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BLM Technical Note: Procedural Guidance and Framework for Developing Solar Regional Mitigation Strategies

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BLM Technical Note: Procedural Guidance and Framework for Developing Solar Regional Mitigation Strategies

1. INTRODUCTION AND PURPOSE

In preparation of the *Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (Solar PEIS; BLM and DOE 2012), the Bureau of Land Management (BLM) acknowledged stakeholders' concerns about unavoidable adverse impacts associated with utility-scale solar development on public lands within solar energy zones (SEZs). In response to these concerns, the BLM committed to developing solar regional mitigation strategies (SRMSs) for each SEZ prior to development in the SEZ, to adopt a more systematic approach for identifying and addressing requirements for off-site mitigation actions.[1] BLM's initial vision for addressing regional mitigation is presented in Appendix A, Section A.2.5 of the Final Solar PEIS. Because this approach is new, the BLM launched a pilot project to test, refine, and demonstrate a process for developing regional mitigation strategies based on the Dry Lake SEZ in Nevada.

This Technical Note presents information about SRMSs, including the BLM's goals for these strategies, relevant authorities, and integration with other programs and initiatives. It also summarizes the activities conducted as part of the Dry Lake SEZ pilot project and provides guidance on a process that can be implemented to develop a SRMS for other SEZs.

1.1 Goals of a Solar Regional Mitigation Strategy

SRMSs will (1) identify the need for off-site mitigation of unavoidable adverse impacts, (2) support the implementation of appropriate off-site mitigation actions, and (3) ensure long-term effectiveness of off-site mitigation actions. The BLM will continue to place a priority on avoiding and minimizing impacts via restrictions on developable areas within each SEZ and implementation of design features and other project-specific mitigation requirements. The focus of the SRMSs will be only on those unavoidable impacts that cannot be measurably avoided or minimized to an acceptable level.

Off-site mitigation requirements are not new to the BLM. As discussed in Section 1.4.1, current BLM policy requires that some impacts be compensated for by replacing or providing substitute resources or habitat at a different location than the project area.[2] These requirements are typically implemented on a project-by-project basis in the absence of a larger context and clearly defined regional objectives. SRMSs will be consistent with and supplement existing BLM requirements by identifying regional mitigation priorities specific to utility-scale solar development impacts at individual SEZs. The mitigation priorities will be based on landscape-level or other regional ecological, recreation, or socioeconomic objectives. It is expected that by focusing on the landscape or regional context and by establishing requirements for each SEZ in advance of most of the new solar development, the BLM will

[1] In the Solar Energy PEIS (BLM and DOE 2012), Appendix A, Section A.2.5, the BLM referred to solar regional mitigation **plans** (SRMPs). To be consistent with guidance to be adopted forthcoming revisions to BLM Off-site Mitigation policy (BLM 2008b), the BLM adopts the terminology of solar regional mitigation **strategies** (SRMSs).

[2] This is also sometimes called "compensatory mitigation."

be able to maximize the effectiveness of off-site mitigation investments, achieve conservation or other resource management outcomes, and provide greater certainty to developers.

The goals of a SRMS are to:

- Develop a consistent, regional approach to mitigating those unavoidable impacts that warrant off-site mitigation through a transparent process that includes stakeholder engagement.

- Reduce uncertainty about mitigation requirements associated with development in a SEZ; obtain concurrence from other regulatory agencies; and potentially reduce the costs, complexity, and timeline associated with off-site mitigation activities and project approvals.

- Establish science-based or other objective criteria to identify which unavoidable impacts warrant mitigation, regional mitigation objectives and priorities, and effective mitigation locations and/or actions.

- Emphasize on-site avoidance and minimization requirements that support development plans for the SEZ.

- Establish a consistent SEZ mitigation fee structure, and create an opportunity to pool funds collected from multiple developers and apply the pooled funds to mitigation projects that will produce the most significant results for the dollar.

- Integrate off-site mitigation into a long-term monitoring program and support the BLM's implementation of an adaptive management approach to solar energy development.

As stated above, the focus of the SRMSs will be on unavoidable adverse impacts anticipated at each SEZ. Although appropriate mitigation must be considered (see 40 CFR 1502.14(f)), not all adverse or unavoidable impacts can or must be fully mitigated, either on SEZ or off-site. A certain level of adverse or unavoidable impact may be acceptable. The BLM will identify these impacts during the project-level environmental analysis and acknowledge them in the decision document, As a part of SRMS, BLM will identify levels of acceptable and unacceptable impacts based on local, landscape, regional conditions, and contribution to cumulative effects. A critical function of each SRMS is the determination of which unavoidable impacts warrant off-site mitigation. The process for determining which unavoidable impacts warrant off-site mitigation is discussed in Section 2.2.3.

The BLM is not using the SRMS approach to define mitigation requirements for projects located outside of SEZs (i.e., variance lands). The SRMS approach is intended to reduce uncertainty about mitigation requirements associated with development in SEZs and, hence, provide an incentive to develop projects in SEZs. The SRMSs will be specific to and establish requirements only for projects located in an SEZ. Developers considering projects on variance lands will need to work with the BLM and other regulatory agencies to develop project-specific off-site mitigation requirements. These efforts may be informed by a SRMS, provided the variance lands are located within the same ecoregion. For example, regional mitigation priorities and identified mitigation actions and sites may be relevant to the project-specific off-site mitigation requirements for projects on variance lands.

1.2 Elements of a Solar Regional Mitigation Strategy

As a result of the Dry Lake SRMS pilot project, the development of an SRMS is currently envisioned to consist of eight elements[3]. These elements, discussed in greater detail in Section 2.2, include the following:

1. A transparent and legally defensible stakeholder engagement and tribal consultation process;

2. A description of SEZ and regional baseline conditions against which unavoidable impacts are assessed;

3. An assessment of the unavoidable impacts and identification of which unavoidable impacts warrant off-site mitigation,

4. The establishment and prioritization of regional mitigation objectives;

5. The establishment of a method for calculating mitigation fees for the unavoidable adverse impacts of solar energy projects within SEZs that warrant mitigation;

6. The evaluation of appropriate mitigation investment locations and/or actions (initially done as part of the SRMS; repeated just prior to lease offering to determine if adjustment to fees is appropriate).

7. The identification and establishment of a structure to hold and apply mitigation investment funds; and

8. The development of long-term monitoring and adaptive management requirements to evaluate and maximize the effectiveness of off-site mitigation actions

1.3 Integration with Other Elements of BLM's Solar Energy Program

A key component of the BLM Solar Energy Program is the designation of SEZs as priority areas for utility-scale solar energy development. The BLM intends to promote development in SEZs over the applications for development on variance lands. The BLM also intends for SRMSs to provide an incentive for development within established SEZs. As discussed above, the goals for SRMS include (1) reducing uncertainty about mitigation requirements associated with development in an SEZ, (2) obtaining concurrence from other regulatory agencies, (3) establishing a mitigation fee for development in the SEZ, and (4) establishing a structure for holding and applying mitigation investment funds. It is anticipated that, in combination, these outcomes will reduce the costs, complexity, and timelines associated with off-site mitigation activities and project approvals in SEZs.

[3] In the Solar PEIS, the SRMS process was outlined as consisting of seven elements. Here the element "Regional Objectives Regarding Where and How Mitigation Investments will be Made" has been separated into two elements.

The BLM intends to proceed with a competitive leasing process to facilitate solar energy development projects in SEZs, and is currently involved in the rulemaking process that would establish the appropriate regulatory authority for competitive leasing. The BLM's Advance Notice of Proposed Rulemaking was published on December 29, 2011 (Volume 76, page 81,906 of the Federal Register). The BLM anticipates that a competitive process would capture fair market value for the use of the SEZ public lands, and ensure fair access to leasing opportunities. The avoidance and minimization requirements established through SRMSs will ultimately inform how parcels in SEZS are offered competitively (e.g., parcel size and configuration, technology limitations, mitigation requirements, and parcel-specific competitive process). Further, the mitigation fees established through SRMSs will necessarily be given consideration by developers in the competitive leasing process as they determine the relative cost of development and their willingness to bid.

1.4 Integration with Other BLM Initiatives

1.4.1 Off-Site Mitigation Policy

The BLM initially issued an Interim Off-site Mitigation policy (Instruction Memorandum [IM] 2005-069, BLM 2005) on February 1, 2005, and a revised policy (IM 2008-204, BLM 2008b) on September 30, 2008. The initial scope of the 2005 policy was limited to oil, gas, geothermal, and energy rights-of-way programs while excluding all other resource programs. The BLM issued the 2008 policy to broaden the scope of off-site mitigation by including other BLM program areas and further defining appropriate use of the policy. The BLM is currently revising its off-site mitigation policy. All mitigation actions undertaken as part of a SRMS will be consistent with existing policy and, in future, be consistent with principles described in the BLM Off-site Mitigation Manual Section MS-1794 (2013)

1.4.2 BLM's Assessment, Inventory, and Monitoring Strategy

In August 2011, the BLM issued its Assessment, Inventory, and Monitoring (AIM) Strategy for condition and trend monitoring of BLM-managed resources and lands (Toevs et al. 2011). A key objective of the AIM Strategy is to establish an approach that will ensure that monitoring activities generate data that (1) can be used for multiple purposes at the national, regional, and local (field office) levels and (2) are adequate to support informed, defensible land management decisions. The AIM Strategy provides guidance on the (1) development of management questions to guide long-term monitoring activities, conceptual ecological models, and statistically valid sampling frameworks; (2) development of effective and efficient information management systems; and (3) the application and integration of remote sensing technologies. A second document issued in August 2011 provides detailed guidance on core indicators of terrestrial ecosystem conditions and methods for measuring those indicators (MacKinnon et al. 2011).

In preparing the Solar PEIS, the BLM committed to developing and incorporating a monitoring and adaptive management plan into its Solar Energy Program to ensure that data and lessons learned about the impacts of solar energy projects will be collected, reviewed, and, as appropriate, incorporated into BLM's Solar Energy Program in the future (Appendix A, Section A.2.4 of the Final Solar PEIS). The long-term solar monitoring and adaptive management plan will be based on the AIM Strategy. As discussed in Section 2.2.7, it is critical that the BLM monitor off-site mitigation actions undertaken as part of a SRMS in order to ensure their effectiveness long-term. The monitoring of mitigation effectiveness will be integrated into the broader solar long-term monitoring efforts.

1.4.3 Rapid Ecoregional Assessments

The BLM is in the process of adopting a landscape-scale approach to managing resources on public lands. One component of this approach is the development of Rapid Ecoregional Assessments (REAs). REAs were initiated in 2010 for a number of ecoregions, including Mojave Basin and Range, Central Basin and Range, Sonoran Desert, and Chihuahuan Desert ecoregions. These four ecoregions encompass 14 of the current 18 SEZs.[4] The REAs, which are scheduled to be completed in 2013 and 2014, will synthesize existing information about resource conditions and trends within an ecoregion, highlight and map areas of high ecological value, and gauge their potential risk from climate change, wildfires, invasive species, energy development (including renewable energy), and urban growth. The REAs will provide an important source of information needed to support the development of the SRMSs, including the assessment of baseline conditions within the SEZ and the region (see Section 2.2.2); determination of which unavoidable impacts warrant mitigation (see Section 2.2.3); and development of regional mitigation objectives and priorities, and identification of appropriate mitigation investment locations and/or actions (see Section 2.2.4).

1.4.4 Existing Resource Management Plans

Existing BLM policy for off-site mitigation requires that, for an unavoidable impact to 'qualify' for off-site mitigation, it must pose a threat to BLM resource management goals and objectives articulated in a Resource Management Plan (RMP). In identifying unavoidable impacts that warrant off-site mitigation, the BLM will review existing RMPs (see Section 2.2.3). The BLM will also use existing RMPs to establish mitigation objectives and potential mitigation opportunities (see Section 2.2.4).

1.5 Coordination with Other Federal, State, and Local Agencies

Federal, state, and local agencies have both specific interests in the outcomes of regional off-site mitigation planning and concurrent or overlapping regulatory authority. It is critical that the SRMS address the issues and concerns of these agencies and concurrently address compliance with other regulatory requirements (e.g., Endangered Species Act requirements), as well identify potential redundancy or duplication of mitigation requirements. In addition, it is likely that these agencies have relevant data and expertise that can be of value to the BLM in developing a SRMS.

At a minimum, the BLM will consult land use plans and other relevant documents developed by other agencies in the region (e.g., county-level documents, NPS General Management Plans) to inform elements of the SRMS. However, in order to achieve the goal of obtaining concurrence from other regulatory agencies so that developers have greater certainty about the off-site mitigation requirements for projects in a given SEZ (see Section 1.1), it is critical that agency staff be directly engaged in the entire SRMS process. In order to formalize concurrence regarding the planning for regional mitigation, conservation or other resource outcomes, and mitigation investment strategies, and to maximize certainty for developers, the BLM will consider establishing memoranda of agreement or other binding agreements related to the requirements and provisions of a SRMS (see Attachment A: BLM CA-CDFG MOA).

[4] The four SEZs located in Colorado fall in the Arizona/New Mexico Ecoregion; a REA has not yet been developed for this ecoregion.

1.6 Relevant Authorities

The BLM is mandated to address the mitigation of environmental impacts by several different authorities, including the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA).

1.6.1 National Environmental Policy Act Requirements

NEPA requires that federal agencies evaluate the impacts of their actions on the natural and human environment and to consider means for mitigating the potential impacts. The President's Council on Environmental Quality promulgated NEPA regulations at 40 CFR Parts 1500-1508. Specifically, Section 1508.20 defines the types of actions that constitute mitigation. The U.S. Department of the Interior promulgated its own NEPA implementation regulations at 43 CFR Part 46, addressing the analysis of mitigation measures in Section 46.130. The BLM's NEPA Handbook (BLM 2008a) provides guidance on the preparation of NEPA analyses, with specific discussion of the analysis of mitigation measures and their implementation addressed in Section 6.8.4.

1.6.2 Federal Land Policy and Management Act Authorization

FLPMA gives the BLM authority to address the mitigation of impacts on public lands associated with a use authorization it issues. The congressional declaration of policy for FLPMA states that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource and archeological values…." (FLPMA §102[a][8]). In addition, the use, occupancy, and development of public lands must be regulated by the Secretary of the Interior, subject to other applicable law, through easements, permits, leases, licenses, or other instruments (FLPMA §302[b], 43 U.S.C. § 1732[b]).

The BLM is authorized to collect fees to fund off-site mitigation through provisions of FLPMA section 307(c), 43 U.S.C. § 1737(c), or in the Wyden Amendment, 16 U.S.C. § 1011.[5] The BLM may accept an offer of monies from individual applicants for the purpose of pooling funds towards completion of larger off-site mitigation efforts. This is especially efficient for mitigating the impact of multiple actions when it is not feasible to require individual applicants to manage their own off-site mitigation efforts. Such monies are only to be used for on-the-ground projects, purchases of land and conservation easements, and associated monitoring and administrative costs. In order to qualify as off-site mitigation, the funds collected must be identified for specific types of mitigation projects, and either the BLM or other parties should be identified as responsible for implementation of the project(s), depending on its location, whether on or off BLM lands. Before accepting money intended for expenditure off of the BLM-managed lands, the authorized officer must confirm that he/she has sufficient authority to expend funds in the proposed manner, such as grant or cooperative agreement authority. The BLM, however, will not waive or forgo on-site mitigation of impacts through payment of monies. The NEPA analysis and decision

[5] The Wyden Amendment, 16 U.S.C. 1011, provides: "For fiscal year 1997 and each fiscal year thereafter appropriations made for the Bureau of Land Management … may be used by the Secretary of the Interior for the purpose of entering into cooperative agreements with the heads of other Federal agencies, tribal, State, and local governments, private and nonprofit entities, and landowners for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and the reduction of risk from natural disaster where public safety is threatened that benefit these resources on public lands within the watershed."

document must be specific regarding what types of projects will be funded and how the projects will contribute to the BLM's long-term resource management goals.

