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BLM

Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

On the cover:
Typical Solar Fields for Various Technology Types (clockwise from upper left):
Solar Parabolic Trough (Source: Hosoya et al. 2008),
Solar Power Tower (Credit: Sandia National Laboratories. Source: NREL 2010a),
Photovoltaic (Credit: Arizona Public Service. Source: NREL 2010b), and
Dish Engine (Credit: R. Montoya. Source: Sandia National Laboratories 2008).
Reference citations are available in Chapter 1.

Background photo: Parabolic trough facility from an elevated viewpoint
(Credit: Argonne National Laboratory)

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CONTENTS

1 INTRODUCTION 1

2 OVERVIEW OF ALTERNATIVES 2

2.1 Solar Energy Development Program Alternative—BLM Preferred Alternative 2
2.2 Solar Energy Zone Program Alternative 2
2.3 No Action Alternative 2
2.4 Environmentally Preferred Alternative 3

3 DECISION 3

3.1 What the Decision Provides 3
3.2 What the Decision Does Not Provide 4

4 MANAGEMENT CONSIDERATIONS IN SELECTING THE PREFERRED ALTERNATIVE 5

4.1 Executive Order 13212 6
4.2 Energy Policy Act of 2005 7
4.3 DOI Secretarial Order 3285A1 7

5 PROTESTS ON THE PROPOSED LAND USE PLAN AMENDMENTS 7

6 NOTICE OF CLARIFICATIONS AND MODIFICATIONS MADE TO THE PROPOSED SOLAR ENERGY PROGRAM AND SOLAR ENERGY PROGRAM POLICIES 8

7 CONSISTENCY AND CONSULTATION REVIEW 14

7.1 Governor's Consistency Review 14
7.2 Cooperating Agencies 15
7.3 Tribal Consultation 16
7.4 National Historic Preservation Act—Section 106 Consultation 17
7.5 Endangered Species Act—Section 7 Compliance 18

8 MITIGATION MEASURES 19

9 MONITORING AND ADAPTIVE MANAGEMENT 19

10 PUBLIC INVOLVEMENT 20

10.1 Scoping 20
10.2 Public Comments on the Draft Solar PEIS 20

10.3 Public Comments on the Supplement to the Draft Solar PEIS 20
10.4 Release of the Final Solar PEIS 21
10.5 Public Comments on the Final Solar PEIS 21
10.6 Availability of the Record of Decision 21

11 CONSIDERATION OF OTHER BLM PLANS AND POLICIES 23

12 PLAN IMPLEMENTATION 24

12.1 General Implementation Schedule 24
12.2 Plan Maintenance and Data Refinement 24
12.3 Changing the Plan 24

13 REFERENCES CITED 24

APPENDIX A—LAND USE PLAN AMENDMENTS 27

APPENDIX B—SOLAR ENERGY PROGRAM POLICIES 146

FIGURES

A-1 Areas Identified for Exclusion Following Publication of the Supplement to the Draft Solar PEIS Based on Continued Consultation with Cooperating Agencies and Tribes 42

A-2 Land Use Allocations in Arizona as a Result of the Solar PEIS Record of Decision 44

A-3 Land Use Allocations in California as a Result of the Solar PEIS Record of Decision 45

A-4 Land Use Allocations in Colorado as a Result of the Solar PEIS Record of Decision 46

A-5 Land Use Allocations in Nevada as a Result of the Solar PEIS Record of Decision 47

A-6 Land Use Allocations in New Mexico as a Result of the Solar PEIS Record of Decision 48

A-7 Land Use Allocations in Utah as a Result of the Solar PEIS Record of Decision 49

TABLES

A-1	**Land Use Plans Amended and Approximate Acreage Available for Application for Solar Energy Development by Planning Area**	**28**
A-2	**Exclusions under BLM's Solar Energy Program**	**38**
A-3	**Solar Energy Zones and Approximate Acreage by State**	**41**
A-4	**Individual Plans Specified as Elements of the Programmatic Design Features**	**52**
A-5	**Solar Energy Zone-Specific Design Features**	**129**

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RECORD OF DECISION

1 INTRODUCTION

This Record of Decision (ROD) describes the U.S. Department of the Interior, Bureau of Land Management's (BLM's), decisions regarding utility-scale solar energy development on BLM-administered lands in six southwestern states (Arizona, California, Colorado, Nevada, New Mexico, and Utah) and approval of these decisions by the Secretary of the Interior. For the purposes of this ROD, utility-scale facilities are defined as projects with capacities of 20 megawatts (MW) or greater that generate electricity that is delivered into the electricity transmission grid. In accordance with the Federal Land Policy and Management Act (FLPMA) (Section 103(c)), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way (ROWs) on public lands for systems of generation, transmission, and distribution of electric energy (FLPMA, Section 501(a)(4)).

The BLM has identified a need to respond in a more efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands and to ensure consistent application of measures to avoid, minimize, and mitigate the potential adverse impacts of such development. Through this ROD, the BLM is replacing certain elements of its existing solar energy policies with a comprehensive Solar Energy Program that would allow the permitting of future solar energy development projects to proceed in a more efficient, standardized, and environmentally responsible manner. While the proposed Solar Energy Program will further the BLM's ability to meet the goals of E.O. 13212 and the Energy Policy Act of 2005, it also has been designed to meet the requirements of Secretarial Order 3285A1 (Secretary of the Interior 2010) regarding the identification and prioritization of specific locations best suited for utility-scale solar energy development on public lands.

The ROD documents the BLM's decisions, which consist of land use plan amendments that establish the foundation for a comprehensive Solar Energy Program. In addition, Appendix B of the ROD describes updated and revised BLM policies and procedures related to solar energy development on public lands. These policies and procedures provide internal administrative guidance to the BLM regarding the processing of ROW applications for utility-scale solar energy projects. The proposed action and alternatives were evaluated through the preparation of the *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (BLM and DOE 2012). The programmatic environmental impacts statement (PEIS) was prepared jointly by the BLM and the U.S. Department of Energy (DOE) in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality's regulations for implementing NEPA (Title 40, Parts 1500–1508 of the *Code of Federal Regulations* [40 CFR Parts 1500–1508]), the DOI and DOE regulations for implementing NEPA (43 CFR Part 46 and 10 CFR Part 1021, respectively), and applicable BLM and DOE authorities.

2 OVERVIEW OF ALTERNATIVES

Through the Solar PEIS, the BLM evaluated three alternatives for managing utility-scale solar energy development on BLM-administered lands in the six-state study area. These alternatives included two action alternatives—a solar energy development program alternative and a Solar Energy Zone (SEZ) program alternative—and a no action alternative. The solar energy development program alternative was identified in the Final Solar PEIS as the BLM's preferred alternative.

2.1 SOLAR ENERGY DEVELOPMENT PROGRAM ALTERNATIVE— BLM PREFERRED ALTERNATIVE

Under the solar energy development program alternative (referred to as the "program alternative"), the BLM proposes categories of lands to be excluded from utility-scale solar energy development (about 79 million acres [319,702 km^2] proposed for exclusion) and identifies specific locations well suited for utility-scale production of solar energy (i.e., SEZs) where the BLM proposes to prioritize development (about 285,000 acres [1,553 km^2] in SEZs). The program alternative emphasizes and incentivizes development within SEZs and proposes a collaborative process to identify additional SEZs. To accommodate the flexibility described in the BLM's program objectives, the program alternative allows for responsible utility-scale solar energy development in variance areas outside of SEZs in accordance with the proposed variance process (about 19 million acres [82,964 km^2] in variance areas). The program alternative also establishes programmatic design features for utility-scale solar energy development on BLM-administered lands.

2.2 SOLAR ENERGY ZONE PROGRAM ALTERNATIVE

Under the SEZ program alternative (referred to as the "SEZ alternative"), the BLM would restrict utility-scale solar energy development to SEZs only, and identify all other lands as exclusion areas for utility-scale solar energy development (approximately 98 million acres [396,600 km^2]). Under the SEZ alternative, the same programmatic design features applicable to the program alternative would apply to utility-scale solar energy development in SEZs. Under the SEZ alternative, new or expanded SEZs would be identified in the future following the collaborative identification process mentioned above.

2.3 NO ACTION ALTERNATIVE

Under the no action alternative, the BLM would continue the issuance of ROW authorizations for utility-scale solar energy development on BLM-administered lands by implementing the requirements of the BLM's existing solar energy policies on a project-by-project basis. Lands available for solar energy development would include those areas currently allowable under existing applicable laws and statutes (approximately 98 million acres [396,600 km^2] in the six-state study area) and in conformance with the approved land use plans. The BLM would not implement any of the proposed elements of the Solar Energy Program described in the two action alternatives.

2.4 ENVIRONMENTALLY PREFERRED ALTERNATIVE

The BLM has determined that both of the action alternatives are environmentally preferred over the no action alternative. The impacts of solar energy development itself, however, are largely similar across the two action alternatives. Because the action alternatives represent planning-level decisions (i.e., allocation decisions), differences between the alternatives are primarily found in the location, pace, and concentration of expected solar energy development.

Under both action alternatives, the BLM would exclude categories of lands from utility-scale solar energy development and identify specific locations well suited for utility-scale production of solar energy, where the BLM would prioritize development. The BLM would emphasize and incentivize development within SEZs and proposes a collaborative process to identify additional SEZs. To accommodate the flexibility described in the BLM's program objectives, the program alternative allows for utility-scale solar energy development in variance areas outside of SEZs in accordance with the proposed variance process. The SEZ alternative, in contrast, would allow development only within SEZs. Both BLM action alternatives would also establish programmatic design features that would apply to all utility-scale solar energy projects on BLM-administered lands. These design features represent accepted methods to avoid, minimize, and/or mitigate potential adverse impacts from solar energy development, including associated facilities such as transmission lines, roads, and other infrastructure.

3 DECISION

The decision is hereby made to implement a comprehensive Solar Energy Program to administer the development of utility-scale solar energy resources on BLM-administered public lands in six southwestern states: Arizona, California, Colorado, Nevada, New Mexico, and Utah. The decision includes incorporating land use allocations and programmatic and SEZ-specific design features into 89 BLM land use plans in the six-state study area. The land use plan amendments, described in Appendix A of this ROD, include the identification of exclusion areas for utility-scale solar energy ROWs, priority areas for utility-scale solar energy ROWs (i.e., SEZs), and areas potentially available for utility-scale solar energy development outside of exclusion areas and SEZs (i.e., variance areas). Land use plan amendments also establish required programmatic and SEZ-specific design features for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy.

Contemporaneous with this ROD, the BLM is also announcing revised policies and procedures that relate to solar energy development on public lands. These policies and procedures are described in Appendix B of this ROD and provide internal administrative guidance to the BLM regarding the processing of ROW applications for utility-scale solar energy projects.

3.1 WHAT THE DECISION PROVIDES

This ROD records the decision of the BLM Director and approval of these decisions by the Secretary of the Interior to establish a comprehensive Solar Energy Program to administer the development of utility-scale solar energy resources on BLM-administered public lands in six southwestern states: Arizona, California, Colorado, Nevada, New Mexico and Utah. This

includes land use plan amendments for land use allocations (exclusion areas, variance lands, and SEZs) and design features. The Solar Energy Program decisions will guide the processing of all new utility-scale solar energy applications on BLM-administered lands. The BLM defines "new" applications as any applications filed within proposed SEZs after June 30, 2009, and any applications filed within proposed variance and/or exclusion areas after the October 28, 2011, publication of the Supplement to the Draft Solar PEIS. To complement its land use planning decision, the BLM also describes updates and revisions to various policies and procedures in Appendix B of this ROD.

3.2 WHAT THE DECISION DOES NOT PROVIDE

This ROD does not authorize any solar energy development projects or eliminate the need for site-specific environmental reviews for any future utility-scale solar energy development project. The BLM will make separate decisions as to whether or not to authorize individual solar energy projects in conformance with existing land use plans as amended by this ROD. The BLM will complete a site-specific environmental review of all solar energy ROW applications in accordance with NEPA prior to issuing a ROW authorization. All future projects will tier to the analysis in the Solar PEIS to the extent practicable. The extent of this tiering will vary from project to project, as will the necessary level of NEPA documentation. Tiering is defined as using the coverage of general matters in broader NEPA documents in subsequent, narrower NEPA documents (40 CFR 1508.28, 40 CFR 1502.20, 43 CFR 46.140). This allows the tiered NEPA document to concentrate solely on the issues not already addressed. It is expected that the ability to tier will be greatest in the SEZs where in-depth analysis was conducted as part of the Solar PEIS.

The scope of the decision being made is limited to utility-scale solar energy development. For the purposes of the Solar PEIS and associated decision making, utility-scale solar energy development is defined as any project capable of generating 20 MW or more. As a result, the BLM's new Solar Energy Program would apply only to projects of this scale; decisions on projects that are less than 20 MW would continue to be made in accordance with existing land use plan requirements, current applicable policy, and individual site-specific NEPA analyses.

While the Solar PEIS considers the impacts of constructing, operating, and decommissioning the related infrastructure needed to support utility-scale solar energy development, such as roads, transmission lines, and natural gas or water pipelines, the land use plan decisions being made (e.g., exclusions, SEZs) are applicable only to utility-scale solar energy generation facilities. Management decisions for supporting infrastructure will continue to be made in accordance with existing land use plan decisions and current applicable policy and procedures.

None of the land use plan decisions or policies described in this ROD are applicable to private lands or other lands outside the BLM's jurisdiction.

The only land use allocations made through the ROD are to identify exclusion areas, variance lands, and SEZs (see Appendix A). The ROD does not amend any land use plan to open areas for utility-scale solar energy development that existing land use plans have identified as exclusion or avoidance areas.

This ROD and the associated land use plan amendments do not provide guidance or direction for pending applications for utility-scale solar energy development on BLM-administered lands. The BLM defines "pending" applications as any applications (regardless of place in line) filed within proposed variance and/or exclusion areas before the publication of the Supplement to the Draft Solar PEIS (October 28, 2011), and any applications filed within proposed SEZs before June 30, 2009. Pending applications will not be subject to any decisions adopted by this ROD. The BLM will process pending solar applications consistent with land use plan decisions in place prior to amendment by this ROD and policies and procedures currently in place (e.g., IM 2011-060 [BLM 2011a] and IM 2011-061 [BLM 2011b]), or as may be modified in the future. Amendments to pending applications would also not be subject to the decisions adopted by this ROD provided they meet the criteria identified in Appendix B, Section B.3.

The decisions in this ROD do not change any regulatory procedures generally applicable to ROWs on BLM-administered lands, including rental fees, cost recovery fees, and bonding requirements. Any regulatory change would require the BLM to pursue rulemaking.

4 MANAGEMENT CONSIDERATIONS IN SELECTING THE PREFERRED ALTERNATIVE

The Final Solar PEIS (Chapter 6) presents an analysis of the BLM's three alternatives in terms of their effectiveness in meeting the objectives outlined as part of BLM's purpose and need for action. Chapter 6 considers the extent to which each alternative would assist the BLM in meeting the Executive Orders, Congressional mandates, and Federal agency orders and policies that promote expedited and concentrated Federal action supporting the development of domestic renewable energy resources. For each of the alternatives, this chapter also includes a summary of programmatic-level information on the potential impacts on resources and resource uses from solar energy development by alternative. These considerations in the Final Solar PEIS were used as the basis for the BLM's selection of the program alternative as the Agency's preferred alternative.

The BLM concluded that the program alternative would best meet the BLM's objectives for managing utility-scale solar energy development on BLM-administered lands. These objectives include the following (as described in Section 1.3.1 of the Final Solar PEIS):

- Facilitate near-term utility-scale solar energy development on public lands;
- Minimize potential negative environmental impacts;
- Minimize potential negative social and economic impacts;
- Provide flexibility to the solar industry to consider a variety of solar energy projects (e.g., location, facility size, and technology);
- Optimize existing transmission infrastructure and corridors;

- Standardize and streamline the authorization process for utility-scale solar energy development on BLM-administered lands; and

- Meet projected demand for solar energy development (as estimated by the Reasonably Foreseeable Development Scenario [RFDS] developed for the PEIS).

As compared to the no action alternative and the SEZ alternative, the BLM concluded that the program alternative would likely result in a high pace of development at a low cost to the government, developers, and stakeholders. The expected increased pace of development would accelerate the rate at which the economic benefits would be realized at the local, state, and regional levels. At the same time, it would provide a comprehensive approach for ensuring that potential adverse impacts would be minimized. The BLM's analysis of the potential environmental impacts of utility-scale development in the Final Solar PEIS concluded that both the program alternative and the SEZ alternative are environmentally preferred over the no action alternative. The action alternatives would exclude categories of lands from utility-scale solar energy development and identify specific locations well suited for utility-scale production of solar energy where the BLM would prioritize development. Both action alternatives would also establish programmatic design features that would apply to all utility-scale solar energy projects on BLM-administered lands. These design features represent accepted methods to avoid, minimize, and/or mitigate potential adverse impacts from solar energy development, including associated facilities such as transmission lines, roads, and other infrastructure.

The program alternative would make an adequate amount of suitable lands available to support the level of development projected in the RFDS and, as compared to the SEZ alternative, would provide greater flexibility in siting both solar energy facilities and associated transmission infrastructure. Under the program alternative, the land area in SEZs (285,000 acres [1,153 km^2]) with an assumed build-out of 80% would be sufficient to meet the RFDS. The additional lands available for application in variance areas (about 19 million acres [82,964 km^2]) would provide additional available acreage as well as flexibility in terms of where the projected 24,000 MW of production capacity would be constructed.

The program alternative will further the BLM's ability to meet E.O. 13212 and the Energy Policy Act of 2005, and it has been designed to meet Secretarial Order 3285A1 (Secretary of the Interior 2010) regarding the identification and prioritization of specific locations best suited for utility-scale solar energy development on public lands.

4.1 EXECUTIVE ORDER 13212

On May 18, 2001, the President signed E.O. 13212, "Actions to Expedite Energy-Related Projects," which states that "the increased production and transmission of energy in a safe and environmentally sound manner is essential" (*Federal Register*, Volume 66, page 28357, May 22, 2001). Executive departments and agencies are directed to "take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy." E.O. 13212 further states that "For energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to

accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation and where appropriate."

4.2 ENERGY POLICY ACT OF 2005

On August 8, 2005, the Energy Policy Act of 2005 (Public Law [P.L.] 109-58) was signed into law. Section 211 of the Act states, "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."

4.3 DOI SECRETARIAL ORDER 3285A1

On March 11, 2009, the Secretary of the Interior issued Secretarial Order 3285, which announced a policy goal of identifying and prioritizing specific locations best suited for large-scale production of solar energy on public lands (Secretary of the Interior 2009). The Secretarial Order requires DOI agencies and bureaus to work collaboratively with each other and with other Federal agencies, individual states, tribes, local governments, and other interested stakeholders, including renewable energy generators and transmission and distribution utilities, to encourage the timely and responsible development of renewable energy and associated transmission, while protecting and enhancing the Nation's water, wildlife, and other natural resources; to identify appropriate areas for generation and necessary transmission; to develop best management practices for renewable energy and transmission projects on public lands to ensure the most environmentally responsible development and delivery of renewable energy; and to establish clear policy direction for authorizing the development of solar energy on public lands. On February 22, 2010, Secretarial Order 3285 was amended to clarify departmental roles and responsibilities in prioritizing development of renewable energy. The amended order is referred to as Secretarial Order 3285A1 (Secretary of the Interior 2010).

5 PROTESTS ON THE PROPOSED LAND USE PLAN AMENDMENTS

Pursuant to the BLM's land use planning regulations in 43 CFR 1610.5-2, any person who participated in the land use planning process for the Solar PEIS and has an interest that may be adversely affected by the land use planning decisions may protest the proposed planning decisions contained in the Final PEIS. The BLM received 16 protest letters on the proposed land use plan amendments in the Final Solar PEIS. After careful consideration of all issues raised in these protests, the BLM Director concluded the responsible planning team followed all applicable laws, regulations, and policies in developing the proposed plan amendments. Individual protests and responses are published in the Director's Protest Resolution Report (available at http://www.blm.gov/wo/st/en/prog/planning/planning_overview/protest_resolution/protestreports.html).

Protest issues included, but were not limited to, allegations regarding the following:

- The National Environmental Policy Act (e.g., the statement of purpose and need for the land use plan amendments, the range of alternatives considered, and the analysis of impacts);

- The Federal Land Policy and Management Act (FLPMA) (e.g., the BLM's obligation to minimize impacts and prevent unnecessary and undue degradation);

- The Endangered Species Act (and related BLM policy);

- Tribal Consultation and the National Historic Preservation Act; and

- The BLM's criteria used to determine exclusion areas.

While the Director's resolution of protests did not identify any issues to be remanded, the BLM has made clarifications and modifications to the proposed Solar Energy Program and Solar Energy Program policies as a result of protests, comments, and internal BLM review. These are discussed below.

6 NOTICE OF CLARIFICATIONS AND MODIFICATIONS MADE TO THE PROPOSED SOLAR ENERGY PROGRAM AND SOLAR ENERGY PROGRAM POLICIES

Clarifications consist of minor corrections and clarifying statements. Modifications include changes to the proposed Solar Energy Program (the land use plan amendments described in Appendix A) that do not affect the adequacy of the underlying NEPA analysis, and changes to the Solar Energy Program Policies (the internal administrative guidance described in Appendix B).

> Clarification—The following application was left off the table of "first in-line" pending applications presented in the Final Solar PEIS (Table B-2): CACA 49421, Solar Partners V, LLC (Brightsource) (Siberia), application received April 30, 2007, 600 MW, 13,920 acres, CSP/tower, Barstow Field Office. The BLM maintains a list of first-in-line pending applications on the Solar Energy Program Web page (http://solareis.anl.gov).
>
> Clarification—The policy citations and manuals regarding lands with wilderness characteristics cited in Section 5.3 of the Final Solar PEIS (5-3) are not in effect. On April 14, 2011, the United States Congress passed the Department of Defense and Full-Year Continuing Appropriations Act, 2011 (Pub. L. 112-10)(2011 CR), which includes a provision (Section 1769) that prohibits the use of appropriated funds to implement, administer, or enforce Secretarial Order 3310 in fiscal year 2011. The BLM immediately halted implementation of the Order and has remained in full compliance with this prohibition in subsequent fiscal years. As required by law, the BLM continues to maintain inventories of lands under its jurisdiction, including lands with wilderness characteristics. Consistent with FLPMA and other applicable authorities, the BLM considers the wilderness characteristics of public lands when undertaking its multiple use

land use planning and when making project-level decisions. Two manuals that the BLM released in March of 2012 provide guidance to agency employees on how to conduct these inventories and to consider the inventories in the land use planning process. (BLM Manuals 6310—*Conducting Wilderness Characteristics Inventory on BLM Lands*, and 6320—*Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process*).

Clarification—In Section 9.4.3 of the Final Solar PEIS, the BLM acknowledged that lands with wilderness characteristics will be impacted through solar energy development in the Riverside East SEZ. However, the total acreage of lands with wilderness characteristics was incorrectly stated in the Final Solar PEIS. The Riverside East SEZ contains approximately 20,578 acres of developable lands with wilderness characteristics (and 4,487 acres of lands with wilderness characteristics that overlap with non-developable areas in the SEZ). The BLM has decided not to manage these lands to protect wilderness characteristics, on the basis of the rationale provided in the Final Solar PEIS (Section 9.4.3.2). The BLM posted a revised map of the overlap between the Riverside East SEZ and lands with wilderness characteristics on the Solar Energy Program Web page (http://solareis.anl.gov). The programmatic design features specific to lands with wilderness characteristics (see Appendix A, Section A.4.1.2) will apply to any future solar energy development in these areas. In addition, unavoidable impacts associated with the development of these lands with wilderness characteristics in the Riverside East SEZ will be given consideration in the regional mitigation plan to be established for the SEZ (see Appendix B, Section B.4.4).

Clarification—Exclusion criteria 32 as described in the Final Solar PEIS (Table 2.2-2) and carried forward in this ROD is defined as "Specific areas identified since the publication of the Supplement to the Draft Solar PEIS by the BLM based on continued consultation with cooperating agencies and tribes to protect sensitive natural, visual, and cultural resources" (total of 1,066,497 acres [4,316 km^2]). In developing this exclusion, the BLM evaluated all of the exclusions proposed through comments on the Supplement to the Draft Solar PEIS and worked with BLM state and field office resource experts to determine appropriateness for exclusion. In most cases these exclusion areas represent locations where multiple resource conflicts overlap, for example areas where priority tortoise connectivity habitat as identified by the U.S. Fish and Wildlife Service overlap with areas identified as high potential conflict by the National Park Service. This particular exclusion is defined by the map that is presented in Appendix A, Figure A-1 of this ROD. Any decision by the BLM to exclude additional lands from future solar energy development in this category would be required to follow applicable BLM land use planning procedures. Data and finer scale maps for all exclusions will be made available through the Solar Energy Program Web page as appropriate (http://solareis.anl.gov) (note that in some cases, the description of exclusion areas will be withheld from the public to ensure protection of the resource).

