



**United States Department of the
Interior**

Bureau of Land Management

Battle Mountain District Office

Battle Mountain Nevada

Tonopah Field Office

Tonopah, Nevada

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N-86292

DOI-BLM-NVB020-2009-0104-EIS

Tonopah Solar Energy, LLC
Crescent Dunes Solar Energy Project



Final Environmental Impact Statement

BLM Mission Statement

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/NV/BM/EIS/10/30+1793

DOI No. FES 10-57



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

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http://www.blm.gov/nv/st/en/fo/battle_mountain_field.html

In Reply Refer To:

N-86292

DOI-BLM-NVB020-2009-0104-EIS

2800 (NVB0200)

Dear Reader:

The Tonopah Field Office has concluded its review of the Draft Environmental Impact Statement for the Tonopah Solar Energy, LLC, Crescent Dunes Solar Energy Project, located near Tonopah, Nye County, Nevada. The Final Environmental Impact Statement (Final EIS) is available for your review.

Printed copies or a compact disc of the Final EIS are available upon request from the BLM Tonopah Field Office, 1553 So. Main Street, P.O. Box 911, Tonopah, Nevada 89049; phone (775) 482-7800; and at the Battle Mountain District Office, 50 Bastian Road, Battle Mountain, Nevada 89820; phone (775) 635-4000; or e-mail at crescent_dunes@blm.gov. Interested persons may also view the Final EIS at the following Web site:

http://www.blm.gov/nv/st/en/fo/battle_mountain_field.html.

Copies of the Final EIS are available for public inspection at the following locations in Nevada:

- BLM Nevada State Office, 1340 Financial Boulevard, Reno.
- BLM Battle Mountain District Office, 50 Bastian Road, Battle Mountain.
- BLM Tonopah Field Office, 1553 South Main, Tonopah.

The Final EIS analyzes the direct, indirect, and cumulative impacts associated with the proposed construction and operation of the Crescent Dunes Solar Energy Project. Technical baseline reports are available upon request at the above address.

During the comment period for the Draft EIS, the BLM received 23 comment letters. Comment responses and resultant changes in the impact analyses are documented in the Final EIS. Comments resulted in the addition of clarifying text but did not identify any substantial issues that changed the Proposed Action. The BLM Preferred Alternative remains the same as identified in the Draft EIS published on September 3, 2010.

If you would like any additional information, please contact Timothy Coward, Renewable Energy Project Manager, at (775) 482-7800.

Sincerely,

Thomas J. Seley
Field Manager

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**FINAL ENVIRONMENTAL IMPACT STATEMENT
TONOPAH SOLAR ENERGY, LLC
CRESCENT DUNES SOLAR ENERGY PROJECT**

Lead Agency: U. S. Department of the Interior
Bureau of Land Management
Battle Mountain District Office

Cooperating Agencies: Department of Defense, Department of
Energy, Nevada Department of Wildlife,
Esmeralda County, Nye County, Town of
Tonopah

Project Location: Nye County, Nevada

Correspondence on This EIS Tim Coward, Renewable Energy Project
Manager

Should be Directed to: Bureau of Land Management
P.O. Box 911
Tonopah, NV 89049
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ABSTRACT

Tonopah Solar Energy, LLC applied to the BLM for a 7,680-acre right-of-way (ROW) on public lands to construct a concentrated solar thermal power plant facility approximately 13 miles northwest of Tonopah, Nye County, Nevada. The proposed project is not expected to use the total acres applied for in the ROW application. The facility is expected to operate for approximately 30 years. The proposed solar power project would use concentrated solar power technology, using heliostats or mirrors to focus sunlight on a receiver erected in the center of the solar field (the power tower or central receiver). A heat transfer fluid is heated as it passes through the receiver and is then circulated through a series of heat exchangers to generate high-pressure steam. The steam is used to power a conventional Rankine cycle steam turbine, which produces electricity. The exhaust steam from the turbine is condensed and returned via feedwater pumps to the heat exchangers where steam is regenerated. Hybrid cooling processes would be used for this project to minimize water use while continuing to maintain efficient power generation. The plant design would generate a nominal capacity of 110 megawatts.

The project's proposed facility design includes the heliostat fields, a 653-foot central receiver tower, a power block, buildings, a parking area, a laydown area, evaporating ponds, and an access road. A single overhead 230-kilovolt transmission line would connect the plant to the nearby Anaconda Moly substation.

This Environmental Impact Statement analyzes the environmental effects of the Proposed Action, two action alternatives, and the No Action Alternative. Because the comments received on the draft EIS did not warrant substantive changes to the draft document, the final EIS is an abbreviated version, including errata sheets indicating where the draft document is revised, comments received on the draft document, the formal response to comments, and appendices including final mitigation plans

Responsible Official for EIS:

Thomas J. Seley
Field Manager, Tonopah Field Office

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1.0 Introduction to the Final Environmental Impact Statement

The U.S. Bureau of Land Management (BLM) has prepared this Environmental Impact Statement (EIS) to analyze potential environmental impacts associated with approval of development of the Crescent Dunes Solar Energy Project. Tonopah Solar Energy, LLC (TSE), the Proponent, has proposed construction of this solar power generation facility in Nye County, Nevada. Nevada Department of Wildlife, Nye County, Esmeralda County, U.S. Department of Defense-Air Force, and the Department of Energy (DOE) accepted invitations to be cooperating agencies in the development of this document.

Because the comments received on the draft EIS did not warrant substantive changes to the draft document, the final EIS is an abbreviated version, including errata sheets indicating where the draft document is revised, comments received on the draft document, the formal response to comments, and appendices including final mitigation plans

Project Purpose and Need

The BLM Tonopah Field Office (TFO) has received a ROW application from TSE (Proponent) and must consider permitting the solar facility. The Proponent proposes to construct, operate, and decommission a solar power electric generation facility and associated infrastructure on lands managed by the TFO. The TFO's purpose is to respond to the Proponent's ROW grant application under Title V of the Federal Land Policy and Management Act (FLPMA) (43 USC 1761) for completeness and in compliance with the FLPMA, BLM ROW regulations, and other applicable federal and state laws.

The TFO's need is to consider permitting TSE's application under the BLM's CFR 2800 while, based on the BLM's EIS, limiting undue or unnecessary degradation of public lands.

Proponent's Intended Use of the Project

The proposed project would contribute much needed on-peak power to the electrical grid that serves the western United States as demand for power continues to grow in these states. The thermal storage capability of this technology allows renewable electricity to be produced even when the peak demand period extends into the late evening hours. As older technology fossil-fuel plants reach the end of their useful lives, replacing them with clean, reliable energy sources is a net benefit. The Proponent has executed a Power Purchase Agreement with NV Energy for sale of the electricity produced from the facility. The facility is expected to produce approximately 110 MW of power.

Project Description

The proposed solar facility will use Concentrating Solar Power (CSP) technology to generate electricity. This specific technology uses heliostat/reflecting mirrors to redirect sunlight on a receiver erected in the center of the solar field (called the central receiver). The central receiver

consists of a series of tubes through which a liquid salt passes and is heated by the concentrated solar energy. The heated salt is then routed to a large insulated tank where it can be stored with minimal energy loss. When electricity is to be generated, the heated salt is circulated through a series of heat exchangers to generate high-pressure, superheated steam that is used to power a conventional Rankine cycle steam turbine/generator to produce electricity. Energy produced from the facility would interconnect to the electrical grid through a new transmission line extending to the existing NV Energy Anaconda Moly Substation, approximately 6 miles north of the site.

Major project components include:

- a solar field consisting of a large area of heliostats
- a central receiving tower
- a conventional steam turbine to generate electricity
- thermal storage tanks to store the hot and cold liquid salt
- a hybrid cooling system (i.e., an air-cooled condenser with a wet cooling augmentation system designed to minimize water consumption by use only during times of high electricity demand)
- a water treatment system and evaporation ponds to remove impurities from the groundwater, thereby protecting the turbine
- associated equipment such as pumps, transformers, heat exchangers, and buildings
- associated linear facilities, including a Transmission Line (TL) and access road, and a borrow pit for aggregate.

This EIS analyzes the environmental effects of the Proposed Action, the No Action Alternative, and two alternatives. The Proposed Action would:

- Approve a right-of-way (ROW) application submitted by TSE to construct and operate a 110-megawatt (MW) solar power generating facility based on concentrating solar power technology (CSP), an approximately 9.5-mile 230 kilovolt (kV) TL, and the temporary use of a 40-acre borrow pit to extract aggregate for construction. The technology uses heliostats (reflecting mirrors) to redirect sunlight onto a receiver erected in the center of a solar field. The solar power facility is proposed to be located on BLM-managed lands in Nye County, Nevada.

Project Location

The proposed project site is located in south-central Nevada, approximately 13.5 miles northwest of Tonopah, in Nye County. The project is located within the southern portion of the Big Smoky Valley, north of US Highway 95/6 along Poleline Road (State Highway 89). The proposed project would be built on lands administered by BLM. BLM's general solar policy is to facilitate environmentally responsible commercial development of solar energy projects on public lands and to use solar energy systems on BLM facilities where feasible (BLM 2007). Given BLM's

solar policy and the advantage of the BLM controlling large areas of land in the southwestern United States, the Proponent is proposing this project on BLM-administered lands as opposed to private lands.

2.0 Agency Coordination

Agency and public review is an integral part of the NEPA process and provides the public and agencies with an opportunity to be involved in the decision process. During this comment review process, BLM solicited comments from pertinent agencies and the public. These comments have been organized and analyzed so that the relevant issues can be addressed in this FEIS.

After the publication of the Notice of Availability of the DEIS, BLM contacted relevant federal, state, and local government agencies to facilitate an Agency Meeting. The following agencies had accepted to become co-operating agencies during the scoping process and were invited to attend:

- Nevada Department of Wildlife (NDOW)
- U.S. Department of Energy
- Nye County
- Esmeralda County
- Town of Tonopah
- U.S. Department of Defense, Air Force

Meetings were subsequently set up for September 22, 2010 at the BLM Southern Nevada District Office, and September 23, 2010 at the BLM, Tonopah Field Office.

During the NEPA process for this project the BLM has been coordinating the analysis with the DOD.

Representatives from NDOW, Nye County, and the Town of Tonopah attended the meeting on September 23, 2010, and discussed a number of topics. Including but not limited to:

- Impacts to the pale kangaroo mouse, raptors, burrowing owls, kit foxes, and other wildlife species and potential mitigation measures
- Potential impacts on recreational activities near the sand dunes
- Potential beneficial impacts of the project on the economy of the region
- Emergency services in the region
- The Development Agreement between Tonopah Solar and Nye County
- Future use of the groundwater well being developed for the project.

The BLM and NDOW met at the TFO Field Office on September 23, 2010. Attendees included 5 BLM staff, 3 NDOW staff and representatives from the proponent. The main discussion topic included recommendations for wildlife mitigation measures to be included in the mitigation plans.

3.0 DEIS Review Period

Federal Register Notice of Availability

The *Federal Register* Notice of Availability of the Draft EIS was published on September 7, 2010, marking the beginning of the comment period for the project (Appendix A). The comment period ended on October 18, 2010. This period fulfills the BLM minimum requirement of a 45-day comment period; however, BLM will continue to accept comments throughout the EIS process.

Announcements, and Media Releases

Announcements for the public review meetings were published in local newspapers (see Table 1). Additionally, meeting dates, times, and locations were posted on the BLM Tonopah Field Office Web site (www.BLM.gov/nc/st/en/fo/Battle_Mountain_Field.html).

Table 1. DEIS Public Review Meeting Announcement Publications

Newspaper	Community	Dates Published
Las Vegas Review-Journal	Southern Nevada	Tuesday, September 7, 2010
Reno Gazette-Journal	Western Nevada	Tuesday, September 7, 2010

Copies of these announcements can be found in Appendix A.

Public Meetings

Public meetings are required where “there may be substantial environmental controversy concerning the environmental effects of the proposed action, a substantial interest in holding the meeting, or a request for a meeting by another agency with jurisdiction over the action” (40 CFR 1506.6). Public meeting locations, dates, and number of attendees are provided in Table 2. In accordance with BLM requirements, sign-in sheets were provided and attendees were encouraged to sign in. Copies of the sign-in sheets are provided in Appendix A.

Table 2. Public meeting information

Meeting Location/Type	Date	Number of Public Attendees
BLM Southern Nevada District Office 4701 N. Torrey Pines Drive Las Vegas, Nevada/ Public	Wednesday, September 22, 2010	15
Tonopah Convention Center 301 Brougner Ave Tonopah, Nevada/ Public	Thursday, September 23, 2010	52

Note: Public meetings were held from 6–8 p.m.

Both public meetings began with a brief presentation of the project area, alternative areas, and technology process involved. Additionally, posters summarizing the proposed project location, proposed technology, and an overview of the NEPA process were displayed for public review (Appendix A). BLM, Tonopah Solar Energy, LLC, and HDR representatives were available to answer questions. Project fact sheets and comment cards were provided at each meeting. A copy of the handouts are included in Appendix A. Comment cards were provided so members of the public could submit comments regarding issues or concerns of the proposed project. Comment cards could be submitted at the meeting, or mailed, emailed, or faxed to the BLM Tonopah Field Office.

4.0 Comments and Response to Comments

Comment 1: Department of Energy

Comment 1-A: Agency Coordination

From 40 CFR 1502.10 (i) – will the required distribution list be included with this document? We need to add DOE stakeholders to the extent they are not already included.

Response 1-A

The BLM agrees.

Comment 1-B: Environmental Justice

While there is an indication in several places in the document (e.g., Table 2-5, 3-1, 4-25) that no EJ populations are present in the project vicinity and a subsequent conclusion that no impacts will result, there is no data or analysis presented to establish that this is in fact true (nor is there an Appendix where this can be found referenced in the text). This may be controversial in light of the impacts on social and economic resources (indicated on p. xxiv) that will be brought by the workforce (an overall increase of 2%) that will be coming to the area and ‘moving into’ the small communities nearby. An influx of the number of workers identified may have an impact (even if seemingly small and temporary) on local services to the permanent and existing residents of those communities. This should be explicitly discussed in the document. BLM received a comment to this effect and a request for the outright analysis of EJ by the Town of Tonopah and EPA, respectively (table 1-5).

Response 1-B

The following information was collected and analyzed during the preparation of the DEIS. The data showed no impacts to Environmental Justice (EJ) populations; therefore, it was not included for further analysis in the DEIS.

The potentially affected populations of both Nye and Esmeralda counties include minority and low-income populations. Tonopah, the only population center in both Nye and Esmeralda counties, had a 2000 Census population of approximately 2,700. In Nye County, there is a census area (Census Tract 9801, Block Group 1) (Table not included here) that indicates the population of Native Americans is 20 percent (99 Native Americans), which exceeds the Nevada 2000 Census data percentage of 1.3 percent. Within this block group, the minority population is “meaningfully greater” than the minority population in Nevada. The next question to be posed is: Would this population be disproportionately affected by the proposed project? The proposed project is approximately 13 miles out of town, and the primary impacts would be felt inside the project area. There would be traffic slowing and increased temporary population in the area during construction. However, all local populations would experience this impact. No one group would be disproportionately affected by the proposed project.

In addition, an area of Esmeralda County (Census Tract 9501, Block Group 2) (Table not included here), according to 2000 Census data, has meaningfully greater populations of both elderly and disabled persons, showing 33.4 percent and 36.7 percent, respectively. Nye County also has a block group (Census Tract 9802, Block Group 1) with a disabled population of 32.8 percent. Both Esmeralda and Nye counties have elderly populations—26.3 percent and 26.1 percent, respectively—that exceed the Nevada elderly population of 15.2 percent. This elderly population could potentially be identified as an environmental justice or Title VI population of concern; however, this potential project would be built in an area 13 miles from any population. In the Native American and elderly and disabled populations, no one group would be affected disproportionately.

One remaining population type stands out: low-income populations that are meaningfully greater in two different block groups, one in each county (Table not included here). In Esmeralda and Nye counties (Census Tract 9501, Block Group 1, and Census Tract 9801, Block Group 1), the block groups are at 18 percent and 15.8 percent, respectively. This is compared with 10.5 percent for the Nevada low-income population. While this population could potentially be identified as an environmental justice or Title VI population of concern, this project would bring both temporary and permanent jobs to the area, which may assist this population in improving its income status. Therefore, this group would not be disproportionately affected by the project. The potential for increased jobs, both temporary and permanent, was mentioned in the community meetings, discussed subsequently, as a potential positive impact of this project.

