed by BrightSource to address these threats will reduce the magnitude of these effects, but some level of adverse effect will likely persist. We cannot reasonable predict the number of desert tortoises that these threats will adversely affect.

The compensation required by the Bureau would, to some degree, offset the adverse effects of the proposed solar power facility. All of the actions that would be undertaken as compensation are consistent with recommendations for recovery of the desert tortoise. However, the lack of specificity with regard to which actions will be implemented, the uncertainty of success of the actions, and the time lag between implementation of the conservation actions and a substantive effect on recovery of the desert tortoise prohibit us from concluding that the compensation measures would completely offset the adverse effects of the solar facility. Because of the long term or permanent loss of approximately 3,297 acres of desert tortoise habitat, the project will likely result in a net decrease in desert tortoise habitat.

To conclude, areas disturbed by the proposed solar facility and its ancillary features would no longer support reproduction of desert tortoises. Most of the desert tortoises that currently reside within these areas will likely continue to reproduce after translocation. Consequently, we anticipate that the proposed action will not appreciably diminish the reproductive capacity of the species.

Implementation of the proposed action would not appreciably reduce the number of desert tortoises in the Northeastern Mojave Recovery Unit. Based on the amount of modeled desert tortoise habitat (7,583.39 square miles) and the average density (4.4 desert tortoises per square mile) that the Service has estimated for this recovery unit, we estimate that approximately 33,367 subadult and/or adult desert tortoises occur in the Northeastern Mojave Recovery Unit. Using the conservative estimate of the amount of remaining modeled habitat (i.e., 3,323 square miles; see the Effects of the Action - Effects of Loss of Habitat section of this biological opinion), we estimate that approximately 15,652 subadult and/or adult desert tortoises reside within the Northeastern Mojave Recovery Unit. Using this estimate and the information and methods described above for estimating the number of juvenile desert tortoises and eggs within the project site, action area, and translocation area, we estimate that the Northeastern Mojave Recovery Unit may contain approximately 16,422 juvenile desert tortoises in at any given time. Reproductive females within the Northeastern Mojave Recovery Unit may produce as many as 134,733 desert tortoise eggs over the course of a year. Consequently, we conclude that the number of desert tortoises and eggs that are likely to be lost as a result of the ISEGS project comprises a relatively small portion of the overall population in the Northeastern Mojave Recovery Unit.

In previous consultations, we estimated the number of desert tortoises found in the desert wildlife management areas and critical habitat by multiplying the average density of animals found in these areas by their total size. For the numbers of desert tortoises outside of those areas, we used a density value of one-tenth of that estimated within desert wildlife management areas and critical habitat, which we multiplied by the estimated area of available desert tortoise habitat. We did not correct for areas that were unsuitable habitat in either case in these past consultation estimates. Because the method of estimating the number of desert tortoises we use in this biological opinion takes into account a conservative estimate of modeled desert tortoise habitat, we used the same average density across all areas of desert tortoise habitat for our estimate.

The distribution of the desert tortoise would be reduced by approximately 5 square miles, based on the amount of long-term and permanent disturbance associated with the proposed action. As we mentioned previously in the biological opinion, this loss comprises approximately 0.07 percent of the modeled habitat in the Northeastern Mojave Recovery Unit and approximately 0.15 percent of the modeled habitat if we use the conservative estimate discussed previously in this section. Although this loss of habitat is likely to increase fragmentation of habitat and decrease the overall sustainability of the portion of the recovery unit that is isolated by Interstate 15, Ivanpah Lake, Primm, Nevada, and the Clark Mountains, it will not appreciably reduce the amount of habitat available to the desert tortoise when considered in the context of the entire Northeastern Mojave Recovery Unit.

Although the effects of this project on desert tortoises are substantial, we do not anticipate that it will result in effects that appreciably reduce the current distribution, numbers, or reproduction of the overall population within the Northeastern Mojave Recovery Unit or range wide. We anticipate that the compensation programs (i.e., one proposed by the Bureau and the other approved by the California Energy Commission) will result in an increase in the amount of habitat that is managed for the conservation of this species and will result in many advances in the implementation of recovery actions. We anticipate that this compensation will offset many adverse effects associated with this project. Taking into consideration the compensation that is proposed, the lack of statistical trends in population size in this recovery unit, and considering the relative scale of the adverse effects in context with our current estimates of the species' status in the Northeastern Mojave Recovery Unit and range wide, we do not anticipate that construction of this project would appreciably reduce our ability to recover the desert tortoise.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Bureau manages all of the land in the action area with the exception of two 640-acre sections owned by the State of California. There are no proposed, non-federal actions within these parcels.

CONCLUSION

After reviewing its status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise. We have reached this conclusion because:

1. Project activities are likely to directly kill few subadult and adult desert tortoises because BrightSource will implement numerous measures to reduce the potential that desert tortoises will occupy project work sites (i.e., clearance surveys, exclusion fencing, translocation, qualified biologists, desert tortoise monitors).

2. The number of desert tortoises injured and killed as a result of translocation will likely be small relative to the number of desert tortoises that occur within the Northeastern Mojave Recovery Unit and across the range of the species.
3. BrightSource will implement numerous measures to reduce the potential for increased predation by common ravens and spread of non-native plant species.
4. Current information from permanent study plots and line distance sampling does not document a statistical trend in adult desert tortoise densities in this recovery unit. Therefore, we have no information to indicate that the loss of a small number of individuals as a result of this project would appreciably reduce our ability to reach population recovery objectives for the desert tortoise in the Northeastern Mojave Recovery Unit.
5. This project would not result in loss of desert tortoise habitat in areas that the Bureau or other agencies have designated for intensive management to achieve conservation of desert tortoises.
6. Compensation requirements through the Bureau and California Energy Commission will result in an increase in the amount of existing habitat that is managed for the conservation of the desert tortoise and will likely lead to restoration of lost or degraded habitat within these areas.
7. Regional management actions are likely to aid in reducing common raven predation in a portion of the desert tortoise's range.

As we noted previously in this biological opinion, the analysis we conduct under section 79a)(2) of the Endangered Species Act must be conducted in relation to the status of the entire listed taxon. We based the analysis in this biological opinion within the context of the Northeastern Mojave Recovery Unit because of the wide range of the desert tortoises. Because we have determined that the effects of this action would not compromise the integrity of the Northeastern Mojave Recovery Unit or impede the survival or recovery of the desert tortoises in a measurable manner in this portion of its range, we have not extended the analysis of the effects of this proposed action to the remainder of the range of the Mojave population of the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act

provided that such taking is in compliance with the terms and conditions of an incidental take statement.

The measures described in this document are non-discretionary. The Bureau has a continuing duty to regulate the activities covered by the incidental take statement in the biological opinion. If the Bureau fails to include the terms and conditions of this incidental take statement as enforceable conditions of its right-of-way grant, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Bureau must report the progress of its action and its impact on the desert tortoise to the Service as specified in the incidental take statement [50 *Code of Federal Regulations* 402.14(i)(3)].

Translocation of Desert Tortoises

We anticipate that the translocation of approximately 32 subadult /adult desert tortoises from project facilities (i.e., Ivanpah 1, 2, and 3 project sites, the CLA, and natural gas distribution line) would involve take, in the form of capture and harassment, of all of these individuals. We anticipate the translocation of few, if any, desert tortoises from the fiber-optic line or highway fence project sites. We emphasize that these numbers are estimates, based on the best available information. The number of individuals translocated may be somewhat higher or lower. We anticipate that few, if any, of these individuals will be injured or killed due to handling.

We cannot precisely quantify how many juvenile desert tortoises eggs that project activities would take because we do not know how successful surveyors will be in locating them. However, we have estimated that as many as 35 juvenile desert tortoises may be on the project site, based on the number of adults detected during pre-project surveys and information on desert tortoise demographics. We have also estimated that as many as 139 desert tortoise eggs may be produced on the project site each year. Based on our estimate that few, if any, subadult and adult desert tortoises would be in project work sites on the fiber-optic line and highway fence, we anticipate that these portions of the action area will contain few, if any, juveniles or eggs. We emphasize that these numbers are estimates, based on the best available information; the number of individuals may be somewhat higher or lower. Because of the difficulty in locating juvenile desert tortoises and desert tortoise eggs and because of the difficulty in determining what proportion of the total number of eggs might be on site at the time that construction occurs, we anticipate that the total number taken in the form of capture for translocation will be a small fraction of these numbers. Any individuals and eggs that are not captured would likely be killed or injured by construction activities. We have discussed injury and mortality of these individuals later in this section.

We do not anticipate that the post-translocation mortality rates for the resident and translocated population will be statistically greater than that of the control population. Consequently, we do not anticipate take associated with translocation aside from what we have described in this incidental take statement.

Disease Testing

We anticipate that as many as 162 subadult and/or adult desert tortoises (i.e., 98, 32, and 32 in the resident, control, and translocated populations, respectively) will be taken, in the form of capture and harassment, when BrightSource collects blood to assess disease prevalence. Although such an invasive procedure presents some likelihood that individuals could be injured or killed, we do not anticipate that blood collection will result in the mortality of any individuals because BrightSource would use experienced biologists, authorized by the Service.

Post-translocation Monitoring

We anticipate the take, in the form of capture, of approximately 64 desert tortoises each in the resident and control population for monitoring. As discussed above, because the project site population may increase between now and the time of translocation, a somewhat larger number of desert tortoises may require monitoring depending on the final number of desert tortoises translocated. Although these animals and the 32 desert tortoises from the translocated population would be captured multiple times over the course of the post-translocation monitoring effort, we do not anticipate injury or mortality of these individuals as a result of the post-translocation monitoring.

Construction of ISEGS Facilities

We anticipate that construction of the ISEGS project site, including use of access routes, is likely to take, in the form of mortality or injury, few, if any, subadult or adult desert tortoises because BrightSource will fence the majority of its work areas with desert tortoise exclusion fencing, perform clearance surveys on all work areas, and implement numerous measures to prevent adverse effects to desert tortoises

We anticipate that construction of the ISEGS facilities is likely to take, in the form of mortality or injury, many of the juvenile desert tortoises and destroy eggs that occur within this area; because of the difficulty detecting them, these individuals and eggs are likely to be missed during clearance surveys. We have estimated that as many 35 juvenile desert tortoises may be on the project site and that as many as 139 desert tortoise eggs may be produced on the project site each year. Because of the difficulty in locating juvenile desert tortoises and eggs, we cannot determine a precise number because we do not know how successful surveyors will be at locating these individuals.

Compensation

All enhancement actions associated with the Bureau's compensation requirements will require future Bureau authorizations. Consequently, we have not provided incidental take exemptions for these actions in this biological opinion. These actions will require future project-specific consultation if they may affect the desert tortoise or other listed species.

Operation and Maintenance of ISEGS Facilities

We anticipate that operation and maintenance activities, including site access, within permanently fenced areas are likely to take few desert tortoises. A limited potential exists that a very small number of desert tortoises may find their way into a fenced area. Most of these individuals are likely to be taken in the form of capture as they are removed to offsite habitat; a small fraction of these individuals may be taken, in the form of injury or mortality, if they are exposed to adverse weather conditions or crushed by vehicles before they are detected.

We anticipate that Class I maintenance activities that are outside of fenced work areas and Class II maintenance activities associated with fence repair are likely to take, in the form of injury or mortality, few, if any, desert tortoises because Class I activities would not result in ground disturbance, Class II activities would be localized and infrequent, and access to repair sites would require little, if any, off-road travel. In addition, for all maintenance work, BrightSource would implement numerous protective measures to avoid killing or injuring desert tortoises. We anticipate that these maintenance activities may result in the take, in the form of capture, of a small number of desert tortoises if they are encountered during work activities and moved from harm's way.

Because we do not have sufficient information regarding the location or extent of other Class II and Class III maintenance activities that may occur outside of the permanently fenced work areas, we cannot determine the level of take associated with these activities. Consequently, we cannot provide an exemption from the prohibitions against take for these activities. These actions will require further site-specific or programmatic consultation.