1.6.3 Endangered Species Act

The Endangered Species Act (ESA; 16 USC 1531 et seq.) is administered by the U.S. Fish and Wildlife Service (USFWS) and the Commerce Department's National Marine Fisheries Service (NMFS). The USFWS has primary responsibility for terrestrial and freshwater organisms, whereas the NMFS has responsibilities for marine organisms. The ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. Under Section 7 of the ESA, the law requires federal agencies, in consultation with the USFWS or NMFS, to ensure that actions that are authorized, funded, or carried out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes "take" of any listed species, as well as the prohibition of import, export, and trade of listed species.

Compensation is one method that federal agencies may implement to lessen or mitigate the effects of agency actions on threatened or endangered species listed under the ESA. Compensation is applied after all other possible mitigation measures, particularly avoidance, are considered and implemented. Requiring compensation as a mitigation measure, as defined by the CEQ, is a way to achieve the purposes of the ESA. The BLM is required to collect and provide to the USFWS remuneration fees for projects authorized, funded, or carried out that are likely to adversely affect species or habitats listed under the ESA.

1.6.4 National Historic Preservation Act

The NHPA creates the framework within which cultural resources are managed in the United States. Section 106 of the NHPA defines the process for identifying and evaluating cultural resources and determining whether a project will result in an adverse effect on the resource. It also addresses the appropriate process for resolving (mitigating) adverse effects to historic properties. Section 110 of the NHPA directs the heads of all federal agencies to assume responsibility for the preservation of listed or eligible historic properties owned or controlled by their agency. Federal agencies are directed to locate, inventory, and nominate properties to the NRHP, to exercise caution to protect such properties, and to use such properties to the maximum extent feasible. The NHPA also establishes the processes for consultation among interested parties, the lead agency, and the SHPO, and for government-to-government consultation between U.S. government agencies and Native American Tribal governments. All requirements of the NHPA relevant to off-site mitigation will be implemented by BLM as part of the leasing process in SEZs.

1.7 Dry Lake SEZ Pilot Project

Although the Solar PEIS provided an initial vision of the SRMS process (Appendix A, Section A.2.5 of the Final Solar PEIS) and the BLM has existing policy related to off-site mitigation (see Section 1.4.1), the BLM determined that SRMS planning was a new enough approach that it warranted the development of more detailed guidance. Accordingly, the BLM launched a pilot project to test, refine, and demonstrate a process for developing regional mitigation strategies based on the Dry Lake SEZ in Nevada. The Dry Lake SEZ pilot project was initiated in July 2012. The goals of the pilot project were to

(1) develop a SRMS for the Dry Lake SEZ and (2) use the lessons learned to develop guidance for the development of SRMSs for all the remaining SEZs. This Tech Note constitutes the outcome of item 2.

The Dry Lake SEZ pilot project was supported by BLM staff from the Washington D.C. Office, the National Operations Center in Denver, the Nevada State Office, Southern Nevada District Office, and Las Vegas and Pahrump Field Offices. Technical support to the project was provided by Argonne National Laboratory, and the National Fish and Wildlife Foundation.

The Dry Lake SEZ pilot project involved extensive stakeholder engagement. The project was supported by a public information website (available at http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/dry_lake_solar_energy.html) and was announced via a news release, emails to the Solar PEIS subscriber list, and direct communication with specific stakeholder groups and members. Draft documents were shared with stakeholders via the project website and public workshops. In addition, the BLM invited tribal representatives of the nearby Moapa Band of Paiutes to participate in workshops and webinars, and sent workshop materials to more than 10 tribes that might be interested in the outcome of the Dry Lake SRMS pilot project.

The BLM held four public workshops in Las Vegas and several webinars (agendas, handouts and presentation materials from each meeting and webinar are available on the project website):

- August 2012 Workshop: Introduction to the SRMS approach and framework, pilot project, and AIM Strategy; stakeholder views regarding regional mitigation; information about the Dry Lake SEZ.

- October 2012 Workshop: Field visit to Dry Lake SEZ, overview of Mojave Desert ecoregional assessments by BLM and The Nature Conservancy, discussion of unavoidable impacts that warrant off-site mitigation.

- December 2012 Webinar: overview of off-site mitigation valuation methods and mitigation structures and discussion of their applicability to the Dry Lake SEZ SRMS.

- January 2013 Webinar: overview of the proposed methodology for identifying unavoidable impacts that warrant off-site mitigation.

- January 2013 Workshop: review methods, tools, and outcomes for (1) establishing regional trends and unavoidable impacts that warrant off-site mitigation; (2) identifying criteria and best-practices for establishing regional mitigation objectives; (3) identifying and prioritizing mitigation projects and locations; (4) identifying mitigation costing options; and (5) using solar monitoring and adaptive management to evaluate mitigation effectiveness.

- February 2013 Workshop: present BLM options and receive additional stakeholder input on (1) mitigation fee valuation/costing, (2) regional mitigation objectives and priority setting, and (3) mitigation fee structures/pooled investment funds and implementation.

- March 2013 Webinar: present (1) BLM methodology for setting mitigation fees, (2) candidate site screening tool, (3) and draft outlines for the Dry Lake SEZ SRMS and BLM Technical Note.

Throughout the course of the pilot project, the BLM received substantial input from the stakeholders. The BLM carefully reviewed the input and incorporated many changes to the methodologies for each element of the SRMS process and to decisions about the Dry Lake SEZ SRMS. The guidance presented in this Tech Note incorporates the many lessons learned through the pilot project.

2. SOLAR REGIONAL MITIGATION STRATEGY FRAMEWORK

2.1 Mitigation Hierarchy

2.1.1 Avoidance and Minimization

The BLM approach to mitigation planning and strategy development in the Solar Energy Program is to first avoid and then minimize the impacts of solar energy development on public lands. Avoidance is achieved by siting projects so as to avoid conflicts (e.g. by siting projects in a SEZ). Avoidance of impacts within SEZs is further achieved through the identification of non-development areas within SEZs. The Final Solar PEIS identified such non-development areas within most of the SEZs; these areas included floodplains, wetlands, dry lake areas, and intermittent streams. More non-development areas may be identified during SRMS planning, during preparation of SEZs or portions of SEZs for lease offering, or during project-specific analysis.

Minimization is achieved through design features (that is, required on-site mitigation measures) and best management practices. Minimization is also achieved through compliance with existing laws (e.g., ESA). Not all the impacts associated with solar energy development can be eliminated by avoidance and minimization however. Some of these unavoidable impacts may require off-site mitigation.

2.1.2 Offset of Unavoidable Impacts

Developing a strategy for regional mitigation is intended to simplify the mitigation process at the project-specific level in SEZs. Appendix A, Section A.2.5.2.2 of the Final Solar PEIS states:

> *For those impacts that cannot be avoided or minimized, the BLM will consider the implementation of measures to offset (or mitigate) impacts with the goal of ensuring viability of resources over time. To accomplish this goal in a streamlined and standardized way for SEZs, the BLM proposes to establish regional mitigation plans [now called strategies].*

The SRMS will address mitigation obligations at multiple levels (i.e., federal, state, and local) concurrently to avoid duplication and/or unintended consequences. A goal is to establish mitigation strategies that are replicable across the Solar Energy Program and adaptable to differences in SEZs, individual projects, and technologies. Regional mitigation strategies are expected to enhance the ability of state and federal agencies to invest in larger scale conservation and mitigation efforts through the pooling of financial resources and prioritization of investments.

Mitigation for projects proposed in variance areas will be handled on a case-by-case basis. Projects proposed in variance lands would not directly benefit from the pre-determined mitigation strategies (see discussion in Section 1.1 above).

2.2 Solar Regional Mitigation Framework Elements

2.2.1 Stakeholder Engagement and Tribal Consultation

The process used to communicate with the public, engage stakeholders, and consult with tribes for the Dry Lake SEZ SRMS pilot project is outlined in Section 1.7 above. A similar process would be appropriate for SRMS development for other SEZs, including:

- Email notifications: BLM emails will be sent to the BLM's Solar Energy Program project web site[6] subscriber list, additional interested parties identified through comments received on the Solar PEIS, and specific stakeholders identified through state and/or local BLM offices at the start of SRMS development and before any workshop, field trip, or webinar.

- Announcements: BLM will issue press release and in local papers concerning SRMS development including first workshop or webinar

- Stakeholder Comment Process and Tools: BLM will provide stakeholders with information on how/where to submit questions or comments, and a point of contact (preferably the BLM project manager)

- Tribal Consultation: BLM will conduct tribal consultation and separate focused communication with potentially interested tribes, following protocols and utilizing guidance from the local BLM field office's tribal liaison.

- Project Website: Establishing a project website to provide stakeholders with important project updates and documents for review

- Timely notification: BLM will provide interested stakeholders and tribes timely notification of SRMS project events or new information.

The Dry Lake SRMS pilot project provided some important lessons learned regarding stakeholder engagement; these lessons learned should be reviewed and incorporated into SRMS planning for other SEZs. Lessons learned include:

- Timing of Stakeholder Engagement: To use stakeholder time more efficiently, many elements of SRMSs should be completed prior to stakeholder engagement. The elements that could be drafted for stakeholder comment at the start of the process include the site conceptual models, identification of unavoidable impacts and those impacts that warrant mitigation, identification of regional mitigation priorities, and possibly the initial proposal for the SEZ-specific per acre mitigation fee. Stakeholders need to be involved to comment on these elements and to help identify candidate mitigation locations and actions.

[6] This web site is currently under construction and is expected to be available for use in June 2013. In the interim the Solar PEIS project web site subscriber list may be used.

- Stakeholder Review Time: Stakeholders should be allowed adequate time to review project documents prior to workshops and webinars.

- Stakeholder Comments Clearinghouse: Consistent with Privacy Act provisions stakeholder comments received during the SRMS will should be shared with the entire stakeholder group in a timely manner (subject to permission from commenters). Comment documents could be posted to the project website.

2.2.2 Defining a Regional Baseline for Assessing Unavoidable Impacts

Due to the large size of the SEZs and the scale of their distribution in the landscape, BLM will assess SEZ specific resource status together with broad-scale regional conditions consistent with the BLM AIM Strategy (Toevs et al. 2011) to assess environmental impacts of solar energy development within SEZs. Consistent with the BLM AIM Strategy (Toevs et al. 2011), a regional boundary is used to provide context for impact evaluations. Examples of regional boundaries include the ecoregion boundary (e.g., Mojave Basin and Range ecoregion), a larger watershed area (e.g., HUC 4 watersheds), or a large buffer around the SEZ (e.g., 50-mile buffer around the SEZ). Each of these boundaries may be spatially delineated to enable spatial analysis in a geographic information system (GIS).

Step 1: **Compile Baseline Information and Data:** The framework for assessing anticipated impacts from solar energy development within the SEZs should incorporate information from a number of sources including (but not limited to):

- the Solar PEIS
- BLM Rapid Ecoregional Assessments
- The Nature Conservancy Ecoregional Assessments
- BLM Resource Management Plans (RMPs);
- Habitat Conservation Plans (HCPs);
- Rangeland Health Assessments
- BLM resource specialists; and
- Other relevant studies and or research

The BLM Rapid Ecoregional Assessments provide information on the ecological values, status, and trends in the ecoregion where a SEZ is located. Rangeland Health Assessments are conducted and maintained by the BLM Field Offices to evaluate rangeland rangeland health and to determine whether land management practices are maintaining Land Health Standards. Land Health Standards are developed based on four underlying fundamentals (43 CFR § 4180.1):

- Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

- Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

- Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs.

- Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal proposed or candidate threatened and endangered species, and other special status species.

Step 2: **Review the Solar PEIS and other Documents:** A preliminary source of information for determining baseline conditions is the Solar PEIS, which included regional-scale impact assessments for each SEZ that could be used to develop a more accurate baseline for understanding unavoidable impacts of solar energy development within each SEZ. The BLM can use the impact determinations presented in the Solar PEIS as an initial reference from which more detailed and accurate impacts can be defined based on local BLM expert knowledge and other information in the BLM RMPs. Development of a table of impacts by resource is recommended to summarize the unavoidable impacts.

Step 3: **Develop a Conceptual Model:** Unavoidable impacts are also better understood in a regional context through the development of conceptual models. Conceptual models depict our current understanding of the interrelationships between key ecosystem components, processes, and stressors and describe the role that resources, individually and in concert with one another, play in the function of the relevant ecological, social, and cultural systems present in the region. Using these models, interactions between human activities (e.g., solar development) and environmental resources can be illustrated to better understand the possible relationships of impacts related to solar energy development. These models can also provide the context to identify critical resources at the local scale near the SEZ. Attachment B illustrates an example conceptual model that can be developed for the region as well as for a specific SEZ. Information sources used for the development of the conceptual model may include (but are not limited to) all sources listed in Step 1.

2.2.3 Assessing Unavoidable Impacts and Identifying Those That Warrant Off-site Mitigation

Many of the resource areas of concern are associated with the ecological health of the SEZ lands (e.g., soils, vegetation, wildlife, riparian areas). Methods for assessing unavoidable ecological impacts and those that warrant off-site mitigation are addressed in this section. Methods for assessing impacts to resources that warrant mitigation will generally start with review of the Solar PEIS impact assessment by BLM specialists. It is suggested that the impacts be summarized and evaluated in table format; an example template is provided in Attachment C. For resources that have unavoidable impacts, further assessment of whether those impacts will warrant off-site mitigation will be conducted. Impacts to threatened or endangered species that require off-site mitigation will be addressed as required under the ESA. Specific methods for assessing impacts that warrant off-site mitigation for cultural resources and visual resources are discussed in Attachments D and E, respectively.

The recommended framework for understanding those unavoidable ecological impacts that warrant off-site mitigation is consistent with the BLM AIM Strategy (Toevs et al. 2011) by including an evaluation of problematic regional trends. A combination of qualitative and quantitative approaches exist for evaluating regional trends, including (1) geospatial overlay analyses using available spatial from the BLM REAs and other sources and (2) by evaluating rangeland health metrics to determine whether Land Health Standards are being maintained. These two approaches may be complimentary to one another and are summarized below.

2.2.3.1 Geospatial Trends Evaluation Using BLM REA Data

This approach includes a systematic evaluation of status and trends for the resources (i.e. conservation elements [CE]) to identify important resources that may warrant mitigation. A framework for determining status and trends for various CEs is presented in BLM REAs (e.g., Mojave Basin and Range REA [BLM 2013a]).

The BLM REAs define CEs as resources of conservation concern within an ecoregion. These elements could include habitat or populations of plant and animal taxa, such as threatened and endangered species, or ecological systems and plant communities of regional importance. A list of CEs could also include other resource values, such as highly erodible soils, populations of wild horses and burros, scenic viewsheds, or designated sites of natural, historical or cultural significance.

Problematic trends are understood by forecasting the response of CEs to one of several change agents (CA) in the ecoregion. The CAs include fire, invasive species, climate change, and human development. Of these CAs, the CE responses to human development are the easiest to predict in a meaningful timeframe for solar regional mitigation planning because solar energy development represents an anthropogenic disturbance and the direct impacts of human development are likely to affect all CEs similarly. Understanding the problematic CE trends is accomplished through 1) a geospatial analysis of available ecoregional data and 2) localized resource knowledge by BLM field experts. Figure 2.2-1 presents a conceptual illustration of the geospatial framework for determining the status and trends of CEs in the ecoregion. The geospatial data used in this assessment are available publicly from open sources. These data include the BLM's landscape condition model as provided in BLM REAs, modeled land cover types, and species-specific habitat suitability models. The landscape condition model can be used as a proxy for landscape intactness. Evaluating status and trends of resource-specific geospatial data in an ecoregional context will provide a better understanding of the impacts of solar energy development within the Dry Lake SEZ relative to the rest of the ecoregion.