Measures to reduce impacts would take into account community views. At this stage, there have been two open house community meetings: one in Tonopah and another in Las Vegas in December 2009. In addition to receiving public comments at the open houses, the project team received comments from the public before and after the events through e-mail and mail. At this time, none of the community members have voiced opposition to this proposed project.

Comment 1-C: Project Description

Is this meant to say, that except for the outgoing transmission line to Pole Line Road that the rest of the TL will be constructed in existing ROW? If not, it would be helpful to indicate where the ‘new’ disturbance would/is anticipated to occur along the TL route because it is unclear in the current description.

Response 1-C

Except for the outgoing transmission line to Pole Line Road, the remainder of the transmission line will be constructed in a new ROW, within an existing BLM utility corridor. Disturbance for the TL is shown in Table 4-1 for each alternative because the transmission line disturbance will be different for each.

Comment 1-D: Project Description

What are the dimensions of the ‘small ditches’ that would be constructed along roads for water run-off?

Response 1-D

The small drainage ditches will be sized as part of the detailed design process. However, these ditches will be no deeper than 3 feet and will be constructed with side slopes no steeper than 3H : 1V.

Comment 1-E: Water Use

Given that this is an area where recreational off-road vehicle use occurs regularly, there may be more dust deposited on mirrors and thereby an increased need to wash them. While amount of water anticipated during washing activities is indicated on p. 2-40 as 70 acre feet per year, is there potential for there to be more water needed due to fugitive dust from ORV use in the area? Should a range of water use for mirror washing be anticipated for the project and, as a result, articulated in the document?

Response 1-E

The project is proposed with a maximum allowed yearly water use of 600 AFY. A portion of the total water use would be used for mirror washing approximately 70 AFY. However, it is expected that the mirror wash water use will vary from year to year and the expected range is between 50 AFY and 100 AFY. However, as earlier stated, the project total water use will not exceed 600 AFY.

Comment 1-F: Hazardous Materials

Is there a standard or BMP that would be followed in cleaning up (or disposal) of residual HTF from the surface soil after processing? Since the HTF is highly flammable and a strong oxidizing agent, how this will be done is perhaps information useful for purposes of transparency.

Response 1-F

The heat transfer fluid (HTF) for the project is “salt”, which is a mixture of potassium nitrate and sodium nitrate. This material is not flammable and solidifies upon exposure to air or contact with the ground. A waste management plan for the facility will include stipulations for the handling and disposal of any HTF that is spilled. The BMP and procedures will include clean up methods, interim disposal in 55-gallon drums, and ultimate disposal at a properly licensed facility.

Comment 1-G: Fire Protection

Will workers be trained to fight fires that occur on site? The documents discuss plans for an onsite fire protection and suppression capability (for example, there is a good deal on infrastructure design and equipment related to fire suppression), but it is not clear whether there would be a trained fire suppression squad on site at all times, or whether all employees

would be trained to fight fires or will the local fire departments be relied upon (thus causing an increased demand on local services)?

Response 1-G

The project will have on-site fire fighting capabilities and personnel to combat on-site fires. The project proponent (TSE) is also working with Nye County and the Town of Tonopah to ensure any increased demand on local services is mitigated. See section 5.0 for errata sheets.

Comment 1-H: Native American Values

This discussion indicated that during initial consultation that no Native American values were identified but there is a comment directing BLM to the Yomba Shoshone Tribe. Perhaps the intention to consult with this tribe as well as the Timbisha Shoshone Tribe would be appropriate here. In table 1-5, BLM received a comment from the Timbisha tribe that the Yomba Shoshone may have an interest.

Response 1-H

Section 3.8.4.2 “Summary of Findings” details the Native American consultations that have been completed. This includes the Timbisha and Yomba tribes.

Comment 1-I: Fire Protection

Wildfire prevention and control does not seem to receive sufficient attention in the document. Due to large grading activities, the project may be expected to increase growth of non-native vegetation (e.g., halogeton, Russian thistle, presence of cheat grass in area), thus increasing the potential for wildfires. Wildfire fire potential also could be increased due to heat from the mirrors. Propose considering discussion of this topic further in the FEIS.

Response 1-I

No increase of wild land fire risk will occur as a result of the project. Between road construction in and around the heliostat field, weed reduction measures proposed by TSE, and extensive bare ground or dust suppressant treated bare ground, wildfires should not be able to propagate across the project area.

Comment 1-J: Cultural Resources

Section 101(d)(6)(A) of the National Historic Preservation Act provides that properties of traditional religious and cultural significance to an Indian tribe or Native Hawaiian organization may be eligible for listing in the National Register of Historic Places.

There is a possibility that eagle habitation in the vicinity of the project may render the landscape a potential historic property of religious and cultural importance to Indian tribes. If so, impacts to the eagle habitation need to be considered by BLM and SHPO during consultation under Section 106. In the recent, Final Environmental Assessment Proposal to Permit Take as Provided Under the Bald and Golden Eagle Protection Act (<http://alaska.fws.gov/eaglepermit/index.htm>), the US FWS explains that some Indian tribes

find eagles or eagle nests, or both, to be sacred sites. These, and the landscapes and landforms associated with them, could be eligible for listing in the National Register.

Given that an impact to Golden eagles is identified in the document, there may be a reason to believe that Tribes that have a current or historic presence near the proposed site consider eagle habitation (which includes eagles and eagle nests) sacred. DOE suggests consulting with the Yomba and Timbisha Shoshone Tribes to assess the present and historic importance of eagles (particularly Golden) and their nests to these Tribes culture.

Response 1-J:

Traditionally, eagles have not been sacred for the tribes in the project area, as maybe the case in Alaska and other states, or for Plains Indians etc. During consultation with the tribes, eagles were not identified as a Native American concern.

The BLM does not consult with the USFWS on Take Permits. TSE will apply for a Take Permit from the USFWS. Currently, an Avian and Bat Protection Plan has been developed and is being reviewed by the USFWS. BLM will adapt necessary mitigation measures in their Wildlife Mitigation and Monitoring Plan from the ABPP.

A notice to proceed for construction will not be given by the BLM to TSE until that time the BLM has a letter of concurrence from the USFWS stating the ABPP supplied by TSE is adequate.

Comment 1-K: Project Description

There is no discussion of possible impacts related to glare from the mirrors (potentially if one or more becomes misdirected for various reasons) on pilots during training exercises given the presence of the Nevada Training Facility and Air Force base located approximately 40 miles away. DOE suggests consideration of this potential indirect impact of the project on operations based at the DOD facility.

Response 1-K

Throughout the EIS process, the BLM has consulted with the DOD. The DOD scientific advisory board (SAB) has been briefed on the project.

Comment 1-L: Project Description

Is this meant to say, that except for the outgoing transmission line to Pole Line Road that the rest of the TL will be constructed in existing ROW? If not, it would be helpful to indicate where the 'new' disturbance would/is anticipated to occur along the TL route because it is unclear in the current description.

Response 1-L

See Comment Response 1-C.

Comment 1-M: Intentional Destructive Acts

Accidents and Intentional Destructive Acts is an area of analysis that DOE must include in the document. Although the potential may appear to be minor, DOE has concerns that there is no analysis in the DEIS regarding potential intentional destructive acts to the project and project elements:

In case of an accidental or intentional destructive act that may require immediate ‘shut down’ of the towers, how will the mirrors be positioned in time to allow towers to cool down?

Response 1-M

In an emergency and at night, the mirrors are placed in the “stow” position, which is a horizontal position with the mirror surface facing up.

DOE’s own wording notes that the potential for, “intentional destructive acts to the project and project elements,” appear to be minor. The project will be completely fenced with controlled access. In order to protect its investment, TSE will provide adequate security measures for protecting the facility and its infrastructure.

Comment 1-N: Emissions

Is it possible to include a quantitative analysis? Something simple such as the formula for “direct emissions” calculations in the EPA’s mandatory reporting rule (for projects over 25,000 metric tons/year)?

Response 1-N

Any calculations are in literature cited and available upon request; Tables shown in Section 4.6.2.3 “Operational Phase” shows air emissions are in conformance with regulatory requirements.

Comment 2: U.S. Bureau of Reclamation

I believe that this project was determined to not have potential to impact any of our lands or facilities. That being said, I’ll save the paper and the postage and just access the link from the BLM site if we decide to take a second look at the project. No need to send us a copy of the DEIS. Thank you for considering us in the NEPA process.

Response 2:

Thank you for your comment.

Comment 3: U.S. Environmental Protection Agency**Comment 3-A: Water Resources**

One of the major concerns identified by EPA in our scoping comments for the Crescent Dunes Solar Energy Project (Project) was the potential impacts to water resources, particularly groundwater. While EPA is pleased that a hybrid cooling system (consisting of an air-cooled condenser with a wet cool augmentation system) is planned for the Project to

reduce water use (with a small evaporative cooler to be used only at times of high energy demand), we remain concerned about the effect on existing groundwater supplies, as well as the potential for cumulative impacts over the life of the Project. Although the draft EIS states that the amount of drawdown for the Project (approximately 600 acre-feet per year) will “not result in wells going dry,” it also states that “some of the existing wells in the area will experience a drawdown of between 1-foot and 1.5-feet,” and that impacts to groundwater may include “well pumping causing drawdown” and “restrictions to existing well access or use.”

Response 3-A:

The proposed solar project currently has a 33-year life: three years of construction and 30 years of operation.

The water wells (there will actually be two wells: a primary water source and a back-up well should the primary well fail) will be used during construction for dust suppression and providing well water for mixing concrete etc.

BLM’s current numeric water-modeling standard is to predict impacts at the 10-foot drawdown contour, or isopleths. The BLM believes that due to uncertainty in water model parameters, the models cannot accurately predict drawdown contours beyond the 10-foot isopleth. This information is significant with respect to the modeling effort for the single well analysis performed for the Crescent Dunes Solar Project well analysis.

The depth to groundwater across the alluvial fill in the project area is approximately 150 feet below the ground surface. When the model was completed for this proposed project (based on information gathered during the well’s pump test), the results indicated that the 10-foot isopleth was very steep and proximate to the production well itself; and the 10-foot isopleth/drawdown contour was contained solely within the proposed power plant area. Therefore, the BLM determined that there would be no direct, indirect, or cumulative impacts to any other wells, springs, seeps, riparian areas, or phreatophyte plant zones as a result of 33 years of pumping the well over the project’s projected life cycle.

The BLM opted to complete the hydro-geologic model for 53-year scenario (i.e. 20 years beyond the construction/production life of the project). The reason for the additional 20-year modeling effort was to address additional potential cumulative impacts from the project. Additionally, TSE hypothesized that with proper maintenance, the project could operate for an additional 20 years.

For purposes of demonstrating impacts in the DEIS, the BLM opted to represent the drawdown contours/isopleths to the one-foot and one and one-half foot isopleths. These modeled drawdowns demonstrate the very limited impacts predicted to all of the potential water resources, including private water rights.

As noted in the DEIS cumulative impact analysis, the result was a one-foot to one and one-half foot drawdown of two livestock wells located approximately 4.5 miles southeast of the proposed well location. Since these wells are located at the groundwater depth of 150 feet below ground surface; and in general the screening level of the wells are an additional 50 to 100 feet below the ground water surface , a 53-year drawdown of one or one-and-a-half feet is not considered a significant impact to these private water rights (i.e. wells).

As noted in the cumulative impact analysis in the DEIS, the BLM is currently unaware of any reasonable foreseeable projects in the CESA area for groundwater (i.e. the Lower Smoky Valley Hydrographic Basin) where the Crescent Dunes Solar Project would be contributing cumulative impacts to the groundwater resources of the Lower Smoky Valley.

Comment 3-B: Water Resources

EPA is also concerned about the potential impacts to surface water associated with the Project, including “increased runoff flows, increased sediment transport, increased discharge and transport of contaminants, or possible affects to drainage paths or altered flow.” The EIS states that the stormwater drainage system would be “designed to allow the storm flow to follow its preexisting drainage paths,” yet later in the document, states that “increased runoff and sediment transport are expected to have a potential cumulative effect.”

Recommendation:

EPA recommends that BLM provide additional information in the FEIS explaining how the Project will affect water supplies for existing wells during its years in operation, as well as measures that could be taken to minimize or mitigate the impacts to these wells.

Additionally, we ask that BLM include a description of the long-term viability of the Project’s groundwater source, taking into account reasonably foreseeable projects planned for the area, as well as other factors, such as climate change, that may impact the Project and surrounding wells.

We ask that BLM include in the FEIS a discussion of the feasibility of recycling the water that would be sent to the evaporation pond and re-injecting or reusing this water.

Response 3-B:

When the plant-cooling tower is in operation, all plant waste streams are directed to the cooling tower where they are re-used (recycled) until the concentration levels in the water make it no longer suitable for use. At that point, it is discharged to the evaporation ponds. When the cooling tower is not in use, rejected water from the water treatment operation is re-used where it can be, but ultimately is sent to the evaporation ponds with constituent levels that are concentrated. In both cases, the water sent to the evaporation ponds cannot be further recycled within the proposed project.

Due to the concentration levels in the water discharged to the evaporation ponds, injection into the ground would require a Class 1 disposal permit. The geology and hydrogeology in the project location are such that injection of the water discharged to the evaporation ponds into the ground with an injection is not appropriate and would not be in compliance with NDEP regulations.

Comment 3-C: Stormwater Pollution Prevention Plan

EPA also recommends that BLM incorporate mitigation measures into the proposed Project sufficient to avoid potential cumulative effects from increased runoff and sediment transport. The Stormwater Pollution Prevention Plan (SWPPP) being developed to avoid these effects should be included in the FEIS.

Response 3-C

A SWPPP for operation of the facility is included the Plan of Development (POD). A SWPPP for construction will be developed in accordance with Nevada Department of Environmental Protection (NDEP) requirements.

Comment 3-D: Special Status Species (Plants and Wildlife)

EPA commends the work undertaken by the BLM to assess the risks to special status species from the Project. For the species highlighted in the DEIS, including Nevada oryctes, pale kangaroo mice, bats, golden eagles, and migratory birds, some mitigation measures have been prepared. These measures, such as covering the evaporation ponds with a porous screen, and, in the case of migratory birds, avoiding land clearing activities during the avian breeding season, should serve as crucial safeguards. But comprehensive mitigation plans for these species are characterized in the

DEIS as “being developed” or “would be developed,” and are not included in the document, making it difficult for EPA to assess whether the mitigation measures planned for the Project will be sufficient to reduce potentially significant impacts.

Recommendation:

EPA recommends that BLM include comprehensive mitigation plans in the FEIS for the special status species located in the Project area.

Response 3-D:

Mitigation plans for pale kangaroo mice, golden eagles, bats, and migratory birds were developed in coordination with NDOW and USFWS and included in the FEIS. Please refer to the Wildlife Mitigation and Monitoring Plan included in the FEIS.

Based on input from NDOW for the industrial pond permit; netting (i.e. porous screen) would not be required for the Crescent Dunes project’s evaporation ponds. This is a change in mitigation requirements from the DEIS (See section 5.0, Errata to the DEIS).

Comment 3-E: Climate Change

EPA commends the BLM for devoting a substantive section of the EIS to greenhouse gases (GHG), including detailed estimates of emissions from construction and operation of the Project. The EIS, however, does not include a discussion of the potential impacts of climate change on the Project. Considering the Project is planned to be in operation for 30, and possibly as many as 50 years, the EIS should include a description of how climate change may affect the Project, particularly groundwater resources.

Recommendation:

EPA recommends that BLM provide information detailing what impacts climate change may have on the Project, particularly sensitive species, its sources of groundwater, and reclamation and restoration efforts after construction and decommissioning.

Response 3-E:

According to EPA's Climate Change Web Page (EPA 2010): "Annual average precipitation decreases in most of the Mediterranean, northern Africa, northern Sahara, Central America, the American Southwest, the southern Andes, as well as southwestern Australia during winter."

As noted in the other responses to the EPA, this project is located in the Great Basin Desert ecoregion, not the "Southwest" Mojave ecoregion. However, this is the most definitive information the BLM has been able to find related to climate change and EPA's comment.

EPA's webpage further notes: "However, regional precipitation projections from climate models must be considered with caution since they demonstrate limited skill at small spatial scales."