Decommissioning and Restoration of ISEGS Facilities

We anticipate that restoration of temporary disturbance within fenced facilities during operation and maintenance or following decommissioning is unlikely to result in take of desert tortoises because BrightSource will clear all fenced areas of desert tortoises prior to construction of facilities. After facility closure, decommissioning activities and restoration of long-term disturbance within fenced areas are unlikely to take desert tortoises for the same reason. We anticipate that restoration of temporary disturbances and long-term disturbances outside of fenced work areas is likely to take, in the form of injury or mortality, few, if any, desert tortoises for the following reasons: 1) desert tortoise habitat will either be absent from restoration sites or will be of a substantially degraded nature that it will not attract desert tortoises; 2) BrightSource will implement clearance surveys of any restoration sites where ground-disturbing activities are likely to occur, 3) BrightSource will implement numerous measures to reduce the potential for take on restoration sites (e.g., worker education, desert tortoise monitors, etc.). We anticipate that a few desert tortoises are likely to be taken, in the form of capture as they are moved out of harm's way, during these activities. Because much of this work would occur many years from now, we cannot quantify the number of animals that are likely to be taken.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoises during the implementation of the ISEGS project:

1. The Bureau must ensure that desert tortoises do not enter fenced project facilities.

2. The Bureau must ensure that the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained herein.

3. The Bureau must ensure that translocation of desert tortoises does not result in injury or mortality of translocated or resident desert tortoises that is substantially elevated above natural injury and mortality rates within the action area.

4. The Bureau must ensure that desert tortoises carrying transmitters are routinely monitored to prevent loss of these animals prior to the removal of transmitters.

5. The Bureau must ensure that the ISEGS facility does not serve as a subsidy to common ravens.

6. The Bureau must ensure that desert tortoises that exhibit clinical signs of disease are not translocated.

7. The Bureau must ensure the proper implementation of health assessments and disease testing to ensure the accuracy of results and to minimize the injury of desert tortoises.

8. The Bureau must ensure that translocation does not result in density-dependent effects or disease related effects to the resident or translocated populations.

Our evaluation of the proposed action includes consideration of the protective measures described in the Description of the Proposed Action section of this biological opinion. Consequently, any changes in these protective measures may constitute a modification of the proposed action that causes an effect to the desert tortoise that was not considered in the biological opinion and require re-initiation of consultation, pursuant to the implementing regulations of the section 7(a)(2) of the Act (50 Code of Federal Regulations 402.16).

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau must comply with the following terms and conditions, which implement the reasonable and prudent measures described in the previous section, or make them enforceable conditions of its right-of-way grant, and must comply with the reporting and monitoring requirements. These conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure 1:

   The Bureau must ensure that BrightSource monitors the integrity of all desert tortoise exclusion fencing at least once a month and following any rain events that result in surface flow of water in washes within the action area. The Bureau must ensure that BrightSource promptly repairs any damage identified during monitoring.

2. The following terms and conditions implement reasonable and prudent measure 2:

   a. To ensure that the measures proposed by the Bureau and BrightSource are effective and are being properly implemented, the Bureau must contact the Service immediately if it becomes aware that a desert tortoise has been killed or injured by project activities. At that time, the Service and the Bureau must review the circumstances surrounding the incident to determine whether additional protective measures are required. Project activities may continue pending the outcome of the review, provided that the proposed protective measures and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented.

   b. If more than 38 subadult or adult desert tortoises are identified for translocation during clearance surveys of the project site, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This condition only applies to clearance of the project site for construction and does not apply to the short distance movement of desert tortoises out of harm's way during activities that occur outside of the fenced project site. Because we do not expect that capturing and removing desert tortoises from work areas outside of the project site is likely to result in injury or mortality of desert tortoises, we are not establishing a re-initiation criterion for that activity.

   c. If 9 desert tortoises are killed or injured as a result of any construction, operation, maintenance, decommissioning, or restoration activities covered by this biological opinion over the life of the ISEGS project, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality and injury of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations (i.e., due to handling, road kills, or other effects caused by personnel working on the project). However, it does not apply to post-translocation mortality within these populations that is not connected directly to an action required to carry out the translocation and monitoring effort.

   d. If 3 desert tortoises are killed or injured in any 1 year as a result of any construction, operation, maintenance, decommissioning, or restoration activities covered by this biological opinion, the Bureau must re-initiate consultation, pursuant to the implementing

regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality and injury of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations (i.e., due to handling, road kills caused by personnel working on the project). However, it does not apply to post-translocation mortality within these populations that is not connected directly to an action required to carry out the translocation and monitoring effort.

3. The following term and condition implements reasonable and prudent measure 3:

   If monitoring of translocated and resident desert tortoises indicates a statistically significant elevation in mortality rates above that observed in control populations, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action.

4. The following terms and conditions implement reasonable and prudent measure 4:

   a. The Bureau must ensure that BrightSource monitors all translocated desert tortoises according to the following schedule: 1) within 24 hours of release, 2) twice weekly for the first 2 weeks after release, 3) starting the third week after release, at least once a week from March 1 to October 31 and once every other week from November 1 to February 28.

   b. The Bureau must ensure that BrightSource monitors all desert tortoises that carry transmitters in the resident and control populations at least once a week from March 1 to October 31 and once every other week from November 1 to February 28.

5. The following term and condition implements reasonable and prudent measure 5:

   The Bureau must meet with the Service to review data and reports associated with BrightSource's monitoring and adaptive management program for common ravens prior to the cessation of these activities. If the agencies determine that further monitoring and adaptive management are warranted, the Bureau must require BrightSource to extend these activities.

6. The following term and condition implements reasonable and prudent measure 6:

   After performance of visual health assessments on project-site desert tortoises, the Bureau must ensure that BrightSource contacts the Service with the results of the health assessments and the proposed disposition of each individual. The Bureau must ensure that BrightSource receives authorization for translocation of these individuals from the Service prior to commencement of translocation.

7. The following term and condition implements reasonable and prudent measure 7:

   The Bureau must ensure that all individuals that will perform visual health assessments and blood collection have been specifically authorized or trained for that activity by the Service. The Service must receive the credentials for all individuals seeking approval at least 30 days prior to the need for visual health assessments and blood collection.

8. The following terms and conditions implement reasonable and prudent measure 8:

   a. If pre-translocation surveys of the translocation area indicate that it cannot accommodate all desert tortoises from the ISEGS project under the threshold established in the description of the proposed action, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16 to address modifications to the translocation plan.

   b. If pre-translocation surveys of the translocation areas indicate a disease prevalence of more than 5 percent or indicates that additional translocation areas will be required to accommodate the disease buffering requirements identified in the description of the proposed action, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16 to address modifications to the translocation plan.

   c. The Bureau must ensure that BrightSource performs disease sampling of all areas that desert tortoises may move to following translocation as described in the Environmental Baseline section of this biological opinion (i.e., area bounded by Interstate 15, the Clark Mountains, Ivanpah Lake, and Primm, Nevada), as opposed to the 6 kilometer buffer identified in the project description.

Because of the complex nature of this incidental take statement, we have attached a summary of the levels of incidental take that would necessitate re-initiation of formal consultation.

REPORTING REQUIREMENTS

Within 60 days of the completion of the proposed action, the Bureau must provide a report to the Service that provides details on the effects of the action on the desert tortoise. The Bureau must also provide an annual report by December 31of each year during construction of each phase and during the subsequent translocation monitoring. Specifically, these reports must include information on the effectiveness and practicality of minimization measures, any instances when desert tortoises were killed, injured, or handled; the circumstances of such incidents and the specific information for each animal; and any actions undertaken to prevent similar instances from re-occurring. In addition, these reports should provide detailed information on the results of translocation monitoring to include the following: 1) location of all desert tortoises carrying transmitters, 2) mortality rate from each population, 3) statistical analysis of mortality rate between all three populations, and 4) health status and body condition of all desert tortoises that

carry transmitters. These reports should also provide an estimate of the actual acreage disturbed by various aspects of the construction and operation up to the time of the report. We recommend that the Bureau provide us with any recommendations that would facilitate the implementation of the protective measures while maintaining protection of the desert tortoise. We also request that the Bureau provide us with the names of any monitors who assisted the authorized biologist and an evaluation of the experience they gained on the project; the qualifications form on our website (http://www.fws.gov/ventura/sppinfo/protocols/deserttortoise_monitor-qualifications-statement.pdf), filled out for this project, along with any appropriate narrative would provide an appropriate level of information. This information would provide us with additional reference material in the event these individuals are submitted as potential authorized biologists for future projects.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Bureau work with BrightSource and the Service to determine if the desert tortoises associated with the resident, control, and translocated populations can be used to answer additional research questions related to translocation or desert tortoise biology.

2. We recommend that the Bureau amend the California Desert Conservation Area Plan to prohibit large-scale development (e.g., solar energy facilities, wind development, etc.) within the area bounded by Interstate 15, the State line, and Clark Mountains. We offer this recommendation because this area will have been used as a recipient site for translocated desert tortoises from the ISEGS project. Additionally, three other projects, the Joint Port of Entry, DesertXpress, and a pipeline extension from the Kern River Gas Transmission Company's line may be built in this valley. Given these activities, the potential exists that this portion of the Ivanpah Valley may be disturbed and fragmented to the extent that desert tortoises and other wildlife populations may be severely compromised.

3. We recommend that the Bureau perform additional wild burro gathers in the former Clark Mountain Herd Management Area to remove remaining burros that may adversely affect habitat within translocation areas.

4. Based upon our review, certain aspects of the weed management plan may result in an inefficient use of resources. We recommend that the Bureau and BrightSource work with the Mojave Resource Conservation District to develop a site-specific weed management plan that would be effective and efficient.

5. We recommend that the Bureau consider alternative configurations for this project that would focus ground disturbance on lands next to Interstate 15 that are likely to have very low desert tortoise densities.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

DISPOSITION OF DEAD OR INJURED DESERT TORTOISES

Within 3 days of locating any dead or injured desert tortoises, you must notify the Ventura Fish and Wildlife Office by telephone (805 644-1766) and by facsimile (805 644-3958) or electronic mail. The report must include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

We will advise you on the appropriate means of disposing of the carcass when you contact us. We may advise you to provide it to a laboratory for analysis. Until we provide information on the disposition of the carcass, you must handle it such that the biological material is preserved in the best possible state for later analysis. If possible, the carcass should be kept on ice or refrigerated (not frozen) until we provide further direction.

Injured desert tortoises must be taken to a qualified veterinarian for treatment. If any injured desert tortoises survive, the Service must be contacted regarding their final disposition.

REINITIATION NOTICE

This concludes formal consultation on the Bureau's proposal to issue a right-of-way grant to BrightSource Energy for construction of the ISEGS facility in San Bernardino County, California. Reinitiation of formal consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action (50 Code of Federal Regulations 402.16).

If you have any questions regarding this biological opinion, please contact Brian Croft of my staff at (951) 697-5365.

Attachment

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Summary of Levels of Take that Necessitate Re-initiation of Formal Consultation

The following table summarizes the incidental take that we anticipate for the ISEGS project and identifies re-initiation thresholds for capture, harassment, injury, and mortality as defined in the body of the incidental take statement or in the terms and conditions of this biological opinion.