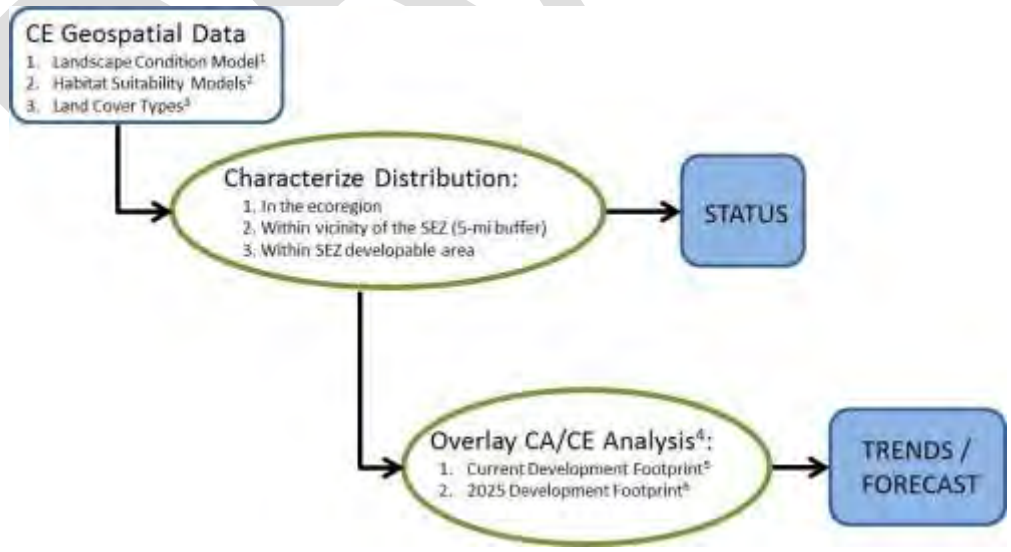

Figure 2.2-1: Conceptual Diagram for Estimating Status and Trends of Conservation Elements in the Ecoregion for Solar Regional Mitigation Planning

The results of the status and trends assessment provide a systematic and quantitative basis for understanding resource vulnerabilities in the ecoregion. Conservation elements that exhibit the most vulnerability and are associated with development on the SEZ may be identified as important resources. Impacts to these resources from solar energy development may warrant off-site mitigation, depending on the likelihood that these impacts may be avoided or minimized. Information obtained from the Solar PEIS, conceptual models, BLM resource specialists, and stakeholders will determine whether impacts may be avoided or minimized on-site.

2.2.3.2 Evaluation of Rangeland Health Indicators

Consistent with the BLM Rangeland Health Standards Guidance (BLM H-4180-1) and the AIM Strategy (Toevs et al. 2011), the evaluation of key ecosystem indictors may provide an understanding of how resources may be affected by solar energy development and whether impacts to these resources warrant off-site mitigation. An example protocol for interpreting rangeland health indicators is discussed in Pellant et al. (2005). Some metrics that can be qualitatively or quantitatively evaluated to determine problematic trends and important resources include the similarity index (range condition) and trend studies. The similarity index can be used as an index of the current plant community in relation to the historic climax plant community or desired plant community. Trend studies determine the directional change in the current plant community and soils in relation to the community that existed in the past along a continuum (Pellant et al. 2005). Three key ecosystem attributes of sustainable terrestrial systems provide a fundamental basis for how the BLM can evaluate ecosystems for SRMP at multiple scales (Toevs et al. 2011). The three attributes are:

1. **Soil/Site Stability:** The capacity of an area to limit redistribution and loss of soil resources (including nutrients and organic matter) by wind and water.

2. **Hydrologic Function (Water Cycle):** The capacity of an area to capture, store, and safely release water from rainfall, run-off, and snowmelt; to resist a reduction in this capacity; and to recover this capacity when a reduction does occur.

3. **Biotic Integrity:** The capacity of the biotic community to support ecosystem processes within the normal range of variability, to resist a loss in the capacity to support these processes, and to recover this capacity when losses do occur. The biotic community includes plants, animals, and microorganisms occurring in terrestrial and aquatic environments.

2.2.4 Establishing Regional Mitigation Goals and Objectives

For impacts within SEZs identified as warranting off-site mitigation, the mitigation goal, at the broadest level, is to off-set the unavoidable adverse impacts that are expected to occur in the SEZ with actions that improve or protect the impacted resource elsewhere in the region. Another equally important objective for the Solar Energy Program is to establish mitigation requirements that do not disincentivize solar development in the SEZs (see Section 1.1). The BLM will need to balance these objectives in the process of establishing the mitigation fee (Section 2.2.5)

For ecological unavoidable impacts that BLM determines warrant off-site mitigation, the BLM will develop mitigation goals and objectives for the affected ecosystem. The BLM will clearly define specific and measurable regional mitigation objectives to provide strategic direction and set clear

priorities and criteria for screening candidate sites for off-site mitigation investments (see Section 2.2.6). The objectives should enhance the ability of state and federal agencies to invest in larger scale conservation and mitigation efforts through the pooling of financial resources and prioritization of investments (i.e., mitigation funds from a single SEZ will likely not be the only source of funding for a given regional mitigation effort). The BLM will engage other federal, state, and local agencies, affected tribes, and other interested public stakeholders in developing the regional mitigation objectives.

Regional mitigation objectives will be based on an understanding of the affected ecosystem, landscape condition, current trends affecting condition, and potential for restoration. Regional mitigation objectives should consider impacts of solar energy development on multiple resources (e.g., ecological, cultural, visual, recreation, other land uses, and socioeconomics) to be

Steps in Regional Mitigation Goal and Objective Development:

1. Document existing regulatory (e.g., ESA) and land management plan protection goals.
2. Articulate overarching regional mitigation goal(s), or desired endpoints.
3. Identify opportunities for achieving complementary objectives through a single action.
4. Define at least one specific, measureable regional mitigation objective (e.g., restoration, acquisition, protection).
5. Apply monitoring and adaptive management principles.
6. Vet with BLM specialists and stakeholders; modify as appropriate.

Regional Goals and Objectives: Example - Dry Lake SEZ

The following Dry Lake SEZ specific regional mitigation goals and objectives were developed using the Steps for Establishing Regional Goals and Objectives outlined above.

Desert Tortoise

Goal: Mitigate such that the impacts do not detract from the recovery of the Desert Tortoise Mojave population.

Objective: Comply with the ESA Section 7 permit issued to the BLM by the USFWS for disturbance of tortoise habitat in the SNDO RMP area. Collect the off-site mitigation fee (currently $810 per acre) for use in supporting the recovery of the species.

Special Status Species Animals

Goal: Mitigate such that the impacts do not contribute to the listing of any of any of the special status species animals found on or near the Dry Lake SEZ.

Objective: Mitigate the loss of habitat by restoring or protecting habitat off-site.

Special Status Species Plants

Goal: Mitigate such that the impacts do not contribute to the extinction of the Rosy Two-toned Penstemon.

Objective: Protect genetic diversity by seed collection before disturbance; and secure basic scientific information pertaining to the plant.

Ecosystem Loss

Goal: No net loss of ecosystem function (*takes into account the condition of the ecosystem of the SEZ*).

Objective: Restore and/or protect an ecosystem in the region proportionate to the condition of the ecosystem of the SEZ and, where possible, in concert with protection/restoration of special status species (animal and plant) habitat.

Mitigation Objectives for Visual Resources

Goal: No net loss of visual resource values for the VRM class.

Objective: Restore and/or protect visual resource values proportionate to expected impacts in concert with ecosystem restoration.

consistent with BLM's multiple-use mandate. Where possible, the regional mitigation objectives should target activities that add to current land management obligations, and are not limited to current day-to-day management tasks.

Finally, the mitigation investments must be durable, that is, they should be made in locations that would not be expected to be adversely impacted by change agents in the future (e.g., in areas with Federal special designations). The effectiveness of the mitigation conducted based on the priorities set in the objectives will be informed by results of the BLM's long-term monitoring program (see Section 2.2.8).

Restoration and protection of ecosystems can result in multiple benefits. For example, restoration and protection of ecosystems can also provide habitat for special status species animals and/or plants, restore/protect visual resources, protect cultural resource values, etc. Restoration and/or protection on an ecosystem essentially restores and/or protects the individual components (soil, water, air, wildlife, vegetation), the services they provide (such as nutrient cycling, soil stabilization, and the ability to resist the establishment of invasive species), and the human elements they support (such as visual resources, cultural resources, and certain Native American concerns).

2.2.5 Establishing Mitigation Fees for SEZs

One of the most important lessons learned through the Dry Lake SRMS pilot project about creating a mitigation fee for an SEZ is that there is no standard method for establishing an off-site mitigation fee. Rather, based on a review of the process used for BLM and other agency projects, to date fee setting has tended to be ad hoc and specific to projects, habitats, species, or regions without much standardization. For its Solar Energy Program, the BLM is has developed a mitigation fee setting structure for the SEZs that it believes will accomplish the goals of: 1) providing funds that will compensate for the unavoidable impacts from solar development within SEZS *commensurate with the current condition of the SEZs;* and 2) incentivize development within SEZs by providing a method to estimate mitigation costs prior to lease offerings, thus increasing cost certainty for developers. The fee setting method, which is based on the value of the resources being mitigated for in a larger regional context and adjusted for the existing condition of the resources in the SEZ, is presented in this section.

In summary, the fee formula: 1) addresses the unavoidable impacts specific to each SEZ, 2) addresses the conservation needs of both the local area and the greater ecoregion, 3) represents the estimated costs of the mitigation actions determined appropriate to meet conservation objectives, and 4) is simple enough that it can be replicated in other SEZs without significant

Further Description of the three replacement options for setting the base fee:

1) *Acquisition of non-federal land or rights in land:*
   a) *Purchase and management (for the term of the right-of-way) of an equivalent acreage in the same state and ecological sub-region*
2) *Restoration of disturbed federal land (this method was chosen in the Dry Lake Pilot SEZ)*
   a) *Restore and manage (for the term of the right-of-way) a disturbed acre in the same State and ecological sub-region*
3) *Prevention of the loss of imminently threatened federal land*
   a) *Effectively neutralize an imminent threat to an equivalent acre of federal land in the same State and ecological sub-region and manage the acre in a manner that sustains the resource values for the term of the right-of-way and the time required to restore the SEZ upon expiration of the right-of-way.*

investment of time and money. The steps to establish the mitigation fee are:

Step 1: Establishing a General Base Fee

The general base fee for off-site mitigation is defined as the dollar figure that is the approximate cost of replacing one developed acre with an equivalent intact acre of the same ecological character. Replacement, however, can be accomplished one of three ways: 1) acquisition of non-federal land or rights in land; 2) restoration of disturbed federal land; or 3) prevention of the loss of imminently threatened federal land. The specific replacement technique utilized for an SEZ will depend on conservation goals, ecological/resource threats, and opportunities for off-site mitigation.

Step 1-A: Costing the Base Fee

Once a replacement option or combination of options has been chose, a BLM economist will perform a market analysis to determine the cost of replacement. For land acquisition, a real estate analysis to determine pricing per acre in similar location and condition as the SEZ is likely to be used. For restoration, local contractors would be queried for estimates on the cost of restoring one acre of local vegetation; e.g. in Dry Lake contractors were asked how much it would cost to replace an acre of creosote-bursage habitat on a burn scar.

Alternatively, if it is determined that the base fee will be estimated on the basis of the cost to prevent the loss of an imminent threat to federal lands, then the costs associated with the actions required to prevent such a threat on an area similar to the size of the SEZ or a project within the SEZ would need to be estimated over the life of the project.

In general, both acquisition and restoration require a front-end capital investment, and all three strategies require funding for ongoing management to achieve long-term success. As is the case with most economic analyses, the specific costs can vary greatly depending on such variables as market conditions, location, the intensity of the restoration effort, and timing. Accordingly, the BLM will conduct a market analysis just prior to the lease offering so that developers have enough time to account for mitigation costs in their budgets

Dry Lake Example: *The per acre mitigation fee for the Dry Lake SEZ is $14,224 per acre. This value was attained by multiplying the cost of restoring one acre of habitat in this area (in this case $10,000 per acre for creosote-bursage habitat), by the total amount of acreage disturbed (maximum of about 3,000 acres for the Dry Lake SEZ). Thus the total restoration cost estimated in Task 1is $30,000,000. The durability fees associated with the restoration include the cost of law enforcement and monitoring for the restoration area over a 30-year time horizon, which is the assumed life of the project. These actions contribute an additional $8,100,000 to the total cost of mitigation. The last item is an overhead charge of 12%, which comes to $4,572,000. Once all of these costs have been summed, the last step is to divide them by the predicted number of acres disturbed (3,000 acres in this example) to acquire the mitigation fee of $14,224 per acre. It should be noted that the base fee of $10,000 used in the Dry Lake SRMS pilot project is specific to the restoration of one acre of creosote-bursage and was estimated by contacting local restoration contractors. It is expected that restoration in difference ecosystems will have a different cost.*

Step 1-B: Costing for Durability of Replacement Actions

In addition to the fees associated with one of the three replacement methods outlined above, the base fee also needs to incorporate the costs of actions required to ensure that the replacement measures are durable. For example, if restoration were used to set the base fee, funding for law enforcement actions for the newly restored areas may also be required to ensure success of the restoration effort. All of the replacement and durability costs would be summed together and divided by the total amount of developable acres in the SEZ to determine the per acre base fee for that SEZ.

Step 2: Adjust Base Fee According to Landscape Condition and Resource Values within the SEZ

The goal of this step is to adjust the cost estimate (i.e. base fee) to reflect the landscape condition and resource values within the SEZ. To do this, a two-dimensional matrix was created to assign percentage multiplier values on the basis of relative rankings of landscape condition index and resource values. Sub-steps 2-A and 2-B detail how to use Table X2 to provide the appropriate multiplier value in each SEZ. It should be noted that the multiplier values given in Table 2.2-1 were those deemed appropriate for the Dry Lake SEZ. It may be appropriate to modify these values when conducting mitigation fee setting for other SEZs (e.g., the percent multipliers for SEZs with high or critical may be increased if this matches requirements or objectives of applicable land use plans).

Rationale behind adjusting the base fee: *There are two main reasons why adjusting the base fee is needed: 1) some SEZs are already disturbed by current or previous uses (such as grazing) and should be discounted as such, and 2) some ecological systems (and the economic, and/or social systems they support) are more valuable than others in terms of biological diversity and/or productivity, scenic values, habitat value, recreational-use etc. By adjusting the base fee for off-site mitigation to reflect these differences between SEZs, the fees charged for the loss of unaltered and valuable ecosystem resources will be higher than those for already altered and less valuable areas.*

Step 2-A: Determine Landscape Condition Relative to Ecoregion

The REA landscape condition maps provide a percent value between 0 and 1 for each 30 meter square land area within each ecoregion. Values closer to 1 indicate a more intact landscape while values closer to 0 indicate a more altered landscape. The exact methodology to derive these landscape condition indices can be found in the appropriate documentation within the REA (BLM 2013a, BLM 2013b).

Use the landscape condition index (or similar GIS layer) included as part of the BLM Rapid Ecological Assessment (REA; discussed in Sections 1.4.3 and 2.2.3.1 above) to estimate the average landscape condition index for the SEZ. The following description explains in detail how to determine the appropriate landscape condition category for an SEZ.