Clarification—Although the BLM expects that future utility-scale solar energy development could be proposed jointly on BLM-administered lands and private lands,

none of the land use plan decisions or policies described in this ROD are applicable to private lands or other lands outside the BLM's jurisdiction.

Clarification—Regarding the offset of unavoidable impacts described in the Draft Framework for Developing Regional Mitigation Plans for the BLM's Solar Energy Program in the Final Solar PEIS (Appendix A.2.5), the BLM did not specify a preference for the acquisition of private lands as a means to mitigate unavoidable impacts on BLM-administered lands. Instead, the BLM conveyed its intent to comprehensively evaluate land acquisition and long-term management strategies for both public and private lands to fully understand impacts on, for example, local jurisdictions and recreational opportunities, as well as regulatory challenges. In meeting regional objectives, the BLM will give consideration to the full range of mitigation tools available to the agency, including but not limited to land acquisition, mitigation banking, withdrawing BLM-administered lands from other uses, changing land designations or uses, and restoration and enhancement activities. This consideration will necessarily include analysis of potential impacts to local jurisdictions.

Clarification—As stated in the Final Solar PEIS (2-43), the BLM will typically process ROW applications in variance areas on a first-come, first-served basis. However, the BLM has the discretion to apply competitive procedures to variance areas. To clarify, the BLM's existing ROW regulations (43 CFR 2804.23(c)) currently provide authority for identifying public lands under competitive bidding procedures, but limit the competitive process to responding to ROW applications. The existing regulations do not provide authority for issuing competitive leases. The BLM has no intent to use these existing competitive procedures in variance areas except in limited circumstances where two or more applications have been determined by the BLM to have competing interests.

Clarification—SEZ-specific design features are limited to those design features included in Appendix A, Table A-5 of this ROD. In many of the SEZ-specific chapters in the Final Solar PEIS, the BLM included examples of how the programmatic design features would be applied to a particular SEZ given the resources determined to be present through the analysis in the PEIS. These are not to be confused with the unique SEZ-specific design features in Table A-5 and were simply included to highlight potential resource conflicts to be addressed within a particular SEZ.

Clarification—Protests received on the Final Solar PEIS expressed confusion regarding the compatibility of utility-scale solar energy development and Multiple Use Class L (Limited Use) designations in the California Desert Conservation Area (CDCA), as well as lands designated as Class M (Moderate Use), and I (Intensive Use). Though the Final Solar PEIS used the CDCA Class C (Controlled Use) designation as one of its exclusion criteria, the siting of solar energy development projects on Class L, M, and I lands remains consistent with the CDCA Plan. The existing CDCA Plan expressly allows for certain electrical generation facilities, including solar facilities, to be sited in areas designated as Class L, M, or I lands, provided that NEPA requirements are met. In the 1980 CDCA Plan ROD, the Assistant Secretary for Land and Water Resources discussed remaining major issues in the final CDCA Plan before he approved the Plan (p. 10,

et seq., CDCA ROD). One of the remaining major issues was the allowance of wind, solar, and geothermal power plants within designated Class L lands (p. 15, CDCA ROD). The CDCA ROD recognized that "these facilities are different from conventional power plants and must be located where the energy resource conditions are available. An EIS will be prepared for individual projects." The recommended decision, which was ultimately approved, noted: "Keep guidelines as they are to allow these power plants if environmentally acceptable. Appropriate environmental safeguards can be applied to individual project proposals which clearly must be situated where the particular energy resources are favorable." Even so, the Solar PEIS ROD, which updates and amends the CDCA plan, clarifies that once NEPA requirements are met for proposed projects in these areas, there are no additional land use plan restrictions specific to Class L, M, or I designations.

Clarification—Several references to the EPA's RE-Powering America's Land Initiative (http://www.epa.gov/renewableenergyland) in the Final Solar PEIS may be misinterpreted as limiting sites to those contaminated sites tracked at the Federal level, and excluding those tracked at the state, local, and/or tribal level. In response, state, local and tribal authorities have been specifically included in appropriate sections of this ROD that discuss the EPA's RE-Powering America's Land Initiative.

Clarification – In the Final Solar PEIS (2-20), exclusion criterion 7 was described as "All areas where the BLM has made a commitment to state agency partners and other entities to manage sensitive species habitat, including but not limited to sage-grouse core areas, nesting habitat, and winter habitat; Mohave ground squirrel habitat; flat-tailed horned lizard habitat; and fringe-toed lizard habitat." Comments and protests received on the Final Solar PEIS expressed confusion over the applicability of this exclusion criteria to Southern Mojave and Sonoran Wildlife Habitat Management Areas (WHMAs) for bighorn sheep and 13 multi-species WHMAs for other special status species established by the Northern and Eastern Colorado Desert Coordinated Management Plan (BLM and CDFG 2002). The BLM did not intend for WHMAs to fall within exclusion criterion 7. This claim is supported by the analysis in the Solar PEIS. For example, the Solar PEIS acknowledges that WHMAs are present within the Riverside SEZ ("WHMAs within the SEZ may provide important connectivity for desert tortoise movements between the DWMAs" [Draft Solar PEIS, p. 9.4-180]).

In response to the comments and protests raised, exclusion criterion 7 (see Appendix A, Table A-2) has been clarified in this ROD to read: "Sage-grouse core areas, nesting habitat, and winter habitat; Mohave ground squirrel habitat; flat-tailed horned lizard habitat; fringe-toed lizard habitat; and all other areas where the BLM has agreements with state agency partners and other entities to manage sensitive species habitat in a manner that would preclude solar energy development." The development restrictions and mitigation requirements adopted in the NECO CMP and other relevant plans remain in effect and would apply to any applications for solar energy development within a WHMA. Such requirements include for example limiting barriers to bighorn sheep movement within and between demes to the extent possible in bighorn sheep WHMAs (NECO CMP 2002) and a 3:1 mitigation ratio for disturbance of Desert Dry Wash

Woodland and Desert Chenopod Scrub communities in multi-species WHMAs (NECO CMP 2002). Further, any projects proposed in WHMAs shall not compromise the management goals of those WHMAs, and the required site-specific NEPA analysis would need to analyze the impacts of the project on the WHMAs and its management prescriptions. The BLM will also consider the presence of WHMAs for solar energy ROW applications within variance areas, including documentation from the applicant that the proposed project will minimize adverse impacts on important fish and wildlife habitats and migration/movement corridors (see Appendix B, Section B.5).

Modification—As explained more fully in Appendix B, Section B.5.3, of this ROD, it is important to protect desert tortoise connectivity areas. To assist in that process, the BLM excluded an additional 515,000 acres (2,084 km^2) of land that coincides with priority desert tortoise connectivity habitat in the Final Solar PEIS (see Section 2.2.2.3.1 therein). In addition, maps and supporting information regarding priority desert tortoise connectivity habitat, as identified by the U.S. Fish and Wildlife Service (USFWS), have been made available through the Solar Energy Program Web page (http://solareis.anl.gov). An explanation of the map is also provided on the Solar Energy Program Web page. As with all landscape-scale mapping exercises, there are inherent limitations in the ability of the USFWS maps to accurately describe site-specific conditions for desert tortoise connectivity. The maps are intended to be used as a first line screening of variance areas in terms of desert tortoise connectivity habitat. For mapped areas that are in variance areas, applicants will be required to follow a special variance process for desert tortoise (see Appendix B, Section B.5.3) that will require an assessment of site-specific data and ground-truthing of the information provided in the USFWS map to determine whether a site is an acceptable location for utility-scale solar energy development. Considerations for the protection of desert tortoise connectivity habitat have also been added to the programmatic design features in this ROD (see Appendix A, Section A.4.1.11.1).

Modification—Protests and comments received on the Final Solar PEIS continue to express concern about the use of solar insolation as an exclusion criterion in the Solar Energy Program. The BLM chose not to make adjustments to the solar insolation exclusion criteria in this ROD. The BLM believes that restricting the available lands for utility-scale solar energy development based on the quality of the solar radiation will help maximize the efficient use of BLM-administered lands and meet the multiple use intent of FLPMA by reserving for other uses lands that are not ideal for solar energy development. However, as described in this ROD, the BLM's Solar Energy Program provides some flexibility to developers who wish to construct utility-scale projects on lands with insolation values lower than 6.5 $kWh/m^2/day$. In particular, in recognition of expected advances in solar energy technology, changes in market conditions, and changes in other state and Federal policies, the BLM will consider the designation of new SEZs in areas with lower insolation (see Appendix B, Section B.4.5.2.2). This was described in both the Supplement to the Draft Solar PEIS and the Final Solar PEIS as part of the proposed SEZ Identification Protocol and was based primarily on the input from solar industry representatives. Under the framework of the Solar Energy Program, the primary mechanism to expand the lands available for utility-scale solar development will be

through the identification of new SEZs. Flexibility for individual projects with respect to solar insolation can be afforded through the land use planning process. Consistent with existing planning regulations, applicants may request that the BLM amend a land use plan to allow for an otherwise nonconforming proposal (ROD citation A.2). For example, an applicant may request a land use plan amendment for an individual utility-scale solar energy project in suitable locations where insolation values are below 6.5 kWh/m^2/day. The BLM will consider such requests on a case-by-case basis.

Modification—The requirement presented in the Final Solar PEIS (Section 2.2.2.2.2) that all projects in SEZs determined by the authorized officer to require an EIS level of analysis must be submitted through the State Director to the BLM Washington Office for the Director's concurrence prior to the issuance of an Notice of Intent has been removed in the ROD. Close coordination with the BLM Washington Office will occur for all projects in SEZs irrespective of the level of NEPA analysis required. The determination of level of NEPA analysis will be made by the BLM authorized officer in coordination with the BLM Washington Office, consistent with the Council on Environmental Quality's NEPA regulations (40 CFR Parts 1500-1508), DOI NEPA procedures (43 CFR Part 46), and the BLM NEPA Handbook (H-1790-1).

Modification—Additional language has been added to the description of pending applications in the ROD to describe the circumstances in which amendments to pending applications would be acceptable (see Appendix B, Section B.3).

Modification—Changes have been made to the variance process based on comments received on the Final Solar PEIS (see Appendix B, Section B.5). These changes, which do not substantially affect the proposed action or the adequacy of the NEPA analysis, include the addition of a factor to be considered regarding lands with wilderness characteristics; the addition of text regarding the preference to use contaminated or previously disturbed lands; changes to text regarding the consideration of the availability of lands with SEZs that could meet an applicant's needs; changes to text regarding the use of existing infrastructure (i.e., roads and transmission); changes to text regarding the use of water; changes to text regarding transmission issues; and changes to text regarding the second pass survey for desert tortoise.

Modification—Additional language has been added to the identification protocol for SEZs to include lands with wilderness characteristics in the types of areas to screen for based on landscape-scale information (see Appendix B, Section B.4.5). This addition does not substantially affect the proposed action or the adequacy of the NEPA analysis.

Modification—Changes have been made to the programmatic design features based on comments received on the Final Solar PEIS (see Appendix A, Section A.4.1). These changes, which do not substantially affect the proposed action or the adequacy of the NEPA analysis, include the addition of possible methods to mitigate unavoidable impacts on specially designated areas and lands with wilderness characteristics; changes to text regarding the siting and design for facilities; changes to text regarding water supply; addition of text regarding coordination with affected grazing permittees/lessees; addition

of design feature for air-quality related values in Class I areas; addition of text regarding the identification of environmental justice communities; clarifying text regarding unique or important recreation resources; removing text regarding the salvage of intact biological soil crusts; clarifying text regarding soil deposition and erosion; clarifying text regarding monitoring for water use; clarifying text regarding mitigating impacts on ecological resources; removing text regarding Migratory Bird Treaty Act take permits; and the addition of design features that address the conservation recommendations put forth by the USFWS in their Biological Opinion and Conservation Review for the Solar Energy Program (July 20, 2012).

7 CONSISTENCY AND CONSULTATION REVIEW

7.1 GOVERNOR'S CONSISTENCY REVIEW

On July 24, 2012, the BLM initiated the 60-day Governor's Consistency Review of the Final Solar PEIS in accordance with FLPMA (43 USC 1712(c)(9)), which states that the Secretary of the Interior shall "coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located." It further directs the Secretary to "assure that consideration is given to those State, local and tribal plans that are germane in the development of land use plans for public lands" and "assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans." Thus, FLPMA does not require the BLM to adhere to or adopt the plans of other agencies or jurisdictional entities but rather to give consideration to those plans and make an effort to resolve inconsistencies to the extent practical. In some circumstances, the BLM may be unable to resolve inconsistencies where state plans conflict with Federal law. While state and Federal planning processes are required to be as integrated and consistent as practical, the BLM is not bound by or subject to State plans, planning processes, or planning stipulations.

The States of New Mexico and Arizona provided letters finding that the BLM's proposed land use plan amendments are consistent with State or local plans, policies or programs. The States of Nevada and Colorado did not provide a formal response. Therefore, consistent with the BLM's planning regulations at 43 CFR 1610.3-2(e), the proposed plan amendments are presumed to be consistent with State or local plans, policies, or programs in Nevada and Colorado. The State of California indicated that there are inconsistencies between the proposed land use plan amendments and the local plans, policies, or programs of Inyo, San Bernardino, and Riverside Counties, but did not identify those inconsistencies or recommend changes to the proposed plan amendments. The California Governor's Office of Planning and Research recommended that the BLM continue to coordinate with these local governments, which the BLM will do as it implements its Solar Energy Program. The State of Utah confirmed that the proposed land use plan amendments to identify SEZs are consistent with Utah law and policy, including the Governor's 10-Year Strategic Energy Plan. The State of Utah also indicated that the BLM's exclusion of some lands from solar development may be inconsistent with state law regarding how viewshed, wilderness characteristics, and sage-grouse habitat should be considered. The State of Utah did not identify those inconsistencies or make recommendations about how the proposed plan amendments should be adjusted to comport with applicable state law. However,

the BLM will work with the state to discuss and review development opportunities outside of SEZs.

7.2 COOPERATING AGENCIES

The Solar PEIS was prepared in close coordination with 19 Federal, state, and local government agencies participating as cooperating agencies. The following agencies participated as cooperating agencies in the preparation of the Solar PEIS:

- U.S. Department of Defense (DoD);
- U.S. Bureau of Reclamation (BOR);
- U.S. Fish and Wildlife Service (USFWS);
- U.S. National Park Service (NPS);
- U.S. Environmental Protection Agency (EPA), Region 9;
- U.S. Army Corps of Engineers (USACE), South Pacific Division;
- State of Arizona Game and Fish Department (AZGFD);
- State of California, California Energy Commission (CEC);
- State of California Public Utilities Commission (CPUC);
- State of Nevada Department of Wildlife (NDOW);
- N-4 Grazing Board, Nevada;
- State of Utah Public Lands Policy Coordination Office;
- Clark County (Nevada), including Clark County Department of Aviation;
- Doña Ana County (New Mexico);
- Esmeralda County (Nevada);
- Eureka County (Nevada);
- Lincoln County (Nevada);
- Nye County (Nevada); and
- Saguache County (Colorado).

The entities listed above are cooperating in the preparation of this PEIS, and Memoranda of Understanding (MOUs) between these agencies and the DOE and/or the BLM have been established, as appropriate. As cooperators, these agencies have been involved in the development of the Draft Solar PEIS, the Supplement to the Draft Solar PEIS, and the Final Solar PEIS. The cooperating agencies were given the opportunity to review the Draft Solar PEIS, the Supplement to the Draft Solar PEIS, and the Final Solar PEIS prior to their publication.

7.3 TRIBAL CONSULTATION

The Final PEIS reflects and incorporates the input from Indian tribes obtained through various means. Beginning in June 2008, the BLM wrote to 316 tribes, chapters, and bands with a potential interest in solar energy development on BLM-administered lands in the six-state area. The BLM provided information on the Solar PEIS, invited them to be cooperating parties, and requested government-to-government consultation. Such communication continued in July 2009, October 2011, March and April 2012, and August 2012. Maps, information, Web links, Question and Answer Fact Sheets, CDs of the PEIS, and hard copies of the Supplement were provided and feedback sought. Based on extensive comments provided by tribes, numerous changes were made to the Final PEIS as explained in correspondence sent to tribes in August of 2012. Records indicate that the BLM continued to communicate with 65 tribes on an ongoing and repeated basis via letters, e-mails, and phone calls.

In summary, tribes generally expressed concern that too much land was being made available for solar development by the BLM's preferred alternative (a concern shared by many other stakeholders). In response, the BLM revised the program alternative to emphasize and incentivize solar development within a reduced number of SEZs, some of which had also been reduced in size. Environmental concerns, including tribal issues related to the importance of cultural resources within SEZs, resulted in the elimination of entire SEZs or portions of SEZs from further consideration in the PEIS. A variance process was established to allow development outside of SEZs on an exceptional basis. The process includes a specific requirement for tribal engagement. The list of exclusion areas was also expanded in the Final Solar PEIS. An additional 1 million acres of exclusion areas were added to the program alternative between the Supplement to the Draft Solar PEIS and the Final Solar PEIS, based in part on continued consultation with tribes to protect sensitive visual and cultural resources.

The BLM conducted numerous face-to-face meetings with tribes throughout the PEIS effort, and such consultation continues. The agency issued Instruction Memorandum WO IM 2012-032 in December 2011 and held face-to-face meetings with tribes that had provided feedback on the Draft PEIS. Meetings focused on tribal comments and concerns, the content and purpose of the Supplement, the policies enumerated in the Question and Answer Fact Sheet, Section 106 procedures proposed in the Solar Programmatic Agreement, and timeframes for completing the PEIS. During the preparation of the PEIS, meetings were held with 19 different tribes. State initiatives such as the Tribal Federal Leadership Conference, Renewable Energy and Desert Planning Meetings in California, and the Restoration Energy Design Project in Arizona continue to provide opportunities for tribal input on the planning for solar energy projects. Tribes

participated in public scoping meetings in 2008 and 2011. Testimony received from five tribes (Duckwater Shoshone Tribe, Pahrump Paiute Tribe (non-federally recognized), San Miguel Band of Mission Indians, Chemehuevi Indian Tribe, and Colorado River Indian Tribe) was taken into account when the Draft and Final Solar PEIS were completed.

The BLM contracted to complete an ethnographic report of tribal issues, concerns, and important sacred and traditional properties within proposed SEZs in Nevada and Utah. Tribally approved texts describing resources and issues of concern to tribes are posted on the Solar Energy Program Web page (http://solareis.anl.gov). The BLM wrote to all tribes in October 2011. The agency shared ethnographic reports specific to individual SEZs and asked other tribes if they would identify sites of a similar nature and concern to them.

7.4 NATIONAL HISTORIC PRESERVATION ACT—SECTION 106 CONSULTATION

The BLM consulted with the Advisory Council on Historic Preservation; the six State Historic Preservation Offices in Arizona, California, Colorado, Nevada, New Mexico, and Utah; the National Trust for Historic Preservation; and Indian tribes in preparing a Programmatic Agreement (PA) governing Section 106 compliance procedures for future solar undertakings. The BLM provided the Draft PA in February 2011 and the Revised Draft PA in late October and early November to tribes for review and comment. In May 2012, PA Version 2.5 was again sent for comment to those tribes with historical and cultural ties to the SEZ and/or variance areas. Detailed feedback provided by the Colorado River Indian Tribes and the Big Pine Paiute Tribe resulted in additions and modifications of compliance procedures in the PA. The Consulting Parties agreed to the final provisions of the Solar PA in August 2012. The final Programmatic Agreement was signed by the Acting BLM Director on September 7, 2012, and was fully executed by all parties on September 24, 2012.

Decisions regarding the identification of historic properties, their evaluation, and treatment of adverse effects will be informed by the processes of inventory, evaluation, and mitigation of effects identified within the Final Solar PA. A sample archeological survey of SEZs within Arizona, California, and Nevada will be completed in November 2012 to provide more up-to-date and complete information for those SEZs. It will allow a projection of the density and distribution of historic properties in the SEZs and help direct development to those portions of SEZs with the fewest conflicts with historic properties. Pre-application meetings with solar applicants will identify the need for additional inventory data. Indian tribes with the historical or cultural ties to the SEZ or variance areas will be invited to participate and will be given the opportunity to identify traditional historic properties through consultations with the BLM and to propose additional ethnographic research.

Opportunities to further improve Section 106 compliance are made possible through completion of Regional Mitigation Planning. The BLM, in consultation with SHPOs, the Advisory Council on Historic Preservation (ACHP), Indian tribes, and other consulting parties, will take steps to collect information on historic properties in a more effective and focused manner than might otherwise be possible through case with case-by-case Section 106 compliance procedures.

7.5 ENDANGERED SPECIES ACT—SECTION 7 COMPLIANCE

On February 2, 2012, the BLM initiated formal programmatic Endangered Species Act (ESA) consultation with the USFWS on its proposed Solar Energy Program. This programmatic consultation was completed on July 20, 2012 and included consultation under both Sections 7(a)(1) and 7(a)(2) of the ESA.

The BLM, in consultation with the USFWS, completed a conservation review pursuant to Section 7(a)(1) of the ESA on the overall Solar Energy Program, including the amendment of 89 land use plans. The conservation review considered BLM's exercise of its authority to contribute to conservation of listed species and avoid potential adverse effects to these species. The USFWS found that the selection of SEZs, exclusion of certain areas from eligibility for solar energy development, application of design features to all solar energy development that will occur, and the review process applicable to development in variance areas outside of SEZs are likely to contribute to the conservation of listed species. The elements of the Solar Energy Program dealing with endangered and threatened species can be considered to constitute a program for their conservation as described by Section 7(a)(1) of the ESA.

The BLM, in consultation with the USFWS, also completed a programmatic consultation with the USFWS on the identification of SEZs under Section 7(a)(2) of the ESA, which was initiated through the submission of a programmatic Biological Assessment. This Biological Assessment described potential effects on ESA-listed species and designated critical habitat from expected solar energy development in SEZs and any appropriate mitigation, minimization, and avoidance measures. Further Section 7(a)(2) consultation will occur, as necessary, at the level of individual solar energy projects and will benefit from the preceding programmatic consultation and resulting programmatic Biological Opinion for SEZs.

The BLM's programmatic Biological Assessment determined that the expected solar energy development in SEZs may affect but is not likely to adversely affect the following species: northern aplomado falcon (*Falco femoralis septentrionalis*), Utah prairie dog (*Cynomys parvidens*), Pahrump poolfish (*Empetrichthys latos*), southwestern willow flycatcher (*Empidonax traillii extimus*), Mexican spotted owl (*Strix occidentalis lucida*), and Yuma clapper rail (*Rallus longirostris yumanensis*). The USFWS concurred with these determinations of "may affect, not likely to adversely affect" through their programmatic Biological Opinion dated July 20, 2012.

The BLM's programmatic Biological Assessment identified 17 species as likely to be adversely affected by the expected solar energy development in the SEZs: desert tortoise (*Gopherus agassizii*), Amargosa niterwort (*Nitrophila mohavensis*), Ash Meadows blazing-star (*Mentzelia leucophylla*), Ash Meadows gumplant (*Grindelia fraxino-pratensis*), Ash Meadows ivesia (*Ivesia eremica*), Ash Meadows milkvetch (*Astragalus phoenix*), Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*), spring-loving centaury (*Centaurium namophilum*), Ash Meadows naucorid (*Ambrysus amargosus*), Ash Meadows amargosa pupfish (*Cyprinodon nevadensis mionectes*), Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*), Devils Hole pupfish (*Cyprinodon diabolis*), Moapa dace (*Moapa coriacea*), Warm Springs pupfish (*Cyprinodon nevadensis pectoralis*), White River springfish (*Crenichthys baileyi baileyi*), Hiko White River springfish (*Crenichthys baileyi grandis*), and Pahranagat roundtail chub (*Gila*

robusta jordani). The USFWS concluded in their programmatic Biological Opinion, dated July 20, 2012, that expected solar energy development in SEZs is not likely to jeopardize the continued existence of these species, and is not likely to destroy or adversely modify designated critical habitat. The conservation recommendations put forth by the USFWS in their programmatic Biological Opinion have been incorporated into the decisions in this ROD as appropriate.