The Crescent Dunes Solar Project is approximately a 1,600-acre project, which is an extremely small portion of the earth's surface compared to the earth's total surface. Evaluating the Crescent Dunes Solar Project in the context of EPA's qualifying statement above, any current climatological model's capability to address the project's overall contribution to climate change is limited.

It could be concluded that if precipitation in the project area were to decline (as noted above) in the next 53 years, then the recharge projected in the DEIS would be an overestimate of the recharge of the Lower Smoky Valley (i.e. recharge of the Lower Smoky Valley would take a longer period of time).

Conversely, should precipitation recharge of the Lower Smoky Valley remain near historic records, or actually increase, recharge would likely occur as predicted in the model; or sooner if precipitation recharge were to increase.

The EPA's Web Page further states: "It is important to recognize that projections of climate change in specific areas are not forecasts comparable to tomorrow's weather forecast. Rather, they are hypothetical examples of how the climate might change and usually contain a range of possibilities as opposed to one specific high likelihood outcome."

Based on this information, the Crescent Dunes Solar Project's contribution to climate change is speculative. Currently, no sufficient processes are in place (i.e. climate change models) to empirically assess future impacts to specific resources.

Comment 3-F: Cumulative Impacts

Another major concern identified by EPA in our NOI letter for this Project was the cumulative impact of multiple large-scale solar projects in the desert southwest, particularly potential impacts to water supplies, endangered species, and habitat. While BLM identified proposed projects in the cumulative effects study area (CESA), including a geothermal energy facility, two solar photovoltaic energy projects, a transmission line, and a mine, no description was provided of what the cumulative impacts may be from these and other reasonably foreseeable projects.

Recommendation:

EPA recommends that BLM provide additional information regarding the cumulative impacts associated with this and other large-scale renewable energy projects on various sensitive desert resources, including water supplies, special status species, and habitat.

Response 3-F

The Council on Environmental Quality (CEQ) has specific recommendations for completing cumulative analysis. The BLM policies further refines CEQ cumulative analysis. The BLM Tonopah Field Office believes they are in compliance with both BLM and CEQ cumulative analysis requirements.

Additionally, the Crescent Dunes Solar Project is located in the Great Basin Desert ecoregion. No other large-scale solar projects are located in this ecoregion.

Comment 4: Nevada Division of Water Resources, Water Resources

The proposed project resides in hydrographic basin 137A, Big Smokey Valley. There are approximately eight to ten currently held water rights on or near the described lands in this proposed project and include wells, lakes and vested rights.

Please be advised that wells and/or points of diverting water on these lands, whether new or existing, shall require prior approval from the Nevada Division of Water Resources. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise. Water wells must be permitted, Monitor wells require a Waiver from the State

Engineer's Office, all boreholes must be plugged within sixty (60) days after being drilled as required by NAC 534.4371.

Any water or monitor wells, or boreholes that may be located on either acquired or transferred lands are the ultimate responsibility of the owner of the property at the time of the transfer and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code. If artesian water is encountered in any well or borehole it shall be controlled as required in NRS § 534.060(3).

Any water used on the described project for construction, dust control, or maintenance should be provided by an established utility or under permit or waiver issued by the State Engineer's Office. If artesian water is located in any well or borehole it shall be controlled as required in NRS 534.060(3).

Response 4:

The stipulation for the grants will include obtaining all federal, state, and local permits (see Table 1-1 and Table 1-2 in DEIS).

Comment 5: Nevada Division of State Lands, Visual Resources

I've reviewed the DEIS for Crescent Dunes Solar and I cut and pasted the text below. I highlighted one section too.

COMMENT: I think you, as the BLM representative for the area, have a lot of leeway and authority to require these guys to be more proactive. It is no different than a city requiring landscaping in a shopping center parking lot, the developer knows it is a cost of doing business, but he sure as heck won't bother putting one bush in if the city doesn't stand up to them. Their wording, "would be shielded from public view to the extent possible" simply doesn't cut it in my mind, and I am not alone, especially in Tonopah, the Dark Sky Capital of the world. BLM should place a condition on these guys that corresponds to the attached RAC letter. These guys should be required to place shields on ALL of the lights except FAA safety lights. (Note: none of the bulleted items require FAA lights except for the tower, ALL of the other lights should have shields). If it is required up front, the lighting specs can easily accommodate the shields. I hope you can do this as it is an easy fix if done up front.

BLM (i.e. YOU) have the chance with this project to set the standard for future projects all over Nevada and the West, it can be a good precedent!

These developers will jump through any hoop that is rational and justified, and if required up front as a condition of approval. After the fact, we the people are out of luck.

Response 5

See Section 5, Errata to the DEIS for updated language.

Comment 6: Nevada Division of Transportation

At this time we do not have any comment on this project

Response 6:

Thank you for your comment. Comment noted.

Comment 7: Nevada Department of Wildlife, Agency Coordination

The Nevada Department of Wildlife welcomes commenting on review of the Draft EIS for the Crescent Dunes Solar Energy Project. Foremost, we concur with BLM's selection of its Preferred Alternative, i.e. Alternative II. This confers the least environmental impacts of the alternatives considered and would result in economies of project construction and operation. Early on in the planning process, NDOW was invited to participate in discussions and is serving as a cooperating agency regarding wildlife resource considerations. The majority of NDOW's inputs have been incorporated into the present Draft EIS which reflects important measures for avoiding and minimizing impacts to wildlife and the resources on which they depend. We look forward to continuing the positive working relationship with the BLM and Tonopah Solar LLC and its agents for effectively and reasonably resolving aspects of outstanding impacts to avian and terrestrial wildlife resources.

Response 7:

Thank you for your comment. BLM and TSE will continue to coordinate with NDOW on the project.

Comment 8: Nevada State Historic Preservation Office

The Nevada State Historic Preservation Office (SHPO) reviewed the subject document. The SHPO recommends that the word "salvage" found in the sections describing the effect of the undertaking on cultural resources should be replaced with the word "mitigate" or "mitigated" to be consistent with the existing regulations and its terminology. The SHPO reminds the Bureau of Land Management that a Memorandum of Agreement for the subject undertaking should be executed before a Record of Decision is signed for the project. If you have any questions concerning this correspondence, please feel free to contact me at (775) 684-3443 or by-mail at Rebecca.Palmer@nevadaculture.org.

Response 8:

The word salvage has been replaced with mitigate/mitigated. Please see Section 5, Errata to the DEIS.

The BLM has reviewed its obligations under Section 106 of the National Historic Preservation Act (NHPA), especially direction provided under 36 Code of Federal Regulations (CFR) 800 (particularly part 800.8 section 4). This section states that:

Approval of the undertaking. If the agency official has found, during the preparation of an EA or EIS that the effects of an undertaking on historic properties are adverse, the agency official shall develop measures in the EA, DEIS, or EIS to avoid, minimize, or mitigate such effects in accordance with paragraph (c)(1)(v) of this section. The agency official's responsibilities under section 106 and the procedures in this subpart shall then be satisfied when either:

- a binding commitment to such proposed measures is incorporated in
- (A) the ROD, if such measures were proposed in a DEIS or EIS (emphasis added); or
 - (B) an MOA drafted in compliance with § 800.6(c); or (ii) the Council has commented under § 800.7 and received the agency's response to such comments.

Specific Section 106 compliance under the BLM Nevada/State Historic Preservation Officer (SHPO) State Protocol were initiated early in the process of permitting the Crescent Dunes Solar Project; and has been ongoing since June 2009 (Page 3-52 of the DEIS).

The formal consultation process with the SHPO correctly identified (within regulatory constraints) all information and processes related to that Section 106 Consultation. During the Consultation Process, the need for a Historic Properties Treatment Plan (HPTP) was identified. This plan will require TSE to provide funding for the recordation and archiving of cultural resources located within Alternatives 1 and 2 of the proposed Crescent Dunes project. In addition, a Cultural Bond supporting the HPTP and a MOA are identified in the FEIS; and properly stipulated as a binding agreement in the proposed ROD (to be signed on or about December 20th, 2010 by the Secretary of Interior.)

This plan will require TSE to provide funding and bonding for the treatment of all National Register Eligible sites identified within the area of potential effect identified as Alternatives 1 & 2.

A binding commitment for the following measures is incorporated in the ROD and proposed in the DEIS.

1. Receipt of ACHP response to an invitation to comment on the project and agency response to any comments.
2. Letters to Native American tribes informing them of the plans for mitigation (ARPA Letter) and requesting comments within 30 days. Copies of the agency's responses to any comments received from Native American tribes.
3. SHPO concurrence for the HPTP.
4. Bonding to ensure that the HPTP is adequately completed in its entirety.
5. MOA between SHPO and BLM with concurring partner signatures.

In addition, a Cultural Bond supporting the HPTP and a Memorandum of Agreement (MOA) are all identified in the FEIS; and properly stipulated as a binding agreement in the proposed ROD (to be signed on or about December 20th, 2010 by the Secretary of Interior.)

Comment 9: L.J. Ramirez, General Support

Tonopah needs this project and I support it.

This project could be the spark that ignites other projects in the area. Sort of put us on the map. JOBS, JOBS, JOBS.

Response 9:

Thank you for your comment. Comment noted.

Comment 10: Jean Public, Land Use

7680 acres of public land used by a profiteer - not a good idea. we need to save some natural land. let the solar facility go on a landfill or some other used site. let this profiteer buy private land instead of trying to weasel so he becomes a public charge on the taxpayers back. Let this be a private endeavor. the only land we should let go at lease rates is old landfills. not virgin land that needs to be saved for natural. They are NOT MAKING NEW LAND IN AMERICA. WE CANT LET PROFITEERS COME IN AND RUIN. WE HAVE TO RE USE. IBET IF THEY HAVE TO BUY PRIVATE LAND, THE ACRES REQUIRED WILL GO DOWN BY TWO THOUSAND PERCENT. THIS PROFITEER IS LOOKING TO TAKE ADVANTAGE OF TAXPAYERS. THIS TAKING AND SITING IS NOT NECESSARY HERE. DONT TAKE OPEN NATURAL SPACE. SOLAR CAN BE PUT ON ROOFS OF HOMES. YO UDONT NEED TO CREATE A HEAT ISLAND. YOU DONT NEED TO TAKE ALL THE WATER-THAT IS ALSO A DETRIMENT. THIS IS NOT THE BEST USE OF SOLAR POWER. THIS IS OPEN SPACE AND NEEDS PRESERVATION FOR ITSELF. THIS IS A TRULY PERVERTED OPPORTUNISTIC APPLICATION. THIS APPLICATION MEANS THE ANNIHILATION OF THE FOLLOWING INT HIS AREA: BIO RESOURCES, WATER RESOURCES, GEOLOGICAL RESOURCES, OPEN SPACE RESOURCES, PALEO RESOURCES, VISUAL RESOURCES, WILDERNESS RESOURCES PLUS OTHER IMPACTS. DENY THIS APPLICATION. JEAN PUBLIC 1 ELM ST FLORHAM PARK NJ07932

Response 10:

Thank you for your comments. Comments noted. The BLM feels that these issues have been addressed in the DEIS. Please refer to the DEIS for details.

Comment 11: Brendan Hughes, General Opposition

I would like to express my opposition to the Crescent Dunes Solar project. This project will have unnecessary impacts on water, wildlife, habitat, and recreation. FLPMA charged BLM with preventing undue degradation to the public lands when alternatives exist. It is obvious that alternatives in the form of energy conservation, efficiency, and rooftop solar exist and

should be implemented before we sacrifice large swaths of our public lands. It may not be BLM's duty to identify specific project alternatives, but it is BLM's duty to protect the public lands. If BLM approves this project it will have failed in one of the main objectives of its organic act, FLPMA. The proof that this project should not go forward is in the data contained within the DEIS, as it has been with every other project located on public land. This project will harm sensitive or T&E species and destroy habitat. It is up to BLM to be a reasoned, scientific arbiter and reject these destructive proposals.

Response 11:

Thank you for your comments. Comments noted. The purpose of the DEIS is to assess impacts to each resource area. The BLM feels it has adequately addressed impacts to each resource of the proposal and alternatives.

Comment 12: Basin and Range Watch

Comment 12-A: Land Use

The preferred project site contains up to 1,600 acres of undeveloped land. The Right of Way is substantially larger. Will it expand?

Response 12-A:

The project is not planned for expansion. The right-of way was sized to accommodate flexibility to potentially avoid impacts to various resources.

Comment 12-B: Purpose and Need

All alternatives are now defined by a Need reflecting the recent Secretarial Order 3283: Enhancing Renewable Energy Development on Public Lands. The goals of Section 4 in Secretarial Order 3283 clearly state a need for environmental responsibility: “the permitting of environmentally responsible wind, solar, biomass, and geothermal operations and electrical transmission facilities on the public lands;

Response 12-B:

The BLM’s purpose and need remains as written. Addressing the need to meet Nevada renewable portfolio standards is mentioned in the proponent’s purpose and need statement.

Comment 12-C: Alternatives

Following the guidelines of the National Environmental Policy Act, the final EIS should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

Response 12-C:

Comment noted. The BLM's Crescent Dunes Solar Energy project Draft EIS correctly followed the guidelines established by CEQ quality as noted in the comment.

Comment 12-D: Alternatives

Included in the guidelines of the National Environmental Policy Act are requirements to "Include reasonable alternatives not within the jurisdiction of the lead agency.

Distributed generation in the built environment should be given much more full analysis, as it is a completely viable alternative. Crescent Dunes will need just as much dispatchable baseload behind it, and also does not have storage. But environmental costs are negligible with distributed generation, compared with the Silver State project. Distributed generation cannot be "done overnight," but neither can large transmission lines across hundreds of miles from remote central station plants to load centers. Most importantly, distributed generation will not reduce the natural carbon-storing ability of healthy desert ecosystems, will not disturb biological soil crusts, and will not degrade and fragment habitats of protected, sensitive, and rare species. Alternatives should be looked at that are in load centers, not closest to the project site. There is a need to consider the "macro" picture, the entire state, to look at maximum efficiency.

A Master comprehensive plan should exist before large expensive inefficient solar plants are sited and built out in the wildlands. This plan should carefully analyze the recreational and biodiversity resources of the Nevada desert. A list of assumptions should be included detailing the plan for integrating various fuels mixes and technologies into each utility's plan, an overall state plan, and a national plan. Loads should be carefully analyzed to determine whether additional capacity is needed for peaking, intermediate, or baseload purposes. Unit size, which impacts capital and operating costs and unit capacity factors, has a direct bearing on the relative economics of one technology over another. A plan might recommend that smaller units built in cities and spaced in time offer a less risky solution than one large unit built immediately.

Right now there is no utility plan, no state plan, and no national plan. Large-scale central station solar plants have been sited very far from load centers out in remote deserts, with the only criterion being nearness to existing transmission lines and natural gas lines. Very little thought has been given to the richness of biological resources, the cumulative impacts on visual scenery to tourists, the proximity to ratepayers, or the level of disturbance of the site.

The California Energy Commission says there will be a need to build many new efficient natural gas peaker or baseload plants to back up the renewables planned, and this will undoubtedly be the case in Nevada as well. Instead, the renewables should be distributed generation in load centers, which will provide much more efficiency, rather than inefficient remote central station plants that reduce biodiversity and require expensive transmission lines. This reduces the risk, as distributed generation is a known technology and has been proven in countries like Germany where incentive programs have been tested. Incentive programs can be designed in an intelligent manner to vastly increase distributed generation. Incentives for large remote projects like Crescent Dunes are unproven to lower risk and may actually raise debt levels with runaway costs associated with poor siting and higher-than-anticipated operating and maintenance costs.

Many renewable project developers have failed to consider reasonable or viable alternatives that could serve as solutions that everybody could live with. In the case of this particular project, conflicts with endangered species, cultural resources, storm water drainage erosion, views from National Parks and wilderness areas could all be avoided with a distributed generation alternative. Thin film photovoltaic can be sited on developed areas using rooftops, parking lots and other urban vacant lots.

Response 12-D:

Distributed generation, also known as “on-site” generation would be a national policy determination, well beyond the scope of this DEIS. CEQ guidelines require federal agencies to analyze “reasonable” alternatives. While you correctly identify “...not within the jurisdiction of the lead agency”, the latest census places current “households” in the U.S. in excess of 113 million. Such an analysis as proposed by B&RW would not only be a comprehensive change in national power supply strategy.

CEQ’s 40 Most Asked Questions (specifically answer 1b) states: “When there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS.”