Category 1: SEZ Landscape Condition More Altered Than the Ecoregion

The SEZ condition is considered more altered than the ecoregion if the SEZ average landscape condition value is less than the average ecoregion landscape condition value minus one-half of one standard deviation unit of the average ecoregion condition:

Table 2.2-1. Matrix of Percent Multiplier Values for Adjusting the Base Fee

		Resource Value			
		Critical	High	Moderate	Low
SEZ Landscape Condition Relative to Ecoregion	SEZ Less Altered Than Ecoregion	100%	80%	60%	40%
	SEZ Similar to Ecoregion	80%	60%	40%	20%
	SEZ More Altered Than Ecoregion	60%	40%	20%	0%

$ALC_{SEZ} < [ALC_{Ecoregion} - (0.5*SD_{Ecoregion})]$

where ALC_{SEZ} = average landscape condition of the sez; $ALC_{ECOREGION}$ = average landscape condition of the ecoregion; and $SD_{Ecoregion}$ = standard deviation for the ecoregion data

Category 2: SEZ Landscape Condition Similar to Ecoregion

The SEZ condition is considered similar to the ecoregion if the SEZ average landscape condition value is within one-half of one standard deviation unit (+/-) of the average ecoregion landscape condition value:

$[ALC_{Ecoregion} - (0.5*SD_{Ecoregion})] < ALC_{SEZ} < [ALC_{Ecoregion} + (0.5*SD_{Ecoregion})]$

Category 3: SEZ Landscape Condition Less Altered Than the Ecoregion

The SEZ condition is considered less altered than the ecoregion if the SEZ average landscape condition value is greater than the average ecoregion condition value plus one-half of one standard deviation unit of the average ecoregion condition:

$ALC_{SEZ} > [ALC_{Ecoregion} + (0.5*SD_{Ecoregion})]$

Use of Half a Standard Deviation:
The inclusion of the standard deviation provides a statistical basis for differentiating SEZ categories that accounts for variability inherent in spatial data. One-half of a standard deviation was chosen specifically because it divides a distribution roughly into equal thirds, i.e. 31% of the population would fall into the less altered than ecoregion category, 38% would fall into the similar to ecoregion category, and 31% would fall into the more altered than ecoregion category. By contrast, a full standard deviation would create three categories that are not close in size, i.e. 16%, 68%, and 16%, respectively. It was determined that a full standard deviation would therefore group too many of the SEZs that were actually quite different from the ecoregion within the category "similar to ecoregion".

Step 2-B: Determine the Resource Value for the SEZ

A BLM interdisciplinary (ID) team will evaluate the SEZ according to four different resource value categories detailed in Table 2.2-2. For each of the four categories, on the basis of local field data and knowledge the BLM ID Team assigns a point value between 0 and 3 that best represents the SEZ under consideration. The points for each of the four categories are then summed and the final resource value category is determined via Table 2.2-3. The resource value categories on Table 2.2-3 align with those listed on the horizontal access of the two-dimensional matrix (Table 2.2-1). Similar tables may be used to rate resource value for other SEZs during the SRMS process.

Table 2.2-2. Assessment Categories Defining Points for Resource Values

Points	Value in the RMP	Rarity	Legal/Policy Status	Resilience
3	Afforded special designation in law and/or in the RMP	Resources values are specifically identified as rare at a national level are present	Special permitting required by law	Not resilient
2	Afforded a special designation in the RMP (ACEC, SRMA, etc.) and identified as an avoidance area.	Resources values specifically identified as rare at a regional level are present	Special permitting required by policy	Low resilience
1	Not avoidance, but specific protective management prescriptions	Resources values specifically identified as rare in the planning area are present	Special protection measures required by policy	Somewhat resilient
0	Not avoidance, no specific protective management prescriptions	Resources values specifically identified as rare in the planning area are not present	General protection measures required by policy	Highly resilient

Table 2.2-3. Score Ranges for Resource Values

Total Score		Resource Value Category
Low End	High End	
10	12	Critical
7	9	High
4	6	Moderate
0	3	Low

The determination of resource values within SEZs will also be based on the BLM Off-Site Mitigation Manual[7], which offers guidelines for determining resource value. The guidelines for resource value evaluation are to consider:

1. The value placed on the resource in the land use plan. For example, Visual Resource Management Class II has a higher level of importance than Class III; and acre per acre, riparian areas are generally considered to be more valuable than uplands, depending on the resource scarcity and values being considered.

2. The rarity of the resource.

3. The legal status or state or national policy status of the resource. For example, Greater Sage-Grouse is a BLM-sensitive species and a candidate species under the Endangered Species Act. Its habitat is important on a range-wide and inter-regional basis as well as having local importance. Other examples include units of the National Landscape Conservation System (NLCS) (National Monuments, National Conservation Areas, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails).

4. The resilience of the resource in the face of change and impact. For example, some animal species may acclimate fairly well to certain levels or types of development, while other species may decrease in population or abandon the area entirely, at least over the short term. BLM Resource Management Plans

Step 3: Calculate the final per-acre off-site mitigation fee for an SEZ

The final per-acre off-site mitigation fee for an SEZ is calculated according to equation 1:

Equation 1:

$$\text{Per Acre Off} - \text{site Mitigation Fee (\$ per acre)} = [\text{Per Acre SEZ Base Fee (\$ per acre)} - \text{ESA Section 7 Permit Fee (\$ per acre)}] * (\text{Landscape Condition and Resource Value Percentage Multiplier})$$

The per-acre off-site mitigation fee is calculated by subtracting any applicable ESA section 7 permit fees from the base fee calculated in Step 1, and then multiplying that resulting value by the percentage multiplier determined in Step 2.

Step 4: Calculate the total mitigation fee for a ROW grant

The last step is to calculate the total mitigation fee for a particular ROW within an SEZ. This is accomplished by simply multiplying the per-acre off-site mitigation fee determined in Step 3 by the impacted acres as described in the ROW (Equation 2).

[7] Policy revising 2008 policy IM (BLM 2008b) is under development.

Equation 2:

$$\text{Total Project Mitigation Fee (\$)} = \text{Land Leased (acres)} * \text{Per Acre Off} - \text{site Mitigation fee (\$ per acre)}$$

Using Rangeland Health Indicators in Resource Value Assessment

Another area of discussion during the SRMS pilot project was incorporating BLM Rangeland Health Indicators into the resource value estimation presented in Table 2.2-2. . Although these discussions occurred too late in the Dry Lake Pilot to be included in that SRMS, the idea may prove useful in future SRMS projects. One of the suggestions would be to evaluate the resilience category using rangeland health data, since those data would, by definition, factor in resilience. Another suggestion would be to create a separate new column for Rangeland Health Indicators.

Results of the Base Fee Adjustment for the Dry Lake SEZ:

For the Dry Lake SEZ SRMS pilot project, the results of the landscape condition index indicated that the landscape within the Dry Lake SEZ is more altered than the surrounding ecoregion. In addition, the interdisciplinary team initial assessment indicated a resource value category of moderate. These two scaling factors indicate a percentage multiplier of 20% from Table 2.2-1.

*According to Equation 1, the ESA section 7 permit fee, which is $810 per acre in the Dry Lake SEZ, is subtracted from the base fee calculated in Step 1. This value is then multiplied by the percentage multiplier determined in Step 2 to determine the final per-acre mitigation fee for Dry Lake. Following these calculations through, the per acre off-site mitigation fee for the Dry Lake SEZ is $2,682 per acre (($14,224 – 810)*0.2). The calculation of the final mitigation fee assessed to a developer is completed by multiplying this per acre mitigation fee by the total amount of acres leased in a ROW.*

2.2.6 Screening Candidate Mitigation Locations and Actions

As part of the SRMS process, an initial set of potential sites to receive mitigation action (i.e., candidate sites) should be identified and screened for meeting the regional mitigation objectives previously identified (see Section 2.2.4). However, depending on the timing of the SRMS process, a re-evaluation of candidate sites may be needed at the time of lease offering for specific SEZs. The re-evaluation will allow for flexibility to take changing conditions within candidate sites and varying costs into consideration, so as to allow identification of mitigation locations and actions with the highest regional value.

The BLM will use various mitigation tools and approaches that are available to the agency to screen and select candidate sites. Proximity to SEZs will not be a limiting factor in identifying suitable candidate sites, although candidate sites should be in the same ecoregion and subregion as the SEZ

being mitigated. BLM will give priority to sites that present the best options for successful mitigation and conservation benefits.

The process identified for screening and selection of candidate sites for off-site mitigation involves four steps, as described below.

Step 1. Identify a Full Range of Mitigation Options: The first step is to identify the full range of mitigation options available that would achieve the regional mitigation goals and objectives. These options would include, but would not necessarily be limited to, restoration and enhancement activities (e.g., invasive species management, fencing, road closures), mitigation banking, land acquisition, withdrawal of BLM lands from other uses[8], special land designations/uses, and law enforcement actions. The BLM will take input on the range of options from stakeholders, and consider and screen the various options to determine the best fit with their mitigation objectives.

Step 2. Assess Alternative Mitigation Sites and Actions: The second step is to identify and assess alternative candidate mitigation options and sites that meet the regional goals and objectives. A template candidate site screening matrix (Attachment F) has been developed to assist with this identification and assessment; this matrix may require modification to adequately assess specific regional mitigation objectives for individual SEZs. The screening matrix should capture site characterization elements of the candidate sites and provide a framework to rate and compare the sites with regard to: (1) their ability to address mitigation effectiveness and provide additionality (i.e., mitigation in addition to current land management obligations) to management practice; (2) feasibility of achieving successful mitigation in a timely manner; (3) durability of the mitigation over time; and(4) the overall risk to the success of the mitigation efforts.

Step 3. Review and Analyze Mitigation Sites in GIS: The identification and assessment process should entail use of BLM expert knowledge of their lands/resources combined with GIS analyses to find comparable options that meet a set of basic qualifying criteria ("go/no-go criteria"), such as location in the same ecoregion and ecological subregion as the SEZ, location in the same ESA recovery unit as the SEZ (if applicable), same hydrologic basin, etc. (see matrix in Attachment F). GIS analyses will also assist in determining the presence of multiple unique and valuable resources within a given candidate site, to the extent that data are available for this purpose. GIS-based approaches using environmental planning software such as Marxan (Ball et al. 2009) may support decision making by incorporating multiple GIS datasets on ecological values and distributions. Additionally, Rangeland Health Indicators (discussed above in Section 2.2.3.1) may be used to evaluate the status of the candidate site lands and compare them with each other and with the status of the SEZ. Stakeholder involvement in the identification process is important, especially in identifying possible non-BLM lands that meet the criteria. Stakeholder-identified candidate sites should be assessed similarly to BLM-identified sites through use of the screening matrix. The scoring component of the matrix allows BLM to rank and compare each of the candidate sites in a semi-quantitative fashion, although it is recognized that it may be difficult to obtain the data to support such scoring and ranking for all candidate sites.

[8] Land use authorizations for compensatory mitigation actions on BLM-administered lands may be available pursuant to relevant lands and realty authorities. For BLM-administered lands, including compensatory actions for SEZ unavoidable impacts, consideration of special land designation changes, ACEC boundary adjustments, land and resource use allocations, withdrawals, or other land use allocations would be consistent with NEPA/LUP planning procedures and public involvement processes (see Section 2.3).

Step 4. Prioritize Candidate Sites and Mitigation Options: The fourth step is to prioritize the candidate sites and the mitigation options (approaches) identified that best meet the regional mitigation goals and objectives. The screening matrix ultimately is only one tool used to prioritize the sites and options. The BLM authorized officer and supporting staff will select the preferred mitigation location and/or actions.

Step 5. Review Candidate Mitigation Sites and Options with Stakeholders: The fifth and final step is for the BLM to present for stakeholder comment the candidate mitigation site and/or options that BLM believes best meet the regional mitigation objectives. Meeting the objectives entails enhancing the ability of state and federal agencies to invest in larger scale conservation and mitigation efforts through the pooling of financial resources and prioritization of investments. Since mitigation funds from a single SEZ will likely not be the only source of funding for mitigation of a given candidate site, selecting the site and actions will require consideration of total funds likely to be available over time and utilization of those funds depending on total cost of mitigation actions required.

2.2.7 Establishing a Mitigation Funding Structure

In addition to establishing a methodology to calculate the site-specific mitigation fee, there must also be a funding structure in place to manage the fees once they are collected. Historically, there have been three main structures used to manage funds for off-site mitigation:

1) Permittee-Responsible Mitigation,
2) Mitigation/Conservation Banking, and
3) In-Lieu Fee Programs

The remainder of this section will provide a basic definition of each of these and then discuss some of the strengths and weaknesses of each structure.

Permitee-Responsible Mitigation is when the permitee, in accordance with an approved project permit, undertakes the required mitigation actions. Since the permittee is responsible for paying for the mitigation, mitigation fees are not collected and therefore there is no need to establish an independent funding structure to manage funds.

Strengths, Weakness and Considerations: The liability to complete mitigation remains with the permittee until the mitigation actions have been successfully completed in accordance with the approved project permit. In general, permittee-responsible mitigation requires significant time and effort from the permittee to complete the mitigation actions and also a significant involvement from agencies to ensure that mitigation actions have been accomplished successfully. Since the permittee remains liable for the ultimate success of the mitigation effort, there is also increased financial risk if the mitigation actions are deemed, for one reason or another, to have failed. From a regional perspective, permittee-responsible mitigation can also lead to a piecemeal approach to mitigation, where each project conducts individual mitigation actions that are not coordinated at a regional level.

Mitigation/Conservation Banking is a way to provide compensation for adverse impacts to the environment in advance of the impact. Mitigation banking applies mainly to wetlands while conservation banking is generally used for species or habitat conservation, but in both cases the 'bank' consists of parcels of land that are conserved and managed (generally in perpetuity via a conservation easement or some other mechanism) to offset impacts to the environment that occur elsewhere.

Credits are assigned to the parcels of land, e.g. 1 credit for 1 acre of land, and these credits are sold to the permittee at an established credit price (USFWS 2003).

Strengths, Weakness and Considerations: There are a number of distinct advantages in establishing a mitigation/conservation bank over a permittee-responsible mitigation approach to off-site mitigation. First, since the bank is established in advance of the impacts, it is possible to find larger, contiguous sites that could potentially serve as the bank for multiple permits, and therefore aid in achieving regional conservation goals. In other words, this approach can decrease the piecemeal approach to off-site mitigation that can result from the permittee-responsible mitigation framework. Second, upon purchasing the credits, the liability for successful mitigation is transferred from the permittee to the bank sponsor, decreasing the long-term financial risk of the permittee. Third, establishing credit prices before development reduces effort and time required of permittees, allowing for permittees to know exactly what the mitigation costs will be before they begin development. Another major difference in this framework is that the bank sponsor undertakes risk in purchasing and establishing the bank before any revenue from credit sales is received. In addition, since the responsibility for the successful long-term management of the bank is transferred from the permittee to the bank sponsor, the financial risk associated with long-term success is likewise transferred.

In-Lieu Fee Programs mitigate impacts to the environment through funds paid to a program sponsor to satisfy off-site mitigation requirements (ELI 2009). In-lieu fee programs establish credits related to the impacts generated by development, and then sell these credits to the permittees at an established price. The revenue generated from the sale of the credits is used then to fund various mitigation efforts to offset the impacts of the permittee.

Strengths, Weakness and Considerations: As is the case with mitigation/conservation banking, the liability for successful mitigation is transferred to the program sponsor once the permittee pays for the credits. The amount of credits required by each permittee is established in an agreement between the program sponsor and the permittee. Cost certainty is increased and time and effort spent on mitigation are decreased for the permittee in in-lieu fee programs because credit prices are established upfront and the liability for long-term success of the mitigation effort is transferred to the program sponsor. In-lieu fee programs also allow for a regional approach to conservation, since the program sponsor can use regional conservation objectives in the formulation of credit prices, and in the disbursement of mitigation funds. One disadvantage to this program is that it can be difficult to accurately determine long-term mitigation costs, which can lead to underfunding of mitigation efforts over time.

In general, permittee-responsible mitigation tends to be more ad hoc while mitigation/conservation bank and in-lieu fee programs tend to be more planned. As a result, time and effort spent on off-site mitigation remain high for both permittees and regulatory agencies throughout the duration of permits within a permittee responsible framework. For mitigation/conservation bank and in-lieu fee programs, considerable effort must be made upfront to establish suitable off-site mitigation locations and actions, and then to use those locations and actions to determine an appropriate credit price. However, once this upfront work is completed, the long-term administration of the bank or in-lieu fee program requires less time and effort as compared with permittee-responsible mitigation structures.