8 MITIGATION MEASURES

The BLM's Solar Energy Program employs a mitigation hierarchy to address potential adverse impacts—avoidance, minimization, and offset of unavoidable impacts. Avoidance will be achieved through siting decisions and the identification of priority SEZs. Minimization will be achieved through the application of programmatic design features and SEZ-specific design features (see Appendix A, Sections A.4.1 and A.4.2). Adherence to the design features included in this ROD will be required for all future utility-scale solar energy development on BLM-administered lands. Design features are mitigation requirements that have been incorporated into the proposed action to avoid or minimize adverse impacts. The design features were derived from comprehensive reviews of solar energy development activities; published data regarding solar energy development impacts; existing, relevant mitigation guidance; and standard industry practices (Final Solar PEIS A.2.2). The Final Solar PEIS in Chapters 8–13 provides an assessment of the effectiveness of the programmatic design features in mitigating adverse impacts from solar energy development within the SEZs. As necessary, SEZ-specific design features and their potential effectiveness are identified in addition to the programmatic design features.

All utility-scale solar energy development on BLM-administered lands will also have to adhere to applicable Federal, state, and local laws and regulations such as the ESA that seek to avoid and/or minimize adverse impacts. For those impacts that cannot be avoided or minimized, the BLM will determine, in consultation with affected stakeholders, whether measures to offset or mitigate adverse impacts would be appropriate. To help accomplish this goal, the BLM will develop regional mitigation plans for each SEZ. As envisioned, these regional mitigation plans will simplify and improve the mitigation process for future projects in SEZs.

9 MONITORING AND ADAPTIVE MANAGEMENT

Required design features and any additional mitigation measures will be identified in ROW authorizations for individual projects. These measures will be monitored by solar energy project developers and the appropriate Federal agency to ensure their continued effectiveness through all phases of development. In cases where monitoring indicates that mitigation measures are ineffective at meeting the desired resource conditions, the BLM would take steps to determine the cause and take corrective action using adaptive management strategies. This information would also be used to inform the authorization of future solar energy development activities on BLM-administered lands.

The BLM has committed to developing and incorporating a larger monitoring and adaptive management strategy 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. This long-term solar monitoring and adaptive management plan will be based on BLM's Assessment, Inventory and Monitoring (AIM) Strategy developed in 2011. It will also take advantage of and augment other AIM efforts, including Rapid Ecoregional Assessments, the national landscape monitoring framework, greater sage-grouse habitat analysis, and an array of local, management-driven monitoring efforts.

10 PUBLIC INVOLVEMENT

10.1 SCOPING

A Notice of Intent (NOI) to prepare this PEIS was published in Volume 73, page 30908 of the *Federal Register* on May 29, 2008. This notice initiated the first scoping period, which lasted from May 29 to July 15, 2008. During that period, the BLM and DOE invited the public to provide comments on the scope and objectives of the PEIS, including identification of issues and alternatives that should be considered in the PEIS analyses. Public meetings were held at 11 locations across the six states. Comments were also collected via the Solar PEIS project Web site (http://solareis.anl.gov) and by mail. A second scoping period was announced through a Notice of Availability (NOA) of Maps and Additional Public Scoping published in the *Federal Register* (Volume 74, page 31307) on June 30, 2009. During this scoping period, the agencies solicited comments about environmental issues, existing resource data, and industry interest with respect to 24 proposed solar energy study areas (later the terminology was changed to Solar Energy Zones, or SEZs). Public comments were collected via the project Web site and by mail. It is estimated that approximately 15,900 individuals, organizations, and government agencies provided comments during the first scoping process, and approximately 300 entities provided comments during the second scoping process. The results of the first scoping process were documented in a report issued in December 2008 (DOE and BLM 2008). The comments received during the second scoping process are summarized in Chapter 14 of the Draft Solar PEIS.

10.2 PUBLIC COMMENTS ON THE DRAFT SOLAR PEIS

The NOA for the Draft Solar PEIS was published in Volume 75, page 78980 of the *Federal Register* on December 17, 2010. The comment period was open for 134 days, closing on May 2, 2011. The BLM held 14 public meetings in the six-state study area between January and March 2011. More than 86,000 comments were received. The public, as well as many cooperating agencies and key stakeholders, offered suggestions on how the BLM could increase the utility of the document, strengthen elements of the proposed Solar Energy Program, and increase certainty regarding solar energy development on BLM-administered lands. Based on this input, the BLM decided to prepare a Supplement to the Draft Solar PEIS.

10.3 PUBLIC COMMENTS ON THE SUPPLEMENT TO THE DRAFT SOLAR PEIS

The NOA for the Supplement to the Draft Solar PEIS was published in Volume 76, page 66958 of the *Federal Register* on October 28, 2011. The comment period was open for 90 days, closing on January 27, 2012. The BLM held five public meetings in the study area between November

2011 and January 2012 to present the new information provided in the Supplement. During the public comment period on the Supplement to the Draft Solar PEIS, more than 134,000 comments were received.

10.4 RELEASE OF THE FINAL SOLAR PEIS

The NOA for the Final Solar PEIS was published in Volume 77, page 44267 of the *Federal Register* on July 27, 2012. While publication of the NOA of a Final EIS does not trigger a formal public comment period, the BLM reviewed all comments submitted following the publication of the Final Solar PEIS (see below for summary) and used them to make clarifications and modifications in this ROD (reference this ROD section).

10.5 PUBLIC COMMENTS ON THE FINAL SOLAR PEIS

The BLM received 15 comment letters on the Final Solar PEIS from county officials, non-governmental organizations, solar energy developers, solar energy industry associations, utility representatives, state and Federal agencies, and tribes. The BLM reviewed all comments received and made clarifications and modifications in this ROD as appropriate (see Section 6). Comments submitted through the protest process were also given consideration by the BLM in developing this ROD (see Section 5).

10.6 AVAILABILITY OF THE RECORD OF DECISION

Electronic copies of this ROD with the Approved Plan Amendments are available via the Internet at http://solareis.anl.gov.

Paper and electronic copies may be viewed at the following locations:

Arizona:

Arizona State Office
One North Central Avenue, Suite 800
Phoenix, Arizona 85004

Lake Havasu Field Office
2610 Sweetwater Avenue
Lake Havasu City, Arizona 86406

Lower Sonoran Field Office
21605 N. 7th Avenue
Phoenix, Arizona 85027

California:

California State Office
2800 Cottage Way, Suite W–1623
Sacramento, California 95825

California Desert District
22835 Calle San Juan De Los Lagos
Moreno Valley, California 92553

El Centro Field Office
1661 S. 4th Street
El Centro, California 92243

Palm Springs—South Coast Field Office
1201 Bird Center Drive
Palm Springs, California 92262

Barstow Field Office
2601 Barstow Road
Barstow, California 92311

Colorado:

Colorado State Office,
2850 Youngfield Street
Lakewood, Colorado 80215

San Luis Valley Public Lands Center
1803 West Highway 160
Monte Vista, Colorado 81144

Nevada:

Nevada State Office
1340 Financial Boulevard
Reno, Nevada 89502

Southern Nevada District Office
4701 North Torrey Pines,
Las Vegas, Nevada 89130

Tonopah Field Office
1553 South Main Street
Tonopah, Nevada 89049

Caliente Field Office
U.S. Highway 93 Building #1
Caliente, Nevada 89008

New Mexico:

New Mexico State Office
301 Dinosaur Trail
Santa Fe, New Mexico 87508

Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005

Utah:

Utah State Office
440 West 200 South, Suite 500
Salt Lake City, Utah 84101

Cedar City Field Office
176 East D.L. Sargent Drive
Cedar City, Utah 84721

11 CONSIDERATION OF OTHER BLM PLANS AND POLICIES

This ROD amends all land use plans in the six-state study area and identifies BLM-administered lands as exclusion areas for utility-scale solar energy development, Solar Energy Zones, or variance lands for utility-scale solar energy development. The land use plan amendments for utility-scale solar energy development are listed in Table A-1 in Appendix A. These existing land use plans continue to outline the decisions or protocols for the management of the other resource uses or values within the appropriate planning areas.

In the event there are inconsistencies or discrepancies between previously approved plans and these Plan Amendments, the decisions contained in the Plan Amendments for the Solar Energy Program will be followed. All future resource authorizations and actions will conform to, or be consistent with, the decisions contained in these Plan Amendments. All existing operations and activities authorized under permits, contracts, cooperative agreements or other authorizations will be modified, as necessary, to conform to this plan within a reasonable timeframe. However, this plan does not impact valid existing rights on public lands. If such authorizations come up for review and can be modified, they will also be brought into conformance with the plan.

12 PLAN IMPLEMENTATION

12.1 GENERAL IMPLEMENTATION SCHEDULE

The decisions of the Plan Amendments and supporting policies go into effect upon signature of the ROD.

12.2 PLAN MAINTENANCE AND DATA REFINEMENT

Land use plan decisions and supporting information associated with these Plan Amendments will be maintained to reflect minor changes in data. Maintenance is limited to refining, documenting, and/or clarifying these land use plan amendments, as provided in 43 CFR 1610.5-4. Plan maintenance will be documented in supporting records. Plan maintenance does not require formal public involvement, interagency coordination, or preparation of an environmental assessment or environmental impact statement.

The available GIS data and maps used for the analysis in the Final Solar PEIS are available at the project Web site (www.solareis.anl.gov). Data used in development of the Plan Amendments are dynamic and in some cases GIS data were incomplete for some planning areas and/or resources. Thus, please note that all acreages presented in the Plan Amendments (and shown in Appendix A) are estimations, even when presented to the nearest acre. The data and maps used throughout the Final Solar PEIS are for land use planning purposes only and shall be verified and/or refined by site-specific information as necessary. Updating data is considered plan maintenance, and is expected to occur over time as the land use plans are implemented.

12.3 CHANGING THE PLAN

The Plan Amendments may be changed, should conditions warrant, through a plan amendment process. A plan amendment may become necessary if changes in circumstances or actions come under consideration that may result in a change in the scope of resource uses or a change in the terms, conditions, or decisions of the approved plan (e.g., significant new information is available, or a proposal or action comes under consideration that is not in conformance with the plan). The results of monitoring, evaluation of new data, or policy changes and changing public needs might also provide the impetus for an amendment. Generally, an amendment is issue-specific, but a programmatic amendment process is also possible. Plan amendments are accomplished with public input and the appropriate level of environmental analysis and NEPA compliance.

13 REFERENCES CITED

BLM (Bureau of Land Management), 2011a, *Solar and Wind Energy Applications—Due Diligence*, Instruction Memorandum 2011-060, U.S. Department of the Interior, Washington, D.C., Feb. 7.

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BLM and DOE (Bureau of Land Management and U.S. Department of Energy), 2012, *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*, FES 12-24, DOE/EIS-0403, July.

DOE and BLM (U.S. Department of Energy and Bureau of Land Management), 2008, *Summary of Public Scoping Comments Received during the Scoping Period for the Solar Energy Development Programmatic Environmental Impact Statement*, Washington, D.C., Oct.

Secretary of the Interior, 2009, *Renewable Energy Development by the Department of the Interior*, Secretarial Order 3285, March 11. Available at http://www.doi.gov/archive/news/09_News_Releases/SOenergy.pdf.

Secretary of the Interior, 2010, *Renewable Energy Development by the Department of the Interior*, Amendment No. 1 to Secretarial Order 3285A1, Feb. 22. Available at http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3285A1.

Final Agency Action and Revised Policies

Land Use Plan Amendment Decisions

It is the decision of the Bureau of Land Management (BLM) to approve the Proposed Plan Amendments to the 89 Land Use Plans identified in this Record of Decision. The Proposed Plan Amendments and related Final Environmental Impact Statement (EIS) were published on July 27, 2012, in the Federal Register (77 FR 44267). I have resolved all protests and, in accordance with BLM regulations 43 CFR 1610.5-2, my decision on the protests is the final decision of the Department of the Interior. This approval is effective on the date this Record of Decision is signed.

Approved by:

Mike Pool
Acting Director
Bureau of Land Management

10/10/2012
Date

Revised Policies

Appendix B of this Record of Decision describes revised BLM policies and procedures that relate to solar energy development on public lands. These policies and procedures provide internal administrative guidance to the BLM regarding the processing of right-of-way (ROW) applications for utility-scale solar energy projects, and are effective on the date this Record of Decision is signed.

Approved by:

Mike Pool
Acting Director
Bureau of Land Management

10/10/2012
Date

Secretarial Approval

I hereby approve these revised policies and procedures and land use plan amendment decisions. My approval of the land use plan decisions constitutes the final decision of the Department of the Interior and, in accordance with the regulations at 43 CFR 4.410(a)(3), is not subject to appeal under Departmental regulations at 43 CFR Part 4. Any challenge to these land use plan decisions must be brought in Federal district court.

Approved by:

Ken Salazar
Secretary
Department of the Interior

10/12/2012
Date

APPENDIX A—LAND USE PLAN AMENDMENTS

A.1 INTRODUCTION

The U.S. Department of the Interior, Bureau of Land Management, develops land use plans to guide activities, establish management goals and approaches, and establish land use allocations within a planning area. Current land use plans are called resource management plans (RMPs); in the past, such plans were called management framework plans (MFPs), and some of these MFPs are still in use. Analyses conducted in the Solar PEIS support the amendment of land use plans in the six-state study area.

The Plan Amendments in this ROD amend 89 plans to do the following:

1. Identify exclusion areas for utility-scale solar energy development in the six-state study area;

2. Identify priority areas for solar energy development that are well suited for utility-scale production of solar energy (i.e., SEZs);

3. Identify areas potentially available for utility-scale solar energy development outside of SEZs in the six-state study area (i.e., variance areas); and

4. Establish required programmatic and SEZ-specific design features for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy.

The Plan Amendments affect allocations and management of utility-scale solar energy development on BLM-administered lands and do not affect any required supporting linear infrastructure, such as roads, transmission lines, and natural gas or water pipelines. Management decisions for supporting linear infrastructure, including available lands, are defined in existing applicable land use plans. These plans continue to outline the decisions or protocols for the management of the other resource uses or values within the appropriate planning areas. The amendments would apply only to the siting of utility-scale solar energy generation facilities.

Land use plans that are currently undergoing revision or amendment, and that are not scheduled for completion until after this ROD is signed, will incorporate the land use plan decisions into their ongoing plan revisions upon signature of this ROD. Plans that have recently been revised before this ROD is signed will be amended upon signature of this ROD.

A.2 LAND USE ALLOCATIONS

The allocations by land use plan and BLM field office are provided in Table A-1. In total, these decisions allocate approximately 78.6 million acres of exclusion areas, 285,000 acres of Solar Energy Zones, and 19.3 million acres of variance areas.

TABLE A-1 Land Use Plans Amended and Approximate Acreage Available for Application for Solar Energy Development by Planning Area[a]

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Arizona[c]		
Agua Fria NM Plan, Hassayampa Field Office	All lands would be excluded.	None
Arizona Strip RMP, Arizona Strip Field Office	739,340 acres	None
Bradshaw–Harquahala RMP, Hassayampa Field Office	185,323 acres	None
Grand Canyon–Parashant NM Plan, Arizona Strip Field Office	All lands would be excluded.	None
Gila Box Riparian NCA Plan, Safford Field Office	11 acres	None
Goldwater Range RMP, Lower Sonoran Field Office	71 acres	None
Kingman R.A. RMP, Kingman Field Office	662,508 acres	None
Lake Havasu RMP, Lake Havasu Field Office	506,107 acres	Brenda SEZ (3,348 acres)
Las Cienegas NCA Plan, Tucson Field Office	All lands would be excluded.	None
Lower Gila North and South RMP Amendment, Lower Sonoran Field Office	295,867 acres	Gillespie SEZ (2,618 acres)
Phoenix R.A. RMP, Lower Sonoran, Safford, and Tucson Field Offices	238,880 acres	None
Safford RMP, Safford, and Tucson Field Offices	608,611 acres	None
San Pedro Riparian NCA Plan, Tucson Field Office	143 acres	None

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Arizona (Cont.)		
Vermilion Cliffs NM Plan, Arizona Strip Field Office	All lands would be excluded.	None
Yuma RMP, Yuma Field Office	144,015 acres	None
Total for Arizona	3,380,877 acres	5,966 acres
California[c]		
Alturas RMP, Alturas Field Office	All lands would be excluded.	None
Arcata RMP, Arcata Field Office	All lands would be excluded.	None
Bishop RMP, Bishop Field Office	31,581 acres	None
Caliente RMP, Bakersfield Field Office	1,496 acres	None
California Coastal NM Plan, California State Office	All lands would be excluded.	None
California Desert Conservation Area RMP, Barstow, El Centro, Needles, Palm Springs–South Coast, and Ridgecrest Field Offices[d]	730,616 acres	Imperial East SEZ (5,717 acres) Riverside East SEZ (147,910 acres)
Carrizo Plain NM Plan, Bakersfield Field Office	All lands would be excluded.	None
Eagle Lake RMP, Eagle Lake Field Office	11 acres	None
Eastern San Diego RMP, El Centro Field Office	228 acres	None
Headwaters Forest Reserve Plan, Arcata Field Office	All lands would be excluded.	None
Hollister RMP, Hollister Field Office	All lands would be excluded.	None

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
California (Cont.)		
King Range NCA Plan, Arcata Field Office	All lands would be excluded.	None
Piedras Blancas Historic Light Station ONA Plan, Bakersfield Field Office	All lands would be excluded.	None
Redding RMP, Redding Field Office	All lands would be excluded.	None
Santa Rosa and San Jacinto Mountains NM Plan, Palm Springs–South Coast Field Office	All lands would be excluded.	None
Sierra RMP, Folsom Field Office	1 acre	None
South Coast RMP, Palm Springs–South Coast Field Office	2,145 acres	None
Surprise RMP, Surprise Field Office	All lands would be excluded.	None
Ukiah RMP, Ukiah Field Office	All lands would be excluded.	None
Total for California	766,078 acres	153,627 acres
Colorado[c]		
Canyon of the Ancients NM Plan, Canyon of the Ancients NM	All lands would be excluded.	None
Glenwood Springs RMP, Glenwood Springs Field Office	All lands would be excluded.	None
Grand Junction RMP, Grand Junction Field Office	All lands would be excluded.	None
Gunnison RMP, Gunnison Field Office	3,162 acres	None
Gunnison Gorge NCA Plan, Gunnison Field Office	All lands would be excluded.	None

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Colorado (Cont.)		
Kremmling RMP, Kremmling Field Office	All lands would be excluded.	None
Little Snake RMP, Little Snake Field Office	All lands would be excluded.	None
McInnis Canyons NCA Plan, Grand Junction Field Office	All lands would be excluded.	None
Royal Gorge/Northeast RMP, Royal Gorge Field Office	29,477 acres	None
San Juan Public Lands Center RMP, Columbine, Dolores, Pagosa Springs, and Uncompahgre Field Offices	12,105 acres	None
San Luis Valley	7 acres	None
San Luis Valley Public Lands Center RMP, Del Norte, La Jara, and Saguache Field Offices	50,377 acres	Antonito Southeast SEZ (9,712 acres) La Jara Field Office De Tilla Gulch SEZ (1,064 acres) Saguache Field Office Fourmile East SEZ (2,882 acres) La Jara Field Office Los Mogotes East SEZ (2,650 acres) La Jara Field Office
Uncompahgre RMP, Uncompahgre Field Office	All lands would be excluded.	None
White River RMP, White River Field Office	All lands would be excluded.	None
Total for Colorado	95,128 acres	16,308 acres

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Nevada[c]		
Black Rock Desert—High Rock Canyon Emigrant Trails NCA Plan Winnemucca District Office	All lands would be excluded.	None
Carson City Consolidated RMP, Carson City District	918,161 acres	None
U.S. Department of Energy Plan, Southern Nevada District Office[e]	All lands would be excluded.	None
Elko RMP, Elko District Office	All lands would be excluded.	None
Ely RMP, Ely District Office	3,344,963 acres	Dry Lake Valley North SEZ (25,069 acres)
Las Vegas RMP, Southern Nevada District Office	873,518 acres	Amargosa Valley SEZ 8,479 acres) Dry Lake SEZ (5,717 acres)
Nellis Non-renewal Area Plan, Southern Nevada District Office[e]	All lands would be excluded.	None
Nellis Test & Training Range RMP, Southern Nevada District Office[e]	All lands would be excluded.	None
Paradise–Denio RMP, Winnemucca District Office	All lands would be excluded.	None
Red Rock Canyon NCA Plan, Southern Nevada District Office	182 acres	None
Shoshone–Eureka RMP, Battle Mountain District Office	663,198 acres	None
Sloan Canyon NCA Plan, Southern Nevada District Office	17 acres	None

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Nevada (Cont.)		
Sonoma–Gerlach RMP, Winnemucca District Office	85,771 acres	None
Tonopah RMP, Battle Mountain District Office	3,190,335 acres	Gold Point SEZ (4,596 acres)
		Millers SEZ (16,534 acres)
Wells RMP, Elko District Office	All lands would be excluded.	None
Total for Nevada	9,076,145 acres	60,395 acres
New Mexico[c]		
Carlsbad RMP, Carlsbad Field Office	271,504 acres	None
El Malpais NCA Plan, Rio Puerco Field Office	64 acres	None
Farmington RMP, Farmington Field Office	391,095 acres	None
Kasha–Katuwe Tent Rocks NM Plan, Rio Puerco Field Office	All lands would be excluded.	None
McGregor Range RMP, Las Cruces District Office	All lands would be excluded.	None
Mimbres RMP, Las Cruces District Office	1,416,196 acres	Afton SEZ (29,964 acres)
Rio Grande Corridor	34 acres	None
Rio Puerco RMP, Rio Puerco Field Office	320,387 acres	None
Roswell RMP, Roswell Field Office	759,743 acres	None
Socorro RMP, Socorro Field Office	656,335 acres	None

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
New Mexico (Cont.)		
Taos RMP, Taos Field Office	24,191 acres	None
White Sands RMP, Las Cruces District Office	344,972 acres	None
Total for New Mexico	4,184,520 acres	29,964 acres
Utah[c]		
Box Elder RMP, Salt Lake City Field Office[f]	All lands would be excluded.	None
Cedar–Beaver–Garfield–Antimony RMP, Cedar City Field Office	177,089 acres	Escalante Valley SEZ (6,533 acres) Milford Flats South SEZ (6,252 acres)
Grand Staircase–Escalante NM Plan, Grand Staircase–Escalante NM	8 acres	None
House Range RMP, Fillmore Field Office[f]	213,111 acres (all inside the UTTR)	None
Kanab RMP, Kanab Field Office	18,633 acres	None
Moab RMP, Moab Field Office	587 acres	None
Monticello RMP, Monticello Field Office	4,129 acres	None
Park City MFP, Salt Lake City Field Office	All lands would be excluded.	None
Pinyon MFP, Cedar City Field Office[f]	474,727 acres (468,540 acres outside the UTTR) (7,125 acres inside the UTTR)	Wah Wah Valley SEZ (5,873 acres)

TABLE A-1 (Cont.)

Plan/BLM Office	Approximate Acreage in Variance Areas[b]	Developable Acreage in SEZs
Utah (Cont.)		
Pony Express RMP, Salt Lake City Field Office[f]	All lands would be excluded.	None
Price RMP, Price Field Office	26 acres	None
Randolf MFP, Salt Lake City Field Office	All lands would be excluded.	None
Richfield RMP, Richfield Field Office	107,071acres	None
St. George RMP, St. George Field Office	9,402 acres	None
Vernal RMP, Vernal Field Office	All lands would be excluded.	None
Warm Springs RMP, Fillmore Field Office[f]	804,974 acres (200,371 acres outside the UTTR) (604,603 acres inside the UTTR)	None
Total for Utah	1,809,759 acres	18,658 acres

Abbreviations: MFP = Management Framework Plan; NCA = National Conservation Area; NM = National Monument; ONA = Outstanding Natural Area; RMP = Resource Management Plan; SEZ = solar energy zone; UTTR = Utah Test and Training Range.

[a] This table replaces Table C-1 of the Draft Solar PEIS (BLM and DOE 2010) and Table E-1 of the Supplement to the Draft Solar PEIS (BLM and DOE 2011). Land use plan amendments for the program alternative would include the identification of SEZs and the identification of variance areas; all remaining lands in a planning area would be identified as exclusion areas. Land use plan amendments for the SEZ alternative would include the identification of SEZs; all remaining lands in a planning area would be identified as exclusion areas. Totals may be off due to rounding. This table lists plans as of August 2010.