In addition, CEQ defines “reasonable as .. includes those that are practical or feasible from the technical and economic standpoint.” The BLM maintains that B&RW proposed alternative does not meet the “reasonable” criteria for the current DEIS.

Comment 12-E: Alternatives

The FEIS should provide two additional alternatives away from the preferred alternative.

Response 12-E:

Three alternatives were proposed and fully analyzed in the DEIS (i.e. Proposed Action , Alternative 1 and Alternative 2). The DEIS also include two sites (i.e. alternative locations) previously identified by TSE. These sites were eliminated for further analysis based on the criteria cited in Section 2.6.2.1 of the DEIS.

Comment 12-F: Alternative

Our preferred alternative would be to deny the Right of Way to the applicant and designate the region unsuitable for renewable energy development.

Response 12-F:

The BLM has identified its preferred alternative as the Alternative 2 site; along with reasons supporting its rationale for the decision. See Section 2.8 of the DEIS for the BLM's supporting rationale for selection of its preferred alternative.

Comment 12-G: Air Quality

Greenhouse gases: The DEIS has indicated a need for transmission line upgrades and new transmission facilities. The green house gas called SF6 is used primarily in electricity transmission - and is emitted in especially large amounts in construction of new lines – and is 24,000 times as potent as CO2 in its global warming impacts. The Environmental Protection Agency has declared “that the electric power industry uses roughly 80% of all SF6 produced worldwide“. Ideally, none of this gas would be emitted into the atmosphere. In reality significant leaks occur from aging equipment, and gas losses occur during equipment maintenance and servicing. With a global warming potential 23,900 times greater than CO2 and an atmospheric life of 3,200, one pound of SF6 has the same global warming impact of 11 tons of CO2. In 2002, U.S. SF6 emissions from the electric power industry were estimated to be 14.9 Tg CO2 Eq. ...<http://www.epa.gov/electricpower-sf6/basic.html> Please provide a more detailed analysis of the amount of SF6 gases that would be released by this project.

Response 12-G:

No leakage of SF6 is projected as TSE is obligated to follow both Federal and State guidelines for its use; which includes recycling of SF6.

Comment 12-H: Air Quality

Scientific studies have revealed that desert ecosystems and minerals have the ability to store CO2 gases. Have Desert Researchers Discovered a Hidden Loop in the Carbon Cycle? Richard Stone: Science 13 June 2008: Vol. 320. no. 5882, pp. 1409 - 1410 DOI:10.1126/science.320.5882.1409

How much CO₂ storage capability would be replaced by development? If the goal is indeed to reduce greenhouse gases, is it wise to remove this much carbon storing living crust? Please provide a detailed analysis on the amount of GHG that would otherwise be offset by an intact arid ecosystem.

Response 12-H

According to current literature, the function of deserts storing CO₂, remains inconclusive to researches at this time (Stone 2008). This indicates that more research is required before the conclusions B&RW state or imply are proven as fact. BLM cannot include a speculative analysis in the NEPA process.

Comment 12-I: Biological Resources

Development of this project will result in the loss of 1,600 acres of habitat for the following species:

Pronghorn

Mule Deer

Elk

Response 12-I:

Elk and mule deer do not normally occur within the proposed project area except perhaps while migrating between mountain ranges. It is unlikely this project would impede migration through the Lower Smoky Valley because the project area is very small compared to the surrounding land available for migration activities. For impacts to Wildlife (i.e. pronghorn) see section 4.2.2 in the DEIS.

Comment 12-J: Biological Resources

Bighorn Sheep: Bighorn biologists Dr. John Wehausen and Dr. Vern Bleich have concluded that radio telemetry studies of bighorn sheep in various southwestern deserts, including the Mojave Desert of California, have found considerable movement of these sheep between mountain ranges.... Consequently, intermountain areas of the desert floor that bighorn traverse between mountain ranges can be as important to the long-term viability of populations as are the mountain ranges themselves.

Alluvial fans near steep rocky terrain can provide crucial foraging habitat for big horn sheep (Wehausen 2009)

For example, ewes at the end of gestation that need nutrients may come down from steep, rocky terrain looking for higher quality forage. They might use areas like the project site for only three weeks, but those three weeks are critical. The Ivanpah Valley might also provide important movement corridors for deer and bighorn sheep. The California Department of Fish and Game has noted that wildlife corridors are present through and adjacent to the Silver State Site and Ivanpah Solar Electric Generating System Site, and have expressed concern that the ISEGS project could adversely affect bighorn sheep. Due to ISEGS close proximity to the Silver State site.

“Radio telemetry studies of bighorn sheep in various southwestern deserts, including the Mojave Desert of California, have found considerable movement of these sheep between mountain ranges (Bleich et al., 1990b). This is especially true of males, but also of ewes

(Bleich et al., 1996). Within individual mountain ranges, populations often are small (Table 1). Levels of inbreeding could be high in such populations, but intermountain movements provide a genetic connection with a larger metapopulation, and this will counteract potential inbreeding problems (Schwartz et al., 1986; Bleich et al., 1990b). Intermountain movements also are the source of colonization of vacant habitat, which is fundamental to metapopulation dynamics and persistence. Colonization by ewes is the slow link in this process, but has recently been documented in two Mojave Desert ranges in California (Bleich et al., 1996; Torres et al., 1996). Consequently, intermountain areas of the desert floor that bighorn traverse between mountain ranges are as important to the long term viability of populations as are the mountain ranges themselves (Schwartz et al., 1986; Bleich et al., 1990b, 1996).”

What if any measures would be provided to mitigate the loss of this habitat? Would land be purchased?

Response 12-J

There is some documented use by big horn sheep in the San Antonio Mountain Range east of the project. It is possible that individual males may periodically move between the San Antonio Range and the Monte Cristo Range to the west; or vice versa. It is unlikely that this small 1,600-acre project would impede movement of bighorn sheep between these mountain ranges since the project would only occupy a small part of Lower Smoky Valley.

Comment 12-K: Special Status Wildlife Species

Special Status Wildlife Species: How much foraging habitat would be lost for bald and golden eagles? Would this result in any Take under the Bald and Golden eagle Protection Act? Raptors potentially resident or migratory on the site that could be adversely impacted by towers:

- American kestrel
- Prairie falcon
- Peregrine falcon
- Northern harrier
- Swainson's hawk
- Ferruginous hawk
- Rough-legged hawk
- Osprey
- Bald eagle
- Golden eagle
- Sharp-shinned hawk
- Northern goshawk

Response 12-K:

The BLM does not consult with the USFWS on Take Permits. TSE will apply for a Take Permit from the USFWS. Currently, an Avian and Bat Protection Plan has been developed and is being reviewed by the USFWS.

A notice to proceed for construction will not be given by the BLM to TSE until that time the BLM has a letter of concurrence from the USFWS stating the ABPP supplied by TSE is adequate.

Comment 12-L: Migratory Birds, Insects, and Polarized Light Pollution

The heliostat mirror towers will assume the appearance of water from a distance.

The Nature Conservancy has just released their Mojave Desert Ecoregional Assessment. In the assessment, they discuss the impacts of polarized light pollution on birds and insects:

“Light and noise pollution associated with electrical power plants can be problematic for wildlife. Polarized light pollution can attract aquatic insects and other species that mistake the panels for bodies of water, potentially leading to population decline or even local extinction of some organisms (Horvath et al. 2010). Nighttime lighting for security or other reasons may negatively impact a variety of Mojave Desert species, many of which have developed nocturnal behavior to escape the daytime heat of the desert. (Mojave Desert Ecoregional Assessment September 2010, The Nature Conservancy of California 201 Mission Street, 4th Floor San Francisco, CA 94105) p. 50”

Response 12-L”

The BLM concurs with these concerns. The mitigation and monitoring plans provide for progressive responses to any change in impacts to migratory birds or other wildlife as a result of evaporation pond or other project-related operations. The final mitigation plans have been provided in the FEIS (See Appendix E—BLM Wildlife Mitigation and Monitoring Plan).

Comment 12-M: Biological Resources

Evaporation Ponds: Saline evaporation ponds will attract birds, bats and insects and be toxic. How will mortality from pollutants be mitigated?

Response 12-M:

The BLM concurs with these concerns. The mitigation and monitoring plans do provide for progressive responses to any change in impacts to migratory birds or other wildlife as a result of evaporation pond or other project-related operations. In addition, a NDOW Industrial Pond Permit will be required for TSE to operate the evaporation ponds. Permit conditions will include appropriate measures to protect wildlife.

The selected alternative (Alternative 2 in the DEIS) does not contribute to any direct, indirect, or cumulative impacts to the Crescent Dunes (i.e. sensitive beetle habitat); therefore, the BLM has determined that mitigation for sensitive invertebrates is not warranted.

Comment 12-N: Biological Resources

Pale Kangaroo Mice: Approval of this project will result in the loss of habitat and impede connectivity for this species. How will this be mitigated?

Response 12-N:

BLM feels it has minimized impacts to this species by selecting Alternative 2. The final mitigation plans have been provided in the FEIS (See Appendix E—BLM Wildlife Mitigation and Monitoring Plan).

Comment 12-O:

Endemic Dune Beetle: Direct loss of 1,600 acres will occur for *Aegelia crescentia* a diurnal, flightless dune beetle. How will this loss be mitigated?

Response 12-O:

Alternative 2, the BLM's preferred alternative is located approximately 1 mile from the Crescent Dunes and will not directly impinge upon the dunes or the beetle.

Also see response 12-M.

Comment 12-P: Special Status Plant Species

Special Status Plant Species: Over 1,600 acres will be lost for rare plants such as Sand Cholla and Nevada oryctes.

There are no mitigation measures outlined for avoidance of rare plants or enhancement of habitat for these plants..

Mitigation measures for several California renewable energy projects with a similar sized destructive footprint outline plans to form a "halo" of construction avoidance around rare plant species that have been located on the site.

Response 12-P:

Because Nevada oryctes is an annual plant, individual plants cannot be relocated; therefore, no mitigation is proposed. Cacti will be relocated in accordance with Nevada Administrative Code 527.250 under a Nevada Division of Forestry Permit.

Comment 12-Q: Alternatives

Again, our preferred alternative would be to deny the Right of Way to the applicant and designate the region unsuitable for renewable energy development.

Response 12-Q:

Thank you for your comment. Comment noted.

Comment 13: Ann McGaw, General Support

I am very supportive of the project. Nye County needs jobs and we need the taxes.

The location is ideal. I have never heard of the Crescent Dunes Special Resource Management Area and I have lived here 18 year.

I do have one concern and that is the fact that our power bill will increase because the power generated by the solar energy plant is more expensive than what we receive now. So this cost will be passed on to us.

But as will all ‘green’ energy produces, we have to weigh the pros and cons, and are we willing to pay for ‘green.’

Response 13:

Thank you for your comment. Comment noted. The purpose of the DEIS is to assess environmental impacts to resources. Electricity rates are established and maintained by the Public Utilities Commission of Nevada.

Comment 14: Danny Costella, General Support

I believe this is an excellent project that will benefit the area economically. The construction jobs alone and influx of workers over the next 3 years will be a boom to the local economy not to mention the 50 or so permanent jobs that will also contribute.

The use of apprentice during construction will aid in training a future workforce for our state. Hopefully the developer will use Nevada workers to build this project and include fair wages and benefits. I also believe this is a well engineered, quality project that will benefit the area for years to come.

Judging by the presentation I feel this will have little or no environmental impact. Build it!

Response 14:

Thank you for your comment. Comment noted.

Comment 15: Duane Kramer, General Support

This project will be a very important to the local economy as well as the job market as well as the future of renewable energies, it should be very exciting to participate in this venture, I can hardly wait to get started.

Response 15:

Thank you for your comment. Comment noted.

Comment 16: Bill Primeau, General Support

This project will be of economic benefit for Nye County. The construction work force will help ease the Nevada unemployment problem. The renewable energy benefits go without mention. I am most definitely in favor of this project.

Response 16:

Thank you for your comment. Comment noted.

Comment 17: Keith Ingram, General Support

I am in favor of this project.

Response 17:

Thank you for your comment. Comment noted

Comment 18: David Rios, General Support

I am in support of this project. I am an avid outdoor enthusiast.

Response 18:

Thank you for your comment. Comment noted

Comment 19: Paul Davies, General Support

I think that the proposed #2 alternative would be a good idea for this project. This is a needed action to the community for green energy and jobs for the area.

Response 19:

Thank you for your comment. Comment noted

Comment 20: Dennis McGaw, Alternatives

I think they should move the project a couple of miles west to Esmeralda County. They need the tax revenue more than Nye County. That way both Nye and Esmeralda County benefits overall. The project will provide more money than the occasional money spent by people coming here to stargaze. The only real problem is the true cost of producing the power which is approx. \$.13 per kw compared to approx. \$.08 per kw of coal, gas, oil, fired power plants. As stated this actually increases the cost for power so as a rate payer and tax payer it decreases the amount of money that I can spend on other items.

Response 20

Thank you for your comment. Comment noted. The purpose of the DEIS is to assess environmental impacts to resources. Electricity rates are established and maintained by the Public Utilities Commission of Nevada.

Comment 21: Red Rock Audubon Society

Comment 21-A: Water Resources and Land Use

Thank you for the opportunity to comment on the Crescent Dunes Solar Energy Project draft EIS. While we support the concept of moving toward renewable energy and away from fossil fuels for electric power generation we have some concerns about how utility scale renewable energy projects in the desert southwest are implemented. It doesn't make sense to destroy the very environment we're trying to save by reducing generation of greenhouse gases.

This project will permanently alter some 1700 acres of marginal habitat and use some 600 acre-feet/year of groundwater. There will, in addition, be impacts to migratory birds. According to the draft EIS a mitigation plan is being developed, but is not yet available. It is not possible for the public to provide meaningful comments on a plan which does not yet exist. The wildlife impact mitigation plans need to be provided to the decision makers and the general public as part of this draft EIS, not provided as a fait accompli in the final EIS. In addition to a mitigation plan a monitoring plan needs to be developed so that we can know how many birds are killed or injured by the heliostat field and the tower. Much bird migration takes place at night and collisions with towers are well known to be a significant source of mortality for migrating birds or many species. We have very little experience with large tower energy collectors of the size proposed here with relation to effects on raptors. The thermal uplift above and around the tower will be substantial and as such attractive to large soaring birds. However, the air temperature in the immediate vicinity of the tower may potentially be lethal. This subject deserves a comprehensive monitoring plan.

Response 21-A

The BLM concurs with these concerns. The mitigation and monitoring plans do provide for progressive responses to any change in impacts to migratory birds or other wildlife as a result of evaporation pond or other project-related operations.

Comment 21-B: Water Resources

The 600 acre-feet/year of water that will be used is approximately 10% of the estimated perennial yield of the hydrographic basin. Unfortunately, the groundwater basin in which this project is located is already greatly over allocated, although actual pumping at this time is considerably less. Given the very long-term nature of this proposed project and the large financial investment involved we can be confident that pumping will occur at the maximum permitted level for the life of the project (unlike mining projects which are temporary or intermittent). Hence, now is the time to start getting control of groundwater utilization in this groundwater basin. It is essential that mitigation include purchase and retirement of groundwater rights in an amount that is at least equal to the proposed usage of this project.

The draft EIS discusses reclamation of temporarily disturbed areas when the construction phase is finished and reclamation and restoration of the entire site at the end of the ROW permit period. Since little is known about how to restore areas of degraded and disturbed soil in that area reclamation efforts need to be result based rather than effort based, since successful restoration of the native plant community on the first try is unlikely.

Response 21-B

Dry, wet, and hybrid cooling were evaluated by Tonopah Solar Energy during project development and prior to submitting a BLM application. Due to the decrease in efficiency, and thereby a higher power cost, the fully dry cooled technology was not carried forward in the analysis (Section 2.6.2.1 Alternative Cooling Technology).

The BLM determined that the project water use would not cause undue or unnecessary degradation; the project is in compliance with approvals from the Nevada Department of Water Resources and does not affect the overall water balance of the Lower Smoky Valley hydrographic basin.

Comment 21-C: Decommissioning and Reclamation

The draft EIS discusses reclamation of temporarily disturbed areas when the construction phase is finished and reclamation and restoration of the entire site at the end of the ROW permit period. Since little is known about how to restore areas of degraded and disturbed soil in that area reclamation efforts need to be result based rather than effort based, since successful restoration of the native plant community on the first try is unlikely.