Source of Take	Age Class	Anticipated Take		Re-initiation Thresholds based on Incidental Take Statement or Terms and Conditions	
		Captured and/or Harassed	Killed or Injured	Captured and/or Harassed[1]	Killed or Injured
Translocation and Disease Testing of Project Site Desert Tortoises	Subadult/Adult	~32	few, if any	38[2]	9 desert tortoises over the life of the project or 3 in any given year[5]
	Juveniles	few, if any	few, if any	35[2]	
	Eggs	few, if any	few, if any	139[2]	
Movement of desert tortoises off of the fiber-optic line and Interstate 15 fence alignment	Subadult/Adult	few, if any	few, if any	None established[3]	
	Juveniles	few, if any	few, if any	None established[3]	
	Eggs	few, if any	few, if any	NA	
Survey and Disease Testing of Control and Resident Population	Subadult/Adult	130[4]	few, if any	130	
	Juveniles	0	0	NA	
	Eggs	0	0	NA	
Construction of ISEGS Facility	Subadult/Adult	few, if any	few, if any[6]	38[2]	
	Juveniles	few, if any	Most[6]	35[2]	
	Eggs	few, if any	Most[6]	13[2]	
Operation and Maintenance	Subadult/Adult	few, if any	few, if any	None established[7]	
	Juveniles	few, if any	few, if any	None established[7]	
	Eggs	few, if any	few, if any	None established[7]	
Post-translocation Monitoring	Subadult/Adult	96[8]	few, if any	None established[3]	
	Juveniles	0	0	NA	
	Eggs	0	0	NA	
Effects of Translocation itself on Residents and Translocated desert tortoises	NA	NA	NA	NA	A statistically significant difference in mortality between the control and resident or translocated populations[10]
	NA	NA	NA	NA	
	NA	NA	NA	NA	
Decommissioning	Subadult/Adult	few, if any	few, if any	None established[2]	9 desert tortoises over the life of the project or 3 in any given year[5]
	Juveniles	few, if any	few, if any	None established[2]	
	Eggs	few, if any	few, if any	NA	

Table Notes:
1. By 'capture,' we mean the act, by authorized biologists (and monitors working under their supervision), of removing desert tortoises from their home ranges to be placed in a quarantine facility, translocated, or moved a short distance from harm's way. By 'harassment,' we mean the act, by authorized biologists, of collecting blood or conducting other invasive health assessments that may result in the likelihood of injury or mortality; see the regulatory definition of harassment in the Incidental Take Statement section of this biological opinion.
2. The re-initiation thresholds identified are the totals for both sources of take and do not represent separate take thresholds for each activity. For example, although we anticipate that 32 subadult and adult desert tortoises are likely to be captured for translocation at the project site, we have established a re-initiation trigger of 38 because we have determined this is the maximum number of subadult and adult desert tortoises that the recipient site is likely to be able to hold. If 38 or more subadult and adult desert tortoises are found onsite, re-initiation of formal consultation would be warranted.
3. No re-initiation trigger is set because this movement not likely to result in injury or mortality, given that these animals will remain within their home ranges. Also, a very small number of desert tortoises may need to be moved more than once to remove them from unfenced work areas and constraining the number of times the animal can be captured and moved would reduce the effectiveness of biological monitoring as a take minimization measure on these actions.
4. The 130 subadults and adults include 98 resident individuals and 32 control individuals.
5. Does not apply to post-translocation mortality that is not directly associated with an action required to carry out the translocation (e.g., handling, disease testing, accessing the translocation areas by vehicle, etc.).
6. We anticipate that any desert tortoises and eggs that are not translocated will be killed or injured by construction. We anticipate that few, if any, subadults and adults will be killed or injured because most will have been translocated. Because of their small size, juveniles and eggs are difficult to detect, so we anticipate that most will be killed or injured.
7. No re-initiation trigger because we only anticipate the capture of desert tortoises during operation and maintenance in instances where desert tortoise exclusion fencing has been washed out. In such rare situation, the biologically preferable option is to move the desert tortoises out of harm's way rather than leave them in place and in danger, while awaiting re-initiation of consultation.
8. Includes all control and translocated individuals identified above for capture and harassment associated with disease testing and translocation and a subset (32 individuals) of the resident population identified above. These individuals would be captured multiple times over the course of the post-translocation monitoring period, but we do not anticipate that these individuals would suffer harassment.
9. No re-initiation threshold set because multiple captures of the same individuals will be required to facilitate post-translocation monitoring.
10. For post-translocation monitoring only.

PROGRAMMATIC AGREEMENT
AMONG
THE BUREAU OF LAND MANAGEMENT,
THE SOUTHERN CALIFORNIA EDISON COMPANY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND THE NEVADA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE MANAGEMENT OF
HISTORIC ELECTRIC POWER CONVEYANCE SYSTEMS
IN THE STATES OF CALIFORNIA AND NEVADA

WHEREAS, the Southern California Edison Company (hereinafter, "SCE") holds and applies for right-of-way (ROW) grants and permits on public lands managed by the Bureau of Land Management in California and Nevada (hereinafter, "the BLM") in accordance with the Federal Land Policy and Management Act (P.L. 940-579, as amended; hereinafter, "FLPMA") for the purpose of constructing, operating, maintaining, modifying, or replacing electrical power distribution and conveyance facilities, some of which are included in or may be eligible for inclusion in the National Register of Historic Places (hereinafter, "historic properties" and "the NRHP"); and

WHEREAS, the BLM considers requests to grant a ROW or issue permits to other applicants for actions which may require the modification, removal, or replacement of electric power conveyance systems and related facilities owned by SCE and other historic properties that may be affected by such Undertakings; and

WHEREAS, the BLM has determined that the modification, removal, or replacement of electric power conveyance systems and related facilities owned by the SCE located on BLM lands or subject to BLM approval is an "Undertaking" as defined in 36 CFR 800.16(y) requiring a ROW grant or Federal permit , which are Federal actions as described at 36 CFR 800.3(a), which may result in similar, redundant, and repeated types of adverse effects on electric power conveyance facilities that are historic properties owned by SCE; and

WHEREAS, this Programmatic Agreement (Agreement) provides a programmatic approach that effectively, efficiently, and consistently takes into account the effects of Undertakings on electric power conveyance facilities that are historic properties and the background and intent of the Agreement are further described in Appendix A; and

WHEREAS, the BLM has consulted with the California and Nevada State Historic Preservation Officers (SHPO), to participate in consultation to resolve the potential adverse effects of an Undertaking on historic properties and the BLM chooses to continue its assessment of an Undertaking's potential adverse effect and resolve any such effect through the implementation of this Agreement; and

WHEREAS, in accordance with regulations at 36 CFR 800.14(b)(3), the BLM has notified and invited the Advisory Council on Historic Preservation (hereinafter, "ACHP") per 36 CFR 800.6(a)(1)(C) to participate in consultation to resolve the potential effects of an Undertaking on Historic Properties, and as per their letter dated December 14, 2009, the ACHP has elected not to participate in this Agreement; and

WHEREAS, SCE has participated in consultation per 36 CFR 800.2(c)(4), is willing to carry out the stipulations of this Agreement under the oversight of the BLM, and is an Invited Signatory to this Agreement; and

WHEREAS, SCE maintains a document and photographic archive at the Huntington Museum, Pasadena, California, which provides documentation and curation of SCE records and demonstrates SCE's commitment to preservation of historic records about historic projects and infrastructure; and

WHEREAS, the stipulations of this Agreement shall be appended to and made a part of any BLM Environmental Impact Statement/Record of Decision authorizing any Undertaking including but not limited to other Programmatic or Memorandum of Agreements that intends to use this Agreement to resolve adverse effects to historic properties that are the subject of this Agreement; and

NOW, THEREFORE, the BLM and the California and Nevada State Historic Preservation Officers (hereinafter, "Signatories) and the SCE, as an Invited Signatory, agree that Undertakings shall be implemented in accordance with the following stipulations in order to take into account the effects on historic properties.

STIPULATIONS

BLM agrees to ensure the following stipulations are carried out:

I. DEFINITIONS

The definitions found at 36 CFR 800.16 apply throughout this Agreement except where another definition is offered as follows:

"Related undertaking" or **"related project"** is an Undertaking requiring the grant of a ROW or issuance of a permit by the BLM to an applicant other than SCE that may require the modification or replacement of components of electric power conveyance systems which may be historic properties owned or managed by SCE.

"Consulting parties" means collectively the Signatories and Invited Signatories to this Agreement, without implying any change regarding the authorities of any of those parties to amend or terminate this Agreement.

"Cultural resources" refers to an object or location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, buildings, places, or objects and definite locations of traditional cultural use by specified social and/or culture groups. Cultural resources include the entire spectrum of resources, from artifacts to cultural landscapes, without regard to eligibility for inclusion in the NRHP.

"Electric power conveyance facilities" refers to transmission power lines that typically carry at least 115 kV of electricity, sub-transmission lines that convey between 66 and 115 kV, distribution lines that carry less than 66 kV, and substations/switching stations that serve all three levels of power transmission. Electric power conveyance facilities include the wood poles and lattice steel towers, H-frame structures (of wood or steel construction) and any other types of poles or towers that support the electrical lines above the ground, and substations, buildings, other types of structures or objects that contribute to the physical transmission, or delivery of electrical power.

"Invited Signatories" include consulting parties (e.g., SCE) who have responsiblities within the consultation process described in this Agreement. Invited Signatories have the same rights with regard to seeking amendments or termination of this Agreement as the other Signatories.

"Right-of-Way" or **"Right-of-Way Corridor"** (ROW) is as defined in FLPMA (Section 501 [43 U.S.C. 1761], "Grant, Issue or Renewal of Rights-of-Ways" and 503 [43 U.S.C. 1763], "Right-of-Way Corridors", respectively), and means an area of land designated by a federal land management agency for use by by a grantee for the construction, operation and maintenance of a project.

"Signatories" refers to the BLM and the SHPOs. Signatories have responsiblities within the consultation process described in this Agreement. Signatories have the sole authority to execute, amend or terminate this Agreement.

II. SCOPE OF THIS AGREEMENT

a) Unless otherwise agreed to by the consulting parties through the process described in Stipulation XII, this Agreement will apply only to:

   i) elements of SCE electric power conveyance facilities located on lands managed by the BLM, unless the Federal action extends to non-Federal lands where an Undertaking lacks independent utility.

   ii) the identification and treatment of adverse effects to certain types of electric power conveyance facilities associated with SCE electric power systems included in, or eligible for inclusion in the NRHP, including lattice steel towers, H-frame structures (of wood or steel construction), wood poles, and associated substation/switching stations that are contributing elements to historic properties. This Agreement does

not include buildings, structures or objects not associated with electric power conveyance systems, or archaeological sites unless they are components of or the remains of components of an electric power conveyance facility; and

b) The treatment measures prescribed in this Agreement shall supersede any other prior Programmatic Agreement or Memorandum of Agreement that might otherwise be applicable to the treatment of adverse effects to the historic properties subject to this Agreement.

c) The terms of this Agreement may be used to resolve the specific adverse effects described in this Agreement for a Undertaking proposed by SCE, or in consultation with SCE, another Applicant whose Undertaking may have an adverse effect on an SCE electric power conveyance facility.

i) This Agreement may stand alone to resolve the effects for an Undertaking where adverse effects to a component of an SCE electric power conveyance facility are the only effects to be resolved.

ii) This Agreement may be referenced or included as an appendix to another Agreement to resolve the effects for an Undertaking where adverse effects to a component of an SCE electric power conveyance facility is not the only effect to be resolved.

III. AREA OF POTENTIAL EFFECTS

a) The Area of Potential Effect (APE) is defined as the total geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties per 36 CFR 800.16(d).

i) The APE is limited to those elements of SCE's electric power conveyance facilities which contain historic properties subject to this Agreement that could sustain direct and indirect physical effects as a result of the undertaking.

(1) Direct effects may result from the modification, removal, or replacement of electric power conveyance facilities.

(a) Where modification, removal or replacement of multiple electric power conveyance facilities may occur, the APE shall be defined in a manner to consider effects to a historic landscape embodied by the facilities.

(2) Indirect effects may result from alterations in the character or use of an electric power conveyance facility or a historic landscape of which an electric power conveyance facility is a component.

(a) Where introduction of visual, auditory, or atmospheric elements diminish the integrity of a property's significant historic features.
(b) Where removal of an electric power conveyance facility diminish the integrity of values that define a historic landscape.

ii) The APE may be amended by written agreement of the Signatories, in consultation with SCE.