[b] These acreage estimates include the acreage in the proposed SEZs. The estimates were calculated on the basis of the best available geographic information system (GIS) data. GIS data were not available for the entire set of exclusions listed in Table 2.2-2 of the Final Solar PEIS; thus the exact acreage could not be calculated. Exclusion areas that could not be mapped because of the lack of data would be identified during the ROW application process.

Footnotes continued on next page.

TABLE A-1 (Cont.)

[c] For state totals, refer to Table 2.2-1 of the Final Solar PEIS.

[d] The CDCA Plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in that plan be considered through the land use plan amendment process. Because some SEZ areas have not previously been identified in the CDCA Plan as associated with power generation or transmission, the CDCA Plan must be amended to allow solar energy generation projects and transmission projects in these areas. The ROD amends the CDCA Plan to identify all SEZ lands within the CDCA as sites associated with power generation or transmission.

[e] Public lands in these planning areas in Nevada have been temporarily withdrawn for use by another Federal agency.

[f] Section 2815(d) of the National Defense Authorization Act (NDAA) for fiscal year 2000 (P.L. 106-65) placed a moratorium on planning efforts on BLM-administered lands "adjacent to, or near the Utah Test and Training Range (UTTR) and Dugway Proving Grounds or beneath Military Operating Areas, Restricted Areas, and airspace that make up the UTTR," NDAA § 2815(a), 113 Stat. 512, 852 (1999). This area encompasses a portion of the lands within the boundaries of the Box Elder, Pony Express, House Range, Warm Springs, and Pinyon land use plans. Within these areas, decisions related to whether lands would be available for ROW application, and adoption of the policies and design features of the PEIS, cannot be implemented via land use plan amendments at this time. Solar energy development ROW applications would be deferred until such time as plan amendments or new land use plan(s) address solar energy development. No SEZs are located within the UTTR affected areas.

Exclusions

Right-of way exclusion areas are defined as areas that are not available for location of ROWs under any conditions (BLM Land Use Planning Handbook, H-1601-1 [BLM 2005]). The identification of exclusion areas allows the BLM to support the highest and best use of public lands by avoiding potential resource conflicts and reserving for other uses public lands that are not well suited for utility-scale solar energy development. Due to the size and scale of utility-scale solar energy development (typically involving a single use of public lands), the BLM is excluding a broader set of categories than would be identified in a land use plan for other types of ROWs (see Table A-2).

All future utility-scale solar energy development must be in conformance (43 CFR 1601.0-5(b)) with the exclusions adopted through this ROD (see Table A-2) and the associated land use plan amendments. The geographic boundaries for exclusion categories 13, 14, 28, 29, 31, and 32 are explicitly defined through this ROD and its associated maps. The remaining exclusion categories are defined by the presence of a specific land use designation in an applicable land use plan (e.g., Areas of Critical Environmental Concern, exclusion category 3) or the presence of a specific resource or condition (e.g., designated or proposed critical habitat for ESA-listed species, exclusion category 4). The geographic boundaries for such exclusion categories will change over time as land use plans are revised or amended and new information on resource conditions is developed. For the purposes of the Solar PEIS and its associated NEPA analysis, the BLM has mapped and estimated the acreage for all exclusions in the aggregate based on best available existing information.

The identification of any new or modified exclusion category for utility-scale solar energy development would involve planning-level decisions and require the BLM to amend applicable land use plans. Consistent with existing planning regulations, applicants may request that the BLM amend a land use plan to allow for an otherwise nonconforming proposal (BLM Land Use Planning Handbook H-1601-1, Section VII(B) [BLM 2005]). For example, an applicant may request a land use plan amendment for an individual utility-scale solar energy project in suitable locations where insolation values are below 6.5 kWh/m^2/day. The BLM will consider such requests on a case-by-case basis.

Solar Energy Zones

An SEZ is defined by the BLM as an area within which the BLM will prioritize and facilitate utility-scale production of solar energy and associated transmission infrastructure development. The BLM is identifying 17 SEZs in the six-state study area. These SEZs total approximately 285,000 acres (1,153 km^2) of land potentially available for development (see Table A-3). The identification of any new or modified SEZ for utility-scale solar energy development would involve planning-level decisions and require the BLM to amend applicable land use plans.[1]

[1] Changes to SEZs established by this ROD must be submitted through the State Director to the BLM Washington Office for the Director's concurrence (see Appendix B, Section B.4.5).

TABLE A-2 Exclusions under BLM's Solar Energy Program

1. Lands with slopes greater than 5% determined through geographical information system (GIS) analysis using digital elevation models.[a]

2. Lands with solar insolation levels less than 6.5 kWh/m^2/day determined through National Renewable Energy Laboratory solar radiation GIS data (http://www.nrel.gov/rredc/solar_data.html).

3. All Areas of Critical Environmental Concern (ACECs) identified in applicable land use plans (including Desert Wildlife Management Areas [DWMAs] in the California Desert District planning area).

4. All designated and proposed critical habitat areas for species protected under the Endangered Species Act (ESA) of 1973 (as amended), or if critical habitat is not yet proposed, then as identified in respective recovery plans or the final listing rule (http://ecos.fws.gov/tess_public/TESSWebpageRecovery?sort=1).

5. All areas for which an applicable land use plan establishes protection for lands with wilderness characteristics.

6. Developed recreational facilities, special-use permit recreation sites (e.g., ski resorts and camps), and all Special Recreation Management Areas (SRMAs) identified in applicable land use plans, except for those in the State of Nevada and a portion of the Yuma East SRMA in Arizona.[b]

7. Sage-grouse core areas, nesting habitat, and winter habitat; Mohave ground squirrel habitat; flat-tailed horned lizard habitat; fringe-toed lizard habitat; and all other areas where the BLM has agreements with state agency partners and other entities to manage sensitive species habitat in a manner that would preclude solar energy development.

8. Greater sage-grouse habitat (currently occupied, brooding, and winter habitat) as identified by the BLM in California, Nevada, and Utah, and Gunnison's sage-grouse habitat (currently occupied, brooding, and winter habitat) as identified by the BLM in Utah.[c]

9. All areas designated as no surface occupancy (NSO) in applicable land use plans

10. All right-of-way (ROW) exclusion areas identified in applicable land use plans.

11. All ROW avoidance areas identified in applicable land use plans.

12. In California, lands classified as Class C in the California Desert Conservation Area (CDCA) planning area.

13. In California and Nevada, lands in the Ivanpah Valley.

14. In Nevada, lands in Coal Valley and Garden Valley.

15. All Desert Tortoise translocation sites identified in applicable land use plans, project-level mitigation plans or Biological Opinions.

16. All Big Game Migratory Corridors identified in applicable land use plans.

17. All Big Game Winter Ranges identified in applicable land use plans.

18. Research Natural Areas identified in applicable land use plans.

TABLE A-2 (Cont.)

19. Lands classified as Visual Resource Management (VRM) Class I or II (and, in Utah, Class III[d]) in applicable land use plans.

20. Secretarially designated National Recreation, Water, or Side and Connecting Trails and National Back Country Byways (BLM State Director approved) identified in applicable BLM and local land use plans (available at http://www.americantrails.org/NRTDatabase), including any associated corridor or lands identified for protection through an applicable land use plan.

21. All units of the BLM National Landscape Conservation System, congressionally designated National Scenic and Historic Trails (National Trails System Act [NTSA], P.L. 90-543, as amended), and trails recommended as suitable for designation through a congressionally authorized National Trail Feasibility Study, or such qualifying trails identified as additional routes in law (e.g., West Fork of the Old Spanish National Historic Trail), including any trail management corridors identified for protection through an applicable land use plan. Trails undergoing a congressionally authorized National Trail Feasibility Study will also be excluded pending the outcome of the study.[e]

22. National Historic and Natural Landmarks identified in applicable land use plans, including any associated lands identified for protection through an applicable land use plan.

23. Lands within the boundaries of properties listed in the *National Register of Historic Places* (NRHP) and any additional lands outside the designated boundaries identified for protection through an applicable land use plan.

24. Traditional cultural properties and Native American sacred sites as identified through consultation with tribes and recognized by the BLM.

25. Wild, Scenic, and Recreational Rivers designated by Congress, including any associated corridor or lands identified for protection through an applicable river corridor plan.

26. Segments of rivers determined to be eligible or suitable for Wild or Scenic River status identified in applicable land use plans, including any associated corridor or lands identified for protection through an applicable land use plan.

27. Old Growth Forest identified in applicable land use plans.

28. Lands within a solar energy development application area found to be inappropriate for solar energy development through an environmental review process that occurred prior to finalization of the Draft Solar PEIS.[f]

29. Lands previously proposed for inclusion in SEZs that were determined to be inappropriate for development through the NEPA process for the Solar PEIS (limited to parts of the Brenda SEZ in Arizona; the previously proposed Iron Mountain SEZ area and parts of the Pisgah and Riverside East SEZs in California; parts of the De Tilla Gulch, Fourmile East, and Los Mogotes East SEZs in Colorado; and parts of the Amargosa Valley SEZ in Nevada).

30. In California, all lands within the proposed Mojave Trails National Monument[g] and all conservation lands acquired outside of the proposed Monument through donations or use of Land and Water Conservation Funds.

31. In California, BLM-administered lands proposed for transfer to the National Park Service with the concurrence of the BLM.[h]

TABLE A-2 (Cont.)

32.	Specific areas identified since the publication of the Supplement to the Draft Solar PEIS by the BLM based on continued consultation with cooperating agencies and tribes to protect sensitive natural, visual, and cultural resources (total of 1,066,497 acres [4,316 km^2]; see Figure A-1; note there are some overlapping exclusions). Data and finer scale maps will be made available through the Solar PEIS project Web site (http://solareis.anl.gov). Note that in some cases, the description of these areas will be withheld from the public to ensure protection of the resource.

[a] Applications may include some lands with up to 10% slope where higher slopes inclusions meet all of the following: (1) are proximate to variance lands in the application, (2) are not otherwise excluded from development, (3) allow for the avoidance or minimization of resource conflicts, and (4) do not create any significant new or additional conflicts. In such cases, a land use plan amendment would have to be adopted as part of the project-specific analysis to permit the slope exception.

[b] In Nevada, many designated SRMAs are located on semi-degraded lands that might be appropriate for solar development. Decisions on solar ROW applications within Nevada SRMAs will be made on a case-by-case basis. A portion of the Yuma East SRMA was identified as a variance area rather than as an exclusion area based on its designation as VRM Class III and as a rural developed recreation setting, both of which allow for modifications to the natural environment.

[c] In April 2010, the USFWS published its listing for the greater sage-grouse as "Warranted but Precluded." Inadequacy of regulatory mechanisms was identified as a major threat in the USFWS finding on the petition to list the greater sage-grouse. The USFWS has identified the principal regulatory mechanism for the BLM as conservation measures in RMPs. On the basis of the identified threats to the greater sage-grouse and the USFWS's timeline for making a listing decision on this species, the BLM has initiated action to incorporate explicit objectives and adequate conservation measures into RMPs (including PEISs and project EISs) within the next 3 years in order to conserve greater sage-grouse and avoid a potential listing under the ESA. To meet the objectives of BLM's sage-grouse conservation policy, the Solar PEIS has excluded specifically identified sage-grouse habitat (currently occupied, brooding, and winter habitat) located on BLM public lands in Nevada and Utah. These exclusions will be subject to change based on the outcome of the BLM's sage-grouse planning efforts and resulting plan amendments.

[d] In Utah, VRM Class III lands have also been removed due to the high sensitivity and location proximity to Zion, Bryce, Capital Reef, Arches, and Canyonlands National Parks, and to significant Cultural Resource Special Management Areas (in southeast Utah).

[e] National Scenic Trails are comprised of extended pathways located for recreational opportunities and the conservation and enjoyment of the scenic, historic, natural, and cultural qualities of the areas through which they pass (NTSA Sec. 3(a)(2)).

National Historic Trails are comprised of Federal Protection Components and/or high-potential historic sites and high-potential route segments, including original trails or routes of travel, developed trail or access points, artifacts, remnants, traces, and the associated settings and primary uses identified and protected for public use and enjoyment (NTSA Sec. 3(a)(3)) and may include associated auto tour routes (NTSA Sec. 5(b)(A) and 7(c)). National Historic Trails or other types of historic trails may also contain properties listed or eligible for listing on the NRHP or National Historic Landmarks. National Historic Trails are protected and identified as required by law (NTSA Sec.3(a)(3)), through BLM inventory and planning processes.

[f] For example, lands considered non-developable in the environmental analyses completed for the Genesis Ford Dry Lake Solar Project, Blythe Solar Project, and Desert Sunlight Solar Project, and some lands previously within the Pisgah and Brenda proposed SEZs.

Footnotes continued on next page.

TABLE A-2 (Cont.)

g As described in Senate Bill 138, California Desert Protection Act of 2011, introduced in the 112th Congress.

h Three specific geographic areas described as (1) the narrow strip of BLM-administered lands between Fort Irwin and Death Valley National Park, (2) an area of public lands on the northeastern side of the Mojave National Preserve adjacent to the California and Nevada border, and (3) an area along the northern boundary of Joshua Tree National Park.

TABLE A-3 Solar Energy Zones and Approximate Acreage by State[a]

SEZ (BLM Office/County)	Approximate Acreage
Arizona	
Brenda (Lake Havasu/La Paz)	3,348
Gillespie (Lower Sonoran/Maricopa)	2,618
Total	5,966
California	
Imperial East (El Centro/Imperial)	5,717
Riverside East (Palm Springs–South Coast/Riverside)	147,910
Total	153,627
Colorado	
Antonito Southeast (La Jara/Conejos)	9,712
De Tilla Gulch (Saguache/Saguache)	1,064
Fourmile East (La Jara/Alamosa)	2,882
Los Mogotes East (La Jara/Conejos)	2,650
Total	16,308
Nevada	
Amargosa Valley (Southern Nevada/Nye)	8,479
Dry Lake (Southern Nevada/Clark)	5,717
Dry Lake Valley North (Ely/Lincoln)	25,069
Gold Point (Battle Mountain/Esmeralda)	4,596
Millers (Battle Mountain/Esmeralda)	16,534
Total	60,395
New Mexico	
Afton (Las Cruces/Dona Ana)	29,964
Total	29,964
Utah	
Escalante Valley (Cedar City/Iron)	6,533
Milford Flats South (Cedar City/Beaver)	6,252
Wah Wah Valley (Cedar City/Beaver)	5,873
Total	18,658
Total	284,918

[a] To convert acres to km^2, multiply by 0.004047.

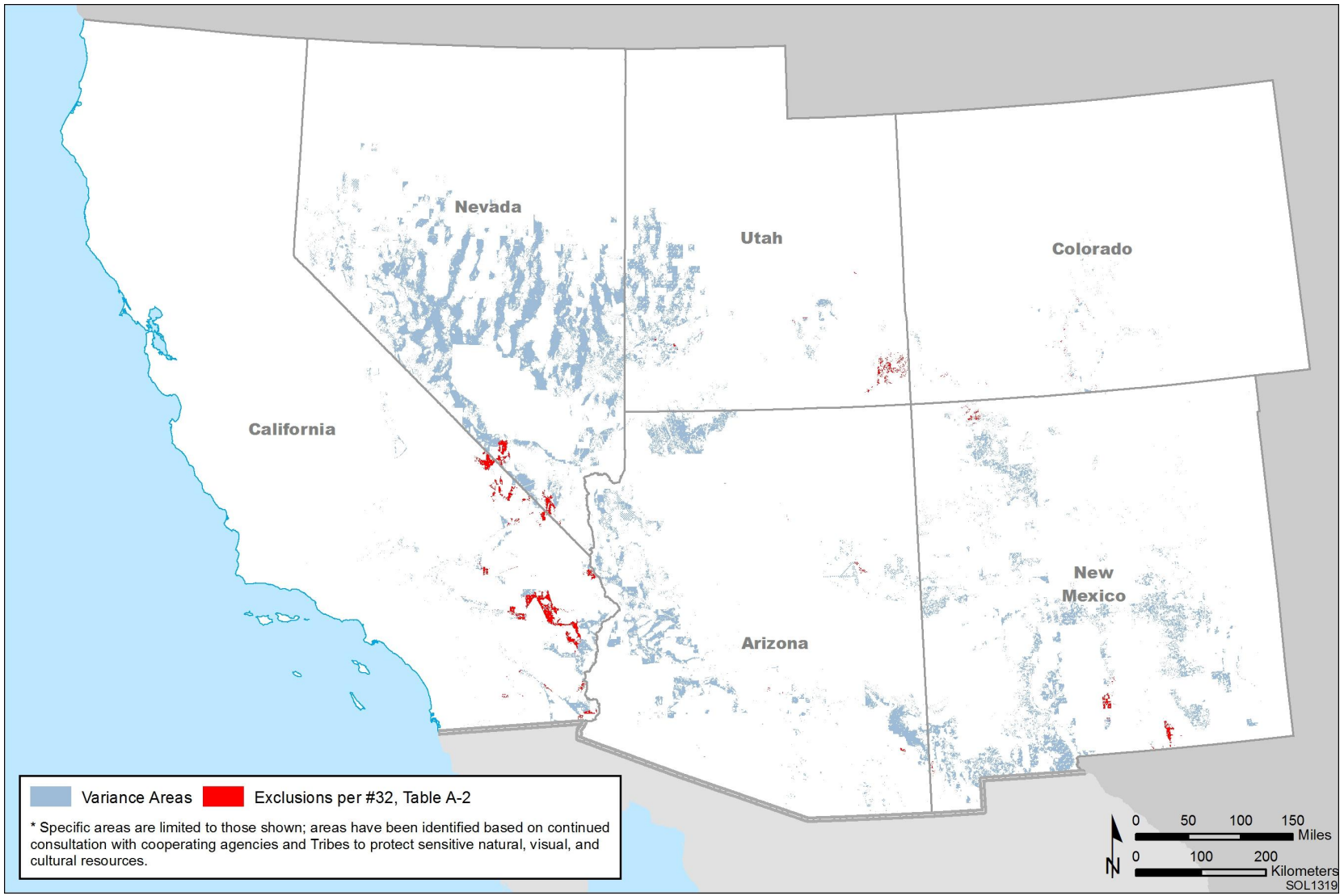

FIGURE A-1 Areas Identified for Exclusion Following Publication of the Supplement to the Draft Solar PEIS Based on Continued Consultation with Cooperating Agencies and Tribes

ROWs for utility-scale solar energy development in SEZs will be given priority over all other ROW applications. The BLM may decide to authorize other ROWs or uses in SEZs, however, if they are found to be compatible with utility-scale solar energy development; other compatible uses may include shared access roads, transmission lines, or other generation sources such as geothermal. The identification of an area as an SEZ will not affect previously authorized ROWs, whether or not construction has been initiated on those ROWs. The BLM will consider the processing of pending ROW applications in identified SEZs on a case-by-case basis.

For a full list of policies that will guide utility-scale solar energy development in SEZs, see Appendix B, Section B.4.

Variance Areas

A variance area is defined by the BLM as an area that may be available for a utility-scale solar energy ROW with special stipulations or considerations (see avoidance area in the *Land Use Planning Handbook* (BLM 2005a), Appendix C, page 21, Part E.9). The BLM is identifying all lands outside of exclusion areas and SEZs as variance areas for utility-scale solar energy development. Variance areas are open to application but require developers to adhere to the variance process described in Section B.5 of Appendix B. The BLM will consider ROW applications for utility-scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate Federal, state, and local agencies and tribes; and public outreach. The responsibility for demonstrating to the BLM and other coordinating parties that a proposal in a variance area will avoid, minimize, and/or mitigate, as necessary, sensitive resources will rest with the applicant. The modification of variance areas would involve planning-level decisions and require the BLM to amend applicable land use plans.

A.3 SPECIFIC LOCATIONS IDENTIFIED AS EXCLUSION AREAS, SOLAR ENERGY ZONES, AND VARIANCE AREAS

The land use plans to be amended through this ROD are listed in Table A-1. Maps showing the locations of exclusion areas, solar energy zones, and variance areas for states in the six-state study area are presented in Figures A-2 through A-7.

A.4 DESIGN FEATURES

Design features are mitigation requirements that have been incorporated into the proposed action or alternatives to avoid and/or minimize adverse impacts. The BLM's decision includes amending land use plans in the six-state study areas with (1) programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered lands; and (2) SEZ-specific design features that would be required for projects in individual SEZs.

A.4.1 Programmatic Design Features

The BLM following programmatic design features will be required for all utility-scale solar energy projects on BLM-administered lands. The programmatic design features are presented by

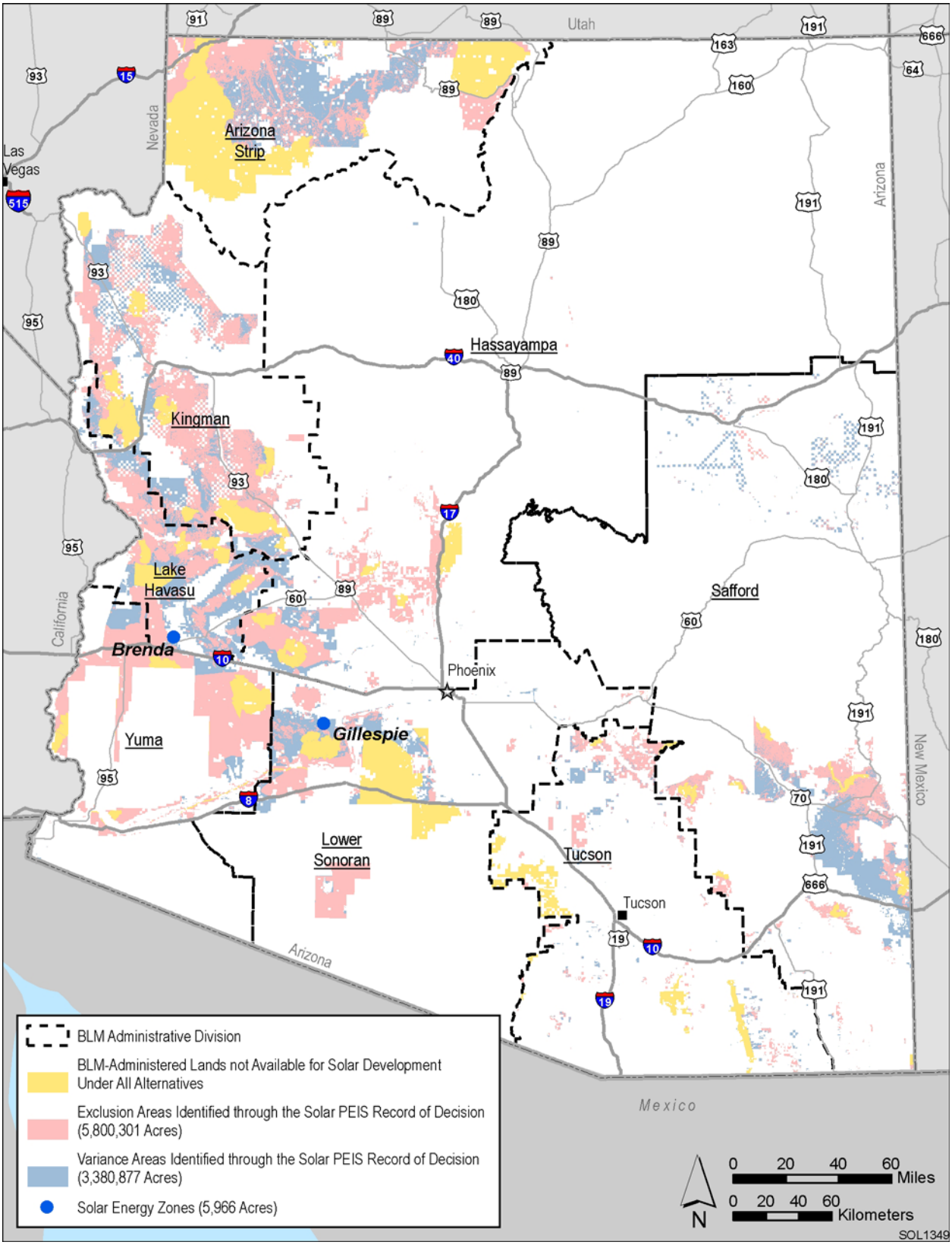

FIGURE A-2 Land Use Allocations in Arizona as a Result of the Solar PEIS Record of Decision