Response 21-C

Reclamation efforts are described in the DEIS (Section 2.5.11) and the POD. Additionally, TSE has prepared a decommissioning and reclamation plan (See Appendix D—Conceptual Decommissioning and Reclamation Plan in FEIS).

Comment 21-D: Social and Economics

The section on socioeconomic impacts notes that due to the depressed housing market in Tonopah that there is quite a bit of unoccupied housing available for construction workers. The impacts to schools, however, are dismissed with the statement that: “The Nye County School District has an established schooling program, which would accommodate the relocating families”(p.4-86). Given the dire state of K-12 school funding in Nevada it is not reasonable to assume that the Nye County School District will be able to just absorb a significant number of additional students. The developer of this project should be required to provide the Nye County School District with the additional funds necessary to provide for an influx of construction related school children. The students will arrive and need to be educated long before Nye County derives any tax benefit from this project. The same is true for other county services such as police, fire and medical personnel.

Response 21-D

TSE will execute a Development Agreement with the Town of Tonopah and Nye County to address impacts to public facilities.

As stated in the DEIS, TSE would provide on-site fire protection and HAZMAT response.

Comment 22: The Wilderness Society, Nevada Wilderness Project, and Toiyabe Chapter Sierra Club

Comment 22-A: Alternatives

Note that the BLM’s Preferred Alternative in the DEIS is not the Proposed Action, but rather Alternative 2 (p. 2-71). It is our understanding based on personal communication with TSE that Alternative 2 is also TSE’s Preferred Alternative. We agree that Alternative 2 has the

least resource impacts. We support Alternative 2 as the Preferred Alternative, and these comments are focused on Alternative 2.

Recommendation: The BLM should carry forward Alternative 2 as the Preferred Alternative.

Response 22-A

Thank you for your comment. Comment noted.

Comment 22-B: Air Quality

The CDSEP offers the potential to reduce greenhouse gas (GHG) emissions related to electricity production during its 30 year lifetime by avoiding electricity production and associated greenhouse gas emissions at highly polluting fossil fuel plants. The CDSEP is expected to produce approximately 485,000 megawatt hours (MWh) of no-emissions electricity annually, (p. 1-72) enough to power over 40,000 homes.

The State of Nevada has passed a RPS rule requiring that the investor-owned utilities generate 25 percent of their electricity from renewable resources by the year 2025 (p. 1-7). The CDSEP could help the utilities reach the RPS goals.

The CDSEP would provide the opportunity for local economic benefits including creation of jobs and the addition of personal income to the State of Nevada. The DEIS states that during construction, “through direct, indirect and induced impacts during the peak of construction, approximately 1,500 jobs would be created, \$140 million of personal income would be added to the State of Nevada annually, and \$160 million would be added to the gross state product annually.” (p. 4-87) During operations and maintenance, the DEIS states that “through direct, indirect and induced impacts during operations and maintenance of the facility, approximately 200 jobs would be created, \$30 million of personal income would be added to the State of Nevada annually, and \$22.7 million would be added to the gross state product annually.” (p. 4-87)

Response 22-B

Thank you for your comment. Comment noted.

Comment 22-C: General Support

Tonopah Solar Energy seems to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited conflicts with biological and other resources. Further, the site does not contain any officially designated sensitive and protected areas such as Areas of Critical Environmental Concern, nor has been it been proposed by citizens for designation as wilderness or other conservation status. The efforts of TSE to identify a good site should be generally commended.

Response 22-C

Thank you for your comment. Comment noted.

Comment 22-D: Biological Resources

There are natural resources that will be impacted by construction of a utility-scale solar plant on the site, as would be expected for industrial development on any intact 1,628-acre parcel of desert. Chapters 3 and 4 of the DEIS detail potential impacts from CDSEP in detail, and additional potential impacts are listed below. We include this summary to help illustrate the scope of potential impacts and highlight the importance of incorporation of robust mitigation measures, described further in Section V of these comments. Impacts identified in the DEIS – impacts to plant and wildlife species from the CDSEP could include loss of habitat and/or direct mortality to:

- Game species, including pronghorn, mule deer, bighorn sheep and elk (p. 3-21, 4-11).
- Special Status Animal Species, specifically the Crescent Dunes aegialian scarab Crescent Dunes aphodius scarab and Crescent Dunes serician scarab (p. 2-48, 3-33).
- Special Status Plant Species, specifically sand cholla and Nevada oryctes (p. 3-23, 4-15).
- Special Status Wildlife Species, including golden eagles, migratory birds, pale kangaroo mice and potentially several species of bats (p. 3-30, 4-23).

Impacts not identified in the DEIS – impacts from CDSEP could also include impacts to cultural resources:

- Direct effects would include surface and subsurface disturbances to four existing properties recommended eligible for listing on the National Register of Historic Places (eligible sites) caused by construction activities. (p. 4-65)
- Indirect effects: numerous eligible sites have been identified outside the Preferred Alternative, and indirect effects to these sites could be significant. Despite the importance of these potential effects, they have not been analyzed by the BLM in the DEIS. Possible effects to eligible sites outside the Preferred Alternative could include surface and subsurface disturbances from vehicle traffic, increased visitation and possible illicit artifact collection.

Recommendation: Given the significant natural and cultural resources that would be impacted by CDSEP, the BLM should require robust mitigation measures that are directly related to the expected impacts, and define how the efficacy of those mitigation measures will be evaluated. Section V of these comments includes additional recommendations on this issue, including recommendations to address potential indirect effects to cultural resources, including eligible sites.

Response 22-D

The final mitigation plans have been provided in the FEIS (See Appendices D,E, and F). Further response to cultural resources is given in comment 22-I.

Comment 22-E: Biological Resources

In order to evaluate the CDSEP, the public needs to know the potential impacts of CDSEP, the mitigation measures that the BLM will require TSE to employ, and how those measures will be monitored and evaluated for effectiveness and modified as necessary under a robust adaptive management plan.

Unfortunately, many of the mitigation measures and plans mentioned in the DEIS lack important details or are not present at all. The DEIS does include some good details in several areas, including raptor deterrent mechanisms (p. 2-48), compaction of soils (p. 2-51), and dark skies (p. 2-53). However, numerous other plans are missing altogether. For example, the DEIS mentions a mitigation plan for the Nevada State Protected Species pale kangaroo mouse and lists a few elements that the plan will contain, but does not provide the plan for review: “A mitigation plan is being developed between TSE, BLM, and NDOW.” Plans mentioned in the DEIS but not included for public review and comment include:

- Special Status Wildlife Species – pale kangaroo mice and bats (p. 2-48)
- Weed Management Plan (p. 2-47)
- Golden eagle monitoring plan (p. 2-48)
- Spill Prevention Control and Countermeasure plan (2-49)
- Stormwater Pollution Prevention Plan (p. 2-49) and
- Hazardous Materials Management Plan (p. 2-55).

The DEIS also does not explain how the mitigation measures and plans described in the document would be translated into terms and conditions in the Record of Decision (ROD) and incorporated in the ROW grant, or how TSE and the public will receive confirmation that the requirements have been met.

The comments in this section are intended to clarify our understanding of the mitigation measures included in the DEIS and recommend specific ways in which the BLM should improve its treatment of mitigation in the mitigation plans and the Final Environmental Impact Statement (FEIS). The best way to address this issue would be to publish a supplement to the DEIS that clarifies and improves the discussion and incorporation of mitigation measures and includes the specific mitigation plans. At the very least, the BLM should publish this additional information and the actual mitigation plans on the BLM project website as soon as they are finalized and provide an opportunity for public comment.⁴ This additional information and the mitigation plans and/or DEIS supplement should be published prior to publication of the FEIS, and should also be incorporated into the FEIS.

Recommendations: As detailed above, the BLM should provide additional information on mitigation, as well as the actual mitigation plans for public review and comment. The plans should include details on what, where, when, and how mitigation measures will be carried out, how they relate to the likely impacts of the project, how results will be monitored, and

how adaptive management will be carried out based on the monitoring. The BLM should also specify how the mitigation measures will be translated into terms and conditions in the ROD.

As an example, we would direct the BLM to the Jack Morrow Hills Coordinated Activity Plan, prepared by the BLM in Rock Springs (Wyoming), which includes a highly detailed section (Appendix 17: "Implementation, Monitoring, and Evaluation Process" – attached for your reference (Attachment A)) that provides the specificity needed to evaluate the effectiveness of planned mitigation measures by setting out specific indicators, measurements and actions to be taken if these measures are not effective. We particularly note the following sections, as examples of the sort of detail that should be contained in the environmental analysis for SSEP:

- Table A17-1 Resource Management Indicators - p. 8
- Table A17-2 Indicator Detail - p. 9-11
- Table A17-3 Measurement Detail - p. 12-14
- Figure A17-3 CAP Management Process - p. 16 and
- Discussion of the JMH CAP - p. 20-21.

Response 22-E:

The BLM-approved mitigation plans are included in Appendix D, E, F, and G in the FEIS.

Grant stipulations require that all other federal, state, and local permits are obtained as part of approval process. Refer to section 1.6 – Authorizing Actions and Permits in the DEIS.

Comment 22-F: Mitigation

The BLM should ensure that a robust adaptive management program is included in the FEIS and carried forward in the ROD. This is particularly important for measures for potentially serious impacts, such as mitigating impacts to wildlife from evaporation ponds. For example, if the BLM chooses to modify the mitigation plan for evaporation ponds and employ hazing or misting instead of the more aggressive and expensive netting, the BLM should carry forward a robust monitoring program, set clear thresholds for unacceptable levels of impacts, and specify additional mitigation measures required if thresholds are exceeded.

Recommendation: The BLM should include a robust adaptive management plan in the FEIS.

Response 22-F

See response to 22-E

Comment 22-G: Mitigation

Utility-scale solar development has significant impacts on project sites, and off-site mitigation is one tool that should be used to offset impacts from converting intact, multiple-use lands to single-use, industrial energy production. TSE and the BLM should commit to further discussions with interested stakeholders to develop additional ideas for off-site

mitigation, and the BLM should commit to further consideration and analysis of potential off-site mitigation measures.

We direct the BLM's attention to Instruction Memorandum (IM) 2008-204, which describes the broad type of actions that may be taken to address both direct impacts of a project and greater cumulative effects that development is having on a landscape. IM 2008-204 identifies and elaborates on the types of off-site mitigation that can be used. For example:

- Offsite mitigation may include, as appropriate:
 - In-kind: Replacement, substitution or permanent protection of resources that are of the same type and kind as those being impacted.
 - Example: For every acre of new, long-term surface disturbance in important pale kangaroo mouse habitat in Area (A), (X) acres of suitable, in-use habitat in Area (B) will be administratively protected with permanent mineral withdrawal and no off-road/route vehicular activities with the specific purpose of protecting pale kangaroo mouse habitat.
 - Out-of-kind: Replacement or substitute resources that, while related, are of equal or greater overall value to public lands.
 - Example: For every acre of new, long-term surface disturbance in important pale kangaroo mouse habitat in Area (A), the project proponent agrees to bury (Y) miles of existing power lines and remove the power poles used as hunting perches by raptors in Area (B).
 - In-lieu-fee: Payment of funds to the BLM or a natural resource management agency, foundation, or other appropriate organization for performance of mitigation that addresses impacts of a project.
 - Example: The applicant may make payment to the BLM or a conservation group based on the amount of acres that will be disturbed in exchange for commitment from the recipient to apply the funds toward local, specified pale kangaroo mouse habitat protection/restoration projects.

In the context of solar development, there may be additional conservation priorities that can be pursued to mitigate the impacts of individual projects and the BLM could hold discussions with interested stakeholders to identify these potential targets for off-site mitigation efforts or funding. Regarding CDSEP, we are not comfortable with decisions regarding mitigation being made in closed negotiations, especially in light of the presence of poorly understood, but incredibly localized species (i.e., scarabs that have very high conservation importance but little scientific information). Although the preferred alternative does not directly impact the dune habitats where scarabs are believed to be localized, there is not enough known about the ecology and life history of these species to definitively rule out impacts that might arise from possibilities not discussed, e.g., shading from the tower on the dune habitats. (It is known that

larval stages of invertebrates are particularly sensitive to variation in their thermal environment. Nothing is known about the larval requirements of these species and potential impacts from additional shade that change the thermal environment.)

Recommendation: Tonopah Solar Energy should commit to further discussions with interested stakeholders to develop additional ideas for off-site mitigation, and the BLM should commit to further consideration and analysis of potential off-site mitigation measures. A mitigation team should be assembled that would include expertise on the poorly understood invertebrate species in the area.

Response 22-G

See response 22-E

The selected alternative (Alternative 2 in the DEIS) does not contribute to any direct, indirect, or cumulative impacts to the Crescent Dunes (i.e. sensitive beetle habitat); therefore, the BLM has determined that off-site mitigation for sensitive invertebrates is not warranted.

Comment 22-H: Biological Resources

The BLM should provide additional details on the methods used for field surveys. Some good detail is included regarding the area of analysis and methodology for special status plant species surveys, including dates of surveys, and specifics on methods for pedestrian surveys. However, additional information is necessary in several areas. The BLM should specify how many traps were used per trap line for kangaroo mice (p. 3-28), as well as whether and how many traps were used for reptiles. The BLM should also specify whether surveys were completed for bats.

We have seen that in Nevada as well as in other states, there is a lack of consistency in carrying out full protocol surveys and ensuring they are done at different times of the year to capture such things as fall-blooming plants. The BLM needs to implement standard, comprehensive guidelines for conducting surveys to ensure that all species' presence on proposed renewable energy sites can be identified.

Recommendation: The BLM should provide the additional details covered above regarding field surveys. The BLM should also ensure that going forward, comprehensive wildlife and plant surveys are completed at least twice and at different times of the year (i.e., spring and fall) for every large scale renewable energy project.

Response 22-H

Upon publication of the notice of available (NOA), the public may request from the BLM all supporting technical (baseline) reports.

Based on baseline data from several sources (including the BLM, Nevada Natural Heritage Program, NDOW, etc.), it was assumed that a wide variety of vertebrate species utilize the

lower Smoky Valley and therefore could be present within the three alternatives area. Surveys were only conducted for pale kangaroo mouse, golden eagles, Nevada oryctes and cacti. BLM coordinated pale kangaroo mouse survey methods with NDOW because it is a state-sensitive species. BLM coordinated Golden Eagle surveys methods with the USFWS because this species is protected under the Bald and Golden Eagle Protection Act. Other species observed during biological field surveys were documented.

Comment 22-I: Native American Religious Concerns and Cultural Resources

We commend the BLM for actively consulting with interested Native Americans to determine any concerns they may have. However, no clear plan is included for addressing these concerns.

The DEIS does not make it clear whether the Nevada SHPO has had an opportunity to review the results of the Class III archaeological inventory, or whether the SHPO concurs with the eligibility determinations made by the BLM. The DEIS also fails to identify or explain whether any plan for protection against indirect effects has been developed for the eligible sites outside of the Preferred Alternative that have been identified during the inventory. Increased access of workers and the public may affect significant cultural resources through illicit collecting or inadvertent damage. The BLM needs to provide these details to the public.

Recommendation: The BLM should continue to consult with interested Native American tribes about the project and any concerns they may have. Understanding the sensitivities of these concerns, the BLM should clarify if a plan for alleviating issues has been developed to the satisfaction of all interested parties. The BLM should also make clear whether the SHPO has had an opportunity to review the Class III archaeological inventory and concurs with the determinations made by the BLM, as well as detailing a plan for avoidance of eligible sites found outside of the Preferred Alternative. The BLM should mandate education of the workers on the importance of avoiding cultural sites and artifacts and provide rules for areas not within the work area, for example, prohibiting off-road driving outside of the project.

Response 22-I

The HPTP is currently under review by the SHPO; until such time the HPTP is completed and agreed upon by the SHPO, no notice to proceed would be given until Section 106 has been completed, which includes Native American Consultation.

Cultural stipulations are included in the ROW grant. These include construction worker education to identify resources not previously discovered. These stipulations will include a stop work order should any unidentified/undiscovered cultural resources being discovered at any phase of construction or operation of the project. Work may not be reinitiated until written authorization by the appropriate BLM Line officer is obtained by TSE or its contractors.

Comment 22-J: Project Description

The BLM should provide further analysis of the potential economic and technical feasibility of dry cooling, including potential impacts to the levelized cost of electricity (LCE), the annualized electrical production, and the capital cost of CDSEP.