IV. ROLES AND RESPONSIBILITIES

a) The BLM shall be responsible for ensuring compliance with Section 106 of the NHPA, providing oversight of this Agreement, coordinating the roles of other consulting parties, participating in the resolution of objections among the consulting parties, and providing technical assistance and guidance as needed to the other consulting parties to this Agreement.

i) The BLM California Desert District Office (CDDO) will assume primary management and responsibility for implementing the terms of this Agreement, and will coordinate with the BLM Field Offices on implementation of this Agreement on lands under their management responsibility.

ii) SCE projects or other projects that may utilize the provisions of this Agreement within a single State may be managed by the appropriate BLM Field Office.

iii) The BLM CDDO will coordinate with all offices utilizing this Agreement for Undertakings that occur in both California and Nevada.

iv) Any District or Field Office within the California Desert District or Southern Nevada District of BLM may be the lead Federal agency for an Undertaking which may utilize the terms of this Agreement.

b) The BLM shall be responsible for reviewing and approving all actions covered by this Agreement carried out by SCE or other Applicants to comply with Section 106 of the NHPA, including:

i) identification of cultural resources within the APE of each Undertaking;

ii) evaluations of NRHP eligibility of cultural resources and consultation with SHPOs regarding NRHP eligibility;

iii) determinations of effects on historic properties;

iv) implementation of treatment measures to resolve any adverse effects on historic properties per this Agreement; and

v) other historic preservation measures for which an Applicant may be made responsible under this Agreement.

c) Unless otherwise agreed to by the consulting parties, the following procedures and timing will apply to activities carried out per the terms of this Agreement.

i) Minor modifications as outlined in Appendix C to properties listed in Appendix B shall be managed by standard recordation treatment and documented in an annual report of activities authorized under this Agreement and submitted to the SHPOs by BLM.

ii) Upon the submission of any documents or at the request of the SCE, BLM will have 20 days to review and comment. SCE will have 10 days to respond to BLM comments. Upon review and acceptance of any document or report required by this Agreement, BLM will submit the document or report to the SHPO(s) who will have 30 days to comment.

iii) The BLM will have 20 days to review and comment on any SCE recommendations. If the BLM disagrees with any SCE recommendation, BLM may direct SCE to reconsider or the BLM and SCE may consult with the appropriate SHPO(s) to resolve the disagreement.

iv) The SHPO(s) will have 30 days from receipt of adequate documentation to respond to the BLM's determinations of eligibility.

V. STANDARDS AND QUALIFICATIONS

a) **PROFESSIONAL QUALIFICATIONS.** All actions prescribed by this Agreement shall be carried out by or under the direct supervision of a person or persons meeting, at a minimum, the *Secretary of the Interior's Professional Qualifications Standards* (PQS) for archaeology, history, or architectural history, as appropriate (48 FR. 44739). Those actions include the identification, evaluation, analysis, recordation, treatment, monitoring, and disposition of historic properties and that involve the reporting and documentation of such actions in reports, forms or other records. However, nothing in this stipulation may be interpreted to preclude any party qualified under the terms of this paragraph from using the services of properly supervised persons who do not meet the PQS.

b) **DOCUMENTATION STANDARDS.** Reporting and documenting the actions cited in Paragraph IV(a) of this stipulation shall conform to every reasonable extent with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR. 44716-44740). The BLM will ensure that recordation and documentation of appropriate cultural resources is consistent with California Department of Parks & Recreation (hereinafter, DPR) form 523, Nevada Cultural Resource

Information System (hereinafter, NVCRIS) form HRIF, National Park Service (hereinafter, "NPS") Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (hereinafter, "HABS/HAER/HALS") Guidelines (e.g., Federal Register vol. 68, no. 139, pp. 43159-43162 http://edocket.access.gpo.gov/2003/03-8197.htm]; *and* http://www.nps.gov/history/hdp/standards/index.htm); and ACHP archaeological guidance at http://www.achp.gov/archguide/, the BLM 8100 Manual, and the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, as applicable.

VI. EVALUATION OF ELECTRIC POWER CONVEYANCE FACILITIES

a) The BLM will consult with both SHPOs, as appropriate, regarding the NRHP eligibility of any SCE electric power conveyance facility that extends across the line demarcating the states of California and Nevada and that includes structures that may be adversely affected by an Undertaking subject to this Agreement.

   i) For any historic property located entirely within one State, the BLM will consult with the SHPO for that State.

   ii) Pursuant to the process provided at Stipulation IV(c), the SHPOs may comment on the NRHP eligibility of unevaluated properties or properties previously evaluated.

   iii) The BLM will coordinate with the SHPOs to manage historic properties in a consistent manner in both states. Prior determinations of eligibility in either State made in consultation with the appropriate SHPO shall remain in force unless the BLM and the appropriate SHPO consult and agree to amend the prior determinations.

b) SCE will assess whether the electric power conveyance facilities within the APE and subject to this Agreement retain historical integrity, taking into account that such facilities have historically undergone modification as part of periodic and routine maintenance. Past periodic and routine maintenance shall be considered a historic activity. Such modifications shall not be considered to have affected the historic integrity of the properties if:

   i) electric power conveyance structures are original construction or substantially retain their original fabric, look, and feel; and

   ii) all post-period-of-significance modifications were in-kind and retain original design integrity, for example original porcelain insulators have been replaced with porcelain insulators (i.e., the presence of porcelain insulators is sufficient for integrity to be maintained); and modifications such as retro-installed concrete tower footings have been installed to ensure original tower stability and meet safety requirements.

c) The BLM, in consultation with SCE, may treat a SCE electric power conveyance facility as eligible for the NRHP for project management purposes and proceed to assess the effects of an Undertaking on those historic properties consistent with Stipulation VIII of this Agreement.

VII. TREATMENT OF HISTORIC PROPERTIES / STANDARD TREATMENT MEASURES

a) SCE will develop historic contexts for portions of its electric power conveyance systems subject to this Agreement as provided for in Stipulation VII(b). Such contexts shall establish the historical significance of any property with the APE and identify its period of significance. SCE may develop a comprehensive historic context for its generation and distribution systems that may be applied to any historic properties subject to this Agreement provided that the historic context presents a level of detail so that all types of structures within the APE are described and their historical significance evaluated.

b) SCE will develop a typology of structures for properties within the APE sufficient to distinguish among structure types and assist in structure evaluation by taking into account design, engineering, function, materials and methods of construction and any other variables that differentiate the function of structures in a distribution system.

i) Within six months of the date of execution of this Agreement, SCE will submit the following to the Signatories.

(1) The following shall be included in Appendix B to this Agreement.

(a) An initial list of historic transmission lines, segments, or known historic properties that SCE recommends be subject to the terms of this Agreement and a justification for their inclusion.
(i) SCE may modify or add to the list of historic facilities subject to the terms of this Agreement at any time by notifying the Signatories, providing a description of the facility and justification for its inclusion.
(b) An initial list of structure typologies and historic contexts.
(c) An initial list of historic properties that will be affected by current projects and a summary of actions taken or to be taken to resolve adverse effects per the terms of this Agreement.

(2) The following shall be included in Appendix C to this Agreement.

(a) An initial list of minor actions affecting NRHP eligible SCE electric conveyance system features that will be subject, without further consultation, to standard treatment measures, and reported to the consulting parties annually.

c) SCE may submit structure typologies, historic contexts, and resource evaluations for any specific Undertaking separately or concurrently.

VIII. MANAGEMENT OF EFFECTS ON HISTORIC PROPERTIES

a) The BLM will apply the criteria of adverse effect found at 36 CFR 800.5(a)(1) to historic properties within the APE to assess whether any electric power conveyance facility that is a contributing element of any proposed historic property may sustain adverse effects of any Undertaking subject to this Agreement.

   i) If the BLM finds an adverse effect, the BLM will proceed to resolve the adverse effect consistent with the terms of this Agreement.

   ii) Removal of wood distribution system poles from any historic property will be considered not adverse if poles are replaced with wood poles of similar size on a one-for-one basis with no alignment change.

b) In the event that an Undertaking subject to this Agreement causes adverse effects on a historic property, the resolution of adverse effects on the historic property shall be as follows.

   i) For each type of structure identified in the typology per Stipulation VII(b) and approved by BLM and the SHPOs per Stipulation IV(c), SCE will, in California, prepare a DPR Form 523 and Building/Structure/Object supplement for review by the BLM. Upon BLM approval, the form will be submitted to the appropriate California Historical Resources Information System (CHRIS) Information Center as directed by BLM. For each type of structure in Nevada, SCE will prepare a Historic Resources Inventory Form (HRIF), provide the form for review to the BLM, and upon approval by the BLM submit the form to the Nevada SHPO.

   ii) Consistent with Stipulation VI(b), SCE will recommend the level of HABS/HAER/HALS documentation that is appropriate to record any historic structure types or landscapes that may sustain adverse effects and submit to BLM a proposal to implement the recordation.

      (1) Unless otherwise agreed to or required by the Signatories, the HABS/HAER/HALS documentation for an Undertaking may be classed as "informal," meaning that although prepared to National Archive standards, the final documents are submitted only to the California State Library, SHPO, the California Historical Resources Information System, the Huntington Museum, the Nevada State Museum in Las Vegas, or other facilities as agreed upon by the consulting parties.

(2) Upon completion of the HABS/HAER/HALS recording and assembling of records, drawings, etc. for archiving, SCE will submit the HABS/HAER/HALS recording and an executed agreement between SCE and a library, archives or other repository stipulating that SCE will donate the appropriate items.

(3) For effects to an individual structure type, one example of each type of structure that contributes to the NRHP eligibility shall be documented according to HABS/HAER standards. One example shall be sufficient treatment for all such structures associated with a given Undertaking subject to this Agreement.

(4) HABS/HAER recordation will be required only once for each state for any given type of structure as defined in the historic context for the affected historic property, regardless where it is on a given SCE project or if it also occurs on other SCE projects. If SCE proposes to remove or modify a type of structure already documented, SCE will notify the BLM in writing, provide a written and photographic description of the structure(s) to be affected, and reference the previous HABS/HAER recordation. SCE will also present a graphic representation of the affected distribution line indicating what if any other structures have been previously treated, indicating the position on the line of the structures to be modified or removed. If the structures have been recorded on separate SCE projects, SCE will provide a graphic of the project showing the number and location of structures previously treated. In case records and files for individual SCE projects are archived separately, SCE will also indicate to the BLM if there are any additional records, drawings or other materials that pertain to the affected structures that should be added to the archives and submit proof that such materials have been archived.

(5) Where modification, removal or replacement of multiple electric power conveyance facilities may occur and such facilities constitute a historic landscape, HALS documentation of the historic landscape shall be the appropriate treatment.

c) For each Undertaking resulting in a modification of a historic property subject to this Agreement and affecting a structure type already addressed per Stipulation VIII(b), SCE will provide to the BLM, a brief report documenting original compliance with Stipulation VIII(b). Minor modifications as outlined in Appendix C to properties listed in Appendix B shall be subject to standard treatment and reported annually to the consulting parties.