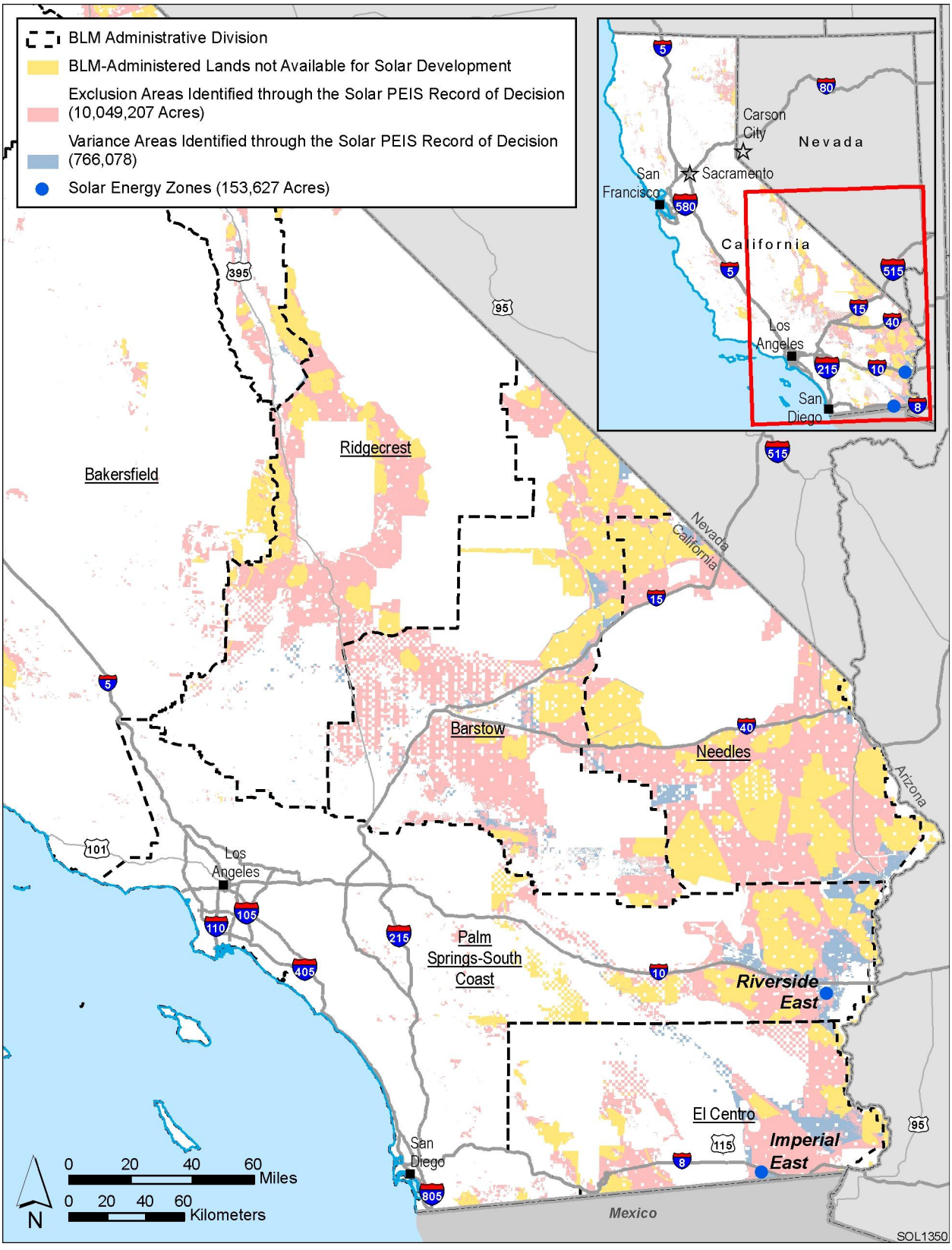

FIGURE A-3 Land Use Allocations in California as a Result of the Solar PEIS Record of Decision

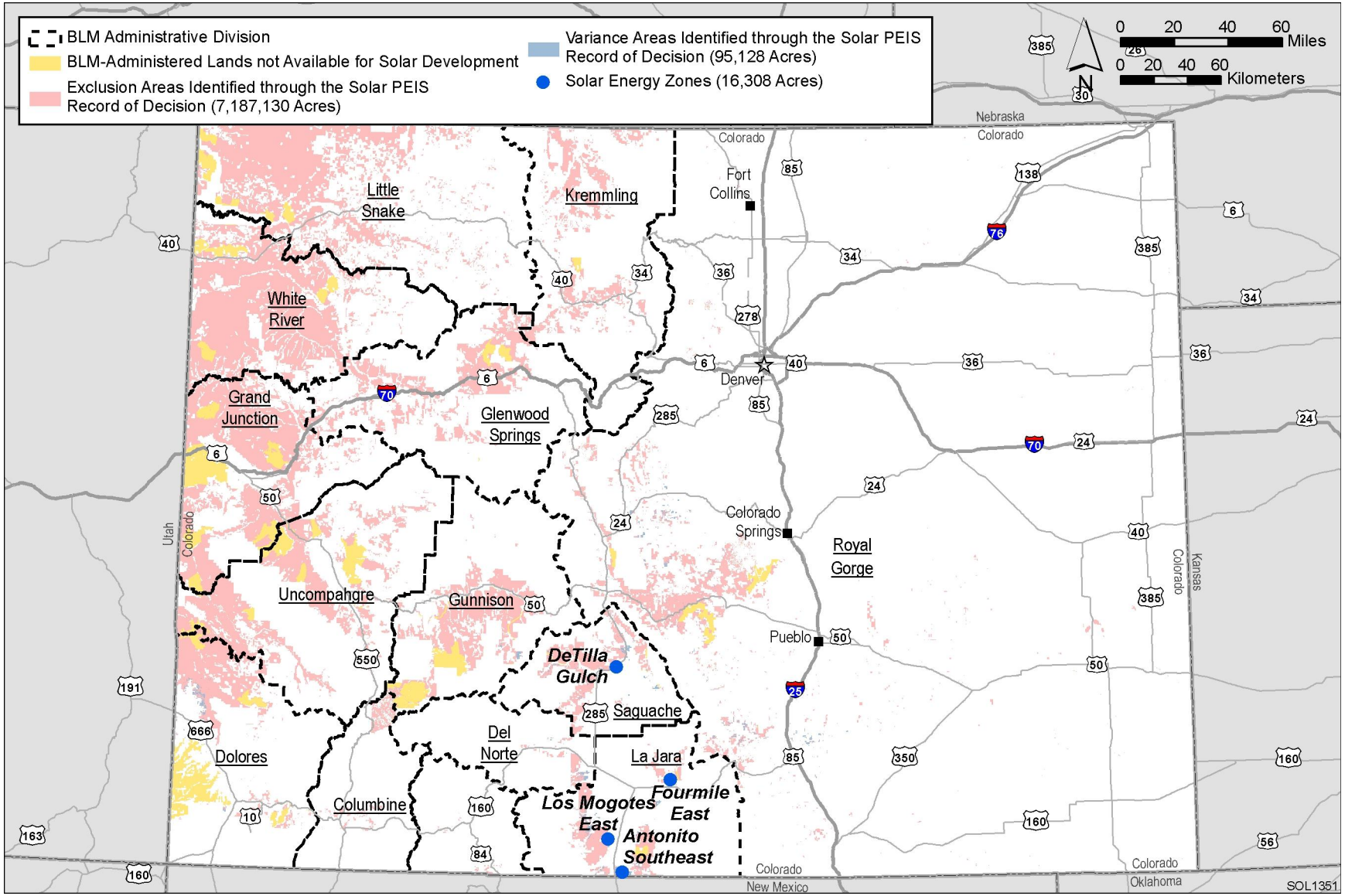

FIGURE A-4 Land Use Allocations in Colorado as a Result of the Solar PEIS Record of Decision

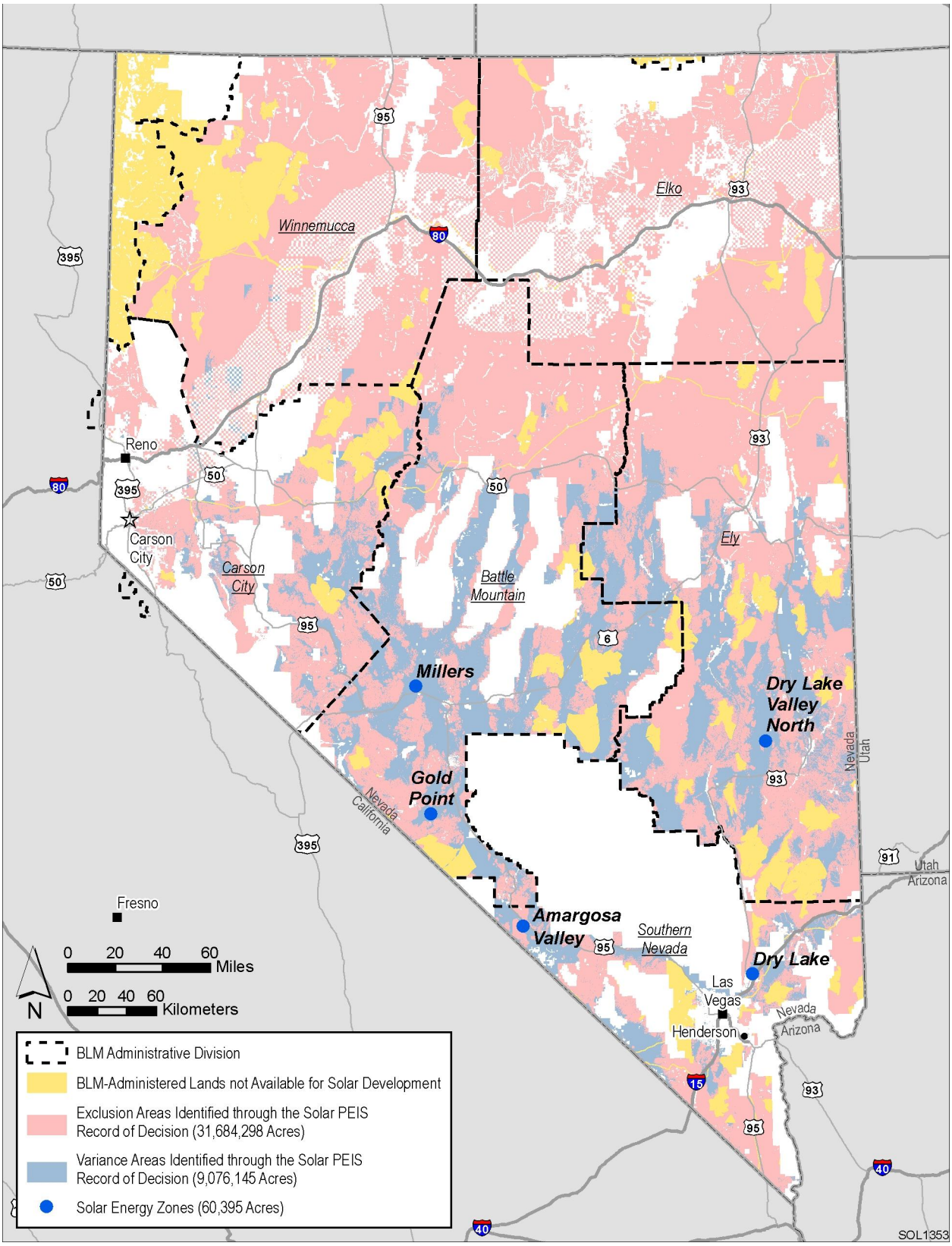

FIGURE A-5 Land Use Allocations in Nevada as a Result of the Solar PEIS Record of Decision

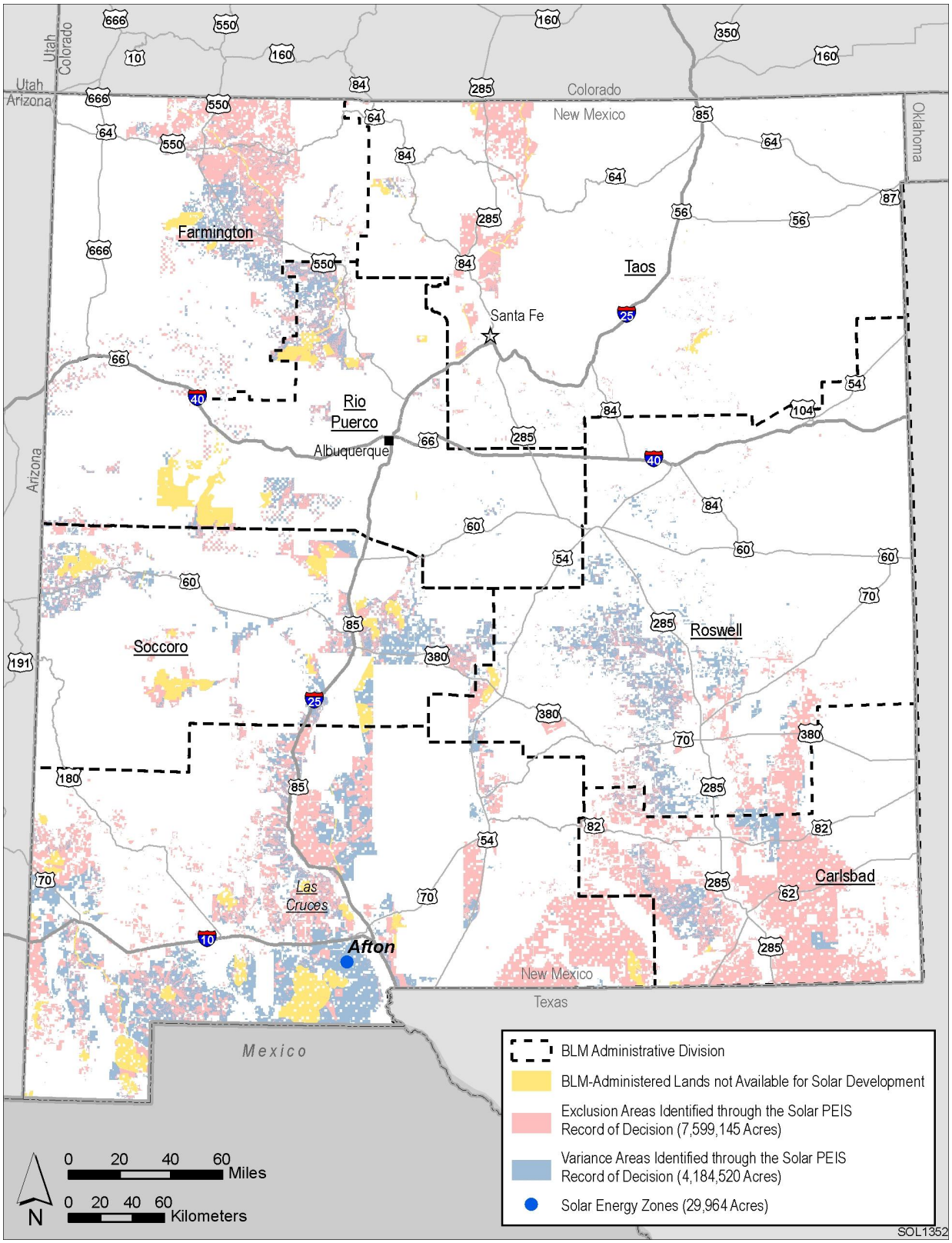

FIGURE A-6 Land Use Allocations in New Mexico as a Result of the Solar PEIS Record of Decision

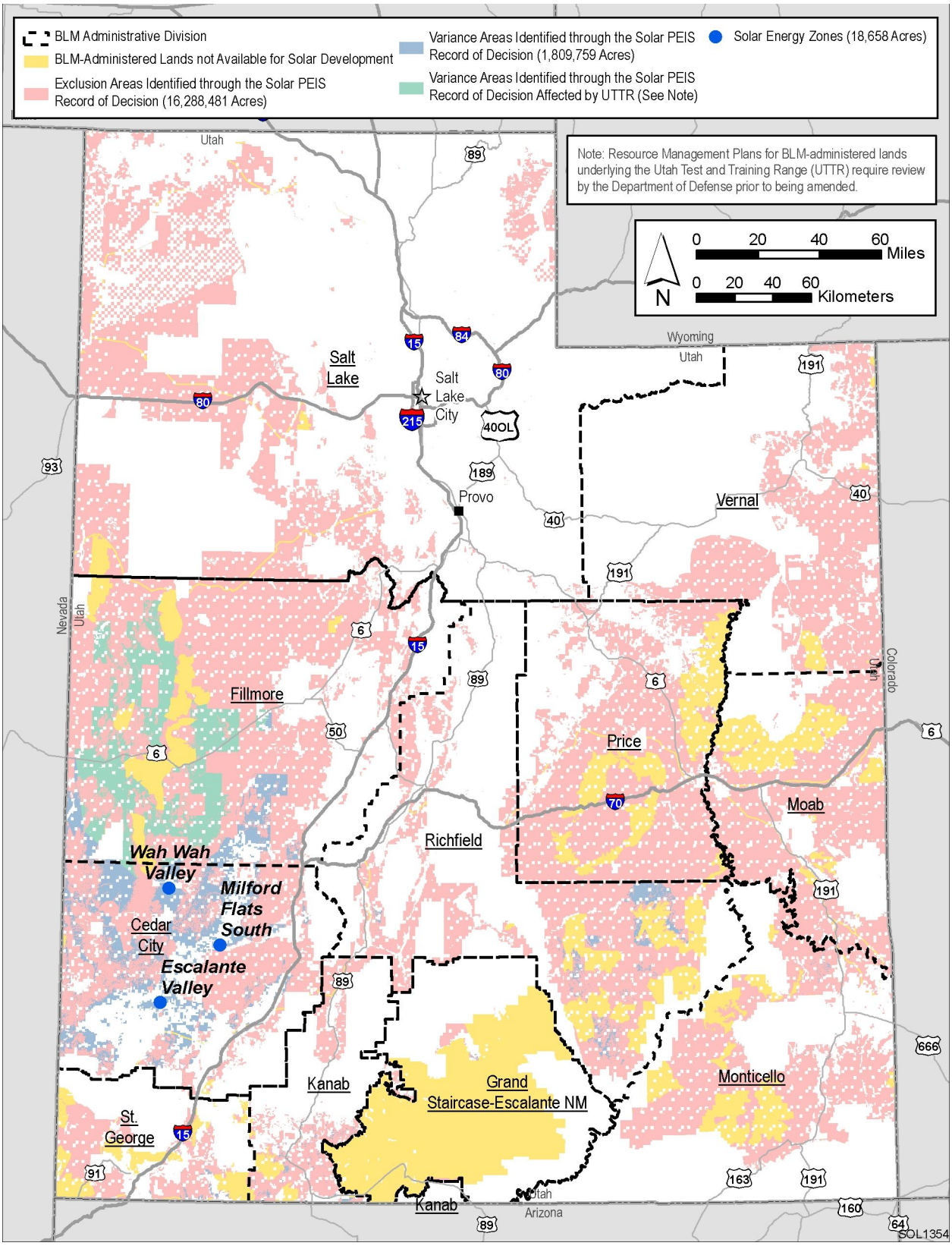

FIGURE A-7 Land Use Allocations in Utah as a Result of the Solar PEIS Record of Decision

resource type and by four project phases as applicable (i.e., [1] general; [2] site characterization, siting and design, and construction; [3] operations and maintenance; and [4] reclamation and decommissioning).

The programmatic design features address the broad possible range of direct and indirect impacts that may result from utility-scale solar energy development as described in the Draft and Final Solar PEIS (Chapter 5). Utility-scale solar energy development necessarily includes the solar generation facilities themselves, as well as associated transmission facilities, roads, and other infrastructure. Applicants seeking approvals to construct utility-scale solar energy projects on BLM-administered lands will be required to avoid, minimize, and/or mitigate the impacts associated with their project in total. While the programmatic design features that follow address utility-scale solar energy projects comprehensively, the land use plan decisions to be made through the Solar PEIS ROD (e.g., exclusions and SEZs) will only be applicable to utility-scale solar energy generation facilities. Management decisions for supporting infrastructure would continue to be made in accordance with existing land use plan decisions and current applicable policy and procedures.

Application of the programmatic design features is intended to result in the avoidance, minimization, and/or mitigation of potential resource conflicts (e.g., night-sky impacts or impacts on wetlands). Due to site-specific circumstances, not all design features as written will apply to all projects (e.g., a resource is not present on a given site). Some design features may require variations from what is described (e.g., a larger or smaller protective area). In some cases, multiple options for addressing a potential resource conflict are provided. Applicants will be required to work with the BLM to address proposed variations in the design features and to discuss selected options for avoidance, minimization, and/or mitigation of potential resource conflicts. Variations in programmatic design features will require appropriate analysis and disclosure as part of individual project authorizations. Programmatic design features that do not apply to a given project should be described as part of the project case file along with an appropriate rationale. Additional mitigation measures may be identified and required during individual project development and environmental review.

The programmatic design features will apply to all utility-scale solar energy projects on BLM-administered lands, whether those projects are within variance areas or SEZs. Based on the extensive upfront data collection and environmental analysis that has been completed for SEZs, the BLM expects that many of the requirements associated with programmatic design features will be met or substantially met for lands in SEZs. For example, as part of the Solar PEIS, the BLM has undertaken some groundwater modeling for SEZs. The programmatic design feature that requires the collection of such groundwater information therefore may have already been met. Further, because SEZs have been sited to avoid potential resource conflicts, the BLM expects that many design features will not be triggered.

The programmatic design features are not intended to be duplicative of other Federal, state, and/or local requirements. In the early stages of siting and design, project developers should coordinate with appropriate Federal, state, and local agencies to determine what plans, permits, and/or approvals may be needed. Where possible, project developers should seek to consolidate such requirements in coordination with the BLM. In addition, the requirements of individual

programmatic design features may be consolidated to further avoid duplication. The programmatic design features are also not intended to be unduly burdensome to the applicant. For example, applicants will not be expected to study resources or collect data beyond what is necessary to disclose and provide knowledge of reasonable avoidance, minimization, and/or mitigation of impacts from a proposed project.

The BLM will require that the planning and minimization activities specified through the programmatic design features be identified and disclosed as part of the project's Plan of Development (POD) to be submitted to the BLM with a ROW application for solar energy development on public lands. In situations where similar activities are required to meet other Federal, state, and/or local permitting requirements, the BLM encourages developers to address these duplicative requirements in separate submittals and append the information to their POD. Examples of such information that may be required for a separate permitting action and appended to the POD include a Stormwater Pollution Prevention Plan, Dust Abatement Plan, and Decommissioning and Site Reclamation Plan (see Table A-4).

A.4.1.1 Design Features for Lands and Realty

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on lands and realty from solar energy development identified and discussed in Sections 5.2.1 and 5.2.2 of the Draft and Final Solar PEIS.

A.4.1.1.1 General

LR1-1 Project developers shall consult with the BLM in the early phases of project planning to identify potential land use conflicts and constraints.

(a) Identification of potential land use conflicts shall include, but is not limited to, the following:

- Identifying potential land use conflicts in proximity to the proposed project. In coordination with the BLM, developers shall consult existing BLM land use plans and local land use plans, as well as with appropriate Federal, state, and local agencies; affected tribes; and adjacent property owners.

- Identifying legal access to private, state, and Federal lands surrounding the solar facilities and the potential to create areas that are inaccessible to the public.

- Considering the effects on the manageability and uses of public lands around boundaries of solar energy facilities.

- Considering the potential effects on prime and unique farmland.

TABLE A-4 Individual Plans Specified as Elements of the Programmatic Design Features[a,b]

Plan Name	Applicable Design Features[c]
Decommissioning and Site Reclamation Plan	ER4-1, HMW-1
Dust Abatement Plan	ER1-1, AQC2-1
Hazardous Materials and Waste Management Plan	HMW1-1
Health and Safety Plan	HS1-1
Spill Prevention and Emergency Response Plan	WR2-1
Stormwater Pollution Prevention Plan	WR1-1
Worker Education and Awareness Plan (WEAP)	LR1-1, WHB1-1, WF1-1, ER1-1, P1-1, CR1-1

[a] The need for each plan will be determined on a project-specific basis.

[b] The number of plans in the Final Solar PEIS has been reduced substantially since the publication of the Draft Solar PEIS. Information associated with those plans that are no longer shown in this table will alternatively be incorporated into the Plan of Development.

[c] The design features specifying the need for individual plans are listed in Sections A.2.2.1 through A.2.2.22.

- Evaluating land use impacts and constraints as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

- Providing notification to existing BLM ROW authorization holders within solar energy development areas, pursuant to Title 43, Part 2807.14 of the *Code of Federal Regulations* (43 CFR 2807.14), to inform them that an application that might affect their existing ROW has been filed and request their comments.

- Proposed solar energy developments within one-quarter mile of any project boundary will require issuance of a Chain of Survey Certificate in conformance with the Departmental standard. In some cases, Land Description Reviews, Certificates of Inspection and Possession, Boundary Assurance Certificates, resurveys, re-monumentation, and/or referencing of Public Land Survey

System (PLSS) corners may be required before the start of any action.