As demand increases for the southwest's already strained water resources, it is critical to capitalize on any available opportunities to limit unnecessary water use. Substantial groundwater pumping is already contributing to a lowering of the water table. Significant drops can contribute to ground subsidence and impact nearby wells, and harm any connected surface water and related wildlife. Because of these reasons, we appreciate that TSE and the BLM are proposing hybrid cooling rather than wet cooling for CDSEP. However, additional information is necessary on the potential impacts and benefits of dry cooling.

Though the DEIS does nominally analyze wet, dry and hybrid cooling, the analysis does not appear to be very deep. Similarly, the DEIS appears to dismiss dry cooling out of hand, simply stating that "because of the decrease in efficiency and, thereby, a higher power cost, the fully dry-cooled technology was not carried forward in the analysis." (p. 2-65)

There are a number of hybrid and dry cooled power plants in operation today that illustrate the technical and economic feasibility of low water use cooling in some situations. A study by the California Energy Commission's Public Interest Energy Research (CA PIER) program detailed years of data from five dry or hybrid cooled power plants (four combined cycle natural gas plants and one wood waste fired plant) and found limited difficulties with operations and maintenance of the dry and hybrid cooled systems. Further, a number of proposed solar plants that intend to begin construction by the end of this year in California and Nevada plan to use dry cooling.

Overall, additional analysis of the potential impacts of dry cooling to the capital costs, annual output, and LCE from SSEP will be necessary to determine which option makes the most sense from environmental, economic and technical perspectives.

Recommendations: The BLM should provide further analysis of the potential impacts of dry cooling to the LCE, the annualized electrical production, and the capital cost of from CDSEP. If dry cooling is determined to be technically and economically feasible, the BLM should select the least water-intensive cooling method as the agency's Preferred Alternative.

Response 22-J

Throughout the BLM approval process, the BLM's responsibility is to insure that undue or unnecessary degradation of the Public Land resources does not occur. The BLM's role is not to mandate specific engineering or business processes to a proponent. BLM does endeavor during the permitting process to work with the proponent to make changes to a proposal to limit impacts to resources.

The BLM worked with Tonopah Solar Energy on the Crescent Dunes project during the application process to minimize environmental impacts.

Dry, wet, and hybrid cooling were evaluated by Tonopah Solar Energy during project development and prior to submitting a BLM application. Due to the decrease in efficiency, and thereby a higher power cost, the fully dry cooled technology was not carried forward in the analysis (Section 2.6.2.1 Alternative Cooling Technology).

The BLM determined that the project water use would not cause undue or unnecessary degradation; the project is in compliance with approvals from the Nevada Department of Water Resources and does not affect the overall water balance of the Lower Smoky Valley hydrographic basin.

Comment 22-K: Purpose and Need

The purpose statement in the DEIS is restricted to responding to TSE’s application for a ROW (p. 1-6). We are glad to see that the BLM’s need is defined to include limiting unnecessary or undue degradation of public lands. We are also glad to see mention of the broader goals for the BLM’s solar energy program in TSE’s purpose and need, including the Energy Policy Act of 2005’s goal of 10,000 MW of non-hydropower renewable energy on public lands by 2015 and Interior Secretary Salazar’s March 11, 2009 Secretarial Order prioritizing responsible renewable energy development on public lands. (p. 1-8) However, to both make clear the BLM’s goals for its solar program and ensure that the DEIS is legally defensible, we recommend that the BLM go further in defining the purpose and need to include mention of the broader goal of “facilitating environmentally responsible commercial development of solar energy projects” and the possibility of CDSEP helping meet Nevada’s RPS and other clean energy goals.

Recommendation: The BLM should go further in defining the purpose and need for CDSEP to include mention of the broader goal of “facilitating environmentally responsible commercial development of solar energy projects” and the possibility of CDSEP helping meet Nevada’s RPS and other clean energy goals.

Response 22-K

The BLM’s purpose and need remains as written. Addressing the need to meet Nevada renewable portfolio standards is mentioned in the proponent’s purpose and need statement.

Sufficient information is provided in Section 2.6.2.1

Comment 22-L: Alternatives

The DEIS does a good job of selecting three action alternatives and one no-action alternative for analysis in the DEIS. Further, the description of parameters used for site selection is very helpful. (p. 2-62). The fact that the project proponent and the BLM included enough flexibility to consider three action alternatives with different footprints was important in

arriving at an alternative which minimizes impacts. We also appreciate that the BLM provides some description of the analysis conducted on two additional alternative sites outside of the current ROW application area, the Mud Lake Site, east of Tonopah, and the Peavine Creek Site, west of the proposed project site. (p. 2-63)

Though the information in the DEIS is helpful, we would recommend that the BLM include additional details on the results of the analyses of the Mud Lake and Peavine Creek sites to provide the public with additional information on why the sites identified as action alternatives were selected and why these sites were not.

Recommendation: The BLM should provide additional details on the results of the analyses of the Mud Lake and Peavine Creek sites to provide the public with additional information on why the sites identified as action alternatives were selected. For future NEPA analysis on proposed renewable energy projects, the BLM should fully analyze a robust range of action alternatives, including alternatives outside the proposed ROW, projects of different size, and projects that include phasing.

Response 22-L

The Mud Lake and Peavine Creek sites were included in the DEIS to show the public that additional sites beyond the three alternatives had been investigated. Early in the site selection process, the Mud Lake and Peavine Creek sites were dismissed as alternatives to be carried forward for further analysis (see 2.6.2 Alternatives Considered and Eliminated from Detailed Analysis).

Comment 22-M: Project Description

The DEIS makes it clear that the project area would be graded: “Approximately 1,500 acres (including the access road) would be graded in order to construct the project facilities (i.e., heliostats, power block, evaporation ponds, and administrative buildings), and a paved access road.” (p. 4-2) However, conflicting statements throughout the DEIS leave the reader with several different acreages of graded project area. Further, statements made by TSE staff at the public meetings in Las Vegas suggested that there would be little grading necessary because the area is level. We recommend limiting grading as much as possible to limit impacts to the project site.

Recommendations: The BLM should limit grading of the project site to the extent possible, and the BLM should make clear the extent of the grading of the project area. The BLM should be commended for their public meetings format for the DEIS, and should continue to use this or a similar format in future CDSEP and other public meetings. The BLM should be commended for the format of their public meetings for CDSEP. These meetings included a presentation on CDSEP from the BLM and TSE, as well as “open house” time for the public to review poster boards and ask questions of BLM, TSE and other staff. The meetings also allowed participants to ask questions during a group question and answer session. These

types of meetings are much more effective in engaging the public than meetings consisting only of open house time because of the opportunity for public discourse and questions.

Recommendation: The BLM should continue to hold public meetings in the format used for the CDSEP.

Response 22-M

Thank you for your comment. Comment noted.

Comment 23: Center for Biological Diversity

Comment 23-A: Plants

The DEIS discloses that the only BLM Sensitive Plant species, aside from cacti and yuccas, found on the site is the Nevada Oryctes. This plant is of concern and is classified by the Nevada Heritage Program as “imperiled due to rarity or other demonstrable factors”. Agency direction contained in BLM Manual 6840.2 establishes that, “...the BLM shall designate Bureau sensitive species and implement measures to conserve these species and their habitats, including ESA proposed critical habitat, to promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA.”

Section 6840.2 C. on implementation of this direction provides:

“On BLM-administered lands, the BLM shall manage Bureau sensitive species and their habitats to minimize or eliminate threats affecting the status of the species or to improve the condition of the species habitat, by:

2. Ensuring that BLM activities affecting Bureau sensitive species are carried out in a way that is consistent with its objectives for managing those species and their habitats at the appropriate spatial scale.
4. Working with partners and stakeholders to develop species-specific or ecosystem-based conservation strategies.
7. Considering ecosystem management and the conservation of native biodiversity to reduce the likelihood that any native species will require Bureau sensitive species status.
8. In the absence of conservation strategies, incorporate best management practices, standard operating procedures, conservation measures, and design criteria to mitigate specific threats to Bureau sensitive species during the planning of activities and projects.”

Despite this direction, the proposed action would grade and destroy over 1374 acres of suitable and occupied habitat for this plant, while the BLM’s preferred alternative would destroy approximately 434 acres of such habitat. Nowhere in the document is there any

analysis or disclosure of the impacts to the status of this plant from this amount of habitat loss, or a disclosure of the likelihood that such loss would increase the need for listing of this plant under the Endangered Species Act.

These deficiencies should be addressed in the final environmental impact statement (“FEIS”).

Response 23-A

BLM feels project impacts have been minimized to this species by selecting Alternative 2. Approximately 434 acres of suitable habitat for oryctes would be graded in order to construct the project facilities; this is approximately 1.7 percent of the available suitable habitat identified within the CESA (25,880 acres) (See Section 4.3.4).

Additionally, this species has been documented in Churchill, Esmeralda, Humboldt, Mineral, Pershing, Storey, and Washoe counties in Nevada, as well as Inyo county of California (See Section 3.4.1.3.5 of the DEIS). BLM does not believe that the removal of 1.7 percent of habitat within the CESA would facilitate the listing of Nevada oryctes under the Endangered Species Act.

Comment 23-B: Biological Resources

The Tonopah milkvetch (*Astragalus pseudiodanthus*) is not yet a BLM Sensitive Species in Nevada, but arguably could be given its rarity and its Sensitive Species Status in California. The State Natural Heritage Program (“Heritage”) ranks this species as both globally and state “imperiled due to rarity and/or other demonstrable factors”. According to Heritage maps it is found in the project site vicinity. It is a perennial herb with a buried root crown found in deep loose sandy soils of sand dune margins. According to NatureServe and Heritage databases, there are only ten occurrences in California and fifteen in Nevada. Estimated population levels for Nevada are likely in the vicinity of 1420 individuals – a number far less than the estimates for *Oryctes* (24,000+) a designated sensitive species.

Due to the rarity of the Tonopah milkvetch, the Center requests that it be treated as a Nevada BLM Sensitive Species and provided the protections called for in BLM Manual 6840. The FEIS must analyze and disclose the impacts to this species and how the BLM will comply with the mandates of Manual 6840.

Response 23-B

Tonopah Milkvetch is currently not a BLM-sensitive species in Nevada; therefore, it is not given any preferential status under current BLM policies.

Comment 23-C: Invertebrates

Heritage and NatureServe rank the Crescent-dune Aegialian scarab beetle (*Aegialia crescent*) as globally and state “critically imperiled due to extreme rarity, imminent threats, and/or biological factors”. It is found only within the Southern Big Smoky Valley, 4 and the proximity of the proposed solar project to the primary habitat at Crescent Dunes creates an imminent threat. It is a BLM Sensitive Species.

The Crescent Dune Serican scarab beetle (*Serica ammomenisco*) is ranked by Heritage and NatureServe as being globally and state “critically imperiled due to extreme rarity, imminent threats, and/or biological factors”. It too is found only within the Southern Big Smoky

Valley, and the proximity of the proposed solar project to the primary habitat at Crescent Dunes creates an imminent threat. It also is a BLM Sensitive Species.

These two beetles, along with four other found elsewhere, have been petitioned for listing under the Endangered Species Act, adding to the burden and responsibility of the BLM to provide adequate protections as to not further jeopardize their survival and viability.

Another beetle, the Crescent Dunes Aphodious scarab is a BLM Sensitive Species, but awaits further taxonomic work and is not listed in Heritage or NatureServe databases.

The DEIS discloses that Alternative 1 would directly impact the beetles by destroying 8 acres of dune habitat.

The proposed action and alternative 2 are said to not impact the beetles since the mapped dune ecosystem is avoided. This is a faulty justification due to the premise that the alternatives do not impact areas mapped as “Inter-Mountain Basins Active or Stabilized Dune Habitat”. A study of images obtained with Google Earth as well as a comparison of Figures 2-1, 3-2, 3-15 and 3-16 reveals gross errors in mapping as well as in interpretations as to the habitat for the above beetles.

Specifically, our concerns are:

- DEIS Figure 3-15 identifies soil types STC and TGE as the primary types in the proposal alternative’s impact area. Both these soil types are comprised of deep, fine sands, easily displaced by wind.
- DEIS Figure 2-1 and views from Google Earth clearly show the dunes systems as being much more expansive than mapped on Figure 3-2. In addition, the soil mapping found on Figure 3-16 also shows the dunes covering a much greater area than that mapped on Figure 3-2. It is quite likely that Alternative 2 impacts greater than the 8 acres disclosed, and the same argument for soil type STC made in the bullet above applies to Alternatives 1 and 2.

Nowhere in the DEIS does the BLM analyze or disclose the impacts from disrupting sand transport to the dunes and the habitat provided for the beetles, nor does it discuss the cumulative impacts to the dunes and the beetles from continued off-road recreational use.

We are also concerned that no mitigation is planned to off-set the impacts to these species. The full intent of BLM Manual 6840 must be met and disclosed.

The Center requests that as part of the project approval process a thorough inventory be made of the entire proposed right-of-way area to determine the presence, absence and status of these species within it, and if present that the environmental compliance process document the avoidance and mitigation strategies that will be employed to ensure the long term survival of the species to preclude the need for listing under the Endangered Species Act. Included

should be a cumulative effects analysis of the off-road vehicle (“ORV”) use at the Crescent Dunes, another major threat to these species. In addition, the survey should be robust enough to identify the presence or absence of other rare or imperiled species that may not have previously been known at this site.

Response 23-C

The Crescent Dune Aegialian scarab beetle and the Crescent Dune Serican scarab beetle are associated with the sandy soils of the Crescent Dunes. The selected alternative (Alternative 2 in the DEIS) does not contribute to any direct, indirect, or cumulative impacts to the Crescent Dunes (i.e. sensitive beetle habitat); therefore, the BLM has determined that mitigation for sensitive invertebrates is not warranted.

The migration and deposition of sand within the Crescent Dunes System was not identified as a resource of concern during scoping for DEIS; therefore, not address in the draft. However, Tonopah Solar Energy had a Geomorphic Aeolian Report completed in April 2010 to assess the movement of the Crescent Dunes including the migration and deposition of sand (Worley Parsons 2010d). The Crescent Dune System is star dunes, which means the dunes are created by multiple relative strong wind directions. Utilizing aerial photographs from 1954-2006, it was determined that the Crescent Dunes system does not appear to have migrated substantially. It appears that the star dune has moved less than 250 feet in one direction since 1954. Upon publication of the NOA, the public may request from the BLM all supporting technical (baseline) reports.

Comment 23-D: Insects, Birds, Bats, and Raptors

The Center asserts that the DEIS is lacking due to its failure to address the impacts from the proposed facility on flying creatures. Our concerns stem from several factors:

- Direct mortality from the death ray zone. While the DEIS does mention a short term study done on a small concentrated solar facility in 1986 on bird mortalities. However, the DEIS merely speculates that it is possible that migratory birds and golden eagles may be harmed by the intense concentration of reflected light and heat towards to top of the central receiver. McCrary estimated 1.7 birds deaths per week on a 32 ha site with one 86 m tower.⁹ The proposed project site is approximately 647 ha (over 20 times larger) with a 653 foot receiving tower. Lacking baseline data of mean daily count of birds on the project site, analysis of the impacts to birds is impossible. Based on the existing literature, the impact may be significant. Further, no mention was made regarding the impacts to flying insects by either McCrary’s study or the DEIS. As a minimum the BLM and proponent should present details in the FEIS on the death zones associated with the tower, perhaps by temperature, height and area of influence, similar to what is done with respect to the area of influence of wind power blades. In the FEIS BLM must address this issue and make a good faith attempt to describe the magnitude of the potential impacts.