IX. RESOLVING OBJECTIONS

a) Should a Signatory or Invited Signatory object at any time, to the manner in which the terms of this Agreement are implemented, the BLM will immediately notify the consulting parties and request their comments on the objection within 30 days, and then proceed to consult with the Signatory or Invited Signatory for no more than 30 days to resolve the objection.

b) If the objection can be resolved within the consultation period, the BLM may authorize the disputed action to proceed in accordance with the terms of such resolution.

c) If at the end of the 30 day consultation period, the BLM determines that the objection cannot be resolved through such consultation, the BLM will forward all documentation relevant to the objection to the ACHP per 36 CFR 800.2(b)(2). Any comments provided by the ACHP within 30 days after its receipt of all relevant documentation will be taken into account by the BLM in reaching a final decision regarding the objection. The BLM will notify the consulting parties and the ACHP in writing of its final decision within 14 days after it is rendered. The BLM shall have the authority to make the final decision resolving the objection. The BLM's responsibility to carry out all other actions under this Agreement that are not the subject of the objection will remain unchanged.

d) At any time during implementation of the terms of this Agreement, should an objection pertaining to the Agreement be raised by a member of the public, the BLM shall immediately notify the SHPOs about the objection and take the objection into account. The other Signatories and Invited Signatories may comment on the objection to the BLM. The BLM shall consult with the objecting party(ies) for no more than 30 days. Within 14 days following closure of consultation, the BLM will render a decision regarding the objection and notify all parties of its decision in writing. In reaching its final decision, the BLM will take into account all comments from the parties regarding the objection. The BLM shall have the authority to make the final decision resolving the objection.

e) Any dispute pertaining to the NRHP eligibility of historic properties or cultural resources covered by this Agreement will be addressed by the BLM per 36 CFR 800.4(c)(2). A determination of eligibility by the Keeper of the National Register will be the final determination in the matter and will be accepted by all consulting parties to this Agreement.

X. REPORTING AND ACCOUNTABILITY

a) The BLM CDDO will coordinate all reporting required by this Agreement.

b) By December 1 of each year following the execution of this Agreement until it expires or is terminated, the BLM CDDO shall provide the consulting parties to this Agreement a summary report detailing work undertaken pursuant to its terms. Such report shall include a summary of actions taken pursuant to this Agreement, any scheduling changes proposed, any problems encountered, and any disputes and objections received in the BLM's efforts to carry out the terms of this Agreement.

   i) On or after October 1 of each year, the SCE shall provide the BLM CDDO a summary of actions taken pursuant to this Agreement, including an account of the SCE projects that utilized the provisions of this Agreement, an account of the adverse

effects to historic properties resolved under the terms of this Agreement, and a summary of the actions taken to resolve effects pursuant to this Agreement.

c) Reporting pursuant to this Agreement may be incorporated in the annual reporting requirements for the BLM California Protocol Agreement. BLM Nevada may separately submit the annual report for this Agreement to the Nevada SHPO as part of its reporting requirements for the BLM Nevada Protocol Agreement.

XI. DURATION OF THIS AGREEMENT

a) This Agreement will expire if the stipulations of this Agreement have not been initiated within five (5) years from the date of its execution. Prior to the expiration date of this Agreement, the BLM may consult with the other consulting parties to extend the Agreement or reconsider the terms of the Agreement and amend it in accordance with Stipulation XII. The BLM shall notify the Signatories as to the course of action the agency will pursue within 30 days of the expiration of the Agreement.

b) This Agreement expires 25 years from its effective date unless extended by written agreement of the Signatories. The Signatories and Invited Signatories shall consult at year 10 to review this Agreement. Additionally, the Signatories and Invited Signatories shall consult not less than one year prior to the expiration date to reconsider the terms of this Agreement and, if acceptable, have the Signatories extend the term of this Agreement. Reconsideration may include continuation of the Agreement as originally executed or amended, or termination. Extensions are treated as amendments to the Agreement under Stipulation XII.

c) Unless the Agreement is terminated pursuant to Stipulation XIII or another agreement executed for the a specific undertaking supersedes it, this Agreement will remain in full force and effect until BLM, in consultation with the other Signatories and Invited Signatories, determines that implementation of all aspects of the undertaking has been completed and that all terms of this Agreement and any subsequent tiering requirements have been fulfilled in a satisfactory manner. At such time, BLM will notify the consulting parties of this Agreement in writing of the agency's determination. This Agreement will terminate and have no further force or effect on the day that BLM so notifies the Signatories to this Agreement.

XII. AMENDMENT

a) Any Signatory or Invited Signatory to this Agreement may at any time propose amendments, whereupon all Signatories shall consult to consider such amendments pursuant to 36 CFR 800.6(c)(7) and 800.6(c)(8). This Agreement may be amended only upon written agreement of the signatories.

b) Amendments to this Agreement shall take effect on the date of full execution by the Signatories.

c) Modifications, additions, or deletions to the appendices made as a result of continuing consultation among the consulting parties shall not require the Agreement to be amended.

XIII. TERMINATION

a) Only Signatories and Invited Signatories may terminate this Agreement. If this Agreement is not amended as provided for in Stipulation XII, or if a Signatory or Invited Signatory proposes termination of this Agreement for other reasons, the party proposing termination shall notify the other consulting parties in writing, explain the reasons for proposing termination, and consult for no more than 30 days to seek alternatives to termination.

b) Should such consultation result in an agreement on an alternative to termination, the Signatories and Invited Signatories shall proceed in accordance with that agreement.

c) Should such consultation fail, the Signatory or Invited Signatory proposing termination may terminate this Agreement by promptly notifying the other parties in writing.

d) Should this Agreement be terminated, the BLM shall either consult in accordance with 36 CFR 800.14(b) to develop a new Agreement or request the comments of the ACHP pursuant to 36 CFR 800.4–800.6.

e) Beginning with the date of termination, the BLM shall ensure that until and unless a new Agreement is executed for the undertakings covered by this Agreement, such undertakings shall be reviewed individually in accordance with 36 CFR 800.4-800.6.

f) This Agreement will terminate and have no further force or effect when BLM, in consultation with the other Signatories and Invited Signatories, determines that all terms of this Agreement have been fulfilled in a satisfactory manner on the day that BLM so notifies the other Signatories and Invited Signatories to the Agreement.

Execution and implementation of this Agreement is evidence that BLM has afforded the ACHP a reasonable opportunity to comment on the undertaking and its effects on historic properties. The Signatories to this Agreement represent that they have the authority to sign for and bind the entities on behalf of whom they sign.

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SIGNATORY PARTIES

U.S. BUREAU OF LAND MANAGEMENT (California)

BY: _____ DATE: 9/27/10

James Wesley Abbott
State Director

U.S. BUREAU OF LAND MANAGEMENT (Nevada)

BY: _____ DATE: 9/27/10

Ron Wenker
State Director

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

BY: _____ DATE: 27 SEP 2010

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

NEVADA STATE HISTORIC PRESERVATION OFFICER

BY: _____ DATE: 9/27/10

for Ronald James
State Historic Preservation Officer

INVITED SIGNATORY

SOUTHERN CALIFORNIA EDISON COMPANY

BY: _____ DATE: _____

Paul Multari
Director, Project Management Organization

APPENDIX A: BACKGROUND AND INTENT

SCE provides reliable electric service to more than 13 million people in 180 cities in 50,000 square miles of service area in central, coastal and southern California. Electric power conveyance facilities are constantly subject to maintenance, modification, reconfiguration and replacement in order to continue to serve as viable system components.

Several of SCE's electric power conveyance facilities are situated on and cross Bureau of Land Management (BLM) land in California and Nevada. The BLM must grant ROWs or permits to build and operate facilities on BLM land in accordance with the Federal Land Policy and Management Act (P.L. 940-579). The BLM must also comply with Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) (NHPA) prior to issuing ROWs or permits to build or modify these electric power facilities.

Many of the facilities throughout SCE's electric power systems were constructed in the early- to mid-20th century, and some of these are listed or eligible for the National Register of Historic Places (NRHP), while many other such resources have not been evaluated. Electric power conveyance facilities that are contributing elements to historic properties may be modified repeatedly as the result of adding new generation capacity into the electrical grid or for other reasons to meet federal and state efficiency and reliability standards.

The maintenance, modification or replacement of NRHP listed and eligible electric power conveyance facilities may adversely affect historic properties. Numerous proposed and future energy projects, system reconfigurations, and maintenance activities involve BLM lands with effects to historic properties that are similar and repetitive in nature. Accordingly, the BLM and State Historic Preservation Officers for California and Nevada (SHPOs) have determined that implementation of this Programmatic Agreement (hereinafter, "Agreement") prepared pursuant to 36 CFR 800.14(b)(1)(i) and (iii), will fulfill the requirements of NHPA Section 106 for multiple undertakings by effectively, efficiently, and consistently considering the effects of those undertakings on electric power conveyance facilities that are historic properties.

Highlights of this Agreement

The treatment of adverse effects under this Agreement is limited to electric power conveyance facilities (transmission, sub-transmission, and distribution line structures, and substation/switching stations) associated with SCE electric power systems listed in, or eligible for listing in the NRHP, including lattice steel towers, H-frame structures (of wood or steel construction), wood poles, switch racks, circuit breakers, transformers, and other ancillary features that are contributing elements to historic properties. This Agreement does not include buildings, other types of structures, objects or archaeological sites that are historic properties unless they are directly associated with the Historic Property/Historic District electric power conveyance system. If historic properties not related to the electric power conveyance system are present and would be adversely affected by an Undertaking, a separate agreement or treatment plan would be necessary.

This Agreement describes a programmatic approach that:

(1) stipulates roles and responsibilities of participating agencies and others;

(2) facilitates identification of historic properties;

(3) determines adverse effects,

(4) establishes treatment and mitigation measures; and

(5) streamlines the resolution of adverse effects.

SCE has specific responsibilities for managing historic properties according to this Agreement, including:

(1) certain routine historic properties management activities (per 36 CFR 800.14(b)(1)(iv));

(2) development of a typology for electrical towers that will facilitate their evaluation and allow SCE to determine the types and number of towers of various types that may be affected by undertakings;

(3) development of historic contexts for electrical power systems that provides the background for evaluation;

(4) implementing standard treatment measures stipulated in this Agreement including various levels of resource recordation such as California DPR forms and HABS/HAER recording of only one of each type of structure, or HALS recording where a group of structures may constitute a historic landscape, to take into account routine and repetitive adverse effects of undertakings on historic properties (per 36 CFR 800.14(b)(1)(v)); and

(5) producing an annual report of activities undertaken under the terms of this Agreement including certain routine activities listed in Appendix C for which SHPO notification is the only regulatory requirement.

The stipulations of this Agreement may be appended to and made a part of the BLM's Record of Decision authorizing any SCE project or non-SCE project that would utilize the terms of this Agreement, after consultation with SCE.

APPENDIX B: HISTORIC PROPERTY TYPES SUBJECT TO THIS AGREEMENT AND RELEVANT TYPOLOGIES

APPENDIX C: MINOR ACTIONS NOT SUBJECT TO FURTHER CONSULTATION AND STANDARD TREATMENT

[Minor Actions Example]

1. Retrofit concrete footings on steel lines not originally constructed with concrete footings.
2. Small-scale or individual structure replacement/repair of original equipments such as insulators, guy-wires, tower steel, conductors, jumpers, etc. that does not substantially change the look and feel of the structure.
3. Replacement of overhead groundwire with fiber-optic imbedded groundwire, installation of cell or other communications antennae (non-permanent and reversible).

[Standard Treatment Example]

1. Recordation on CA DPR Form 523 or NV Form HRIF.
2. Before and after photo image documentation reported annually to BLM.