(b) Methods to minimize land use conflicts and constraints may include, but are not limited to, the following:

- Informing project personnel of all laws and regulations that they may be subject to, such as international borders, limitations on the removal of salable materials such as stone or wood from a project site for personal use, and use of vehicles off of the project site in limited access areas. This information should be incorporated into a Worker Education and Awareness Plan (WEAP) that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key mitigation efforts of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.

A.4.1.1.2 Site Characterization, Siting and Design, Construction

LR2-1 Solar facilities shall be sited, designed, and constructed to avoid, minimize, and/or mitigate impacts on BLM land use planning designations.

(a) Methods to minimize impacts on BLM land use planning designations may include, but are not limited to, the following:

- Locating existing designated transmission corridors within the area of a proposed solar energy development project in consultation with the BLM. Reviewing future transmission capacity in the corridor to determine whether the corridor should be excluded from solar energy development or whether the capacity of the designated transmission corridor can be reduced. Options to partially relocate the corridor to retain the current planned capacity or to relocate the solar energy project outside the designated corridor may be considered.

- Identifying and protecting evidence of the PLSS and related Federal property boundaries prior to commencement of any ground-disturbing activity. This will be accomplished by contacting the BLM Cadastral Survey to coordinate data research, evidence examination and evaluation, and locating,

referencing, or protecting monuments of the PLSS and related land boundary markers from destruction. In the event of obliteration or disturbance of the Federal boundary evidence, the responsible party shall immediately report the incident, in writing, to the Authorizing Official. The BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence the responsible party will be instructed to use the services of a Certified Federal Surveyor (CFedS), whose procurement shall be per qualification-based selection, or to reimburse the BLM for costs. All surveying activities will conform to the Manual of Surveying Instructions and appropriate state laws and regulations. Local surveys will be reviewed by Cadastral Survey before being finalized or filed in the appropriate state or county office. The responsible party shall pay for all survey, investigation, penalty, and administrative costs.

- Considering opportunities to consolidate access to and other supporting infrastructure for single projects and for cases where there is more than one project in close proximity to another in order to maximize the efficient use of public land and minimize impacts.

A.4.1.2 Design Features for Specially Designated Areas and Lands with Wilderness Characteristics

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on specially designated areas and lands with wilderness characteristics from solar energy development identified and discussed in Sections 5.3.1 and 5.3.2 of the Draft and Final Solar PEIS.

A.4.1.2.1 General

LWC1-1 Protection of existing values of specially designated areas and lands with wilderness characteristics shall be evaluated during the environmental analysis for solar energy projects, and the results shall be incorporated into the project planning and design.

(a) Assessing potential impacts on specially designated areas and lands with wilderness characteristics shall include, but is not limited to, the following:

- Identifying specially designated areas and lands with wilderness characteristics in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.

- Identifying lands that are within the geographic scope of a proposed solar energy project that have not been recently inventoried for wilderness characteristics or any lands that have been identified in a citizen's wilderness proposal in order to determine whether they possess wilderness characteristics. Developers shall consider including the wilderness characteristics evaluation as part of the processing of a solar energy ROW application for those lands without a recent wilderness characteristics inventory. All work must be completed in accordance with current BLM policies and procedures.

- Evaluating impacts on specially designated areas and lands with wilderness characteristics as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

(b) Methods to mitigate unavoidable impacts on specially designated areas and lands with wilderness characteristics may include, but are not limited to, the following:

- Acquiring wilderness inholdings from willing sellers.

- Acquiring private lands from willing sellers adjacent to designated wilderness.

- Acquiring private lands from willing sellers within proposed wilderness or Wilderness Study Areas.

- Acquiring other lands containing important wilderness or related values, such as opportunities for solitude or a primitive, unconfined (type of) recreation.

- Restoring wilderness, for example, modifying routes or other structures that detract from wilderness character.

- Contributing mitigation monies to a "wilderness mitigation bank," if one exists, to fund activities such as the ones described above.

- Enacting management to protect lands with wilderness characteristics in the same field office or region that are not currently being managed to protect wilderness character. Areas that are to be managed to protect wilderness characteristics under

this approach must be of sufficient size to be manageable, which could also include areas adjacent to current WSAs or adjacent to areas currently being managed to protect wilderness characteristics.

A.4.1.2.2 Site Characterization, Siting and Design, Construction

LWC2-1 Solar facilities shall be sited, designed, and constructed to avoid, minimize, and/or mitigate impacts on the values of specially designated areas and lands with wilderness characteristics.[2]

A.4.1.3 Design Features for Rangeland Resources—Grazing

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on grazing from solar energy development identified and discussed in Sections 5.4.1.1 and 5.4.1.2 of the Draft and Final Solar PEIS.

A.4.1.3.1 General

RG1-1 Project developers shall consult with the BLM early in project planning to identify activities that could impact rangeland resources and grazing.

(a) Identifying impacts on rangeland resources and grazing shall include, but is not limited to, the following:

- Identifying rangeland resources and grazing use in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.

- Coordinating with affected grazing permittees/lessees to discuss how a proposed project may affect grazing operations and to address possible alternatives to avoid and minimize impacts, as well as mitigation and compensation strategies.

- Evaluating impacts on rangeland resources and grazing use as part of the environmental impact analysis for the project, and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM. Issues to be considered include, but are not limited to, maintenance or relocation of range improvements and fencing, access to water and water rights, delineation of open range, and traffic management.

[2] See Section 4.3 of the Final Solar PEIS for details on areas included in these categories.

A.4.1.3.2 Site Characterization, Siting and Design, Construction

RG2-1 Roads shall be constructed, improved, and maintained to minimize their impact on grazing operations. Road design shall include fencing, cattle guards, and speed control and information signs where appropriate.

A.4.1.4 Design Features for Wild Horses and Burros

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on wild horses and burros from solar energy development identified and discussed in Section 5.4.2.1 and 5.4.2.2 of the Draft and Final Solar PEIS.

A.4.1.4.1 General

WHB1-1 Project developers shall coordinate with the BLM and other stakeholders early in the project planning process to assess and consider options to avoid, minimize, and/or mitigate impacts on wild horses and burros and their management areas.

(a) Assessing impacts on wild horses and burros and their management areas shall include, but is not limited to, the following:

- Identifying wild horses and burros and their management areas in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.

- Evaluating potential impacts on wild horses and burros and their management areas as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

(b) Methods to minimize impacts on wild horses and burros and their management areas may include, but are not limited to, the following:

- Installing fencing and access control.

- Providing for movement corridors.

- Delineating open range.

- Requiring traffic management measures (e.g., vehicle speed limits).

- Ensuring access to or replacement of water sources.

- Incorporating key elements to mitigate impacts on wild horses and burros in a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key wild horse and burro mitigation efforts of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporates adaptive management protocols for addressing changes over the life of the project, should they occur.

A.4.1.4.2 Site Characterization, Siting and Design, Construction

WHB2-1 Project access roads shall be sited, designed, constructed, fenced, and/or improved to minimize potential wild horse and burro collisions. Fences, or other appropriate structures, should be constructed to exclude wild horses and burros from solar energy project site facilities. Either water sources or access routes to water sources for horses and burros should be excluded from the solar energy development area, or alternate water sources or routes should be provided.

A.4.1.5 Design Features for Wildland Fire

The following design features have been identified to avoid, minimize, and/or mitigate potential fire risks that could be affected by solar energy development as identified and discussed in Sections 5.4.3.1 and 5.4.3.2 of the Draft and Final Solar PEIS.

A.4.1.5.1 General

WF1-1 Project developers shall coordinate with the BLM and other appropriate fire organizations early in the project planning process to determine fire risk and methods to minimize fire risk.

(a) Identifying fire risk shall include, but is not limited to, the following:

- Assessing the potential for fire risk associated with the proposed project in coordination with the BLM and other appropriate fire organizations. Developers shall consult existing land use plans and fire management plans.

- Evaluating fire risk as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.

(b) General methods to minimize fire risk shall include, but are not limited to, the following:

- Developing and implementing fire management measures that include providing worker training.

- Incorporating key elements to mitigate the potential for fire into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key fire mitigation efforts of the project worksite during all phases of the project's life. The information provided in the WEAP shall be reviewed and approved by BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.

- Incorporating inspection and monitoring measures, including adaptive management protocols, into the POD and other applicable plans to monitor and respond to fire risk during construction, operations, and decommissioning of a solar energy development.

A.4.1.5.2 Site Characterization, Siting and Design, Construction

WF2-1 Solar facilities shall be sited and designed to minimize fire risk.

(a) Methods to minimize fire risk may include, but are not limited to, the following:

- Siting and designing the solar facilities to ensure sufficient room for fire management within the ROW and its facilities to minimize the risk of fire moving outside the ROW and the risk of fire threatening the facility from outside.

- Consulting fire management personnel to determine actions, both active and passive (e.g., vegetation manipulation), that may minimize the need for protective responses by the BLM and state and local fire organizations.

- Developing and implementing measures to integrate vegetation management to minimize the potential to increase the frequency of wildland fires and prevent the establishment of non-native, invasive species on the solar energy facility and its transmission line and roads.

A.4.1.6 Design Features for Public Access and Recreation Impacts

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on public access and recreation from solar energy development identified and discussed in Sections 5.5.1 and 5.5.2 of the Draft and Final Solar PEIS.

A.4.1.6.1 General

R1-1 Project developers shall consult with the BLM in the early phases of project planning to identify public access and recreation use areas in and adjacent to a project site.

(a) Identifying public access and recreation in and adjacent to a project shall include, but is not limited to, the following:

- Considering existing public access through or around proposed solar facilities that allows for access to and use of BLM-administered public lands and non-BLM administered lands. Developers shall conduct this assessment in coordination with the BLM and consult existing land use plans, recreation management plans, etc.

- Identifying legal access to private, state, and Federal lands surrounding the solar facilities to avoid creating areas that are inaccessible to the public.

- Evaluating impacts on public access and recreation as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

(b) Methods to minimize access and recreation conflicts may include, but are not limited to, the following:

- Considering replacement of acreage lost for identified recreation opportunities, such as off-highway vehicle use.

- Considering, to the extent practicable, providing access through or around a solar energy facility to provide for adequate public access and/or recreation.

- Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts on recreation during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

A.4.1.6.2 Site Characterization, Siting and Design, Construction

R2-1 Solar facilities shall not be sited in areas designated as unique or important recreation resources (such as Special Recreation Management Areas), where it has been determined that a solar facility or other such development of the land would be in direct conflict with the objectives of the relevant management plan.

A.4.1.7 Design Features for Military and Civilian Aviation

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on military and civilian aviation from solar energy development identified and discussed in Sections 5.6.1 and 5.6.2 of the Draft and Final Solar PEIS.

A.4.1.7.1 General

MCA1-1 Project developers shall coordinate with the BLM, military personnel, and civilian airspace managers early in the project planning process to identify and minimize impacts on military and civilian airport and airspace use.

(a) Identifying impacts on military and civilian airport and airspace use shall include, but is not limited to, the following:

- Submitting plans for proposed construction of any facility that is 200 ft (~61 m) or taller and plans for other projects located in proximity to airports to the Federal Aviation Administration (FAA) to evaluate potential safety hazards.

- Consulting with the U.S. Department of Defense (DoD) to minimize and/or eliminate impacts on military operations, and encouraging compatible development. This consultation will be initiated by the BLM and will include both general discussions for early planning and detailed assessments of specific proposals at the local level. The BLM will accept formal DoD submissions once they have been vetted through both the Military Departments and the DoD Siting Clearinghouse.

- Evaluating impacts on military and civil aviation as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

A.4.1.8 Design Features for Soil Resources and Geologic Hazards

The following design features have been identified to avoid, minimize, and/or mitigate potential soil impacts and potential geologic hazards from solar energy development identified and discussed in Sections 5.7.1 and 5.7.2 (soil impacts) and 5.7.3 (geologic hazards) of the Draft and Final Solar PEIS.

A.4.1.8.1 General

SR1-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the project planning process to assess soil erosion and geologic hazard concerns and to minimize potential impacts.

(a) Assessing soil erosion and geologic hazard concerns shall include, but is not limited to, the following:

- Identifying soil erosion and geologic hazard concerns on-site and in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans, updated inventories, soil surveys, etc.
- Identifying local factors that can cause slope instability (e.g., groundwater conditions, precipitation, earthquake activity, slope angles, and the dip angles of geologic strata).
- Consulting with local Federal, state, and county agencies regarding road design on the basis of local meteorological conditions, soil moisture, and erosion potential.
- Determining the potential safety and resource impacts associated with soil erosion.
- Evaluating soil erosion and geologic hazard concerns as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

A.4.1.8.2 Site Characterization, Siting and Design, Construction

SR2-1 Solar facilities shall be sited, designed, and constructed to minimize soil erosion and geologic hazard concerns.

(a) Methods to minimize soil erosion may include, but are not limited to, the following:

- Designing structures to meet the requirements of all applicable Federal, state, and county permits and building codes.

- Minimizing ground-disturbing activities.

- Preventing channel erosion from project runoff.

- Controlling culvert outlets with appropriate structures (e.g., rock lining or apron) to reduce soil erosion and scouring.

- Recontouring and revegetating project roads that are no longer needed in order to increase infiltration and reduce soil compaction.

- Considering utilizing originally excavated materials for backfill.

- Controlling project vehicle and equipment speeds to reduce dust erosion.

- Controlling water runoff and directing it to settling or rapid infiltration basins.

- Retaining sediment-laden waters from disturbed, active areas within the project through the use of barriers and sedimentation devices (e.g., berms, straw bales, sandbags, jute netting, or silt fences). Removing sediment from barriers and sedimentation devices to restore sediment-control capacity.

- Placing barriers and sedimentation devices around drainages and wetlands.

- Siting project structures and facilities to avoid disturbance in areas with existing biological soil crusts.

- Replanting project areas with native vegetation at spaced intervals to break up areas of exposed soil and reduce soil loss through wind erosion.

- Minimizing land disturbance (including crossings) in natural drainage systems and groundwater recharge zones (i.e., ephemeral washes and dry lake beds).

- Locating and constructing drainage crossing structures so as not to decrease channel stability or increase water volume or velocity.

- Providing adequate space (i.e., setbacks) between solar facilities and natural washes to preserve hydrologic function.

- Considering the use of existing roads, disturbance areas, and borrow pits before creating new infrastructure. The use of any existing infrastructure shall be analyzed in the environmental analysis for the proposed project.

- Siting, designing, and constructing new roads and walking trails consistent with the appropriate design standards and criteria, such as those described in BLM Manual 9113 and 43 CFR 8342.1. Roads and trails should follow natural land contours, and hill cuts should be minimized in the project area.

- Avoiding areas with unstable slopes and soils.

- Avoiding excessive grades on roads, road embankments, ditches, and drainages during site preparation and construction.

- Considering use of special construction techniques in areas of steep slopes, erodible soil, and drainageways.

- Considering implementing construction in stages to limit the areas of exposed and unstabilized soils.

- Reducing construction activity timeframes so that ground-disturbing activities take place over as short a timeframe as possible.

- Lessening fugitive dust emissions and site soils compaction by avoiding unpaved surfaces with construction traffic.

- Avoiding clearing and disturbing areas outside the construction zone.

- Clearly identifying construction zone boundaries on the ground (e.g., through the use of construction fencing) to minimize conflict with other resource concerns.

- Avoiding ground disturbance in areas with intact biological soil crusts and desert pavement.

- Burying electrical lines from solar collectors along existing features (e.g., roads or other paths of disturbance) to minimize the overall area of surface disturbance.

- Obtaining borrow materials from authorized and permitted sites.

- Conducting construction grading in compliance with industry practice (e.g., the American Society for Testing and Materials [ASTM] international standard methods) and other requirements (e.g., BLM and/or local grading and construction permits).

- Using temporary stabilization devices (i.e., erosion matting blankets, or soil stabilizing agents) for areas that are not actively under construction.

- Salvaging topsoil from all excavation and construction and reapplying it to disturbed areas upon completion of construction.

- Restoring native plant communities as quickly as possible in disturbed areas through natural revegetation or by seeding and transplanting (using weed-free native grasses, forbs, and shrubs), on the basis of BLM recommendations.

- Minimizing soil-disturbing activities on wet soils.

- Performing studies to determine the effects from construction activities on the eolian processes that maintain any nearby sand dunes, if applicable.

- Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts on soil resources during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

(b) Methods to minimize geologic hazard concerns may include, but are not limited to, the following:

- Building project structures in accordance with the design-basis recommendations in the project-specific geotechnical investigation report.

- Considering special siting, design, and engineering strategies in areas that involve high seismic activity or have potential for flooding or debris flow.

A.4.1.8.3 Operations and Maintenance

SR3-1 Compliance with the conditions for soil resources and geologic hazards shall be monitored by the project developer. Consultation with the BLM

shall be maintained through the operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Methods to maintain the soil erosion and geologic hazard design elements during operations and maintenance of the project shall include, but are not limited to, the following:

- Applying design features developed for the construction phase to similar activities during the operations phase.
- Performing routine site inspections to assess the effectiveness of maintenance requirements for erosion and sediment control systems.
- Maintaining permanent barriers and sedimentation devices to ensure effective control.
- Regularly maintaining catch basins, roadway ditches, and culverts.
- Identifying soil erosion and geologic hazard requirements within the POD and other applicable plans.

SR3-2 Permanent stabilization of disturbed areas shall occur during final grading and landscaping of the site and be maintained through the life of the facility.

A.4.1.8.4 Reclamation and Decommissioning

SR4-1 All design features for soil erosion and geologic hazards developed for the construction phase shall be applied to similar activities undertaken during the decommissioning and reclamation phase.

SR4-2 To the extent possible, the original grade and drainage pattern shall be re-established.

SR4-3 Native plant communities in disturbed areas shall be restored by natural revegetation or by seeding and transplanting (using weed-free native grasses, forbs, and shrubs), on the basis of recommendations by the BLM, once decommissioning is completed.

A.4.1.9 Design Features for Mineral Resources

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on mineral resources from solar energy development identified and discussed in Sections 5.8.1 and 5.8.2 of the Draft and Final Solar PEIS.

A.4.1.9.1 General

MR1-1 Project developers shall consult with the BLM in the early phases of project planning to identify potential impacts on mineral development activities and ways to minimize potential adverse impacts.

(a) Assessing impacts on mineral resources shall include, but is not limited to, the following:

- Identifying active mining claims or mineral development activities and potential for mineral development in proximity to a proposed project. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.

- Evaluating impacts on mineral development as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

MR1-2 All solar energy development ROWs shall contain the stipulation that the BLM retains the right to issue oil and gas or geothermal leases with a stipulation of no surface occupancy within the ROW area. Upon designation, SEZs will be classified as no surface occupancy areas for oil and gas and geothermal leasing.

A.4.1.9.2 Site Characterization, Siting and Design, Construction

MR2-1 Solar energy development projects shall be located to minimize conflicts with valid existing mineral rights and/or ongoing mineral development.

A.4.1.10 Design Features for Water Resources

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on water resources from solar energy development identified and discussed in Sections 5.9.1 and 5.9.2 of the Draft and Final Solar PEIS.

A.4.1.10.1 General

The following activities will be undertaken to minimize impacts on water resources. They are to be done in coordination with the appropriate local, state, and Federal regulating agencies.

WR1-1 The project developer shall control project site drainage, erosion, and sedimentation related to stormwater runoff. The project developer shall identify site surface water runoff patterns and develop measures that prevent adverse impacts associated with project related soil deposition and erosion throughout and downslope of the project site and project-related construction areas. This shall be implemented within a Stormwater Pollution Prevention Plan and incorporated into the POD, as appropriate.

(a) Assessing stormwater runoff concerns shall include, but is not limited to, the following:

- Conducting hydrologic analysis and modeling to define the 100-year, 24-hour rainfall for the project area and calculating projected runoff from this storm at the site.
- Demonstrating the project will not increase off-site flooding potential, and including provisions for stormwater and sediment retention on the project site.
- Demonstrating compliance with construction stormwater permitting through the EPA or state-run NPDES program (whichever applies within the state).
- Demonstrating compliance with the EPA requirement that any development larger than 20 acres (0.08 km^2) and begun after August 2011 must monitor construction discharges for turbidity concentrations.

(b) Methods to minimize stormwater runoff concerns may include, but are not limited to, the following:

- Managing runoff from parking lots, roofs, or other impervious surfaces.
- Creating or improving landscaping used for stormwater treatment to capture runoff.
- Considering reduction of impervious surfaces through the use of permeable pavement or other pervious surfaces.
- Maintaining natural drainages and pre-project hydrographs for the project ROW to the extent practicable.
- Maintaining pre-development flood hydrograph for all storms up to and including the 100-year rainfall event.

- Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts from stormwater runoff during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

WR1-2 Project developers shall conduct hydrologic study (or studies) that demonstrate a clear understanding of the local surface water and groundwater hydrology.

(a) Assessing surface water and groundwater hydrology may include, but is not limited to, the following:

- Determining the relationship of the project site hydrologic basin to the basins in the region.

- Identifying surface water bodies within the watershed of SEZs or individual projects (including rivers, streams, ephemeral washes/drainages, lakes, wetlands, playas, and floodplains) and identifying the 100-year floodplain of any surface water feature on the site.

- Identifying applicable groundwater aquifers.

- Quantifying physical characteristics of surface water features, such as streamflow rates, stream cross sections, channel routings, seasonal flow rates.

- Quantifying physical characteristics of the groundwater aquifer, such as physical dimensions of the aquifer, sediment characteristics, confined/unconfined conditions, hydraulic conductivity, and transmissivity distribution of the aquifer.

- Quantifying the regional climate, including seasonal and long-term information on temperatures, precipitation, evaporation, and evapotranspiration.

- Quantifying the sustainable yield of surface waters and groundwater available to the project.

- Consulting with the U.S. Army Corps of Engineers (USACE) regarding the siting of solar energy generating facilities in relation to hydrological features that have the potential to be subject to USACE jurisdiction.

WR1-3 Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process in order to identify water use for the solar energy project, and to secure a reliable and legally available water supply to meet project water needs.

(a) Assessing water use shall include, but is not limited to, the following:

- Quantifying water use requirements for project construction, operations, and decommissioning.
- Meeting potable water supply standards of Federal, state, and local water quality authorities (e.g., Sections 303 and 304 of the Clean Water Act [CWA]).
- Identifying wastewater treatment measures and new or expanded facilities, if any, to be included as part of the facility's National Pollutant Discharge Elimination System (NPDES) permit.

(b) Methods for minimizing water use may include, but are not limited to, the following:

- Utilizing appropriate water sources with respect to management practices for maintaining aquatic, riparian, and other water-dependent resources.
- Considering water conservation measures related to solar energy technology water needs to reduce project water requirements (i.e., use dry cooling, use recycled or impaired water).
- Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor water use during construction, operations, and decommissioning of the solar energy development, including adaptive management protocols.

WR1-4 Project developers shall avoid and/or minimize impacts on existing surface water features, including streams, lakes, wetlands, floodplains, intermittent/ephemeral streams, and playas (any unavoidable impacts would be minimized or mitigated) and in nearby regions resulting from the development in accordance with the following:

- All sections of the CWA, including Sections 401, 402, and 404, addressing licensing and permitting issues;

- Executive Orders (E.O.s) 11988 and 11990 of May 24, 1977, regarding floodplain and wetland management: E.O. 11988, "Floodplain Management" (*Federal Register*, Volume 42, page 26951 [42 FR 26951]), and E.O. 11990, "Protection of Wetlands" (42 FR 26961);

- EPA stormwater management guidelines and applicable state and local guidelines;

- Include submittal of a jurisdictional delineation for consultation with the USACE, in accordance with the 1987 wetlands delineation manual and appropriate regional supplement; avoidance, minimization and compensation proposals;

- USACE permit, Nationwide verification, or other approved jurisdiction. This includes identification of a Least Environmentally Damaging Practicable Alternative (LEDPA) within the environmental analysis. The USACE permit, Nationwide verification, or approved jurisdiction letter shall be provided to the BLM prior to a decision;

- National Wild and Scenic Rivers System (Public Law 90-542; 16 *United States Code* [U.S.C.] 1271 et seq.); and

- Required CWA Section 303(d) identification of impaired surface water bodies.

A.4.1.10.2 Site Characterization, Siting and Design, Construction

WR2-1 Project developers shall avoid, minimize, and mitigate impacts on groundwater and surface water resources in accordance with the laws and policies above.

(a) Methods to minimize impacts on surface water and groundwater resources may include, but are not limited to, the following:

- Reclaiming disturbed soils as quickly as possible.