- Also, there was no mention made of any raptor or other bird surveys having been conducted aside from a single survey for golden eagles done on June 4, 2010 and a single flight looking for eagle nesting areas on June 24, 2010.¹⁰ McCrary, M.D. 1986. Avian Mortality at a Solar Energy Power Plant. *Journal of Field Ornithology* 57(2): 135-141. This presents several concerns. First, no site specific information was collected for migrating raptors and passerine species. Second, there is considerable doubt on the reliability of such limited sampling and how such surveys did or did not meet scientifically acceptable protocols. Third, the use of office analysis of existing available data not specific to the project also creates great doubt in the reliability of the information presented in the DEIS. The DEIS fails to disclose the number of pairs of golden eagles that could be affected by the proposed project. Scientific literature on this subject is clear - the presence of humans detected by a raptor in its nesting or hunting habitat can be a significant habitat-altering disturbance even if the human is far from an active nest.¹¹ Regardless of distance, a straightline view of disturbance affects raptors, and an effective approach to mitigate impacts of disturbance for golden eagles involves calculation of viewsheds using a threedimensional GIS tool and development of buffers based on the modeling. The BLM must address these data deficiencies and conduct scientifically credible surveys to detect the species likely to be impacted by the proposed project and then to address and disclose the impacts and mitigation in the FEIS.
- There is a lack of clarity in the DEIS as to how impacts from the evaporative ponds will be mitigated. Early on in Section 2.5.3.5.7, the DEIS discloses that when the ponds are filled with water, a porous screen would cover the entire pond so that wildlife (presumably, birds, bats and other mammals) would not be attracted to the water surface. However. Later in section 4.5.11 on “Mitigation”, no mention is made of the protective cover. Instead, a monitoring scheme is described that would document the occurrences of bird and wildlife species use of then ponds and any deaths, deformities or other abnormalities found, and share that information with the BLM, NDOW and other appropriate agencies. The Center feels that the avoidance/mitigation value of the protective cover is essential, and must be the first line of protection against undesirable impacts. The monitoring program should also be implemented, but geared towards measuring the effectiveness of the screen.

Response 23-D

As correctly pointed out by CBD, the only existing such facility is 86 meters tall in the U.S. Similar facilities as the proposed project do not currently exist in the U.S.; therefore, no information exists on the impacts to golden eagles, migratory birds, insect, and bats. The BLM concurs with these concerns. The mitigation and monitoring plans do provide for progressive responses to any change in impacts to migratory birds or other wildlife as a result of increased temperature zones around the central receiver and heliostats, evaporation ponds, or other project-related operations.

In addition, the Notice to Proceed for construction would be contingent upon BLM receiving concurrence from USFWS on the proposed Avian and Bat Protection Plan (ABPP). The proposed ABPP is an agreement between TSE and the USFWS that addresses potential impacts, mitigation measures, and monitoring requirements.

Golden eagle surveys methodology was coordinated with and approved by the USFWS.

Comment 23-E: Water Needs

The POD stated and the DEIS confirms that the Tonopah Flat sub-basin in which the proposed project is located is currently over allocated by about 20,000 acre-feet per year. This disturbing fact is somewhat dismissed by pointing out that the existing water rights in the basin do not represent the actual groundwater withdrawal and consumption. The DEIS states that water for the proposed project would come from purchased and retired active irrigation rights 10.6 miles from the project site. The DEIS fails to specifically identify these wells/rights and their location.

The proposed project will employ a “hybrid cooling system”, and together with the water needed for steam cycle makeup, mirror washing and dust control would require an estimated 600-854 acre-feet per year, all to come from groundwater wells.

The Center is concerned about the ability of this overdrawn basin to supply the water needs without impacting biological and spring resources within and adjacent to the basin. Alternatives that consume less groundwater should be evaluated and, in particular, the applicant must assess dry cooling as an alternative. Additionally the proponent should be required to purchase and retire water rights in excess of their own needs to bring the basin into a better balance in order to protect biological and hydrologic resources.

Response 23-E

Water rights have been negotiated from a current state water-rights holder north of the proposed project. BLM will not issue a NTP until verification of water rights is received from Nevada Division of Water Resources (NDWR).

The BLM determined that the project water use would not cause undue or unnecessary degradation; the project is in compliance with approvals from the NDWR and does not affect the overall water balance of the Lower Smoky Valley hydrographic basin.

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5.0 Errata to the Draft Environmental Impact Statement

The errata section of this FEIS illustrates the BLM's revisions to the DEIS. The revisions have been developed from either comments received or BLM's internal review of the DEIS. ~~Strike-outs~~ indicate that text has been removed for the FEIS. **Bold** indicates that text has been added or revised for the FEIS.

Executive Summary

Page xxi – Vegetation

Construction activities associated with the Proposed Action ~~Alternative~~ would result in direct effects, including the removal of topsoil and vegetation within the project areas during grading activities.

Page xxii – Special Status Species (Wildlife)

~~A porous screen will cover~~ Active management of the ponds ~~so~~ will help ensure that **migratory birds, pale kangaroo mice, and all other wildlife** are excluded from the pond.

Page xxiii – Cultural

Development of the Proposed Action ~~Alternative~~ would impact four historic properties.

Page xxiv – Social Economics

Through direct and indirect impact, approximately ~~1,500~~ 450 jobs would be created, \$140 million of personal income would be added to the State of Nevada annually, and \$160 million would be added to the gross state product annually during the peak of construction.

Page xxv – Hazardous Materials and Other Waste

The construction activities associated with the proposed project will result in an increased risk of accidental hazardous material spills from vehicles and heavy equipment. These risks will be mitigated with the implementation of operational plans and best management practices. ~~Start-up and operation of the facility will involve large volumes of heated molten salt, which if released, could be harmful to the local natural resources within the project footprint.~~

1.0 Introduction and Purpose and Need

Page 1-3, 1.3 Project Location

TL, Substation and Construction Power Line (N-87933, N-89273, N-89272) ~~TL and Substation (N-87933)~~

2.0 Alternatives Including the Proposed Action

Page 2-4, 2.2 Project Background

The annual average direct normal solar resource for this site averages **7.34 kiloWatt-hours (kWh)** ~~7.4 Watt hours (Wh)~~ per square meter (m²) per day.

Page 2-7, 2.5.2 Project Component Summary, Generating Facility Components

1. Solar Array (Figure 2-5) – The array would consist of a circular field encompassing an area with a radius of 4,300 feet (approximately ~~330~~ 1,330 acres) where the heliostats (or mirrors) would be located.
2. Reverse Osmosis Water Treatment System and Evaporation Ponds – These facilities would purify the groundwater to be used in the production of electricity **and to provide a means of wastewater disposal through evaporation.**

Page 2-8, Figure 2-4, Central Receiving Tower

Crane height is **15** feet, not ~~20~~ feet, and the cylindrical receiver should be **100** feet not ~~95~~-feet.

Page 2-11, 2.5.2 Project Component Summary, Major Electrical Systems and Equipment

3. Lighting Systems – The lighting system for the facility would be limited to those areas required for safe operation of the facility. Where lighting is required, it would be designed and installed to minimize visual impacts (**including impacts to night skies**) in the region. **Additionally, perimeter lighting, including lighting used to illuminate walkways, roadways, equipment yards, and parking lots would be fully shielded, low-pressure sodium lighting to reduce or eliminate detrimental lighting impact and prevent unnecessary light pollution and usage.**

Page 2-21, 2.5.2 Project Component Summary, Water Sources and Water Demand

4. Water Sources – ~~Approximately 854 AFY of existing water rights in the basin would be acquired and used for this project, subject to approval from the Nevada Division of Water Resources (NDWR).~~ Water used by the proposed project would not exceed 600 acre-feet per year. The projects water needs will be met through the acquisition of existing waters rights from within the Lower Smoky Valley **Hydrographic water** basin and would not require allocation of any new water rights.

Page 2-23, 2.5.3.1.3 Power Block

The primary components of the power block include (see Figure 2-6):

5. ~~Solar~~ Steam Generator System – The steam generator would be the core of the steam supply system for the power block. The steam generator system would include a preheater, evaporator, superheater, reheater, and steam drum. High-pressure feedwater would enter the steam generator from the preheaters and would leave as saturated steam that subsequently flows to the superheaters.

Page 2-24, 2.5.3.1.3 Power Block

6. ~~Solar~~ Preheater – The solar preheaters would have a shell and tube design. High-pressure feedwater would enter the preheaters from the low-pressure feedwater heaters and would leave as high-pressure feedwater.

Page 2-24, 2.5.3.1.3 Power Block

7. ~~Solar~~ Superheaters/Reheaters – The saturated steam would flow to a shell and tube superheater to reach the desired steam-turbine temperature and pressure-operating conditions.

The reheater would receive “cold” outlet steam from the high-pressure turbine stage and reheat the steam before being reintroduced into the intermediate-pressure stage of the turbine.

Page 2-28, 2.5.3.3 Construction Power Supply

A 60-55 kV power line is located adjacent to and west of the existing Millers to Anaconda TL. This power line is owned and operated by NV Energy and would be used to provide a source of temporary power for construction and for a backup to auxiliary plant/house power load requirements. A separate overhead power line would be installed adjacent to the project TL to deliver power from this 60-55 kV line to the plant site. Transformers would be installed to step down the power to the voltage necessary for use.

Page 2-28, 2.5.3.4.1 Interconnection

The anticipated pole configuration used for the new TL would be a steel “mono” pole or H-frame wood structure, as shown; a H-frame structure is shown on Figure 2-9.

Page 2-33, 2.5.3.5.7 Evaporation Ponds

.....near the site. When ponds are filled with water, a porous screen would cover the entire pond **hazing and other deterrents will be utilized as part of the adaptive management** so that wildlife would not be attracted to the water surface. Additional information on the design and operation of the evaporation ponds is provided in the Wastewater Plan (WorleyParsons 2010b).

Page 2-34, 2.5.4.2 Construction Process and Conceptual Schedule

Construction of the generating facility, from site preparation and grading to commercial operation, would be expected to take approximately 30 months. Typically, construction would be scheduled to occur between 5 a.m. and 7 p.m. on weekdays and Saturdays (approximately 14-10 hours per day, 6-5 days per week).

Page 2-34, 2.5.4.2 Construction Process and Conceptual Schedule

Therefore, preparations may take place overnight to ready the facility for start-up tests the following day, when the sun would provide the energy to power the start-up testing. **A conceptual construction schedule is presented in Table 2-1.**

Page 2-40, 2.5.7 Land Ownership and Mining Claims

During the analysis, ~~three~~ **five** mining claims had been filed (April 2010) in Section 34 of the TSE ROW application area (**Alternative 2**). **Additionally, mining claims were filed along the proposed transmission line ROW** ~~Several other existing mining claims exist along the transmission route~~ (Figure 2-1 and 2-2) **and on the borrow pit area. John O. Rud, as authorized representative for the group of individuals that filed placer claims on the gravel pit, have no objection to the disposal of mineral materials per the letter received on July 26, 2010. A copy of this letter is available upon request.**

Page 2-43, 2.5.8 Hazardous Materials Management, Table 2-4

Mineral oil quantity on site is **30,000 gallons** (not 100,000 gallons)

Page 2-45, Fire Protection

The project would rely on both on-site fire protection systems and off-site fire protection services during both construction and operation of the facility. **On-site fire protection by trained TSE staff will be the primary response. Because the off-site fire departments are pure volunteer departments, their response would strictly be as emergency back-up.**

2.5.10 Applicant-Committed Environmental Protection Measures Page 2-47, Vegetation

The Proponent has developed a Preliminary Weed Risk Assessment and will develop Weed Management Plan (WMP) for the project (see **Appendix G—Weed Management Plan**).

Page 2-48, Wildlife Resources

Some wildlife such as small mammals and reptiles may still access the ponds, so ponds will be equipped with materials (**such as geo-strips or ramps**) in each corner that would provide trapped wildlife with sufficient traction to be able to exit the ponds. Additional mitigation is described in Section 4.5.11. **and in Appendix E--BLM Wildlife Mitigation and Monitoring Plan. Mitigation would be further developed in coordination with NDOW as part of the Industrial Artificial Pond Permit.**

Page 2-48, Special Status Wildlife Species

Mammals: Pale Kangaroo Mice and bats

~~A mitigation plan is being developed between TSE, BLM, and NDOW. Mitigation would include raptor deterrent mechanisms on TLs and any vertical structures that could promote raptor predation. In addition, the proponent may undertake additional studies of the Pale Kangaroo mouse during construction, in coordination with NDOW.~~ **The BLM Wildlife Mitigation and Monitoring Plan was developed in coordination with NDOW and includes mitigation for pale kangaroo mice, bats, and migratory birds (Appendix E)**

Golden Eagles and Migratory Birds

~~A golden eagle monitoring plan for known nest locations would be developed between BLM, NDOW, and USFWS.~~ **An Avian and Bat Protection Plan (ABPP) has been developed by the proponent and the USFWS; BLM has adapted mitigation measures that are in Appendix E-Wildlife Mitigation and Monitoring Plan.**

~~In order to mitigate potential effects of TLs on birds, all static TLs would be marked with wire marks. This should make the static lines easier to see and reduce bird/wire collisions. In order to minimize potential bird electrocutions, TL wires would be spaced to accommodate the wingspan of the largest bird in the project area.~~ **Detailed mitigation is presented in Appendix E-BLM Wildlife Mitigation and Monitoring Plan. Additionally, mitigation to migratory birds and golden eagles will be negotiated between TSE and USFWS. The BLM will not issue TSE at Notice to Proceed until the Tonopah Field Office receives a concurrence letter from USFWS on TSE's Avian and Bat Protection Plan.**

Page 2-49, Water Quality and Quantity

Facility water needs are estimated to be less than the anticipated maximum water right quantity to be acquired and would not negatively affect or alter the appropriation of groundwater. **A groundwater monitoring plan for the project is presented in Appendix F—Groundwater Monitoring Plan.**

Page 2-50, Evaporation Ponds

~~Evaporation ponds would be covered with a porous screen, that would allow for evaporation, but also act as an avian deterrent~~ **subject to the adaptive management plan, which will incorporate hazing and other methods that will act as an avian deterrent (See Appendix E-BLM Wildlife Mitigation and Monitoring Plan). Additionally, NDOW will require TSE to**

obtain and comply with an Artificial Industrial Pond Permit, which will detail wildlife protection measures.

Page 2-50, Cultural Resources

Further archaeological data collection will be needed to mitigate the adverse impacts to historic properties. A Historic Property Treatment Plan (HPTP) ~~is being~~ **has been** developed by TSE. The HPTP will list all historic properties to be adversely affected by the project and specify and describe in detail the mitigation measures—site avoidance, testing, data recovery, or monitoring—to be implemented prior to and/or during construction.

Page 2-54, Hazardous Materials

During facility operation, various hazardous materials and one regulated substance will be stored onsite as shown in Table 4-23. Material Safety Data Sheets (MSDS) for the chemicals likely to occur on site during operation of the proposed Project can be found in the **Plan of Development (POD)** (Tonopah Solar Energy 2009).

3.0 Affected Environment

Page 3-23, 3.4.1.3 Affected Environment

The field surveys did not identify any BLM sensitive plant in the Proposed Area during the May 2009 field surveys. However, in the 2010 surveys of the Alternative Area, Nevada oryctes (*Oryctes nevadensis*), a BLM sensitive species, was found to be widespread throughout the Inter-Mountain Basins Mixed Salt Desert Scrub vegetation association, where the dominant shrub cover was Nevada dalea (*Psorothamnus polydenius*) and the soils were Stumble Loamy fine sand 0-8 percent slopes (STC) (Figure 3-5 and Figure ~~3-14~~ **3-15** in Section ~~3-8~~ **3.10**, Soils).

Page 3-25, 3.4.1.3.2 Alternative Area

Because of the number of plants observed in the area, a detailed count of the plants was not obtained, but the boundary of the area within which the plants were observed was mapped (Figure 3-5, and Figure ~~3-15~~ **3.16** in Section ~~3-8~~ **3.10**, Soils).

Page 3-25, 3.4.1.3.3 Borrow Pit

One cactus was found in proposed borrow pit. No other BLM sensitive species or associated habitat or soils were found throughout the borrow pit area (Figure ~~3-16~~ **3.17** in Section ~~3-8~~ **3.10**, Soils).

Page 3-25, 3.4.1.3.4 TL and Anaconda Moly Substation

In 2009, one Nevada oryctes plant was found within the TL and Anaconda Moly Substation corridor (~~Figure 3-5~~).

Page 3-37, 3.5 Water Quality and Quantity

Groundwater CESA – The 1-foot, 53-year draw-down contour for the proposed groundwater well (Figure 3-10). The CESA for groundwater resources was developed using a ~~numerical~~-analytical model developed by WorleyParsons (WorleyParsons 2010c) in cooperation with the BLM Nevada State Office. The full report is available at the BLM TFO for review.

~~It is estimated that only 600 AFY would be needed for facility operations.~~ **Water used by the proposed project would not exceed 600 AFY. The water rights needed for the proposed**

project would be obtained by acquiring existing water rights within the Lower Smoky Valley and would not require allocation of new water rights.