California Desert BLM District Offices

Fast-Track Solar Energy Projects

Projects as of September 22, 2010

Legend

- Fast-Track Solar Energy Project
- Solar Energy Zone
- National Monument Boundary
- California Desert Conservation Area Boundary
- Field Office

Area of Critical Environmental Concern

- Area of Critical Environmental Concern
- Desert Wildlife Management Area

Federal Wilderness

- Bureau of Land Management
- National Park Service
- US Forest Service
- US Fish & Wildlife
- Wilderness Study Area

Land Status

- Bureau of Land Management
- US Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- Other Federal
- State
- Local Government
- Private/Other
- Indian Trust Assets

California Desert District

Solar Partners I - Ivanpah 2
CACA 048668

Calico Solar LLC - Calico
CACA 049537

Chevron Energy Solutions
Lucerne Valley
CACA 049561

Palo Verde Solar I
LLC - Blythe
CACA 048811

Genesis Solar LLC
Genesis Solar
CACA 048880

Palen Solar I LLC - Palen
CACA 048810

Desert Sunlight Holdings LLC
Desert Sunlight
CACA 048649

Imperial Valley Solar
LLC - Imperial Valley Solar
CACA 047740

Miles
0 12.5 25 50

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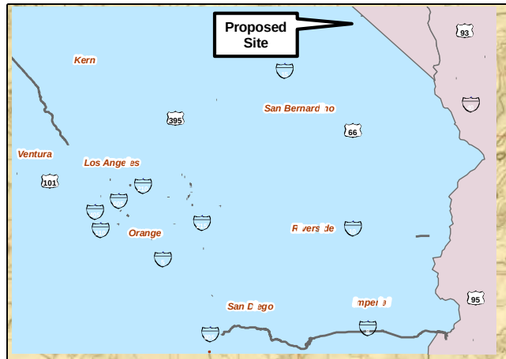
US Department of the Interior
BUREAU OF LAND MANAGEMENT
California Desert District
Moreno Valley, California
(951) 697-5200
www.ca.blm.gov/cdd

September 22, 2010



Pr mm

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15

First Solar
- Statel ne
CACA 048669

Solar Partners
vanpah 2
CACA 048668

PPM Energy
CACA 044988

LEGEND

- Project Boundary (3,479 acres)
- Solar Energy Projects
- Wind Energy Projects
- Bureau of Land Management
- National Park Service
- State
- Private/Other

Regional Setting with Vicinity Projects
Solar Partners I - Ivanpah 2 Project
CACA 048668

NGS TOPO 100K Image

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 978-4400
www.ca.blm.gov

Date Prepared: 9/20/2010

N

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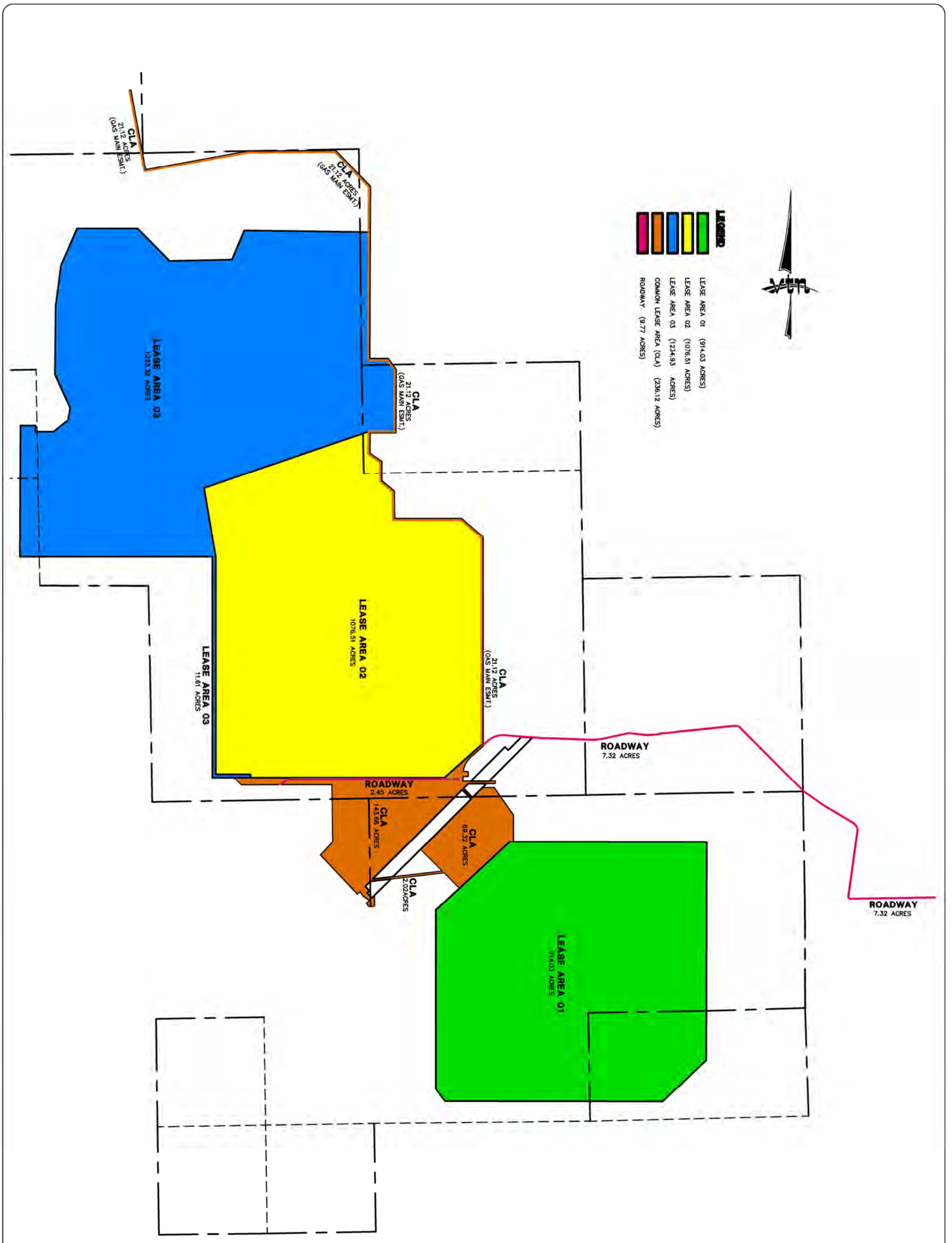
Miles

SCALE: 1" = 2.5 Miles (1:158,400)
SCALE CORRECT WHEN PRINTED AT 11X17



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SHEET	1 OF 1 SHEETS	WO NO.	7276
SCALE	HORZ. 1" = 1200' VERT.	BY	TJ
DATE	09/10		

SEAL

TITLE
BLM LEASE AREA, COMMON AREA. AND ROADWAY EXHIBIT

PROJECT
IVANPAH SOLAR FACILITY

REV	DATE	BY	REVISION

vtn nevada
CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89102-5148 PHONE (702) 873-7550 FAX (702) 362-2597

EXHIBIT A Project Map

Appendix 4

The following Stipulations are to be made part of Exhibit B in all four ROW grants issued for the project:

EXHIBIT B STIPULATIONS

1. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the approved Plan of Development, as amended or supplemented by approval of the Authorized Officer. Any surface disturbing activity, additional construction, or use that is not in accord with the approved Plan of Development shall not be initiated without the prior written approval of the Authorized Officer. A copy of the complete right-of-way lease/grant, including all stipulations and approved Plan of Development, shall be made available on the right-of-way area during construction, operation, and decommissioning. Noncompliance with the above will be grounds for immediate temporary suspension of activities if it constitutes a threat to public health or safety or the environment.

2. The holder shall comply with the CEC License and Conditions of Certification, issued by the California Energy Commission on September 22, 2010. Noncompliance with the requirements of the License and Conditions of Certification will be grounds for immediate temporary suspension of activities and operations within the right-of-way by the Authorized Officer to protect public health or safety or the environment.

3. The holder shall comply with the Biological Opinion for listed and proposed species associated with this project signed by the US Fish and Wildlife Service on _____. Failure to comply with the requirements of the Biological Opinion shall be cause for suspension or termination of the right-of-way lease/grant.

4. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on its behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

5. The holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets forth the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the holder shall obtain an individual permit from the appropriate office of the Army Corps of Engineers and provide the Authorized Officer with a copy of same. Failure to comply with this requirement shall be cause for suspension or termination of the right-of-way lease/grant.

6. Unless otherwise agreed to in writing by the Authorized Officer, powerlines shall be constructed in accordance with standards outlined in "Suggested Practices for Raptor Protection on Powerlines", Raptor Research Foundation, Inc., 1996. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication are "eagle safe." Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modifications or additions to all powerline structures placed on this

right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

7. The holder will arrange and attend preconstruction conference(s) prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way or specific construction phase of the right-of-way as specified by the Authorized Officer. The holder and/or his representatives will attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, will also attend this conference to review the stipulations of the authorization, including the Plan of Development, as applicable. The holder shall notify the Authorized Officer of the schedule for any preconstruction conference at least 10 calendar days in advance of the preconstruction conference or such timeframe as may be required by the Notice to Proceed.

8. The holder shall designate a representative who shall have the authority to act upon and to implement instructions from the Authorized Officer. The holder's representative shall be available for communication with the Authorized Officer within a reasonable time when construction or other surface disturbing activities are underway.

9. The holder shall protect all survey markers found within the right-of-way. Survey markers include, but are not limited to, Public Land Survey System line and corner markers, other property boundary line and corner markers, and horizontal and vertical geodetic monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the Authorized Officer and the respective installing authority if known. Where any of the above survey markers are obliterated or disturbed during operations, the Authorized Officer will determine how the marker is to be restored. The holder will be instructed to secure the services of a registered land surveyor or informed that an official survey will be executed by the Bureau of Land Management (BLM). All surveying activities will be in conformance with the Manual of Surveying Instructions and appropriate State laws and regulations. Surveys by registered land surveyors will be examined by the Authorized Officer and the BLM State Office Chief Cadastral Surveyor for conformance with the Manual of Surveying Instructions and State laws and regulations before being filed in the appropriate State or county offices of record. The holder shall be responsible for all administrative and survey costs.

10. Use of pesticides and herbicides shall comply with all applicable Federal and State laws. Pesticides and herbicides shall be used only in accordance with their registered uses within limitations imposed by the Secretary of the Interior. Prior to the use of the pesticides, the holder shall obtain from the Authorized Officer, written approval of a Pesticide Use Proposal Plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, locations of storage and disposal of containers, and any other information deemed necessary by the Authorized Officer.

11. Only those chemicals (pesticides and herbicides) listed on the BLM approved label list are authorized for use on public lands. A Pesticide Use Proposal must be submitted for each chemical used, and it cannot be used until approval has been obtained in writing from the Authorized Officer. The proposal needs to identify any surfactants or dyes used in the spraying operation. Applicator(s) of chemicals used must have completed pesticide certification training and have a current up to date Certified Pesticide Applicator's License. Pesticide and herbicide

application records for the areas and acres treated must be submitted to the Authorized Officer each year. This includes the following:

Brand or Product name
EPA registration number
Total amount applied (use rate #A.I./acre)
Date of application
Location of application
Size of area treated
Method of treatment (air/ground)
Name of applicator
Certification number and dates
Costs to treatment
Amount of surfactants or dyes used in spraying operation

The record information must be recorded no later than 14 calendar days following the pesticide or herbicide application and must be maintained for ten years.

12. Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. 'Waste' means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. A litter policing program shall be implemented by the holder which covers all roads and sites associated with the right-of-way.

13. The holder shall comply with all applicable Federal, State, and local laws and regulations, existing or hereafter enacted or promulgated, with regard to any hazardous materials, as defined by 43 CFR 2801.5 that will be used, produced, or transported on or within the right-of-way, or used in the construction, operation, maintenance, or decommissioning of the right-of-way or any of its facilities. The holder agrees in accordance with 43 CFR 2807.12(e) to fully indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601 et seq., or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

14. Within 120 calendar days of completion of construction, the holder will submit to the Authorized Officer as-built drawings and a certification of construction verifying that the facility has been constructed in accordance with the design, plans, specifications, and applicable laws and regulations.

15. The holder will be liable for all fire suppression costs resulting from fires caused during construction or operations. The holder shall comply with all guidelines and restrictions imposed by agency fire control officials.

16. The holder shall fund in accordance with 43 CFR 2805.16 a third party Compliance and Inspection Program as deemed necessary by the Authorized Officer to ensure compliance with the terms, conditions, and stipulations of this right-of-way lease/grant and applicable laws and regulations.