- Preventing the release of project waste materials into stormwater discharges.

- Avoiding impacts on sole source aquifers according to EPA guidelines.

- Developing measures to prevent potential groundwater and surface water contamination and incorporating them into the

Spill Prevention and Emergency Response Plan and POD, as appropriate.

- Minimizing land disturbance in ephemeral washes and dry lakebeds. Stormwater facilities shall be designed to route flow through or around the facility using existing washes when feasible, instead of concrete-lined channels.

- Designing culverts and water conveyances to comply with BLM, state, and local standards, or to accommodate the runoff of a 100-year storm, whichever is larger.

- Designing stormwater retention and/or infiltration and treatment systems for storm events up to and including the 100-year storm event.

- Utilizing geotextile matting to stabilize disturbed channels and stream banks.

- Diverting worksite runoff from entering disturbed streams using earth dikes, swales, and lined ditches.

- Placing sediment control devices so that sediment-laden water can pond, thus allowing sediment to settle out.

- Considering placement of check dams (i.e., small barriers constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products) across a swale or drainage ditch to reduce the velocity of flowing water.

- Considering special construction techniques in areas of erodible soil, alluvial fans, and stream channel/wash crossings.

- Backfilling foundations and trenches with originally excavated material.

- Disposing of excess excavated material according to state and Federal laws.

- Maintaining drilling fluids or cuttings in a manner so as not to contact aquatic habitats. Temporary impoundments for storing drilling fluids and cuttings shall be lined to minimize the infiltration of runoff into groundwater or surface water.

- Avoiding washing equipment or vehicles in streams and wetlands.

- Constructing entry and exit pits in work areas to trap sediments from vehicles so they do not enter streams at stream crossings.

- Providing for periodic removal of wastewater generated in association with sanitary facilities by a licensed hauler.

- Avoiding the creation of hydrologic conduits between two aquifers.

- Using herbicides and pesticides within the framework of BLM and DOI policies and standard operating procedures, to include the use of only EPA-registered pesticides/herbicides that also comply with state and local regulations.

- Transporting, storing, managing, and disposing of hazardous materials and vehicle/equipment fuels in accordance with accepted best management practices (BMPs) and in compliance with all applicable regulations, and where applicable, the SWPPP.

A.4.1.10.3 Operations and Maintenance

WR3-1 Compliance with the terms and conditions for water resource mitigation shall be monitored by the project developer. The developer shall consult with the BLM through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Maintaining the water resource design elements during operations and maintenance of the project shall include, but not be limited to, the following:

- Monitoring water quantity and quality in areas adjacent to or downstream from development areas through the life of the project to ensure that water flows and water quality are protected.

- Treating of sanitary and industrial wastewater either on-site or off-site to comply with Federal, state, and local regulations. Any discharges to surface waters would require NPDES permitting. Any storage or treatment of wastewater on-site must use proper lining of holding ponds and tanks to prevent leaks.

- Implementing monitoring using adaptive management strategies to ensure that long-term water use during operations does not substantially and disproportionately contribute to the long-term

decline of groundwater levels or surface water flows and volumes, considering any mitigation measures that have been taken.

A.4.1.10.4 Reclamation and Decommissioning

WR4-1 Reclamation of the project site shall begin immediately after decommissioning to reduce the likelihood of water resource impacts from project activities. Developers shall coordinate with the BLM in advance of interim/final reclamation to have the BLM or other designated resource specialists on-site during reclamation to work on implementing water resource requirements and BMPs.

(a) Methods for minimizing water resource impacts associated with reclamation and decommissioning activities may include, but are not limited to, the following:

- Restoring the project area to predevelopment water conditions or to the extent acceptable to the BLM.
- Considering contouring of soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas to approximate naturally occurring slopes.
- Feathering edges of vegetation to reduce form and line contrasts with the existing landscapes.
- Salvaging and reapplying topsoil from all decommissioning activities during final reclamation.
- Continuing groundwater and surface water monitoring activities for a limited period of time, if appropriate given the specific situation.

A.4.1.11 Design Features for Ecological Resources

Many design features are similar for different types of ecological resources (plant communities and habitats, wildlife, aquatic resources, and special status species[3]). Design features for avoiding or minimizing impacts on all these types of ecological resources in general and during

[3] Special status species include the following types of species: (1) species listed as threatened or endangered under the ESA; (2) species that are proposed for listing, under review, or candidates for listing under the ESA; (3) species that are listed as threatened or endangered by the state or are identified as fully protected by the state; (4) species that are listed by the BLM as sensitive; and (5) species that have been ranked S1 or S2 by the state or as species of concern by the state or USFWS. Note that some of the categories of species included here do not fit BLM's definition of special status species as defined in BLM Manual 6840. These species are included here to ensure broad consideration of species that may be most vulnerable to impacts.

the various project phases are presented in the following sections. They were identified to avoid, reduce, and/or mitigate impacts on ecological resources from solar energy development identified and discussed in Section 5.10 of the Draft and Final Solar PEIS.

A.4.1.11.1 General

ER1-1 Project developers shall consult with the BLM and other Federal, state, and local agencies in the early phases of project planning to help ensure compliance with Federal regulations that address the protection of fish, wildlife, and plant resources, with appropriate Federal, state, and local agencies.

(a) Assessing compliance with pertinent regulations for ecological resources shall include, but is not limited to, the following:

- Developing in coordination with the BLM and USFWS strategies for complying with regulatory requirements of the Bald and Golden Eagle Act.

- Developing in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies) measures to protect birds (including migratory species protected under the Migratory Bird Treaty Act [MBTA]).

- Contacting appropriate agencies (e.g., BLM, USFWS, and state resource management agencies) early in the project planning process to identify potentially sensitive ecological resources such as aquatic habitats, wetland habitats, unique biological communities, crucial wildlife habitats, and special status species locations and habitats located within or in the vicinity of the areas occupied by the solar energy facility and associated access roads and ROWs.

- Reviewing maps and supporting information regarding desert tortoise connectivity habitat made available through the Solar PEIS project Web site (http://solareis.anl.gov) and consulting with the BLM and USFWS early in project planning to receive instructions on the appropriate desert tortoise survey protocols and the criteria the BLM and USFWS will use to evaluate the results of those surveys (see Appendix B, Section B.5.3, for additional information).

- Consulting with the USACE regarding the siting of solar energy generating facilities and energy transmission infrastructure in relation to hydrological features that have the potential to be subject to USACE jurisdiction.

- Considering restrictions on timing and duration of activities developed in coordination with the BLM, USFWS, and other appropriate agencies to minimize impacts from project activities on nesting birds (especially passerines and listed species).

- Considering recommendations contained in *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocol and Other Recommendations in Support of Golden Eagle Management and Permit Issuance*.

- Adhering to instruction Memorandum 2010-156, the *Bald and Golden Eagle Protection Act—Golden Eagle National Environmental Policy Act and Avian Protection Plan Guidance for Renewable Energy*, until programmatic permits from the USFWS are available. The analysis of potential impacts on, and mitigation for, golden eagles shall be made in coordination with the USFWS.

- Avoiding take of golden eagles and other raptors. Mitigation regarding the golden eagle shall be developed in consultation with the USFWS and appropriate state natural resource agencies. A permit may be required under the Bald and Golden Eagle Protection Act.

- Discussing potential impacts on sensitive habitats resulting from operation of vehicles and construction of structures, including transmission lines, within the environmental analysis.

(b) Methods to minimize regulatory conflicts for ecological resources may include, but are not limited to, the following:

- Including submittal of a jurisdictional delineation for consultation with the USACE, in accordance with the 1987 wetlands delineation manual and appropriate regional supplement; avoidance, minimization and compensation proposals.

- Identifying an LEDPA and analyzing within the environmental analysis. A USACE permit, Nationwide verification, or approved jurisdiction letter shall be provided to the BLM prior to a decision.

- Developing measures to ensure protection of raptors in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies).

- Developing measures to ensure protection of bats in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource agencies).

- Developing measures to ensure mitigation and monitoring of impacts on special status species in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies).

- Consulting with the USFWS upon discovery of federally listed threatened and endangered species during any phase of the project. An appropriate course of action shall be determined to avoid, minimize, or mitigate impacts. All applicable terms and conditions and conservation measures listed in the programmatic Biological Opinion, issued by the USFWS, shall be followed.

- Informing project personnel that only qualified biologists are permitted to handle listed species according to specialized protocols approved by the USFWS.

- Considering plants, wildlife, and their habitats in the facility's Dust Abatement Plan.

- Limiting herbicide use to non-persistent, immobile substances. Only herbicides with low toxicity to wildlife and non-target native plant species shall be used, as determined in consultation with the USFWS. Section 5.10.2.1.5 of the Draft Solar PEIS discusses the potential impacts of herbicides on wildlife. All herbicides shall be applied in a manner consistent with their label requirements and in accordance with guidance provided in the Final Solar PEIS on vegetation treatments using herbicides. Prior to application of herbicide treatments, a qualified person, such as a biologist, shall conduct surveys of bird nests and of special status species to identify the special measures or BMPs necessary to avoid and minimize impacts on migratory birds and special status species.

- Developing a SWPPP for each project that avoids, to the extent practicable, changes in surface water or groundwater quality (e.g., chemical contamination, increased salinity, increased temperature, decreased dissolved oxygen, and increased sediment loads) or flow that result in the alteration of terrestrial plant communities or communities in wetlands, springs, seeps, intermittent streams, perennial streams, and riparian areas (including the alteration of cover and community structure, species composition, and diversity) off the project site.

- Utilizing block or check valves on both sides of the waterway or habitat to minimize product release from pipelines that transport hazardous liquids (e.g., oils) that pass through aquatic or other habitats. Such pipelines shall be constructed of double-walled pipe at river crossings.

- Considering compensatory mitigation and monitoring of significant direct, indirect, and cumulative impacts on, and loss of habitat for, special status plant and animal species.

- Incorporating key elements on the identification and protection of ecological resources (especially for special status species), including knowledge of required design features, in instructions to all personnel. Incorporate the knowledge into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, so as to ensure the continued ecological awareness of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing ecological changes over the life of the project, should they occur.

- Planning for vegetation management that is consistent with applicable regulations and agency policies for the control of noxious weeds and invasive plant species (Sections 5.10.1.1.2 and 5.10.1.1.4 of the Draft Solar PEIS discuss the need for local and regional native plants in revegetation and restoration).

- Developing measures for fire management and protection that minimize the potential for a human- or facility-caused fire to affect ecological resources and that respond to natural fire situations (Sections 5.10.1.1.2 and 5.10.1.1.3 of the Draft Solar PEIS discuss the potential impacts of fire on native plant communities).

- Developing measures to investigate the possibility of revegetating parts of the solar array area.

- Designating a qualified biologist who will be responsible for overseeing compliance with all design features related to the protection of ecological resources throughout all project phases, particularly in areas requiring avoidance or containing sensitive biological resources. This person shall be reviewed and approved by the USFWS and the BLM for designation as a qualified biologist.

- Conducting pre-construction surveys, in coordination with BLM, USFWS, and state agency statutes, programs, and policies.

- Conducting seasonally appropriate inspections by a qualified biologist or team of biologists to ensure that important or sensitive species or habitats are not present in or near project areas. Attendees at the inspections may include appropriate Federal agency representatives, state natural resource agencies, and construction contractors, as appropriate. Habitats or locations to be avoided shall be clearly marked.

A.4.1.11.2 Site Characterization, Siting and Design, Construction

ER2-1 Solar facilities shall be sited and designed, and constructed to avoid, minimize, or mitigate impacts on ecological resources.

(a) Methods to avoid, minimize, or mitigate impacts on ecological resources may include, but are not limited to the following:

- Siting and designing projects to avoid and minimize direct and indirect impacts on important, sensitive, or unique habitats in the project vicinity, including, but not limited to waters of the United States, wetlands (both jurisdictional and non-jurisdictional), springs, seeps, streams (ephemeral, intermittent, and perennial), 100-year floodplains, ponds and other aquatic habitats, riparian habitat, remnant vegetation associations, rare or unique biological communities, crucial wildlife habitats, and habitats supporting special status species populations (including designated and proposed critical habitat).

- Incorporating measures to exclude tortoises from entering solar energy development sites. Examples include, but are not limited to, tortoise-proof fencing (fence specifications should be consistent with those approved by the USFWS in the Desert Tortoise Field Manual [USFWS 2009]) and tortoise guards at all road access points where desert tortoise-proof fencing is interrupted.

- Reducing the attractiveness of solar energy development and infrastructure areas to opportunistic predators such as desert kit fox, coyotes, and common ravens. Examples include, but are not limited to, litter control programs; measures to discourage the presence of ravens on-site, including elimination of available water sources; designing structures to discourage their use as potential nest sites; use of hazing to discourage raven presence; and active monitoring of the site for presence of ravens.

- Considering opportunities to upgrade or maintain crossings along existing facilities (e.g., roads, railroads, and aqueducts) such that desert tortoise occupancy and connectivity are not compromised.

- Avoiding siting projects in designated critical habitat, ACECs, or other specially designated areas that are identified as necessary for special status species and habitat conservation.

- Considering siting projects on previously disturbed lands in close proximity to energy load centers to avoid and minimize impacts on remote, undisturbed lands.

- Designing project facilities to reduce the number of stream crossings within a particular stream or watershed (e.g., access roads and utilities could share common ROWs, where feasible), and locating facilities in pre-disturbed areas to reduce potential for habitat fragmentation.

- Preventing establishment and spread of invasive species and noxious weeds within the ROW and in associated areas where there is ground surface disturbance or vegetation cutting. Developers should consider siting project facilities and activities, including associated roads and utility corridors, out of occupied habitats of special status animal species.

- Determining, in coordination with appropriate Federal and state agencies, the translocation of special status species, including the steps to implement the translocation and the follow-up monitoring of populations in the receptor locations, as determined in coordination with the appropriate Federal and state agencies. Developers should plan for translocation of special status species when appropriate.

- Considering the salvage of Joshua trees (*Yucca Brevifolia*), other Yucca species, and most cactus species in coordination with the local BLM field office.

- Considering conducting interim and final restoration activities as soon as possible after development activities are completed in order to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.

- Implementing revegetation, soil stabilization, and erosion reduction measures to ensure temporary use areas are restored.

- Conducting a nesting bird survey or other necessary survey for nesting birds. If active nests are detected, the nest area shall be flagged, and no activity shall take place near the nest (at a distance determined by the BLM in coordination with the USFWS and/or appropriate state agencies), or until the appropriate agencies agree that construction can proceed with the incorporation of agreed-upon monitoring measures.

- Siting and designing project activities away from habitats occupied by special status animal species. Developers should consider establishing buffers around sensitive habitats to prevent destructive impacts associated with project activities (e.g., identified in the land use plan or substantiated by best available information or science in consultation with the BLM).

- To the extent practicable, avoiding entry into aquatic habitats, such as streams and springs, during site characterization activities until surveys by qualified biologists have evaluated the potential for unique flora and fauna to be present.

- Planning for and developing measures that identify management practices to minimize increases in nuisance animals and pests in the project area. The plans should identify nuisance and pest species that are likely to occur in the area, risks associated with these species, species-specific control measures, and monitoring requirements.

- Designing solar facilities to avoid, minimize, and mitigate impacts on wetlands, waters of the United States, and other special aquatic sites.

- Locating and designing individual project facilities to minimize disruption of animal movement patterns and connectivity of habitats. Section 5.10.2.1.2 of the Draft Solar PEIS discusses the potential impacts of habitat loss and fragmentation on wildlife.

- Avoiding surface water or groundwater withdrawals that adversely affect sensitive habitats (e.g., aquatic, wetland, playa, microphyll woodland, and riparian habitats) and habitats occupied by special status species.

- Designing water intake facilities to minimize the potential for aquatic organisms from surface waters to be entrained in cooling water systems.

- Demonstrating, through hydrologic modeling, that the withdrawals required for the project are not going to affect groundwater discharges that support special status species or their habitats.

- Considering the use of fencing and netting for evaporation ponds to prevent their use by wildlife.

- To the extent practicable, locating meteorological towers, solar sensors, soil borings, wells, and travel routes to avoid sensitive habitats or areas where wildlife (e.g., sage-grouse) is known to be sensitive to human activities.

- To the extent practicable, avoiding siting solar power facilities near open water or other areas that are known to attract large numbers of birds.

- To the extent practicable, placing tall structures, such as meteorological towers and solar power towers, to avoid known flight paths of birds and bats.

- Implementing current guidelines and methodologies in the design and analysis of proposed transmission facilities in order to minimize the potential for raptors and other birds to collide or be electrocuted by them.

- Placing mechanisms to visually warn birds (permanent markers or bird flight diverters) on transmission lines at regular intervals to prevent birds from colliding with the lines.

- Designing transmission line support structures and other facility structures to discourage use by raptors for perching or nesting (e.g., by using monopoles rather than lattice support structures or by use of anti-perching devices).

- Considering spanning important or sensitive habitats with transmission line conductors within the limits of standard structure design.

- Using low-water crossings (fords) during the driest time of the year. Developers should consider using rocked approaches to fords and returning the crossing to pre-existing stream channel conditions after the need for a low-water ford has passed.

- Employing noise reduction devices (e.g., mufflers) to minimize the impacts on wildlife and special status species populations.

Explosives shall be used only within specified times and at specified distances from sensitive wildlife or surface waters as established by the BLM or other Federal and state agencies.

- Minimizing the number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, and laydown areas). Movement of a discovered special status species that is hidden or trapped is prohibited. If necessary, the animal should be moved only to remove the animal from the path of harmful activity, until the animal can escape.

- Implementing measures for proper trash removal and storage, such as using secured containers and periodic emptying, on the project site to reduce attractive opportunistic species, such as common ravens, coyotes, and feral cats and dogs.

- Constructing, improving, and maintaining access roads to minimize potential wildlife/vehicle collisions and facilitate wildlife movement through the project area.

- Limiting project vehicle speeds and using shuttle vans and carpooling in areas occupied by special status animal species. Traffic shall yield to wildlife, allowing safe road crossing.

- Utilizing existing access roads, utility corridors, and other infrastructure to the maximum extent feasible.

- Locating staging and parking areas within the site of the utility-scale solar energy facility to minimize habitat disturbance.

- Considering rolled and compacted on-site construction access routes to allow trucks and equipment to access construction locations.

- Minimizing vehicle use off of access roads and foot traffic through undisturbed areas.

- Constructing fences (as practicable) to exclude livestock and wildlife from project facilities.

- Prohibiting project personnel from bringing firearms and pets to project sites.

- Placing food refuse and other garbage in closed containers so it is not available to scavengers.

- Reducing the collection, harassment, or disturbance of plants, wildlife, and their habitats (particularly special status species) through employee and contractor education about applicable state and Federal laws.

- Advising personnel to minimize stopping and exiting their vehicles in the winter ranges of large game while there is snow on the ground.

- Coordinating with BLM and appropriate project personnel to handle unreasonable traffic delays caused by wildlife in roads. Utilizing appropriate personnel to move live, injured, or dead wildlife off roads, ROWs, or the project site.

- Reporting any vehicle-wildlife collisions. Observations of potential wildlife problems, including wildlife mortality, shall be immediately reported to the BLM or other appropriate agency authorized officer.

- Considering road closures or other travel modifications (e.g., lower speed limits, no foot travel) during crucial periods (e.g., extreme winter conditions, calving/fawning seasons, raptor nesting).

- Conducting pre-construction surveys by qualified personnel, such as a qualified biologist, in areas with potential to adversely affect special status species (Section 5.10.4.1.1 of the Draft Solar PEIS) and utilizing approved survey techniques or established species-specific survey protocols to determine the presence of special status species in the project area.

- Considering the number of qualified biological monitors (as determined by the Federal authorizing agency and USFWS) to be on-site during initial site preparation and during the construction period to monitor, capture, and relocate animals that could be harmed and are unable to leave the site on their own.

- Relocating wildlife found in harm's way from the area of the activity. Qualified personnel shall be required to relocate some animals such as rattlesnakes.

- Establishing a controlled inspection and cleaning area to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.

- To the extent practicable, avoiding placement of transmission towers within aquatic and wetland habitats, or other sensitive habitats such as riparian habitats. If towers must be placed within these habitats, they shall be designed and installed to not impede flows or fish passage.

- Designing necessary stream crossings to provide in-stream conditions that allow for and maintain uninterrupted movement and safe passage of fish during all project periods.

- Considering cutting trees in stream buffers that are able to grow into a transmission line conductor clearance zone within 3 to 4 years.

- Considering the use of helicopters where access roads do not exist or where access roads could not be constructed without significantly impacting habitats.

A.4.1.11.3 Operations and Maintenance

ER3-1 The developer shall manage vegetation utilizing the principles of integrated pest management, including biological controls to prevent the spread of invasive species, per the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States,* and the *National Invasive Species Management Plan, 2009*. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Methods to manage vegetation, including controlling for invasive species, during operations and maintenance of the project may include, but are not limited to, the following:

- Using certified weed-free seed and mulching.

- Cleaning vehicles to avoid introducing invasive weeds.

- Educating project personnel on weed identification, the manner in which weeds spread, and methods for treating infestations.

- Considering periodic monitoring, reporting, and immediate eradication of noxious weed or invasive species occurring within all managed areas.

- Limiting vegetation maintenance and performing maintenance mechanically rather than with herbicides.

- Considering retaining short (i.e., less than 7-in. [18-cm] tall) native species during maintenance and operation activities.

- Reducing risk of non-native and nuisance aquatic species introductions. Developers should decontaminate equipment used in surface water, especially equipment used to convey water (i.e., pumps).

- Monitoring for and eradicating invasive species.

- Reestablishing vegetation within temporarily disturbed areas immediately following the completion of construction activities.

- Focusing revegetation efforts on the establishment of native plant communities similar to those present in the vicinity of the project site. Considering dominant native species within the plant communities that exist in adjacent areas and have similar soil conditions for revegetation.

- Considering post-translocation surveys for target species (especially if the target species are special status species) and releasing individuals to protected off-site locations as approved by Federal and state agencies.

ER3-2 The developer shall, in consultation with the BLM and appropriate Federal, state, and local agencies, manage projects so as to minimize impacts on ecological resources during operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Methods to minimize impacts on ecological resources during operations and maintenance of the project shall include, but are not limited to, the following:

- Monitoring for increase in predation of special status species (e.g., desert tortoise, Utah prairie dog, and greater sage-grouse) from ravens and other species that are attracted to developed areas and use tall structures opportunistically to spot vulnerable prey.

- Turning off all unnecessary lighting at night to limit attracting wildlife, particularly migratory birds.

(b) Other methods for maintaining compliance with ecological resource design elements during operations and maintenance of the project may include, but are not limited to, the following:

- Monitoring for and reporting bird mortality species (e.g., raptors) that are associated with power lines to the BLM and the USFWS.

- Monitoring for the effects of groundwater withdrawals on plant communities.

- Monitoring unavoidable impacts on wetlands and waters of the United States.

- For projects that affect desert tortoise linkages, developing and implementing a Desert Tortoise Habitat Linkage Management and Monitoring Plans and a Desert Tortoise Population Connectivity Effectiveness-Monitoring Plan as described in the USFWS Biological Opinion and Conservation Review for the Solar Energy Program (July 20, 2012).

- Removing raptor nests only if the birds are not actively using the nest.

- Considering relocating nests to nesting platforms. Reporting on relocated or destroyed nests to the appropriate Federal and/or state agencies.

- Coordinating with the USFWS and BLM project personnel in the event that a raptor nest is located on a transmission line support structure.

- Removing raven nests only when inactive (i.e., no eggs or young). The removal of raven nests may be addressed in the minimization measures that incorporate the most current USFWS guidance (e.g., FONSI, *Implementation of a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise, 2008*).

- Considering trench breakers and/or sealing the trench bottom to maintain the original wetland hydrology where a pipeline trench drains a wetland.

- Minimizing removal of deadfall or overhanging vegetation in streams for crossings.

- Installing fish screens on cooling water intakes to limit the potential for impingement impacts on organisms in surface water sources used for cooling water.

- Maintaining areas left in a natural condition during construction (e.g., wildlife crossings) in as natural a condition as possible within safety and operational constraints.

- Avoiding use of guy wires to minimize impacts on birds and bats. If guy wires are necessary, permanent markers (e.g., bird flight diverters) shall be used to increase their visibility.

- Maintaining native vegetation cover and soils and minimizing grading.

- Monitoring unavoidable impacts on wetlands and waters of the United States.

- Instructing personnel to avoid harassment and disturbance of local plants and wildlife.

- Informing personnel of the potential for wildlife interactions around facility structures.