Page 3-39, 3.5 Water Quality and Quantity

There are many springs and seeps within the Tonopah Flat (137A) hydrographic basin (Figure 3-11 ~~3.10~~).

Page 3-39, 3.5 Water Quality and Quantity

Historical groundwater consumption in the undeveloped Tonopah Flat subarea is attributed to agriculture water use. This includes irrigation of crop and pasture land and stock watering. Current ~~groundwater consumption is~~ **subsurface water rights are** summarized in Table 3-15.

Page 3-39, 3.5 Water Quality and Quantity

Table 3-15. ~~Current groundwater consumption in the Tonopah Flat subarea~~ Current Subsurface Water Rights

Page 3-82, 3.5 Water Quality and Quantity

The most recent data on housing conditions and mortgage costs indicate that median housing conditions in Nye County are generally about 60 percent less than for the state of Nevada as a whole (Table 3-34 ~~3-33~~).

Page 3-64, 3.9.3.1 Affected Environment

The Tonopah RMP identifies the project area as having “low” mineral potential. The only known historical hard rock mineral development is in the San Antonio Mineral District located approximately nine (9) miles north of the current Preferred Alternative location. A former copper operation, with a known molybdenum deposit, known as the “Hall Mine,” operated in the mid-to late 1980s at this location. It is currently owned by General Moly Corporation.

Within the proposed Crescent Dunes Alternative 2 area, the only known hard rock mining “activity” is the mining claims for lithium filed in April 2010. No actual hard rock or other potential mining activities, including leasable/saleable activities, have occurred in the Proposed Action or Alternative areas.

Page 3-64, 3.9.3.1.2 Alternative Area

As of April 2010, mining claims comprise approximately 460 acres out of 3,800 acres in this alternative area (Figure 2-1).

Table 3-22. Authorized and Pending BLM ROWS and Mining Claims within the Alternative Area.

Area of Analysis	U.S. Bureau of Land Management Serial Number	Status	Description
Alternative Area	N-086292	Pending	Crescent Dunes Solar Energy Project, by Tonopah Solar Energy, LLC
Alternative Area	N-89272	Pending	Tonopah Solar Energy, LLC
Alternative Area	N-89273	Pending	Tonopah Solar Energy, LLC
Alternative Area	N-033242	Authorized	Right-of-way (ROW) – power transmission, by Sierra Pacific Power Company (now NV Energy)
Alternative Area	N-040052	Authorized	ROW – water facility, by federal government
Alternative Area	N-88177	Authorized	ROW – test well for Crescent Dunes Solar Energy Project, by Tonopah Solar Energy, LLC
Alternative Area	NMC1022994 (FM#68) NMC1022995 (FM#69) NMC1022996 (FM#70) NMC1022997 (FM#71) NMC1022998 (FM#72)	Active	Placer claims (FM) – Nevada Alaska Mining Co Inc., Robert Craig, Barbara Anne Craig, Elizabeth Dickman

Page 3-65, 3.9.3.1.4 TL and Anaconda Moly Substation

As of April 2010, mining claims in the TL ROW comprise approximately 54 acres out of the 180 acres in the proposed TL ROW (Figure 2-1).

While the Tonopah RMP indicates that mineral potential of the Proposed Action and Alternative Area is low, it is conceivable minerals other than lithium and/or other hard rock or leasable minerals may exist in the area. With the low potential for minerals, however, and the lack of development efforts in the proposed project area, possible impacts to mining in general are considered minimal.

Page 3-87, 3.11.3.1 Proposed Area

Public Water Supply and Wastewater

There are few public water supply systems in the project area. The majority of water users rely on individual wells. Tonopah Public Utilities manages public water supply and wastewater systems near the project area (Economic Development Authority of Nye County 2010).

Page 3-93, 3.12.3.2 Project Setting

The project area is located in ~~northeastern Esmeralda County and southwestern~~ western Nye County and lies in Gabb’s Valley Range north of SR 95 and south of the Humboldt-Toiyabe National Forest.

Page 3-94, 3.12.3.3.1 KOP 1 – Crescent Dunes SRMA

KOP 1 is within the SRMA (the view faces ~~north toward the Anaconda Moly Substation southwest towards Miller's rest stop~~). From this vantage point, high-relief mountains are visible for nearly 180 degrees from north to south (Photograph 1).

Photograph 1 caption - View from KOP 1 faces ~~north toward the Anaconda Moly Substation southwest toward Miller's Rest Stop~~

Page 3-105, 3.15.1 Area of Analysis and Methodology

To assess the existing condition of recreation and wilderness, the locations of national forests, wilderness areas, wilderness study areas, hunting units, campgrounds, and SRMAs were reviewed and are illustrated on Figures 3-21 and 3-22. In addition, these resources were evaluated within a ~~10-mile~~ **25-mile** radius of the project area to assess potential cumulative effects (Figure 3-22). ~~Additionally, the~~ **The** Statewide Comprehensive Outdoor Recreational Plan, hunter information sheets, and NDOW Big Game Statistics were reviewed to identify recreational opportunities within the project area.

In addition to the above information, the BLM conducted a wilderness characteristics study report (BLM 2010g), to document the current wilderness status in the project area. A summary of findings and conclusions from the wilderness inventory findings show the area meets size requirements for wilderness. However, the area does not appear to be natural and does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation. The area is bordered to the south by the Gabbs Pole-Line road, to the north and west by another developed road, and to the east by the Crescent Dunes. Recreational OHV use occurs on the dunes, as well as camping in an area at the base of the dunes.

Several ROWs in the area include power lines, pipeline, range improvements, and additional 2-track roads.

4.0 Environmental Consequences

Page 4-15, 4.2.9 Mitigation

In addition to fencing that would exclude larger wildlife, the evaporations ponds would be covered with a porous screen, which would allow evaporation but exclude wildlife (i.e. birds, ~~mice and bats~~) **subject to the adaptive management, which will incorporate hazing and other methods that will act as an avian deterrent**, additional mitigation is described in Section 4.5.11. Mitigation, **and in Appendix E—BLM Wildlife Mitigation and Monitoring Plan**, would be further developed in coordination with NDOW as part of the Industrial Artificial Pond Permit.

Page 4-23, 4.4.2.2 Operation

Golden Eagles and Migratory Birds

Additionally, birds that utilize the water may experience a build-up of sodium crystals in their feathers, resulting in a reduction of the feathers' thermoregulatory properties **or oily properties**, causing the birds to die of hypothermia during cold weather or **drown, respectively** (USFWS 2009b, 2010). **Adaptive management would be implemented in accordance with**

the mitigation measures shown in the BLM Wildlife Mitigation and Monitoring Plan (Appendix E)., ~~A porous screen would cover the evaporation ponds this minimizing/eliminating these effects on golden eagles and migratory birds.~~

Page 4-34, 4.5.1 Methods

The Groundwater Resources Evaluation report outlines the data and methods used to assess the potential effects of water use for construction and operation of the proposed project, including the effect of diverting water currently in use for agricultural irrigation to the project site for industrial use. The current agricultural water usage occurs approximately 10.6 miles to the northeast of the project location. ~~report outlines the data and methods used to assess the potential effects of water use for construction and operation of the proposed project, including the effects from the original point of diversion, which was located approximately 10.6 miles northwest of the project site(s). The location of the final point of diversion would be within the project area boundary based on the alternative chosen.~~

Page 4-35, 4.5.2.1 Construction

Construction describes the drawdown and well interference effects for the 3 years of construction and the 50 year operational life (total 53 years). For purpose of water impacts during construction, the analysis used the impacts derived from the operational water consumption of 600 AFY.

Page 4-38, 4.5.2.1 Construction

Currently, these ephemeral streams lose definition before reaching Peavine Creek, as shown in Figure ~~3-7~~ **3-10**.

Page 4-65, 4.7.2.1 Construction

Indirect Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no indirect impacts are associated with construction of the project.

Page 4-65, 4.7.2.2 Operation

Direct Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no direct impacts are associated with operation of the project. Undiscovered historic properties could be directly affected by operation of the facility.

Indirect Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no indirect impacts are associated with operation of the project.

Page 4-66, 4.7.3.1 Construction

Indirect Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no indirect impacts are associated with construction of the project.

Page 4-66, 4.7.4.1 Construction

Indirect Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no indirect impacts are associated with construction of the project.

Page 4-66, 4.7.4.2 Operation

Direct Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no direct impacts are associated with operation of the project. Undiscovered historic properties could also be directly affected by operation.

Page 4-67, 4.7.4.2 Operation

Indirect Effects

Any existing property eligible for listing on the NRHP would be ~~salvaged~~ **mitigated** prior to construction; therefore, no indirect impacts are associated operation of the project.

Page 4-70, 4.9.2.1 Construction

The Proposed Action would have no direct effects to the authorized and pending BLM rights-of-way identified in Table 3-21 and presented in Figure ~~3-14~~ **3-14**.

Page 4-73, 4.9.4.1 Construction

As with the Proposed Action, Alternative 2 would have no direct effects to the authorized and pending BLM rights-of-way identified in Table 3-21 and presented in Figure ~~3-14~~ **3-14**.

During the preparation of this FEIS, no notices of intent for exploration, exploration plans of operations, or plans of operation have been submitted for mineral exploration or mine development identified in Chapter 3 Section 3.9.3.1; therefore, no direct effects could be identified.

Page 4-74, 4.9.4.2 Operation

During the preparation of this FEIS, no notices of intent for exploration, exploration plans of operations, or plans of operation have been submitted for mineral exploration or mine development identified in Chapter 3 Section 3.9.3.1; therefore, no direct effects could be identified.

Page 4-74, 4.9.5.1 Construction

The TL and substation would have no direct effects to the authorized and pending BLM rights-of-way identified in Table 3-21 and presented in Figure ~~3-14~~ **3-14**.

During the preparation of this FEIS, no notices of intent for exploration, exploration plans of operations, or plans of operation have been submitted for mineral exploration or mine development identified in Chapter 3 Section 3.9.3.1; therefore, no direct effects could be identified.

Page 4-75 4.9.5.2 Operation

During the preparation of this FEIS, no notices of intent for exploration, exploration plans of operations, or plans of operation have been submitted for mineral exploration or mine development identified in Chapter 3 Section 3.9.3.1; therefore, no direct effects could be identified.

Page 4-84, 4.11.2.1 Construction

As a backup to the on-site services, the Tonopah Fire and Emergency Medical Services have 14 emergency medical technicians and 3 ambulances, which are backed up by a **two** volunteer hazardous materials ~~team~~ **teams** from Tonopah and Round Mountain.

Page 4-106, 4.12.9 Mitigation

Mitigation measures would include color treating the buildings located on site ~~the backs of the solar panels, and the central receiving tower~~ to a BLM-approved color that blends into the surrounding landscape. Subsequent to construction, restoration efforts would be made in areas that were temporarily disturbed.

Page 4-109, 4.13.2.2 Operation, Table 4-25

Add footnote: standard cubic foot (scf), Pound(s) (lb), Gallons (gal)

Page 4-132, 4.19.5 Reasonable Foreseeable Future Actions

Potential Mining Activities: Potential mining activities are identified in sections 3.9.3.1 and 3.9.3.2. As described in section 4.9 Land Use and Access, no notices of intent for exploration, exploration plans of operations, or plans of operation have been submitted for mineral exploration or mine development on the preferred alternative site (Alternative 2). However based upon concerns that after project construction a plan of operation for mining development could be submitted within the Alternative 2 project area and TL ROW, the BLM has decided to analyze the potential for development of these lithium mining claims.

Additional future mining claims filed after the ROW is granted would have to wait until the ROW expired to conduct surface-disturbing activities. Mineral extraction that did not involve surface-disturbing activity could operate contemporaneously with the ROW grant.

The Alternative 2 project area is located in a very broad alluvial fan in the Lower Smoky Valley. The alluvium is many hundreds of feet thick; and as such provides potential access to numerous saleable minerals areas such as sand and gravel (Worley Parsons 2010a). Closing the approximately 1,600 acres of the Alternative 2 project area by constructing the Crescent Dunes Solar project is unlikely to limit access to a multitude of additional saleable minerals outside the project area.

That stated, there has been some recent interest in lithium, a mineral. As such, the possible impacts to development to the lithium mineral resource are addressed to identify the specific impacts that could result from the development of the proposed project.

Impacts to the development of potential lithium mineral resources may vary depending on how development of the resource occurs. For example, mining of a lithium resource found under the proposed project could occur outside of the Project ROW by:

- 1) down hole drilling (i.e. non-directional or non- slant drilling) and removal of any lithium bearing groundwater; or
- 2) through directional (slant) drilling/extraction of any lithium bearing ground water from under the project;

Utilizing these techniques, impacts to the lithium resource would be slightly different than if mining of the lithium resource found under the proposed project requires on-site mining techniques. The two different development options and associated impacts are discussed below.

Should mining be proposed on site:

- 1) after construction of the solar project is complete:
 - a) 460 acres of the northern portion of the Alternative 2 project area could be affected leading to overall decreased efficiency of power generating capabilities. This could potentially lead to less electrical production and/or result in TSE closing the project due to lower profit margins. This would be a significant impact for the project;
 - b) Since the wells needed for lithium production are relatively small, it may be possible that co-location of the lithium wells, and thus mining could exist within the Alternative 2 project area and not affect the solar operations. This would require an agreement between TSE and the mining claim owners. Should such an agreement be reached, it is possible that the solar project and the lithium well portion of a lithium mine could occupy the Alternative 2 project area without impacts to each other's operations.
 - c) Lithium mining has two phases: water withdrawal and evaporation/processing. Under this scenario, the evaporation ponds and any processing plants for the lithium mining could be operated outside the Alternative 2 boundary but the lithium wells would co-located within the Alternative 2 fenced area; thus, both projects could proceed simultaneously. This scenario would not be considered a significant impact to the Alternative 2 project;
- 2) After construction of the TL:
 - a) It is likely the TL would have to be partially rerouted around the lithium operation; or
 - b) Completely rerouted around the lithium operation.

The effects of the Alternative 2 and TL on any proposed lithium mining would be:

- a) if directional drilling off-site of the project site is not possible, (i.e. the lithium well/s must be located on the project site) the number of wells and/or location of the wells would be limited due to the space taken up by solar facilities. This could be an impact to lithium production in

both time and volume. This could be a significant impact to the lithium mine project.

- b) Any evaporation ponds and/or lithium processing plants would most likely need to be placed off-site of the solar project site potentially leading to higher lithium production costs; lower profits, and/or making the lithium mining project un-profitable. If the lithium project could not be operated profitably, it would be a significant economic impact to the operator; but not a significant impact to the natural or cultural resource environment.**
- c) If the lithium wells and processing facilities (i.e. evaporation pond/s and processing plant) had to be located on the TL ROW, the valid existing right (i.e. the mining claims) would take precedent, and the TL would need to be relocated where the TL would not affect the lithium mining operation; or**
- d) the TL design is modified, the TL remains in place and the evaporation ponds constructed “around” the TL structures through use of a “bulkhead”, separating the TL structures from the lithium brine solution.**
- e) If “d” above were to occur, the wells could:
 - 1. be constructed and operated within the TL ROW (if there was sufficient electrical insulating distances from the TL);**
 - 2. or just outside the TL ROW since the ROW is only 150 feet wide**
 - 3. and the processing plant would also be located outside the ROW;****In this scenario, the TL could coexist with the lithium mining operation; therefore, no significant impacts to the lithium mining operation would occur.****
- f) Assuming that NV Energy or TSE agree, TSE electric power from the project could be sold directly to the lithium operation, providing benefits to both operations.**

Page 6-1, List of Preparers

An updated list of preparers has been included in Appendix H.

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6.0 Additional References

BLM 2010g. *Wilderness characterization study*. Tonopah Field Office.

Stone, Richard. 2008. *Have desert researchers discovered a hidden loop in the carbon cycle?* *Science*. 320:5882

U.S. Environmental Protection Agency. 2010. *Future precipitation and storm changes*. Site accessed October 29, 2010, at <http://www.epa.gov/climatechange/science/futurepsc.html>

USFWS. 2010. Personal communication between Dave Davis, BLM and Duane Crimmins, USFWS Senior Wildlife on November 1, 2010.

Worley Parsons. 2010d. *Geomorphic Aeolian Report, Crescent Dunes Solar Energy Project*. April 2010.