2.2.8 Mitigation Effectiveness Monitoring and Adaptive Management

As discussed in Section 1.4.2, the BLM has developed the AIM Strategy to guide monitoring of conditions and trends for BLM-managed resources and lands (Toevs et al. 2011). In the Solar PEIS, the BLM committed to developing and incorporating a monitoring and adaptive management plan into its Solar Energy Program. Detailed information about how the AIM Strategy will be implemented to support long-term monitoring of solar development is provided in Appendix A, Section A.2.4 of the Solar PEIS.

In the context of solar energy development, long-term monitoring should be conducted to (1) evaluate the effectiveness of mitigation measures, including avoidance measures, on-site mitigation, and off-site mitigation; (2) detect unanticipated direct and cumulative impacts at the project- and regional level; and (3) evaluate the effectiveness of elements of the BLM's Solar Energy Program (e.g., policies, design features).

In order to ensure that investments in off-site mitigation actions are effective and that regional mitigation objectives are being met – i.e., to ensure the effectiveness of the SRMS activities – it is critical that the long-term monitoring plan include monitoring objectives specific to the off-site mitigation locations and actions. The findings of the long-term monitoring activities will be examined by the BLM to support adaptive management of solar development (i.e., to identify the need to adjust operational parameters, modify mitigation measures, and/or implement new mitigation to prevent or minimize further impacts).

The AIM-Monitoring plan will include five primary elements: A structured implementation framework (see Figure 1) built on management questions and conceptual models of ecosystem structure and function; a standard set of core and contingent quantitative indicators and methods that can be supplemented for locally specific needs; a statistically valid, scalable sampling design; integration of remote sensing monitoring technologies; and electronic, on-site data capture and centralized data management.

The five goals of the AIM-Monitoring plan will include:

1. Determine the status, condition, and trend of priority resources and key ecosystem components and processes.

2. Determine the location, amount, and spatial pattern of priority resources, key ecosystem components and processes, disturbances, and other changes on the landscape.

3. Provide a conceptual understanding of key ecosystem components, processes, and sustainability concepts that should be incorporated into land use plans, National Environmental Policy Act (NEPA) documents, cumulative effects analyses, etc.

4. Generate quantitative and spatial data to address goals 1 and 2 and to contribute to existing land health assessment and evaluation processes at multiple scales of inquiry.

5. Generate quantitative and spatial data that are necessary to defensibly determine if management actions (e.g., land treatments) are moving resources toward desired

states, conditions, or specific resource objectives identified in planning or related documents or legal mandates.

Interpreting the status, departure, or rate of change of renewable resources to determine condition requires comparison of data collected via field sampling and/or remote sensing against indicators of ecological attributes for reference conditions. These reference conditions must be based on site or landscape potential.

Ecological site descriptions (ESDs) describe the potential of a site to support different types and amounts of vegetation, determined by factors like soils, climate, and landform. Ecological sites react to factors like disturbance or degradation (historic or current), which can lead to alternative stable plant communities outside the historic potential of the site. Elements of an ESD that are helpful for defining reference conditions and interpreting departure from reference conditions include: state-and-transition conceptual models of plant community changes in response to disturbance or management; descriptions of the range of plant communities that could exist on the site in addition to the potential vegetation; descriptions of anthropogenic and natural disturbances and their potential to cause changes in plant communities; descriptions of dynamic soil properties (e.g., organic matter content, soil aggregate stability), and soil cover (e.g., bare ground).

ESDs are the basic units for stratifying landscapes for site-level AIM-Monitoring efforts and are also fundamental for most terrestrial upland Land Health Standards and land health evaluations in the BLM. While ESDs are the foundation upon which AIM Monitoring data are evaluated, efforts are currently underway to determine methods for describing current and reference resource conditions based on land potential at broader scales using a combination of field and remote sensing data.

The BLM will use information derived from AIM Monitoring to make necessary management adjustments to meet resource objectives described at project, activity plan, resource management plan, and/or national program levels. Reporting at multiple scales will inform decision makers on the effectiveness of management actions, opportunities for adaptive management, refinement of conceptual models, and evaluating the monitoring program itself. Adaptive changes will be subject to environmental analysis, land use planning, and public involvement, as appropriate.

2.3 Options for Developing Solar Regional Mitigation Strategies

Solar Regional Mitigation Strategies (SRMS) for the 18 existing Solar Energy Zones (SEZ) may be developed through a non-NEPA study process that builds on the Solar PEIS (July 2012) and Record of Decision (October 2012). Alternatively, SRMS's for existing SEZs may be developed through a planning- or project-level decision process such as interagency Habitat Conservation Planning or species recovery planning associated with Endangered Species Act compliance or NEPA review for an individual project or RMP revision. SRMS's developed through a planning or project-level decision process would be implemented consistent with procedures set forth in BLM NEPA Handbook H-1790-1 and BLM Land Use Planning Handbook H-1601-1.

Note, as described in the Solar PEIS ROD (Section B.4.7), the designation of new SEZs should include an accompanying SRMS. The BLM will analyze new SEZs and their SRMS's through a land use planning and NEPA process which will result in a decision record.

The BLM has identified four possible options for field office development of SRMS's for existing SEZs. Under all options, the BLM assumes that the mitigation hierarchy, as defined in the Solar PEIS (July 2012, ROD October, 2012) including exclusions, programmatic and SEZ-specific design features, as well as criteria set forth in the BLM Off-site Mitigation Manual (2013), will form the foundation of unavoidable impact assessment and compensatory mitigation requirements and fee setting. The BLM also assume that SRMS's will be in addition to existing land management obligations, in terms of time and resources, durable in terms lasting impact on lands and resources, developed based on sound science, specify clear and measureable objectives, account for fair and equitable valuation of resources and mitigation fees and fund holding structures, and transparently identify SEZ development incentives.

Sound science in this context, is assumed to include, but not be limited to, best available data and clear geospatial analytical approaches, including assessment of coarse- and fine-scale scale geographic data (e.g. BLM Rapid Ecological Assessment, TNC Ecoregional Study, etc) and Solar Long-term Monitoring to inform ecosystem and landscape-level resource conditions and trends and authorized decisions regarding which unavoidable impacts warrant off-site mitigation and how mitigation effectiveness will be evaluated, over time, for adaptive management.

SRMS development options for existing SEZs are outlined in Sections 2.3.1 through 2.3.4.

2.3.1 Non-NEPA Pre-Competitive Lease/Pre-Project Study

Under this option an SRMS would be developed as a non-NEPA study, and would build upon the programmatic-level NEPA analyses for direct, indirect, and cumulative impacts. The content of this non-NEPA study would be to refine the baseline conditions at a SEZ, describe likely unavoidable impacts at a SEZ, describe those impacts that warrant off-site mitigation resulting from full SEZ build-out, define objectives for off-site compensatory mitigation, recommend a per acre mitigation fee based on relative resource values at the SEZ and market valuation, establish a set of priority mitigation action(s) (where and what), and recommended structure to hold and disperse fees. The non-NEPA study would not result in a formal decision upon completion but would inform future project level decisions and be analyzed as part of the required project-specific NEPA analysis for development in the SEZ.

2.3.2 Competitive Lease or Project Authorization and NEPA Analysis

Under this option an SRMS would be completed concurrent with or immediately preceding a the NEPA analysis that supports a competitive lease or project authorization. The content for the SRMS would be the same as under option 1. Combining the development of the SRMS with the competitive lease or project authorization NEPA analysis would allow the BLM to make a formal decision regarding the SRMS at the end of the process.

2.3.3 SEZ Development NEPA Analysis

Under this option an SRMS would precede a specific competitive lease or project authorization and would be combined with a bounded development analysis completed for the SEZ. Developing the SRMS as part of the bounded SEZ development NEPA analysis would allow the BLM to make a formal decision regarding the SRMS at the end of the process. The bounded analysis completed at either the EA or EIS-level would assume full development of developable areas of the SEZ through the most impacting (and appropriate) solar technology. Post-lease solar project development Plans of Development within the SEZ which fall within the scope of analysis and impacts identified in the EA could be processed

through a Determination of NEPA Adequacy and Notice to Proceed. The content for the SRMS component of the analysis would be the same as under option 1.

2.3.4 New or Revised Land Use Planning Process

Under this option, an SRMS for an existing SEZ could be developed as part of the development of a new or revised Resource Management Plan. Developing an SRMS as part of a planning process (and the associated NEPA analysis) would allow the BLM to make a formal decision regarding the SRMS at the end of the process. The content for the SRMS would be the same as under option 1.

2.4 SRMS Team Composition, Roles, and Responsibilities

The process to develop a SRMS will involve many, if not all, of the groups identified in this section. A summary of the potential roles and responsibilities of each group is provided. The BLM staff responsible for development of a SRMS should identify the key players in each of these groups and begin coordinating with them as early as possible in the SRMS process.

BLM Washington Office. The BLM Washington Office may play a critical role in establishing administrative priorities for developing specific SRMSs and in making policy decisions on issues that have implications and impacts across the BLM Solar Energy Program, or other programs. Washington Office staff may also provide expertise on specific technical issues. In particular, Washington Office staff supporting the BLM AIM Strategy, the REA process, and other landscape-scale resource management initiatives can provide valuable assistance to the SRMS process. Economists in the Washington Office may be able to assist specifically with efforts to establish mitigation fees and fee holding structures.

BLM State, District, and Field Offices. Administrative priorities for SRMS development must be established at the state, district, and field office levels. Appropriate resources must be allocated and reasonable schedules must be established. An Interdisciplinary Team (ID Team) must be established to engage resource specialists. BLM assumes that Solar Regional Mitigation Strategy documents will be coordinated and developed closely between all levels of the agency (BLM WO, SO, DO, FO). However, for most SRMS's decision authority will be under designated line manager, or Authorized Officer, in the case of most SEZ's is the Field Manager.

BLM SRMS Project Manager. A Project Manager will be identified and given adequate authority to lead the ID Team, manage necessary technical resources (e.g., other BLM experts, technical support contractors, non-BLM experts), and engage with coordinating agencies and stakeholders. It is most likely that the project manager will be located in the district or field office; however, someone from the state office might also be tasked. The Project Manager will be responsible for identifying and communicating with coordinating agencies and stakeholders to ensure their engagement. The Project Manager also will be responsible for maintaining the budget and schedule for the SRMS process and for producing draft and final deliverables. Ideally, the Project Manager will be largely dedicated to the SRMS and have limited responsibilities to other projects.

BLM Interdisciplinary Team. The ID Team will be composed of those resource specialists at the state, district, and field office levels that have the relevant knowledge and expertise to support the analysis of (1) baseline conditions, including regional trends and conditions; (2) unavoidable impacts that warrant off-site mitigation; (3) regional mitigation objectives and priorities; (4) appropriate mitigation

locations and/or actions; and (5) mitigation fees. Members of the ID Team should be available to engage with other technical resources engaged in the project, coordinating agencies, and stakeholders throughout the SRMS process. ID Team members will not be exclusively dedicated to the SRMS process, but it is expected to take a considerable amount of their time and they should be given direction on how to allocate their time among other responsibilities.

BLM National Operations Center. Staff in the BLM National Operations Center (NOC) may be able to provide valuable technical assistance to the SRMS process, either by supplementing the expertise of the ID Team or, in some cases, serving as an ID Team member.

Technical Support Contractors. The BLM may contract for technical support to assist the Project Manager and/or supplement the work of the ID Team. This type of support would be particularly valuable if members of the ID Team have substantial competing responsibilities.

Coordinating Federal, State, and Local Agency Staff. As discussed in Section 1.5, it is critical that other federal, state, and local agencies be involved in the SRMS process to ensure that (1) their issues and concerns are integrated into the regional mitigation objectives and priorities and (2) relevant data and expertise in these agencies is incorporated into the process. Staff from these agencies should participate in the SRMS process at the level needed in order to support concurrence by their agency in the requirements and provisions of a SRMS.

Stakeholders. The BLM is committed to developing SRMSs through a transparent process that engages stakeholders. As discussed in Section 2.2, it is recommended that stakeholders be given an opportunity to provide input on each element of a SRMS. Many stakeholders have relevant data and technical expertise that should be incorporated into the SRMS, as appropriate. Stakeholders will be responsible for attending public meetings and webinars, reviewing draft deliverables, and providing relevant comments regarding the SRMS.

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ATTACHMENTS

A. BLM CA-CDFG MOA

MEMORANDUM OF UNDERSTANDING BY AND BETWEEN THE BUREAU OF LAND MANAGEMENT AND THE CALIFORNIA DEPARTMENT OF FISH AND GAME

A. STATEMENT OF PURPOSE

The Bureau of Land Management (BLM) and the California Department of Fish and Game (CDFG) agree to work with each other and with the United States Fish and Wildlife Service, and the California Energy Commission in an effort to streamline renewable energy project permitting while conserving biological and natural resources within the Desert Renewable Energy Conservation Plan (DRECP) area. The BLM and CDFG have developed this memorandum of understanding (MOU) for the purpose of memorializing and making specific their cooperation and coordination to protect and conserve fish, wildlife, plants and their habitat in the DRECP area.

This MOU is a framework that describes general agency cooperation and coordination commitments. The DRECP will contain the specific implementation strategies and actions to achieve land use goals including conservation of wildlife and natural communities within the plan area, based on factors unique to the particular area and its natural resources, species, geography and other appropriate considerations.

B. STATEMENT OF AUTHORITIES

The BLM and CDFG each have specific administrative responsibility or regulatory authority under Federal and state statutes. These statutes direct them, in part to take into consideration biological and natural resources within the state, including certain species of concern and their habitats, and adverse effects resulting from public, private, and state land use and development actions. These statutes include but are not limited to:

1. BLM. The Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. § 1701 et seq.); the Omnibus Public Lands Management Act of 2009 (OPLMA), Pub. L. 111-11, March 30, 2009; the Consolidated Appropriations Act of 2012, Pub. L. 112-74, December 23, 2011; the Endangered Species Act of 1973, Sec. 2 (c)(1) and Sec. 7(a)(1) and (2) (ESA); the Sikes Act of 1974, 16 U.S.C. § 670g-o; the National Environmental Policy Act of 1969, 42 U.S.C. § 4321 et seq. (NEPA); Recreation and Public Purposes Act, 43 U.S.C. § 869, et seq. (RPPA), and 43 C.F.R. Part 24, Department of the Interior Fish and Wildlife Policy: State-Federal Relationships.

2. CDFG. The California Endangered Species Act, Fish and Game Code § 2050, et seq. (CESA); the Natural Community Conservation Plan Act, Fish and Game Code § 2800, et seq. (NCCPA); Fish and Game Code § 1600, et seq., the Native Plant Protection Act, Fish and Game Code § 1900, et seq. (NPPA); Fish and Game Code §§ 3511, 4700, 5050, and 5515; Fish and Game Code §§ 3503, 3503.5, and 3513; Fish and Game Regulations, Title 14, Cal. Code Regs.; Fish and Game Code § 1802; and the California Environmental Quality Act, Public Resources Code § 21000, et seq. (CEQA).

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C. COOPERATION AND COORDINATION

To the maximum extent possible consistent with Federal and state law, the BLM and CDFG will coordinate and cooperate with one another regarding: (i) the development of the DRECP and its subsequent implementation; (ii) the identification of goals and objectives for public land use planning and BLM Land areas for renewable energy project development and for conservation; and (iii) any other significant and relevant policy, planning, and implementation decisions that have the potential to affect fish, wildlife, and plant resources, or the habitat upon which they depend, in the DRECP area.