17. The holder shall not initiate any construction or other surface disturbing activities as a minor change to the right-of-way or Plan of Development without prior written approval of the Authorized Officer, or his delegate. Such authorization shall be a written Change of Verification. Each Change of Verification shall authorize construction or use only as therein expressly stated and only for the particular location and use therein described. All Changes of Verification are subject to such terms and conditions as deemed necessary by the Authorized Officer at the time of approval. Approved changes authorize construction or use only as therein expressly stated and only for the particular location, phase, area, or use described. The Authorized Officer may by written notice suspend or terminate in whole or in part any change of verification which has been approved, when in the Authorized Officer's judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

~~18.~~ The applicant shall consult with USFWS, BLM, and CFGD to obtain updated lists of special status plant species (i.e., Federally listed species, candidate specie, BLM sensitive, and California state listed species) that have the potential for occurrence on the project area based on the current distribution of the species, habitat associations, and previously documented occurrences of the species within the project area. Based on these species' lists provided by these agencies, the BLM shall consider whether further field surveys shall be conducted during the appropriate season and within suitable habitat in the Project area utilizing survey protocols appropriate for the species' of interest. If special status plant species occurrences are identified, the preferred mitigation would consist of avoidance, whenever practical.

~~19.~~ The applicant shall prepare a MBTA Conservation Agreement in coordination with the USFWS, BLM, and CFGD. This Plan would identify procedures to minimize or eliminate impacts to MBTA species. Procedures may include, but are not limited to, pre-construction clearing and grading outside of breeding seasons, enforceable timing restrictions and identification of permissible activities within a prescribed distance from active nests, survey protocols for raptors and MBTA species, buffer zones around active nests, monitoring and reporting requirements.

20. The applicant shall conduct visual biweekly surveys for bird and bat mortalities throughout the project site. In addition to the photo documentation of bird mortalities (Item #14 in BIO-11), mortalities and injuries to bats and other wildlife shall be photo documented. Additionally, data would document the species affected and any overt signs of injury resulting in death (e.g., scorched feathers). This information would be compiled and provided to the BLM on quarterly intervals for the first three years, then annually thereafter, unless otherwise requested by the BLM. This data would add to the understanding of impacts of solar facilities on avian and bat species. BLM would maintain the authority to require additional mitigation of the applicant in the future to reduce collision or heat-related injuries.

21. To minimize potential impacts to Nelson bighorn sheep, the applicant shall not use barbed wire fence on the northern perimeter of the Ivanpah 3 site, unless required for security reasons.

22. The applicant shall monitor and control noxious and invasive weeds within 100 feet of the artificial water source. Control of weeds shall be coordinated with the BLM staff and shall consist of removal by mechanical methods, rather than herbicides.

23. The project owner shall implement the Closure, Revegetation, and Rehabilitation Plan, Revision 3, dated July 6, 2010, with the following modifications.
    1. The long-term soil stockpiles, as discussed in Table 5-2 of the plan, will be no higher than 6 feet high.
    2. The Preliminary Seeding Plan for Short-Term Disturbed Areas, and to be used as the basis for the seeding during final project decommissioning, will be based upon the species list provided in Table 7-1 of the plan, rather than the species list in Table 7-2. The list may be modified at the time of decommissioning based on seed availability.
    3. Concrete will be removed to a minimum depth of 6 feet unless it is shown that a particular area is prone to flood hazards and a greater depth for concrete removal should be required. All concrete removed shall be hauled off the project site and disposed of in an approved facility. Crushed concrete will not be used as backfill on the site during decommissioning.
    4. Succulents salvaged during project construction will not be sold by the applicant. Should excess succulents be removed that cannot be transplanted in the Succulent Nursery Area, their disposition will be managed by BLM.

24. USFWS has notified BLM that due to the proximity of known occupied golden eagle territories, and that the effects of power towers on bald and golden eagles is unknown, this project has the potential to take an eagle. Due to the distance of the project site to known eagle territories, available mitigation measures (some of which are already described in other measures identified in this section), and habitat compensation associated with other species (i.e. desert tortoise), USFWS believes that this project can reach the "no net loss" standard for golden eagles identified in the Eagle Act Rule if the applicant submits and implements an Avian Protection Plan. The holder shall submit an Avian Protection Plan for approval of the Authorized Officer within 6 months of the issuance of any ROW grant for the project. The Avian Protection Plan must be implemented within one year from the date of any ROW grant Notice to Proceed.

25. The following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoises during the implementation of the ISEGS project:
    1. The Holder must ensure that desert tortoises do not enter fenced project facilities.
    2. The Holder must ensure that the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained therein.
    3. The Holder must ensure that translocation of desert tortoises does not result in injury or mortality of translocated or resident desert tortoises that is substantially elevated above natural injury and mortality rates within the action area.
    4. The Holder must ensure that transmittered desert tortoises are routinely monitored to prevent loss of these animals prior to the removal of transmitters because translocated desert tortoises have the potential to move long distances in a relatively short period of time.
    5. The Holder must ensure that the BrightSource facility does not serve as a subsidy to common ravens.
    6. The Holder must ensure that desert tortoises that exhibit clinical signs of disease are not translocated.

26. The Holder must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These conditions are non- discretionary.

27. The Holder shall monitor the integrity of all desert tortoise exclusion fencing at least once a month and following any rain events that result in surface flow of water in washes within the action area. The Holder shall promptly repairs and damage identified during monitoring.

28. To ensure that the measures proposed by the Bureau and BrightSource are effective and are being properly implemented, the Holder shall contact the BLM Authorized Officer and the FWS immediately if it becomes aware that a desert tortoise has been killed or injured by project activities. At that time, the Service and the Bureau must review the circumstances surrounding the incident to determine whether additional protective measures are required. Project activities may continue pending the outcome of the review, provided that the proposed protective measures and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented.

29. If more than 93 subadult or adult desert tortoises are identified for translocation during clearance surveys of the project site, the Holder shall notify the BLM Authorized Officer so BLM can re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This condition only applies to clearance of the project site for construction and does not apply to the short distance movement of desert tortoises out of harm's way during activities that occur outside of the fenced project site.

30. If 9 desert tortoises are directly killed or injured as a result of any construction, operation, maintenance, decommissioning, or restoration activities covered by this biological opinion over the life of the ISEGS project, the Holder shall inform the BLM so the BLM can re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality associated handling of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations. However, it does not apply to mortality associated with post-translocation mortality that is not related to direct handling of the individuals.

31. If 3 desert tortoises are killed in any 1 year as a result of any construction, operation, maintenance, decommissioning, or restoration activities covered by this biological opinion, the Holder shall inform the BLM so the BLM can re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality associated handling of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations. However, it does not apply to mortality associated with post-translocation mortality that is not related to direct handling of the individuals.

32. If 10 translocated desert tortoises suffer mortality within the post-translocation monitoring period, the Holder shall inform the BLM so the BLM can re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action.

33. If monitoring of translocated and resident desert tortoises indicates a statistically significant elevation in mortality rates above that observed in control populations, the holder shall inform the BLM so the BLM can re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action.

34. The Holder shall monitor all translocated desert tortoises according to the following schedule: 1) within 24 hours of release, 2) twice weekly for the first 2 weeks after release, 3) starting the third

week after release, at least once a week from March 1 to October 31 and once every other week from November 1 to February 28.

35. The Holder shall monitor all transmittered desert tortoises in the resident and control populations at least once a week from March 1 to October 31 and once every other week from November 1 to February 28.

36. The holder shall extend monitoring and adaptive management programs associated with holders monitoring and adaptive management program of common ravens beyond the required term if the BLM and FWS determine that further monitoring and adaptive management are warranted.

37. After performance of visual health assessments on project-site desert tortoises, the Holder shall contact the BLM and the Ventura Fish and Wildlife Office with the results of the health assessments prior to commencement of translocation.

38. The Holder shall ensure that all individuals that will perform visual health assessments and blood collection have been specifically authorized or trained for that activity by the FWS.

39. This stipulation relates only to the establishment of the BLM compensation requirement and does not reflect conditions imposed by the State of California in BIO 17. To mitigate for habitat loss and potential take of desert tortoise, the holder shall provide compensatory mitigation at a 1:1 ratio for impacts to 3,472 acres as described in the final Plan of Development. The BLM 1:1 ratio is developed in accordance with BLM's desert tortoise mitigation requirements as described in the Northern and Eastern Mojave Desert Management Plan (BLM 2002). The BLM mitigation requirement will be satisfied through completing habitat enhancement projects on suitable lands located within the Northern and Eastern Mojave Recovery Unit. Those habitat enhancement projects are further described below.

    The priority for desert tortoise habitat enhancement projects are the installation of at least 50 miles of desert tortoise exclusion fencing, and habitat restoration of at least 50 routes within the Desert Wildlife Management Area, or other similar rehabilitation activities that meet BLM, FWS, DFG, and Energy Commission approval. (Note: This requirement applies to the entire 3,472 acre project but may be prorated on an acreage percentage basis among the four right-of-way grants). The BLM and the FWS will utilize the Desert Tortoise Recovery Office's (DTRO) Spatial Decision Support System to model this project's net impacts to tortoise vs. the net benefits of mitigation measures to determine the exact fencing requirements and route closures required. If the results from SDSS indicate that 50 miles of fencing and 50 routes restored is not sufficient to offset net impacts, additional habitat enhancements would be required. Other habitat enhancement measures that may be implemented in addition to tortoise fencing of roads include fencing the public land boundary around Nipton and Goffs to minimize OHV use, removal of exotic species from tortoise habitat, clean up destroyed or damaged habitat areas, such as illegal dumpsites, and contributing funds to a Service approved head start research facility.
    The Holder may elect to satisfy the requirements of this mitigation measure by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) in accordance with the following table.

    If the Holder elects not to utilize the REAT NFWF Account, they must assume the full financial responsibility for completing the required habitat enhancement projects within 2-years of the effective date of the ROW grant. The holder is also responsible for the long term maintenance and upkeep of installed projects and is required to obtain an appropriate authorization from the BLM, such as a right-of-way grant, prior to the installation and maintenance of installed projects.

The maintenance shall occur for the duration of project impacts. The holder will be responsible for all costs associated with processing right-of-way applications for the enhancement projects. Failure of the holder to complete enhancement actions under this mitigation measure within the 2-year time frame will be grounds for suspension of the right-of-way.

If the REAT NFWF Account is used for the enhancement projects, the holder shall ensure funds are transferred into the account in accordance with the prescribed REAT NFWF table within 6 months to ensure enhancement projects can be implemented within the 2-year deadline.

Desert Renewable Energy
REAT[1] Biological Resource Compensation/Mitigation Cost Estimate[2] Breakdown
September 14, 2010

The purpose of this table is to describe estimated costs that may be associated with implementing off-site biological mitigation/compensation required by one or more of the REAT agencies.