D. PROCEDURES AND RESPONSIBILITIES OF THE PARTIES

1. Conservation.

a. BLM's Conservation Lands. The BLM currently manages public land within the DRECP area under some form of conservation protection, including lands: (i) incorporated into the National Land Conservation System (NLCS) as a nationally significant landscape; (ii) designated as an Area of Critical Environmental Concern (ACEC) with special management provisions; or (iii) nominated for another formal resource protection status (e.g., wilderness, wild and scenic rivers, etc.). The BLM may identify additional public land within the DRECP area for conservation protection through the above or other planning actions, or site-specific actions including Sikes Act Agreements and Cooperative Agreements for Management. Some lands may be appropriate for overlapping designations. These conservation designations and their management will be described through the Record of Decision for the DRECP.

b. Habitat Reserves. If CDFG approves the DRECP as a natural community conservation plan (NCCP), it must create habitat reserves and other equivalent conservation and mitigation measures that provide for long-term management and protection as needed for the conservation of the covered species. CDFG will identify habitat reserves within the DRECP area, which will include privately owned land, state-owned land, and Federally owned land, including BLM Lands. The configuration of the habitat reserves will be based on the best available scientific data for covered species, which include Federally listed, state-listed, jointly listed, and non-listed species. CDFG will, to the maximum extent possible consistent with the NCCPA, recognize the conservation benefit of BLM's land use planning designations and management of these protected conservation lands in satisfying the conservation requirements of the NCCPA for the DRECP area.

c. BLM's Continuing Land Use Authority. The BLM retains discretion in accordance with Federal law, regulations, and policy to manage lands identified by CDFG as part of a habitat reserve. Consistent with the goals of this agreement, the BLM will work with CDFG to identify and evaluate tools and actions, consistent with BLM's land use authority as defined by Federal law, regulations, and policy, to manage the lands identified by CDFG as part of a habitat reserve to meet NCCPA requirements.

2. Compensatory Mitigation.

a. Cooperative Management of BLM Lands. The BLM and CDFG agree to consider the use of site-specific Sikes Act Agreements and Cooperative Agreements for

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Management to cooperatively manage lands within the DRECP area on which compensatory mitigation projects are located.

b. Mitigation for Impacts to Privately Owned Land or State-Owned Land. In many cases, CDFG and the BLM anticipate that impacts from renewable energy projects located on privately owned land or state-owned land will be mitigated on privately owned land or state-owned land. However, BLM may agree to authorize mitigation on BLM Lands for impacts caused by development on privately owned land or state-owned land on BLM Lands. In all cases, mitigation on BLM Lands will be managed consistent with Federal law, regulations, and policy, including any applicable site-specific Sikes Act Agreements and Cooperative Agreements for Management.

c. Nesting of Compensatory Mitigation. To the maximum extent possible consistent with Federal and state law, the BLM and CDFG will seek to avoid duplicative mitigation and may each credit compensatory mitigation measures required by the other agency as part of the compensatory mitigation required under its own laws.

d. State Mitigation on BLM Lands. California law typically requires compensatory mitigation above and beyond that required by Federal law. Project proponents or CDFG may seek to locate such additional compensatory mitigation measures for renewable energy projects on BLM Lands. Allowing the mitigation measures to be constructed or implemented on BLM Lands is within the discretion of the BLM consistent with Federal law, regulations, and policy and subject to site-specific analysis and approval by BLM. For mitigation required under state law that exceeds or is different than mitigation required by the BLM, the BLM will coordinate and consult with CDFG regarding the compensatory mitigation and applicable land use designations and will consider, where appropriate, authorizing certain mitigation actions or land use requirements to satisfy state law requirements. Under FLPMA, BLM may authorize compensatory mitigation actions required by CDFG under the NCCPA on BLM Lands which may include, but are not limited to:

i. fencing highways, freeways, and primary county roads;

ii. removing, restoring, or rehabilitating closed roads;

iii. removing of illegal dumps;

iv. removing or controlling invasive or exotic plant infestations;

v. predator control actions;

vi. improving habitat connectivity by increasing the size of existing culverts, increasing the number of culverts, or constructing alternative means of crossings;

vii. additional law enforcement patrols;

viii. restoration of habitat and corridors;

ix. acceptance of the relinquishment of grazing permits or leases to make the land available for mitigation by allocating the forage to wildlife use pursuant to the Consolidated Appropriations Act of 2012;

x. creating artificial nest or burrow sites;

xi. fencing between grazing lands and wildlife habitat lands;

xii. developing water sources for bighorn sheep; and

xiii. increasing educational outreach (e.g., interpreters, handouts, kiosks, signage, etc.);

e. Land Use Authorizations for State Mitigation on BLM Lands. The following land use authorizations are available and may be approved and granted by the BLM to authorize state-required compensatory mitigation actions described above on BLM Lands:

i. rights-of-way pursuant to 43 U.S.C. § 1761, et seq.;

ii. permits, leases, or easements pursuant to 43 C.F.R. § 2920;

iii. withdrawals pursuant to 43 U.S.C. § 1714; and

iv. leases pursuant to the Recreation and Public Purposes Act, 43 U.S.C. § 869, et seq. (RPPA)

3. Projects Proposed on Mitigation Lands. If a project is proposed on BLM Lands previously approved for compensatory mitigation purposes, both the BLM and CDFG will inform the applicant proposing to develop those mitigation lands of the extent of the existing use as mitigation, both temporally and spatially, prior to receiving an application for a right-of-way or other permit or approval for development. The BLM and CDFG will confer to discuss whether and to what extent granting the application would impair or be inconsistent with the mitigation value of the lands. The BLM, in its discretion and considering the mitigation value of the lands, will consider appropriate means of limiting impairment or inconsistency with the mitigation values and will determine whether to approve or deny any such application. In the event the BLM approves an application on mitigation land, the BLM and CDFG will further confer to identify actions to offset any impacts to previously approved compensatory mitigation from the subsequently proposed project. Prior to the BLM's approval of a subsequently proposed project, the BLM and CDFG will cooperate and coordinate to the maximum extent possible to achieve the goals of this MOU and the DRECP.

4. Notification.

a. Notice to Holders of Land Use Authorizations for Mitigation Actions. The BLM and CDFG will provide written notification to the holder of any land use authorization for any compensatory mitigation action, as described in Sections 2.e. above, upon the BLM's receipt of an application for a right-of-way or other permit or approval, CDFG's receipt of an application for any permit or approval, or the initiation of any activity by the BLM or CDFG

themselves if the application received or activity initiated has the potential to affect the BLM Lands on which the compensatory mitigation action is located. Both the BLM and CDFG agree to meet in a timely manner with the holder of the land use authorization, if a meeting is requested by any of those three parties, to discuss the application or activity and its potential impact to the compensatory mitigation action.

b. Annual Report on Project Approvals within the DRECP Area. Provide each other, on or before January 1 of each calendar year, with a written account of all rights-of-way, permits, authorizations, and other approvals issued by the BLM or CDFG for projects and activities occurring on, or potentially affecting BLM Lands within the boundaries of CDFG's habitat reserve designated under the DRECP.

E. ADMINISTRATIVE PROVISIONS

1. Effective Date. This MOU is made and entered into as of the last date of signature by and between the BLM and CDFG.

2. Unilateral Termination. Either Agency may withdraw from this MOU by delivering to the other Agency a written notice of intent to withdraw at least thirty days prior to the proposed withdrawal date. After the withdrawal date, the withdrawing Agency shall have no further obligations under this MOU.

3. Amendment or Modification. This MOU may be amended with the written agreement of the BLM and CDFG.

4. Applicability of State and Federal Law. Notwithstanding any other provision in this MOU, nothing in this MOU is intended to be nor shall it be interpreted to be inconsistent with any applicable Federal or state law or regulation.

5. Funding. This MOU does not obligate any funds from either Agency. Subject to the availability of funds, the BLM and CDFG each agrees to fund its own expenses associated with this MOU. Nothing contained in this MOU shall be construed as obligating any Federal agency to any expenditure or obligation of funds in excess or advance of appropriations, in accordance with the Anti-Deficiency Act, 31 U.S.C. §1341.

6. Elected Officials Not to Benefit. No member of or delegate to Congress shall be entitled to any share or part of this MOU, or to any benefit that may arise from it.

7. FACA. The parties will comply with the Federal Advisory Committee Act to the extent it applies.

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U.S. BUREAU OF LAND MANAGEMENT

Signature

Title

Date 11/27/2012

CALIFORNIA DEPARTMENT OF FISH AND GAME

Signature

Title DIRECTOR

Date 11/27/12

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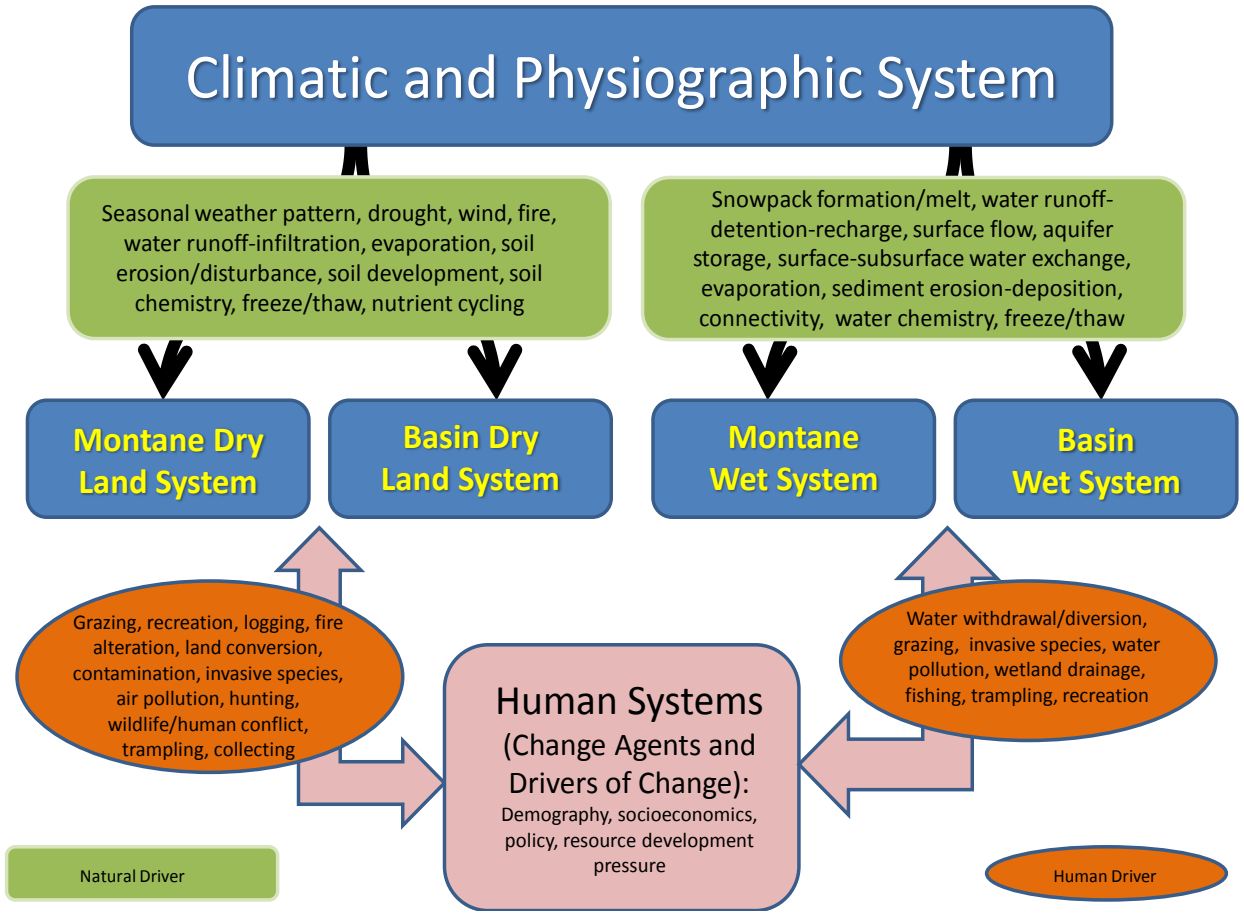
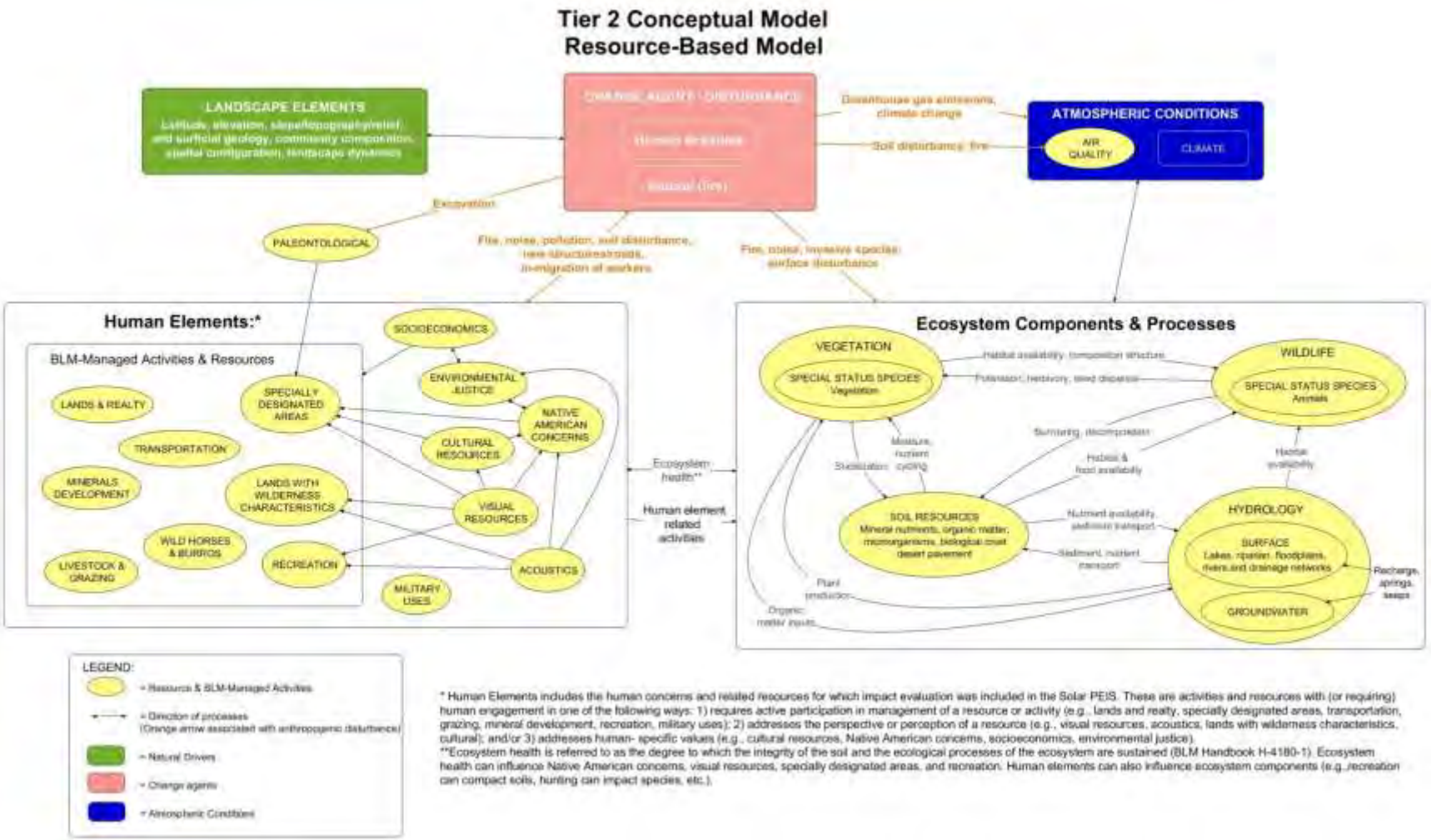
B. Example Conceptual Models

Conceptual models are used to understand ecosystem interactions at a ecoregion scale, (Tier 1), the solar development scale (Tier 2), and the SEZ-specific scale (Tier 3). The models used for the Dry Lake SRMP pilot project (as revised with stakeholder input) are presented here. Additional more complex models may be constructed if needed to support impact assessment in the future.