	Task	**Cost**
1.	Land Acquisition	$1000 per acre[3]
2.	Level 1 Environmental Site Assessment	$3000 per parcel[4]
3.	Appraisal	$5000 per parcel[4]
4.	Initial site work - clean-up, enhancement , restoration	$250 per acre
5.	Closing and Escrow Costs – 2 transactions at $2500 each; landowner to 3rd party and 3rd party to agency[5]	$5000 for 2 transactions
6.	Agency costs to review and determine accepting land donation - includes 2 physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed and deed restrictions; issue escrow instructions; mapping the parcels….	15% of land acquisition costs (#1) × 1.17 (17% of the 15% for overhead)[6]
	SUBTOTAL *for Acquisition & Initial Site Work for Permitee-Directed and REAT-NFWF MOA Options*	*$*
7.	Long-term Management and Maintenance (LTMM) - includes land management; enforcement and defense of easement or title [short and long term]; region-wide raven management; monitoring….	$1450 per acre[7]
	REAT-NFWF MOA Mitigation Account Additions *[only applicable if the REAT Mitigation Account is used for all or a portion of the mitigation]*	
~~6.~~ 8.	Biological survey for determining mitigation value of land (habitat based with species specific augmentation)	$5000 per parcel[4]
~~7.~~ 9.	3rd party administrative costs - includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acres to acquire….	10% of land acquisition cost (#1)
10.	Establish the project specific sub-account[8]	$12,000
11.	Pre-proposal Modified RFP or RFP processing[9]	$30,000
12.	NFWF management fee for acquisition & initial site work	3% of SUBTOTAL,& Tasks #8, #9
13.	NFWF management fee for LTMM	1% of LTMM
	TOTAL *for deposit into the REAT-NFWF MOA Project Specific Mitigation Sub-Account*	*$*

[1] Not all costs will apply to all REAT agency requirements. For example, some of the elements in this table are not intended to be used as a basis for prescribing security to meet obligations under the California Endangered Species Act.
[2] All costs are best estimates as of summer 2010. This cost estimate table will be updated once per quarter, at a minimum. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation (MOA V.I.).
[3] Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18-24 month window to acquire the land after agency decisions are made. If the agencies, developer, or 3rd party has better, credible information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
[4] Parcel sizes may range from 1 acre to over 640 acres, plus. The 40 acre estimate is used for illustration purposes only. The general location of the land acquisition(s) will determine the generalized parcel size for determining project specific estimates.
[5] Two transactions at $2500 each: landowner to 3rd party; 3rd party to agency. The transactions will likely be separated in time. State agencies may or may not require this funding.
[6] Always required for Federal agency donations. State agencies may or may not require cost to accept donations. SB 34 projects do not have to pay this fee
[7] Estimate for purposes of calculating general costs. The general location and parcel size(s) of the land acquisition may also factor into the estimate. The actual long term management and maintenance costs will be determined using a Property Analysis Report (PAR) or a PAR-like assessment tailored to the specific acquisition.
[8] Each renewable energy project will be a separate sub-account within the REAT-NFWF account, regardless of the number of required mitigation actions per project. If a project and its mitigation are phased, this fee is only applied when the project specific account is established and not charged again when additional funds are deposited with subsequent phases.
[9] If determined necessary by the REAT agencies if multiple 3rd parties have expressed interest; for transparency and objective selection of 3rd party to carryout acquisition.

Summary of Mitigation Measures

Condition	Summary	CEC	BLM	Comment
Air Quality				
AQ-SC1	Designate an Air Quality Construction Mitigation Manager	X		CEC-specific requirement
AQ-SC2	Develop an Air Quality Construction Mitigation Plan	X	X	
AQ-SC3	Fugitive Dust Control Plan for Construction	X	X	
AQ-SC4	Monitoring and Response to Dust Plumes	X	X	
AQ-SC5	Diesel-Fueled Engine Control	X		CEC-specific requirement
AQ-SC6	New Model Year Vehicles for maintenance and mirror washing	X		CEC-specific requirement
AQ-SC7	Fugitive Dust Control Plan for Operations	X	X	
AQ-SC8	Provide copies of Authority-to-Construct (ATC) and Permit-to-Operate (PTO)	X		CEC-specific requirement
AQ-SC9	Follow emissions standards for emergency generator and fire pump engines	X		CEC-specific requirement
AQ-SC10	Limit natural gas burning to 5 percent of total annual heat input	X		CEC-specific requirement
AQ-1 through AQ-39	MDAQMD permit requirements for boilers for proposed project	X		Other state regulation (MDAQMD)
AQ-1 through AQ-30	MDAQMD permit requirements for boilers for Mitigated Ivanpah 3 Alternative	X		Other state regulation (MDAQMD)
Biological Resources				
BIO-1	Designated Biologist selection and qualification	X	X	
BIO-2	Designated Biologist duties	X	X	
BIO-3	Biological Monitor selection and qualifications	X	X	
BIO-4	Biological Monitor duties	X	X	
BIO-5	Designated Biologist and Biological Monitor Authority	X	X	
BIO-6	Worker Environmental Awareness Program	X	X	
BIO-7	Biological Resources Mitigation Implementation and Monitoring Plan	X	X	

Condition	Summary	CEC	BLM	Comment
BIO-8	Desert Tortoise Clearance Surveys and fencing	X	X	
BIO-9	Desert Tortoise Translocation Plan	X	X	
BIO-10	Desert Tortoise Compliance Verification	X	X	
BIO-11	Impact Avoidance and Mitigation Measures	X	X	
BIO-12	Raven Management Plan	X	X	
BIO-13	Weed Management Plan	X	X	
BIO-14	Closure, Revegetation, and Rehabilitation Plan	X	X	
BIO-15	Pre-Construction Nest Surveys	X	X	
BIO-16	Burrowing Owl Impact Avoidance and Minimization Measures	X	X	
BIO-17	Desert Tortoise Compensatory Mitigation	X	X	
BIO-18	Special-Status Plant Impact Avoidance and Minimization	X	X	
BIO-19	Nelson's Bighorn Sheep Mitigation	X	X	
BIO-20	Streambed Impact Minimization and Compensation Measures	X		Other state regulation (CDFG)
BIO-21	Provide information on special-status plant species, and conduct surveys as directed by BLM		X	
BIO-22	Prepare MBTA Conservation Agreement in coordination with USFWS, BLM, and CDFG		X	
BIO-23	Conduct bi-weekly surveys for bird and bat mortalities		X	
BIO-24	Avoid using barbed wire on northern boundary fence to minimize impacts to sheep		X	
BIO-25	Monitor and control noxious weeds near artificial water source		X	
BIO-26	Implement all mitigation identified by USFWS in the Biological Opinion		X	
BIO-27	Implement July 2010 Closure Plan, with modifications		X	
BIO-28	Golden Eagle protection		X	
Cultural Resources				
CUL-1	Designate Cultural Resources Specialist (CRS) and	X	X	

Condition	Summary	CEC	BLM	Comment
	Cultural Resources Monitors (CRMs)			
CUL-2	Provide CRS with copies of AFC, Data Responses, maps, and confidential cultural resources reports	X	X	
CUL-3	Cultural Resources Monitoring and Mitigation Plan (CRMMP)	X	X	
CUL-4	Submit Cultural Resources Report (CRR)	X	X	
CUL-5	Worker Environmental Awareness Program	X	X	
CUL-6	Halt work upon discovery of buried archaeological materials	X	X	
CUL-7	Further monitoring following discovery	X	X	
CUL-8	Documentation of Hoover Dam-to-San Bernardino transmission line	X	X	
CUL-9	Development of HAER-type documentation for Hoover Dam-to-San Bernardino transmission line	X	X	
CUL-10	Cultural resources surveys for borrow and fill areas	X	X	Required by BLM only for borrow and fill areas located on public lands managed by BLM.
Hazardous Materials Management				
HAZ-1	Hazardous materials use limited to types and quantities provided in Appendix B - Hazardous Materials	X	X	
HAZ-2	Provide Hazardous Materials Business Plan to San Bernardino County Fire Department	X		Other state regulation (County)
HAZ-3	Safety Management Plan for delivery of liquid hazardous materials	X		Other state regulation
HAZ-4	Construction Site Security Plan	X		Other state regulation
HAZ-5	Operation Site Security plan	X		Other state regulation
HAZ-6	Comply with federal and state laws and regulations		X	BLM standard term and condition
Land Use				
LAND-1	Obtain ROW grant from BLM	X		CEC-specific requirement
LAND-2	Provide minimum 20 feet setback between security/tortoise fence and ROW boundary to allow for	X	X	

Condition	Summary	CEC	BLM	Comment
	maintenance			
Noise and Vibration				
NOISE-1	Notify Primm Valley Golf Course of commencement of construction	X	X	
NOISE-2	Noise Complaint Process	X		CEC-specific requirement
NOISE-3	Noise Control Program	X		CEC-specific requirement
NOISE-4	Noise level restrictions	X		CEC-specific requirement
NOISE-5	Noise Hazard Surveys	X		CEC-specific requirement
NOISE-6	Construction time restrictions	X		CEC-specific requirement
NOISE-7	Steam blow restrictions	X		CEC-specific requirement
Soil and Water Resources				
Soil&Water-1	Drainage, Erosion, and Sedimentation Control Plan	X	X	
Soil&Water-2	Water Discharge Requirements	X	X	
Soil&Water-3	Groundwater well construction and documentation	X	X	
Soil&Water-4	Construction and Operations Water Use	X	X	
Soil&Water-5	Stormwater Damage Monitoring and Response Plan	X	X	
Soil&Water-6	Groundwater Level Monitoring and Reporting Plan	X	X	
Soil&Water-7	Wastewater Collection System requirements	X	X	
Soil&Water-8	Septic and Leach Field requirements	X	X	
Traffic and Transportation				
TRANS-1	Traffic Control Plan	X	X	
TRANS-2	Repair of Public Right-of-Way	X		CEC-specific requirement
TRANS-3	Heliostat Positioning Plan and Monitoring	X	X	
TRANS-4	Verification of Power Tower Receiver Luminance and Monitoring	X	X	
TRANS-5	Power Tower Lighting	X	X	Other federal requirement (FAA)
TRANS-6	FAA Notification	X	X	Other federal requirement (FAA)
Transmission Line Safety and Nuisance				
TLSN-1	Construct tie lines according to CPUC regulations	X		Other state regulation (CPUC)
TLSN-2	Measure electric and magnetic fields	X		Other state regulation (CPUC)
TLSN-3	Keep area under tie lines free of combustible material	X		Other state regulation (CPUC)

Condition	Summary	CEC	BLM	Comment
TLSN-4	Ensure that all permanent metal objects under tie lines are grounded	X		Other state regulation (CPUC)
Visual Resources				
VIS-1	Surface treatment of project structures and buildings	X	X	
VIS-2	Landscape screening of golf course	X		CEC-specific requirement
VIS-3	Revegetation of disturbed soil areas	X	X	
VIS-4	Temporary and Permanent Exterior Lighting	X	X	
Waste Management				
WASTE-1	Identification of Professional Engineer or Geologist to oversee soil disturbance	X		Other state regulation (DTSC)
WASTE-2	Identification and management of contaminated soils	X	X	Other state regulation (DTSC)
WASTE-3	Construction Waste Management Plan	X	X	
WASTE-4	Hazardous Waste Generator Identification Number	X	X	Other federal requirement (EPA)
WASTE-5	Notify agency of impending waste management-related enforcement action by local, state, or federal authorities	X	X	Other regulation (various)
WASTE-6	Operation Waste Management Plan	X	X	
WASTE-7	Address releases of hazardous materials in accordance with applicable regulations	X	X	Other regulation (various)
Worker Safety				
Worker Safety-1	Project Construction Safety and Health Program	X	X	
Worker Safety-2	Project Operations and Maintenance Safety and Health Program	X	X	
Worker Safety-3	Designate Construction Safety Supervisor	X		CEC-specific requirement
Worker Safety-4	Make payments to the Chief Building Officer for services of a Safety Monitor	X		CEC-specific requirement
Worker Safety-5	Portable Automatic External Defibrillator	X		CEC-specific requirement
Worker Safety-6	Follow Best Management Practices for storage and application of herbicides	X	X	

Condition	Summary	CEC	BLM	Comment
Geology, Paleontology, and Minerals				
GEO-1	Specifications for Soils Engineering Report	X	X	
PAL-1	Designate Paleontological Resources Specialist (PRS) and Monitors	X	X	
PAL-2	Provide maps and drawings to the PRS	X		CEC-specific requirement
PAL-3	Develop Paleontological Resources Monitoring and Mitigation Plan (PRMMP), if directed by PRS	X	X	
PAL-4	Worker Environmental Awareness Program, and Conduct weekly training, if required by PRS	X	X	
PAL-5	Monitor in areas on grading, excavation, trenching, and augering	X	X	
PAL-6	Collect fossil materials in accordance with PRMMP	X	X	
PAL-7	Develop Paleontological Resources Report	X	X	
Recreation				
REC-1	Develop Solar/Ecological Interpretive Center	X		CEC-specific requirement
REC-2	Allow public access to redirected trails		X	BLM-specific requirement