Tier 1 Conceptual Model- Mojave Ecoregion Model





* Human Elements includes the human concerns and related resources for which impact evaluation was included in the Solar PEIS. These are activities and resources with (or requiring) human engagement in one of the following ways: 1) requires active participation in management of a resource or activity (e.g., lands and realty, specially designated areas, transportation, grazing, mineral development, recreation, military uses); 2) addresses the perspective or perception of a resource (e.g., visual resources, acoustics, lands with wilderness characteristics, cultural); and/or 3) addresses human- specific values (e.g., cultural resources, Native American concerns, socioeconomics, environmental justice).
**Ecosystem health is referred to as the degree to which the integrity of the soil and the ecological processes of the ecosystem are sustained (BLM Handbook H-4180-1). Ecosystem health can influence Native American concerns, visual resources, specially designated areas, and recreation. Human elements can also influence ecosystem components (e.g.,recreation can compact soils, hunting can impact species, etc.).

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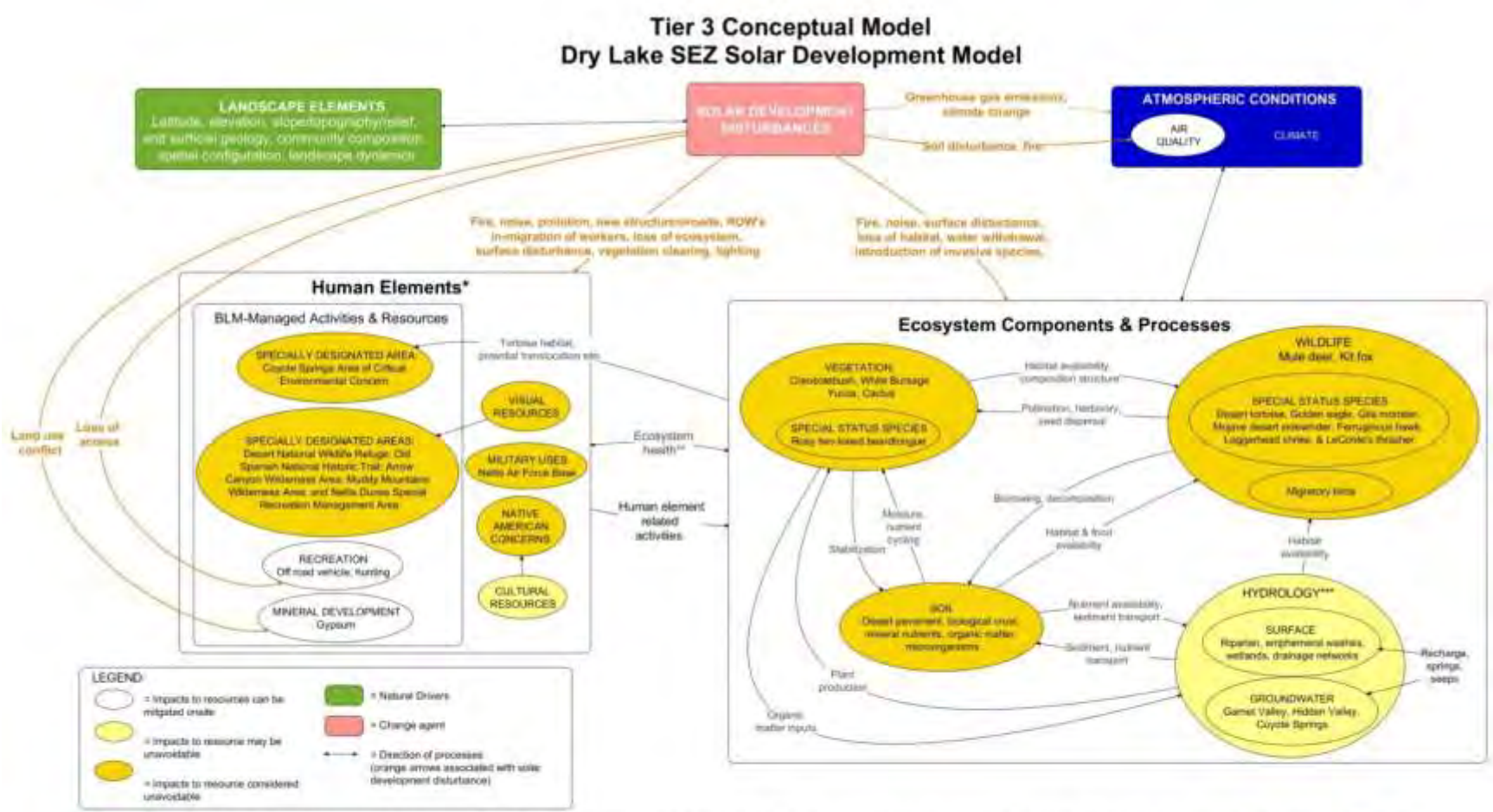

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***Unavoidable hydrologic impacts may occur due to changes in drainage and recharge patterns. Potential impacts to water availability will be mitigated on-site through the implementation of a net neutral use policy (water rights must be purchased).

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C. Template Table for Unavoidable Impacts that Warrant Mitigation

Resource/ Issue	Could Unavoidable Impacts Occur?[9]	How certain is it that the unavoidable impacts will occur?	How significant are the unavoidable impacts on-site?	How significant are the unavoidable impacts of developing the SEZ in the region?[2]	Role in the ecosystem?[3]	Other considerations	Do the unavoidable impacts warrant off-site mitigation?
Acoustics							
Air Quality							
Cultural							
Environmental Justice							
Fire							
Hazardous Waste							
Hydrology (Water/ Watershed/ Water Quality)							
Invasive/ Noxious Weeds							
Lands & Realty							
Livestock Grazing							
Military							
Minerals							
Native American Concerns							
Paleontology							
Recreation							
Riparian							

[9] Unavoidable impacts are those that cannot be adequately mitigated on-site by avoidance and/or minimization. Avoidance is accomplished by imposing spatial and/or temporal restrictions. Minimization is accomplished using design features and/or best management practices.

[2]Significance may be determined using data and evaluations provided in BLM Rapid Ecoregional Assessments, Rangeland Health Assessments/Standards, and expert opinion by local BLM staff.

[3]A conceptual model may be developed and used to understand the role that a resource plays in the ecosystem.

Resource/ Issue	Could Unavoidable Impacts Occur?[9]	How certain is it that the unavoidable impacts will occur?	How significant are the unavoidable impacts on-site?	How significant are the unavoidable impacts of developing the SEZ in the region?[2]	Role in the ecosystem?[3]	Other considerations	Do the unavoidable impacts warrant off-site mitigation?
Socioeconomics							
Soils/Erosion							
Special Status Species - Animals							
Special Status Species - Vegetation							
Specially Designated Areas							
Transportation							
Wild Horses and Burros							
Wilderness & Lands with Wilderness Characteristics							
Wildlife							
Vegetation							
Visual Resources							

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D. Mitigation for Cultural Impacts – To Be Provided

E. Mitigation for Visual Resource Impacts

INTRODUCTION

There are two parts to the determination of unavoidable impacts to visual resources, with the first being relevant to the resource itself and the second pertaining to viewshed impacts to Specially Designated Areas, such as National Parks, Wilderness Areas (WA), National Scenic and Historic Trails (NSHT), Special Recreation Management Areas (SRMA), etc.

Determining Unavoidable Impacts to Visual Resources Part I

The Technical Note outlines three aspects of unavoidable impact determination:

1. Current trends affecting the resource
2. Rarity (scarcity)
3. Management objectives outlined in the Resource Management Plans
4. Resilience

BACKGROUND

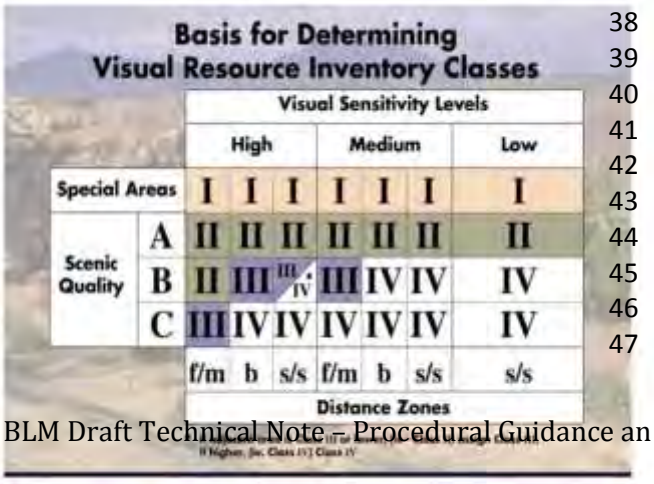
Inventory of the Visual Resource

All BLM lands are required by FLPMA to have and maintain a current inventory of visual resource condition. The Visual Resource Inventories (VRIs) examine three visual values, scenic quality, public sensitivity for scenic quality, and distance zones (better described as visibility).

Scenic Quality is rated as A, B or C with A representing areas with the highest degree of scenic quality and C with the lowest degree.

Sensitivity is rated as areas with High, Medium or Low levels of public sensitivity to the scenic quality. It is important to note that the rankings of High, Medium and Low pertain to only visual sensitivity. There will be situations where there may be low visual sensitivity, but other resources present may have values of medium or high sensitivity.

Distance Zones (DZ) are characterized as areas within a range of distance from where people commonly view the landscape (well-traveled roads, neighborhoods, campgrounds, rivers, trails, etc.). The Foreground/ Middle-ground DZ are areas within 3 to 5 miles from where people commonly view the landscape; Background DZ areas are those that extend beyond the Foreground/ Middle-ground to 15 miles from where people commonly view the landscape; and Seldom-Seen DZ include areas beyond 15 miles and landscapes concealed behind intervening topography.



igure 1: VRI Class Matrix

Visual Resource Inventory (VRI) Classes are determined through overlaying the three inventoried values, with the combination of the individual values establishing the assignment of VRI Class I, II, III, or IV. The VRI Class assignments are drawn from the VRI Class Matrix in Figure 1.

VRI Class II represents areas with the highest combined values while VRI Class IV represents

areas with lower combined value. The VRI Class I assignment is reserved for areas declared for preservation though Congressional legislation or administrative decisions.

The Visual Resource Inventory (VRI) is instrumental in answering several questions posed by the procedures for determining unavoidable impacts to the visual resource. The VRI will help answer questions regarding level of value, trends that affect the resource, scarcity and relative importance among the full range of visual values present locally and regionally (the visual resource place on the Table X Matrix and Table XX – to be provided).

While level of importance can be derived from the inventory, the VRI Classes do not prescribe management direction. VRI Classes and the underlying visual values serve as quantified information considered in making land use decisions during the RMP process. These decisions are manifested in VRM Classes and associated management objectives that establish allowable levels of visual modification. There are four VRM Classes I, II, III and IV, with the greatest protection provided by VRM Class I and II and with the least amount of protection provided by VRM Class IV.

CURRENT TRENDS AFFECTING THE VISUAL RESOURCE

Two trends can be learned from the VRI 1) human alteration to the scenic quality of the natural landscape, 2) the increase in visibility *(further development of #2 to be provided).*

Human alteration to the scenic quality of the natural landscape. Scenic quality alterations from human imposed activity are characterized as "Cultural Modification" under the VRI process for determining Scenic Quality. Scenic quality is determined by rating 7 visual characteristics of the landscape including landform, vegetation, water, color, adjacent scenery, cultural modifications, and scarcity.

Cultural modification can receive a score of 0, a negative score up to -4 , or a positive score up to +2. A score of 0 indicates that either no visual alterations are present, or those that are present do not influence the outcome for scenic quality. A negative score indicates that change adds visual variety that is discordant and inharmonious to the natural landscape. A positive score indicates change that adds favorably to the visual variety and complementary harmony of the natural landscape.

The inventoried values are geospatially represented and trends in culturally modified landscapes can be mapped and quantified.

With respect to Dry Lake Solar Energy Zone and the Mojave Desert Ecoregion. The trends discovered within the Mojave Desert Ecoregion indicated that 47% of the BLM administered lands remain visually intact with no cultural modifications, or cultural modifications present, but not contributing to or subtracting from the visual variety of the other scenic quality attributes.

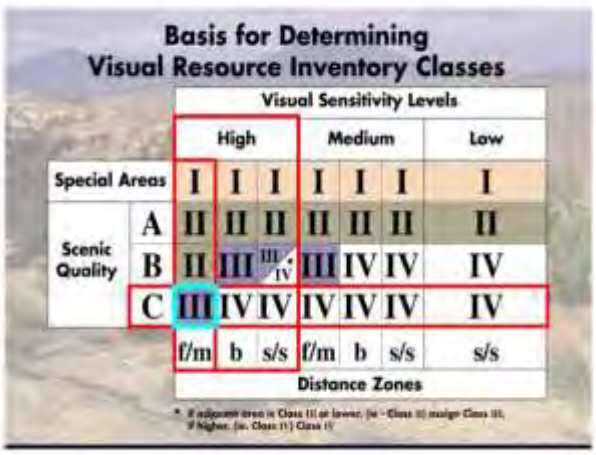
Fifty-three percent of the landscape does contain cultural modifications that are either discordant or complementary to the landscape scenic quality. Forty-eight percent of the landscape received a negative score ranging from -1 to -4 reducing the landscape's scenic quality while 5% received a positive score.

The Dry Lake Solar Energy Zone is located within a landscape documented as having cultural modifications that have discordant characteristics resulting in a negative score of **–X** (to be provided).

The goal for on-site visual mitigation for SEZs is to avoid further reduction in the Cultural Modification scoring and not perpetuate negative trends where they exist. This goal will be achieved through implementation of the Solar PEIS design features.

SCARCITY

The inventoried visual values are quantified in acres. Therefore, the scarcity of the values can be compared locally and at the ecoregional scale. While FLPMA does not define a quantified threshold for visual resource scarcity (or for that matter for any resource), the determination of scarcity is a qualitative function of value derived from the inventory compared to a quantitative percent of presence across the landscape in relationship to the distribution of the other visual values. The values are evaluated independently and in combination in the context of the VRI Class Matrix (Fig 1 and 2).



Dry Lake Solar Energy Zone. The range of values present within the boundaries of the Dry Lake SEZ includes Scenic Quality C, High Sensitivity and Foreground/ Middle-ground Distance Zone. These three values in combination render a VRI Class III (Fig. 2).

With respect to the Mojave Ecoregion, VRI Class III represent 21% of the BLM administered lands inventoried within the ecoregion, which would be considered common and fairly abundant.

RESILIENCY

Visual resource resilience has two contexts:

1. The resilience of the landscape to visually absorb the development within the SEZ while under operation.
2. The resilience to restore the natural visual intactness to the landscape after SEZ decommissioning, and

Visual absorption while SEZ is under operation. SEZs placed within the foreground/ middle-ground portions of the landscape (5 miles from areas where the public commonly views the landscape, or critical viewing locations that are less visited) would be considered to have low resilience. In this close range, the SEZ would be visually prominent even with mitigating the facility's visually contrasting design elements (form, line, color and texture). Due to the large scale of the SEZs, they may remain low in visual resilience in locations further away in the background zones out as much as 15 miles. However, there is a case to be made that the further away the SEZ is from where people commonly view the landscape and the more the project reduces visual contrast, the greater the potential for increased resilience. This would need to be determined on a case by case basis using the Contrast Rating Process and consideration of the range of VRM Class objectives.

Attaining a VRM Class I or II objective would imply high resilience; VRM Class III, moderate resilience; and VRM Class IV, low resilience from an operational/viewer relationship perspective.

The resilience to restore the natural visual intactness to the landscape. Restoring visual intactness would be directly related to the ability to restore the natural vegetation, habitats and other biological and physical resources. If determined that the biological resources have low resilience, especially with respect to vegetation, then it is predictable that the visual resource resilience would be the same.

For example, Dry Lake SEZ is within the foreground middle-ground and immediately contiguous to two highways from where the public would commonly view the landscape and consistent with the VRM Class IV objective. The spatial orientation of the Dry Lake SEZ to the casual observer would lead to the conclusion of the SEZ not having resilience.

The visual resilience at decommissioning is also low, which is consistent with the biological resources for the Mojave Desert ecoregion.

RESOURCE MANAGEMENT PLAN

The RMP designates the VRM Class objectives, which are legally binding decisions that require conformance. Projects out of conformance with the VRM objectives are either denied approval, proposed actions modified until they demonstrate conformance, or require a land use plan amendment to allow the project to be permitted.

The RMP designation of VRM Classes takes into consideration the range of visual values independently and as combined in VRI Class assignments along with other resource values, allocations, national priorities and desired outcomes. There are 4 VRM Classes I, II, III and IV.

- VRM Class I objective requires the preservation of the visual environment and allows for only minor changes that would be unnoticed by the casual observer.

- VRM Class II requires retention of the visual environment allowing for low level of change that would not attract attention of the casual observer.

- VRM Class III allows for moderate levels of visual change that can attract attention, but not visually dominate the landscape.

- VRM Class IV allows for major modification that is allowed to visually dominate the landscape.

  Under all VRM Classes, projects are required to mitigate for reducing visual contrast through repeating visual elements of the natural landscape in form, line, color and texture.

Dry Lake SEZ. The RMP designated the Dry Lake SEZ area as VRM Class III.

RMP VRM CLASS DESIGNATION, VRI VALUES AND OFF-SITE MITIGATION

Off-site mitigation for visual resources may be warranted when a proposed action is found to be out of conformance with the RMP VRM Class designation and the decision is made to amend the land use plan to a VRM Class of lesser protection. Amending the land use plan implies impacting a resource in a manner not anticipated by the land use planning process and that would be out of sync with the level of importance and protection established in the RMP. To impact this resource to a greater degree than anticipated may warrant replacing these values in suitable areas off-site from the proposed action.

A sliding scale of values lost compared to areas available to conduct offsite mitigation can be built from the VRI Class Matrix (Fig. 3). The first step is to reference the RMP and VRI to determine the VRI Class and the combination of visual values for the area subject to a VRM Class amendment. Then the combined range of values for areas that are of similar value, those of greater value, and those of lesser value are reviewed.

Consistent with biological resources, a justification can be established for a sliding scale when identifying areas suitable for off-site mitigation relative to visual values:

- 1:1 replacement for areas of common value,
- X<1:1 for areas of greater value, or a
- ratio of X>1:1 for areas lesser value may be justified.

These ratios can be used to incentivize areas for mitigating visual values that would provide the greatest public value in return for the investment.

Dry Lake SEZ. Using Dry Lake SEZ as an example, the combined visual values within the SEZ boundary are Scenic Quality C, High Sensitivity and within the Foreground/ Middle-ground. The blue square shown on the VRI Matrix (Figure 3 indicates where the combined values of the SEZ fall within the full range of combinations, which results in a VRI Class III. VRI Class III indicates a Moderate Visual Value.

The RMP designated this area as a VRM Class III, which carries a management objective that allows for moderate levels of visual change that may attract, but not dominate the attention of the casual observer.

The combination of the VRI Class III value and the RMP VRM Class III indicates a **moderate level of importance with a moderate level of resource management protection**. It is a reasonable forecast that the SEZ when partially or fully developed would not meet the VRM Class III objective and would require an RMP amendment reclassifying the area as VRM Class IV.

The SEZ's visual landscape condition scored a -1, which is similar in relationship to other visually modified landscapes within the Ecoregion. The Resource Value combined with the SEZ Visual Condition would render a numeric value of 40 on Table X2- to be provided.

Figure 3: VRI Matrix

The areas on the VRI Class Matrix shaded in purple are those combinations of comparable value and would warrant a 1:1 acre for acre replacement.

The areas shaded in white are those areas of lesser value where the ratio may be increased to a factor of 2:1.

The areas shaded in brown have greater value that may warrant reducing the ratio of replacement, perhaps to 0.75:1.

(WILL PLACE ARROWS WHEN FINAL DRAFT IS COMPLETED)

The areas shaded in tan are specially designated areas where Congressional or administrative decisions have been made to preserve the visual integrity. Occasionally there are places of impairment that may warrant restoration where the ratio could be lowered even to a greater degree, perhaps .5:1.

The inventory of visually modified landscapes reveals a potential supply of 125,422 acres that have visual values in common with the Dry Lake SEZ at a 1:1 mitigation ratio. The acreage would need to be field assessed for suitable mitigation opportunities.

There is a potential supply of X,XXX,XXX (to be provided) acres of visually modified landscapes that have lower visual value than the SEZ that may be suitable to visually mitigate off-site at a ratio of 2:1.

There is a potential supply of 2,188,143 acres of visually modified landscapes with higher visual value than the SEZ that may be suitable to visually mitigate off-site at a ratio of 0.75:1.

The Specially Designated VRI Class I areas have not been inventoried for Cultural Modifications, but it is likely that there are areas within the Specially Designated landscapes that could serve as an opportunity to mitigate visual values off-site at a ratio of 0.5:1. Non-BLM lands that would not have VRI Class assignments such as National Parks, National Wildlife Refuges, Wilderness Areas managed by others, etc. should also be placed into this category for 0.5:1 ratio for off-site visual mitigation opportunities.

SPECIALLY DESIGNATED AREAS

In addition to the visual resource inventory and RMP management direction for visual resources, consideration is often given to viewsheds stemming from Specially Designated Areas. While an SEZ may be in full conformance with the RMP VRM Class objectives, there may be concerns from the Specially Designated Areas with sensitivity toward views that extend beyond their management boundaries.

An approach for determining impacts that warrant off-site mitigation includes both the human cultural context of the landscape in question and the assessment of degree of visual change and dominance, which can be derived using the BLM Visual Contrast Rating System as described within the BLM Handbook H-8431-1 Visual Contrast Rating.

The following steps are recommended in order to initiate a process for understanding the degree of impact and the necessity to consider off-site mitigation.

1. Develop a table with accompanying maps listing Specially Designated Areas (SDAs) identified in the Final Solar PEIS as potentially having moderate to strong visual contrasts associated with solar development within the SEZ.

   For the Dry Lake SEZ, the SDAs of concern include:
   a. the Desert National Wildlife Refuge;
   b. Old Spanish National Historic Trail;
   c. Arrow Canyon WA; and
   d. Nellis Dunes SRMA),

   The following information from the Solar PEIS should be included in the table: name, type of special designation (Wilderness Area, ACEC, SRMA, National Park unit, National Historic Trail, etc.), distance

from Dry Lake SEZ, and affected area within the Special Designation (acreage/ percent of area).

2. Provide SDA managers with maps showing the locations of potential visual impacts within the SDAs from SEZ development.

3. Request the SDA manager to provide information on the purpose of the SDA designation, type of human-base uses within the potentially affected area, and use intensity.

4. For SDAs identified as having important human uses in the potentially affected areas, select key observation points (KOPs) with input from SDA managers.

5. Prepare supportive mapping (KOP locations, Affected Area view-shed mapping within the Special Designations, visualizations, etc.), and prepare a refined impact assessment.

6. Indicate that for SDAs containing KOP locations where solar development within the SEZ would cause unavoidable impacts to human uses; those impacts may warrant off-site mitigation.

7. For SDAs with impacts that may warrant off-site mitigation, assess the value of the resource in the context of the region – are there other nearby SDAs that offer similar benefits to the public, etc.

8. Identify final list of SDAs for which solar development would cause unavoidable impacts that warrant off-site mitigation.

9. Propose off-site mitigations that should be required at the time of solar development (e.g., restoration or improvement of other parts of the SDA, movement of the KOP if possible, minimization of visual impact of non-solar facilities in the viewshed if possible, etc.) for the SDAs that warrant off-site mitigation. Alternatively, the cost of such mitigations could be estimated and developers could pay a portion of those costs into a mitigation fund.

10. As a part of the process for determining off-site mitigation compensation, compare compensatory alternatives with the other resource off-site mitigation strategies and identify those that overlap for multiplying the value (not cost) of the mitigation.

(NOTE: SUBSEQUENT DRAFT TO PROVIDE DETAILS ON A PROCESS AND CRITERIA FOR DETERMING IF THE VIEWSHEDS FROM SDAs WARRANT OFF-SITE MITIGATION)

F. BLM Screening Matrix for Candidate Regional Mitigation Sites for SEZs (Screening tool for the BLM Interdisciplinary Team to use for evaluating and recommending candidate sites to the BLM Authorized Officer. See definitions for criteria categories after Table)

#	Criteria	SEZ	Candidate Sites		Notes
		SEZ Being Evaluated	Candidate Site 1	Candidate Site 2 etc	
SITE CHARACTERISTICS					
1	Contiguous area of site (acres)				The size, in acres, of the candidate site.
2	For ACECs, reason for designation				If the candidate site encompasses land in an ACEC, this field represents the value(s) present that the ACEC was established to protect.
3	Mitigation tool (restoration/enhancement, acquisition, banking, withdrawal, special designation, etc.)				The type(s) of mitigation tool that would implemented at the site
MITIGATION SITE QUALIFYING CRITERIA					
4	In SEZ Ecoregion?				
5	In SEZ ecological subregion?				
6	Meets priorities for ESA critical habitat?				
8	Same HUC 4 watershed?				The HUC 4 watershed is used to evaluate the sites; sites not in the same HUC 4 watershed would have a fairly strong hydrologic disconnect from Dry Lake SEZ.
9	Mitigates unavoidable impacts to "least common and most geographically restricted species?"				
10	Mitigates for all or most identified unavoidable impacts that warrant offsite mitigation?				
11	Similar landscape value, ecological functionality, biological value, species, habitat types, and/or natural features?				Site includes resources critical to meet mitigation objectives.
12	Provides adequate geographic extent?	n/a			Provides area for mitigation at least as large as the entire developable area of the SEZ.
STOP HERE FOR ANY OF THE CANDIDATE SITES THAT DID NOT MEET ONE OR MORE OF THE ABOVE QUALIFYING CRITERIA					
13	Presence of unique/valuable resources or features				Calculate score on the basis of the number of unique/valuable resources or features present at the candidate site, as listed for criteria 13a through 13f.
13a	Perennial, protected sources of water?				List specific resource(s)
13b	Unique species assemblages?				List specific resource(s)
13c	Protected species and/or critical habitat?				List specific resource(s)
13d	Desert washes or ephemeral playas?				List specific resource(s)
13e	Other?				List specific resource(s)
14	Sources of data for the site	Solar PEIS; BLM Interdisciplinary team, stakeholders			

Attachment F (cont.):

#	Criteria	SEZ	Candidate Sites		Notes
		SEZ Being Evaluated	Candidate Site 1	Candidate Site 2 etc	
EFFECTIVENESS / ADDITIONALITY					
15	To what extent can the full spectrum of regional mitigation goals/objectives be met simultaneously? Use scale of 1 (low) to 5 (high)				Rate the extent to which the regional mitigation goals/objectives can be met simultaneously through mitigation actions at the site, based on the following scale: all (100%) of the goals and objectives can be met (score of 5); 75-99% can be met (score of 4); 50-75% (score of 3); 25 - 49% can be met (score of 2); less than 25% can be met (score of 1); none of the goals/objectives can be met (score of 0).
16	How effective will the mitigation be in the context of achieving mitigation goals/objectives for conserving/restoring ecosystem intactness? Use scale of 1 (low) to 5 (high)				Rate the effectiveness of the mitigation actions at the site in terms of achieving mitigation goals/objectives, based on the following scale: highly effective (score of 5); moderately effective (scores of 2-4), and minimally effective (score of 1).
17	For mitigation on BLM-administered lands, mitigation consists of actions not eligible for Bureau or other sources of funding.				Enter 1 if criterion is met, -2 if not.
FEASIBILITY					
18	Based on action required (e.g., restoration, BLM land management action, land acquisition, Congressional action), how difficult will implementation be? Use scale of 1 (difficult) to 5 (relatively easy). See note 1.				Rate the mitigation action, based on the following scale: restoration/enhancement actions (score of 5); BLM planning decisions (score of 3-4); land acquisition actions (score of 1-3); Congressional actions (score of 1). Ratings should be adjusted on the basis of factors such as cost of the action; time and effort requirements; public and/or BLM support for or opposition to action; and, for land acquisitions, willingness of seller.
19	Time frame needed to establish site as mitigation location (estimated years)				Enter the estimated number or range of years required to establish the site as the location for mitigation action (e.g., number of years to establish priority on restoration actions at the site, number of years to acquire parcel of land).
20	Time frame for achieving mitigation goals and objectives from implementation (estimated years)				From first date of implementation, enter the estimated number or range of years required to implement actions and achieve mitigation goals and objectives.
21	Cost estimate				Enter a total and per-acre cost estimate for the proposed mitigation action(s) at the site, including cost of restoration and enhancement actions, future maintenance costs (e.g., weed management), land acquisition costs, enforcement costs, BLM management costs.
DURABILITY					
22	How durable would the mitigation be from a timeframe and management perspective? Use scale of 1 (low) to 5 (high)				Rate the temporal and managerial durability of the mitigation action, based on the following scale: Congressionally protected lands would be very durable (score of 5); other federally administered lands specifically designated in land use plans or withdrawn by public land order would be moderately to very durable (score of 4-5); federally administered lands without any special designation but with enforcement oversight would have limited durability (score of 2); lands without special designation or enforcement oversige would not be very durable (score of 1).
23	How durable would the mitigation be in the context of permanence of conservation and biodiversity protections? Use scale of 1 (low) to 5 (high)				

Attachment F (cont.):

#	Criteria	SEZ	Candidate Sites		Notes
		SEZ Being Evaluated	Candidate Site 1	Candidate Site 2 etc	
RISK					
24	What are the constraints or threats to success?				List the constraints or threats present at the site or in the surrounding area that could jeopardize long-term success of the mitigation action(s).
25	To what extent will surrounding land uses impact mitigation success? Use scale of 1 (considerable) to 5 (low)				Rate the extent to which surrounding land uses and stressors (e.g., proximity to expanding urban areas, pressures on region for recreational land use, excessive groundwater withdrawl and drawdown conditions that could affect resources on the mitigation site) would jeopardize long-term success of the mitigation actions, based on the following scale: if surrounding land uses are similar to or compatible with mitigation actions, the impact would be low (score of 5); if surrounding land uses are incompatible with mitigation actions or present significant pressure for use of the site for incompatible uses, the impact would be considerable (score of 1); surrounding land uses falling within this range would be assessed to determine degree of impact (score of 2-4).
26	What is the relative probablility of success? Use scale of 1 (low) to 5 (high)				Rate the relative probability of success of the actions at the mitigation site, based on the combination of factors evaluated in criteria 15 through 24, giving a score of 5 (high probability of success), a score of 1 (low probability of success), and scores of 2-4 to represent moderate degrees of probability of success.
					Calculate score by summing the entries in blue-shaded cells.
PRELIMINARY RANKING (see note 2)					Calculate score by summing the entries in blue-shaded cells.

NOTES:

(1) For scale, consider the following: restoration, relatively easy (5); BLM land management action, not easy to moderately complicated (3-5); land acquisition, moderately complicated to not very easy (1-3); Congressional

(2) Scores are calculated based on entries in blue-shaded cells as follows: all scaled values (i.e., ratings from 1 to 5) are summed; 1 pt is added for each check mark; 2 pts are deleted for each X.

Definitions for Criteria Categories

Site Characterization Criteria: characteristics of site that are largely known or measureable, that determine whether it is comparable to the SEZ site and/or is suitable for supporting effective mitigation actions.

Effectiveness/Additionality Criteria: factors that (1) measure how effective the actions at the mitigation site will be in terms of meeting the BLM's mitigation goals/objectives for the SEZ and (2) assess whether or not the action meets the requirement for additionality (i.e., mitigation is beyond current land management obligations).

Feasibility Criteria: factors that measure the degree of difficulty of implementing actions at the site, the time required to successfully implement the mitigation action(s), and the total and per-acre mitigation cost.

Durability Criteria: factors that measure the durability of the mitigation in terms of the permanence and stability of the mitigation area.

Risk Criteria: factors that measure the degree to which external factors might jeopardize long-term success of the mitigation action(s).