A.4.1.11.4 Reclamation and Decommissioning

ER4-1 Reclamation of the construction and project site shall begin immediately after decommissioning to reduce the likelihood of ecological resource impacts in disturbed areas as quickly as possible.

(a) Addressing ecological resource impacts during reclamation and decommissioning shall include, but is not limited to, the following:

- Applying design features developed for the construction phase to similar activities during the decommissioning and reclamation phase.

- Developing and implementing a Decommissioning and Site Reclamation Plan specific to the project, approved by the BLM in consultation with appropriate agencies, that incorporates adaptive management strategies.

- Using weed-free seed mixes of native shrubs, grasses, and forbs of local sources where available, as required in the Decommissioning and Site Reclamation Plan.

- Developing and implementing monitoring measures to ensure successful reclamation per the Decommissioning and Site Reclamation Plan.

(b) Other methods to minimize ecological resource impacts during reclamation and decommissioning may include, but are not limited to, the following:

- Lightly raking and/or ripping and reseeding with seeds from low-stature plant species collected from the immediate vicinity in disturbed areas.

- Reclaiming access roads when they are no longer needed, considering seasonal restrictions.

- Filling or grading holes and ruts created by the removal of structures and access roads.

- Considering maximizing area reclaimed during solar energy operations to minimize habitat loss and fragmentation.

- Maintaining a clean and orderly worksite during and after decommissioning to ensure land is clear of debris.

- Planning to return land surfaces to pre-development contours immediately following decommissioning.

- Expediting the reestablishment of vegetation for site stabilization.

- Continuing vegetation reestablishment efforts until all success criteria have been met, as identified within the Decommissioning and Site Reclamation Plan.

- Focusing revegetation on the establishment of native plant communities similar to those present in the vicinity of the project site. Considering dominant native species within the plant communities that exist in adjacent areas and have similar soil conditions for revegetation.

- Leaving the facility fencing in place for several years, or replacing it with new exclusion fencing, to assist reclamation (e.g., the fence could preclude large mammals and vehicles from disturbing revegetation efforts). Shorter times for maintaining fencing may be appropriate in cases where the likelihood of disturbance by cattle and wildlife is low.

A.4.1.12 Design Features for Air Quality and Climate

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on ambient air quality and climate from solar energy development that were identified and discussed in Sections 5.11.1 and 5.11.2 of the Draft and Final Solar PEIS.

A.4.1.12.1 General

AQC1-1 Project developers shall consult with the BLM in the early phases of project planning to help determine the potential conformance to air quality and other potential constraints.

(a) Assessing conformance to air quality and other related constraints shall include, but is not limited to, the following:

- Identifying air quality and other related constraints associated with the proposed project site. In coordination with BLM, the appropriate state and local air regulatory authorities shall be consulted to identify air quality and related constraints and requirements.

- Determining any applicable Federal, state, and local laws and regulations related to air quality.

- Considering effects on particulate matter PM_{10} and $PM_{2.5}$ from the solar energy project and its facilities.

- Evaluating the cumulative impacts to air quality and air quality related values in Class I areas. Such an analysis should include the Reasonably Foreseeable Development Scenario from the Solar PEIS for all SEZs within the region of a proposed project.

- Evaluating potential contributions to air quality impacts as part of the environmental impact analysis for the project and considering options to avoid, minimize and/or mitigate adverse impacts in coordination with the BLM.

A.4.1.12.2 Site Characterization, Siting and Design, Construction

AQC2-1 Solar facilities shall be sited and designed, and constructed to minimize impacts on air quality.

(a) Methods to minimize air quality impacts shall include, but are not limited to, the following:

- Using equipment that meets emission standards specified in the state code of regulations and meets the applicable EPA Tier 3 and Tier 4 emissions requirements.

- Preparing a Dust Abatement Plan for the solar facilities that considers multiple methods for dust suppressant (i.e., water, paving, gravel, and/or regulation-compliant palliatives).

(b) Other methods to minimize air quality impacts and related constraints may include, but are not limited to, the following:

- Considering surfacing access roads with aggregate that is hard enough that vehicles cannot crush it.

- Managing unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during project activities as frequently as necessary to effectively minimize fugitive dust generation.

- Using machinery that has air-emission-control devices as required by Federal, state, and local regulations or ordinances.

- Limiting travel to stabilized roads.

- Considering paving the main access road to the main power block and the main maintenance building.

- Enforcing posted speed limits (e.g., 10 mph [16 km/hour]) within the construction site to minimize airborne fugitive dust.

- Covering vehicles that transport loose materials as they travel on public roads, using dust suppressants on truck loads, and keeping loads below the freeboard of the truck bed.

- Installing wind fences around disturbed areas that could affect the area beyond the site boundaries (e.g., nearby residences).

- Suspending soil disturbance activities and travel on unpaved roads during periods of high winds. Site-specific wind speed thresholds shall be determined on the basis of soil properties determined during site characterization.

- Utilizing compatible native vegetative plantings to limit dust generation from stockpiles that will be inactive for a relatively long period.

- To the extent practicable, avoiding chemical dust suppressants that emit volatile organic compounds within or near ozone nonattainment areas.

- Considering use of ultra-low sulfur diesel with a sulfur content of 15 parts per million (ppm) or less for project vehicles.

- Limiting the idling time of equipment to no more than 5 minutes, unless idling must be maintained for proper operation (e.g., drilling, hoisting, and trenching).

- Minimizing use of dust palliatives in areas of close proximity to sensitive soil and streams.

- Accessing transmission lines from public roads and designated routes to minimize fugitive dust emissions.

- Minimizing on-site vehicle use and requiring routine preventive maintenance, including tune-ups to meet the manufacturer's specifications, to ensure efficient combustion and minimal emissions.

- Encouraging use of newer and cleaner equipment that meets more stringent emission controls.

- Limiting access to the construction site and staging areas to authorized vehicles only through the designated treated roads.

- Staging construction to limit the areas exposed at any time.

- Considering inspection and cleaning of tires of all construction-related vehicles to ensure they are free of dirt before they enter paved public roadways.

- Cleaning up visible trackout or runoff dirt on public roadways resulting from the construction site (e.g., street vacuum/ sweeping).

- Salvaging topsoil from all excavations and construction activities during reclamation or interim reclamation and reapplying to construction areas not needed for facility operation as soon as activities in that area have ceased.

- Considering atmospheric conditions when planning construction activities to minimize dust.

- To the extent practicable, avoiding ground disturbance from construction-related activities in areas with intact biological soil crusts and desert pavement. Developers should salvage soil crusts for restoration, on the basis of recommendations by the BLM once construction has been completed.

- Incorporating environmental inspection and monitoring measures into the POD and other relevant plans to monitor and respond to air quality during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

A.4.1.12.3 Operations and Maintenance

AQC3-1 Compliance with the terms and conditions for air quality shall be monitored by the project developer. Consultation with BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Methods for maintaining compliance with the terms and conditions for air quality during operations and maintenance shall include, but are not limited to, the following:

- Monitoring and treating areas that have been graded, scraped, bladed, compacted, or denuded of vegetation ahead of actual construction/assembly.

(b) Other methods to maintain compliance with the terms and conditions for air quality during operations and maintenance may include, but are not limited to, the following:

- Reapplying palliatives or water as necessary for effective fugitive dust management.

- Considering use of design features for portions of facilities maintained to be free of vegetation during operations, and use of the dust control design features that were listed above under AQC2-1 to limit fugitive dust emissions during the construction phase to minimize fugitive dust emissions from bare surfaces and unpaved access roads.

- Ensuring compliance of all combustion sources with state emission standards (e.g., best available control technology requirements).

A.4.1.12.4 Reclamation and Decommissioning

AQC4-1 Reclamation of the site shall incorporate the design features listed above for construction under AQC2-1 to reduce the likelihood of air quality impacts associated decommissioning.

A.4.1.13 Design Features for Visual Resources

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on visual resources from solar energy development identified and discussed in Section 5.12.3 of the Draft and Final Solar PEIS.

A.4.1.13.1 General

VR1-1 Project developers shall consult with the BLM in the early phases of project planning to help determine the proposed project's potential conformance to VRM class designations and other potential constraints, thus avoiding costly unforeseen planning implications and re-design.

(a) Assessing conformance to VRM class designations and identifying visual resource conflicts shall include, but is not limited to, the following:

- Consulting with the appropriate BLM field office for VRM class designations and associated management objectives during the early phases of project planning, including those related to project site selection, planning, and design. The BLM visual resource inventory (VRI) class values—including those for scenic quality, sensitivity, and distance zones—shall also be factored into the project planning, design, and decision making.

- Analyzing how the visual values influence project design and how the impacts on these values will be minimized through consideration for the proposed project location and its relationship to the surrounding viewshed.

- Including a qualified professional, such as a landscape architect, with demonstrated experience of the BLM's VRM policies and procedures as part of the developer's and the BLM's respective planning teams, to evaluate visual resource issues as project siting options are considered.

- Consulting with the locally based public to provide input on identifying important visual resources in the project area and on the siting and design process. The public shall be involved and

informed about the visual site design elements of the proposed solar energy facilities.

- Consulting on viewshed protection objectives and practices with the respective land management for landscapes having special designations, such as Wilderness Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, National Parks, and National Wildlife Refuges located within the project's viewshed. Developers shall demonstrate a concerted effort to reconcile conflicts while recognizing that the BLM retains authority for final decisions determining project approval and conditions.

- For applications that include artifacts and remnants of a National Historic Trail, are located within the viewshed of a National Historic Trail's designated centerline, or include or are within the viewshed of a trail eligible for listing on the *National Register of Historic Places* (NRHP) by virtue of its important historical or cultural values and integrity of setting, evaluating the potential visual impacts on the trail associated with the proposed project; avoiding, minimizing, and/or mitigating adverse effects through the Section 106 consultation process; and identifying appropriate mitigation measures for inclusion as stipulations in the POD.

- Considering landscape settings observed from a unit of the National Park system, National Historic Sites, National Trails, and cultural resources of tribal concern that may be a part of the historic context contributing to the historic significance of the site or trail.

- Project developers are encouraged to obtain topographical data of engineering-design quality and use digital terrain mapping tools at a landscape-viewshed scale for project location selection, site planning and design, visual impact analysis, and visual impact mitigation planning and design. The digital terrain-mapping tools shall be at a resolution and contour interval suitable for site design and accurate placement of proposed developments into the digital viewshed. Visual simulations shall be prepared and evaluated in accordance with BLM Handbook H-8431-1 and other agency directives, to create spatially accurate and realistic depictions of the appearance of proposed facilities. Simulations shall depict proposed project facilities from key observation points (KOPs) and other visual resource sensitive locations.

- Conducting outreach through public forums as necessary to disseminate visual resource information through methods such as

offering organized tours of operating solar energy development projects, and using simulations in public presentations.

- Performing visual mitigation planning and design through field assessments, applied global positioning system (GPS) technology, photo documentation, use of computer-aided design and development software, three-dimensional GIS modeling software, and imaging software to depict visual simulations to reflect a full range of visual resource mitigation measures.

A.4.1.13.2 Site Characterization, Siting Design, and Construction

VR2-1 Solar facilities shall be sited and designed to minimize glint and glare.

(a) Identification of glint and glare effects shall include, but is not limited to, the following:

- Assessing and quantifying potential glint and glare effects and determining the potential safety and visual impacts associated with glint and glare using appropriate and commonly accepted software, procedures, and past project examples.

- Having qualified individuals conduct assessments for glint and glare.

(b) Methods to minimize glint and glare effects may include, but are not limited to, the following:

- Limiting use of signs and project construction signs. Beyond those required for basic facility and company identification for safety, navigation, and delivery purposes, commercial symbols or signs and associated lighting on buildings and other structures should be prohibited.

- Utilizing retro-reflective or luminescent markers in lieu of permanent lighting.

- Minimizing off-site visibility of all commercial symbols and signs and associated lighting. Necessary signs should be made of non-glare materials and utilize unobtrusive colors. The reverse sides of signs and mounts should be painted or coated using a suitable color selected from the BLM Standard Environmental Color Chart to reduce contrasts with the existing landscape. However, placement and design of any signs required by safety regulations must conform to regulatory requirements.

- Considering off-site mitigation of visual impacts. In some situations, off-site mitigation may serve as a means to offset and/or recover the loss of visual landscape integrity. For example, off-site mitigation could include reclaiming unnecessary roads, removing abandoned buildings, reclaiming abandoned mine sites, putting utility lines underground, rehabilitating and revegetating existing erosion or disturbed areas, or establishing scenic conservation easements. Appropriate off-site mitigation will be determined on a project-specific basis in consultation with the BLM.

VR2-2 Solar facilities shall be sited and designed to minimize night-sky effects.

(a) Identification of night-sky effects shall include, but is not limited to, the following:

- Assessing and quantifying potential lighting impacts on the night sky and nocturnal wildlife, while providing lighting for hazard marking, safety, and other necessary site needs.

- Conducting assessments for night-sky effects by qualified individuals using appropriate and commonly accepted procedures and past project examples.

(b) Methods to minimize night-sky effects may include, but are not limited to, the following:

- Using minimum intensity lighting that meets safety criteria. When accurate color rendition is not required (e.g., roadway, basic security), lighting shall be amber in color, using low-pressure sodium lamps, yellow LED lighting, or equivalent. When white light is required for accurate color rendition, it shall be equal to or less than 3500° Kelvin color temperature. Bluish-white lighting is discouraged.

- Prohibiting the use of red or white strobe lighting unless the BLM approves its use because of conflicting mitigation requirements.

- Fully shielding all permanent lighting (e.g., full cut-off), except for collision markers required by the FAA or other emergency lighting triggered by alarms.

- Mount lighting so that no light is emitted above an imaginary horizontal plane through the fixture.

- Considering lighting control through timers, sensors, dimmers, or switches that are available to facility operators.

- Considering vehicle-mounted lights over permanently mounted lighting for nighttime maintenance activities. When possible, such vehicle-mounted lighting shall be aimed toward the ground to avoid causing glare and skyglow.

VR2-3 The siting and design of solar facilities, structures, roads, and other project elements shall explore and document design considerations for reducing visual dominance in the viewshed and shall comply with the VRM class objectives in conformance with VR1-1.

(a) Assessing visual dominance shall include, but is not limited to, the following:

- Conforming with VRM class objectives through the use of the BLM contrast rating procedures defined in BLM Handbook H-8431-1. Visual contrast rating mitigation of visual impacts shall abide by the requirements outlined in the handbook and other BLM directives. Revised project plans and simulations are to be reevaluated by using the contrast rating procedures.

- Selecting KOPs by first determining the extent of the viewshed using the viewshed modeling tools previously cited under VR1-1. The viewshed modeling shall illustrate the areas from which the proposed facilities may be seen out to 25 mi (40 km). From within the areas, KOPs are to be selected at places where people would be expected: scenic overlooks, roads, trails, campgrounds, recreationally active river corridors, residential areas, etc. For the purpose of conducting a visual contrast rating evaluation, the number of KOPs would be reduced to those that serve as the best representations for demonstrating conformance to the respective VRM class objectives. The BLM is consulted on the KOP selections, and reserves the right to require additional KOPs to further determine the extent of visual impacts and conformance to VRM class objectives.

- Integrating visual design elements into the construction plans, details, drawings, and specifications for the project.

- Incorporating facility siting measures to minimize the profile of all facility-related structures to reduce visibility and visual dominance within the viewshed, particularly for facilities proposed within the foreground/middleground distance zone (0–5 mi [0–8 km]) of sensitive viewing locations.

(b) Measures to minimize visual dominance may include, but are not limited to, the following:

- Using existing topography and vegetation as screening or partially screening devices.

- Incorporating visual design elements when planning for grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural measures.

- Minimizing visual dominance of projects by siting projects outside the viewsheds of KOPs or by diminishing dominance through maximizing visible separation with distance.

- Avoiding, when feasible, locating facilities near visually prominent landscape features (e.g., knobs and waterfalls) that naturally draw an observer's attention.

- Avoiding visual "skylining" by placing structures, transmission lines, and other facilities away from ridgelines, summits, or other locations where they would silhouette against the sky from important viewing locations; however, consideration should be given to the potential for increased ground disturbance and other resource impacts.

- Designing linear features (e.g., ROWs and roads) to follow natural land contours rather than straight lines; however, consideration should be given to the potential for increased ground disturbance and other resource impacts.

- Locating linear developments (e.g., transmission lines, pipelines, roads) at the edges of natural clearings or natural lines of transition between vegetation type and topography.

- Considering alternative means of access in visually sensitive areas, to preserve the natural landscape conditions between tower locations.

- Minimizing vegetation and ground disturbance, and taking advantage of existing clearings where feasible.

- Reducing cut and fill for structures and roads by design and location. Retaining walls, binwalls, half bridges, etc., can be used to reduce cut and fill.

- Considering rounded and varied road-cut slopes and the cut-and-fill pitches to reduce contrasts in form and line; encouraging slope cuts to preserve specimen trees and nonhazardous rock outcroppings.

- Considering sculpting and shaping natural or previously excavated bedrock landforms when excavation of these landforms is required. For example, percent backslope, benches, and vertical variations may be integrated into a final landform that repeats the natural shapes, forms, textures, and lines of the surrounding landscape. The earthen landform may be integrated and transitioned into the excavated bedrock landform. Sculpted rock face angles, bench formations, and backslope could adhere to the natural bedding planes of the natural bedrock geology. The color contrast from the excavated rock faces may be removed by color treating with a rock stain. Native vegetation or a mix of native and non-native species (if necessary to ensure successful revegetation) could be reestablished with the benches and cavities created within the created bedrock formation.

- Designing and installing natural-looking earthwork landforms, or vegetative or architectural screening to minimize visual impacts. Considering shape and height of earthwork landforms for adaptation to the surrounding landscape.

- Repeating the size, shape, and characteristics of naturally occurring openings in vegetation for facilities, structures, roads, etc.

- Burying electrical collector lines, pipelines, and communication and local utility lines to minimize additional surface disturbance where feasible (e.g., along roads or other paths of surface disturbance).

- Minimizing visual impacts associated with solar energy and electricity transmission projects by choosing appropriate building and structural materials and surface treatments (i.e., paints or coatings designed to reduce contrast and reflectivity). A careful study of the site should be performed to identify appropriate colors and textures for materials; both summer and winter appearance shall be considered, as well as seasons of peak visitor use. Materials and surface treatments shall repeat and/or blend with the existing form, line, color, and texture of the landscape.

- Considering the typical viewing distances and landscape when choosing colors. Appropriate colors for smooth surfaces often

need to be two to three shades darker than the background color to compensate for shadows that darken most textured natural surfaces. The BLM Standard Environmental Color Chart CC-001 and guidance shall be referenced when selecting colors.

- Selecting appropriately colored materials for structures, or stains/coatings to blend with the project's backdrop. Materials, coatings, or paints having little or no reflectivity shall be used whenever possible.

- Color treating solar panel/mirror/heliostat backs/supports to reduce visual contrast with the landscape setting.

- Color treating solar towers to reduce visual contrast.

- Considering multiple-color camouflage technology application projects within sensitive viewsheds and with a visibility distance that is between 0.25 and 2 mi (0.40 and 3.20 km).

- Matching aboveground pipelines' paint or coating to their surroundings.

- Considering the appropriate choice of monopoles versus lattice towers for a given landscape setting to further reduce visual impacts.

- Utilizing nonspecular conductors and nonreflective coatings on insulators for electricity transmission/distribution projects.

- Minimizing the use of signs. Where signs are necessary, they shall be made of non-glare materials and utilize unobtrusive colors. The reverse sides of signs and mounts shall be painted or coated by using the most suitable color selected from the BLM Standard Environmental Color Chart; however, placement and design of any signs required by safety regulations must conform to regulatory requirements.

- Clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving vegetation to the greatest extent possible; utilizing undulating surface disturbance edges; stripping, salvaging, and replacing topsoil; using contoured grading; controlling erosion; using dust suppression techniques; and stabilizing exposed soils.

- Preserving existing rocks, vegetation, and drainage patterns to the maximum extent possible.

- Employing brush-beating, mowing, or the use of protective surface matting rather than removing vegetation.

- Considering mulching and spreading slash from vegetation removal over fresh soil disturbances.

- Avoiding leaving slash piles in sensitive viewing areas.

- Considering restoration of disturbed soils by use of weed-free native grasses, forbs, and shrubs representative of the surrounding and intact native vegetation composition and/or using non-native species, if necessary, to ensure successful revegetation.

- Reducing the visual color contrast of graveled surfaces with approved color treatment practices.

- Considering segregating and spreading topsoil from cut-and-fill activities on freshly disturbed areas to reduce color contrast.

- Avoiding leaving topsoil piles in sensitive viewing areas.

- Spreading excess cut and fill material within project disturbance area and vegetate per approved restoration plan requirements while maintaining natural drainage pathways. Where soil cannot reasonably be spread within project disturbance areas, excess cut-and-fill materials should be hauled out to minimize ground disturbance and impacts from piles.

- Removing stakes and flagging from the construction area after completion of construction.

VR2-4 Project developer shall perform a pre-construction meeting with BLM or their designated visual/scenic resource specialists, such as a landscape architect, to coordinate the project construction VRM mitigation strategy. Final design and construction documents will be reviewed with regard to the visual mitigation elements, assuring that requirements and commitments are adequately addressed. The review of construction documents will include, but not be limited to, grading, drainage, revegetation, vegetation clearing, and feathering.

A.4.1.13.3 Operations and Maintenance

VR3-1 Compliance with the terms and conditions for VRM mitigation shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Maintaining the visual resource design elements during operations and maintenance shall include, but is not limited to, the following:

- Maintaining revegetated surfaces until a self-sustaining stand of vegetation is reestablished and visually adapted to the undisturbed surrounding vegetation. No new disturbance shall be created during operations without completion of a VRM analysis and approval by the BLM authorized officer.
- Keeping painted and color-treated facilities in good repair and repainting when the color fades or flakes.
- Using interim restoration during the operating life of the project as soon as possible after land disturbances.
- Including dust abatement and noxious weed control in maintenance activities.
- Deploying and operating mirrors/heliostats to avoid high-intensity light (glare) reflected off-site. Where off-site glare is unavoidable and project site/off-site spatial relationships favor effective results, fencing with privacy slats or similar screening materials should be considered.

A.4.1.13.4 Reclamation and Decommissioning

VR4-1 Reclamation of the construction site shall begin immediately after construction to reduce the likelihood of visual contrasts associated with erosion and invasive weed infestation and to reduce the visibility of temporarily disturbed areas as quickly as possible. Developers shall coordinate with BLM in advance of interim/final reclamation to have BLM or other designated visual/scenic resource specialists, such as a landscape architect, on-site during reclamation to work on implementing visual resource requirements and BMPs.

(a) Methods for minimizing visual contrast associated with reclamation and decommissioning of the project may include, but are not limited to, the following:

- Including treatments, such as thinning and feathering vegetation along project edges, enhanced contour grading, salvaging landscape materials from within construction areas, special revegetation requirements (e.g., use of mix of native and non-native species).

- Designing and implementing restoration of the project area to predevelopment visual conditions and the inventoried visual quality rating, or to that of the surrounding landscape setting conditions to the best extent possible or to conditions agreed upon by the BLM.

- Removing aboveground and near-ground-level structures. Some structures may need to be removed to a level below the ground surface to allow reclamation/restoration.

- Considering contouring soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas to approximate naturally occurring slopes. Contouring to a rough texture would trap seeds and discourage off-road travel, thereby reducing associated visual impacts. Cut slopes can be randomly scarified and roughened to reduce texture contrasts with existing landscapes and aid in revegetation.

- Utilizing native vegetation to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape.

- Reapplying stockpiled topsoil to disturbed areas, where applicable, or using a mix of native and non-native species if necessary to ensure successful revegetation.

- Removing or burying gravel and other surface treatments.

- Restoring rocks, brush, and forest to approximate pre-existing visual conditions.

- Integrating feathering edges of vegetation to reduce form and line contrasts with the existing landscapes.

A.4.1.14 Design Features for Noise

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on the acoustic environment from solar energy development that were identified and discussed in Sections 5.13.1 and 5.13.2 of the Draft and Final Solar PEIS.

A.4.1.14.1 General

N1-1 Project developers shall consult with the BLM in the early phases of project planning to assess and minimize the proposed project's noise impacts on sensitive noise receptors.

(a) Assessing noise impacts shall include, but is not limited to, the following:

- Taking measurements to assess the existing background ambient sound levels both within and outside the project site and comparing these with the anticipated noise levels proposed at the facility. The ambient measurement protocols of all affected land management agencies shall be considered and utilized. Nearby residences and likely sensitive human and wildlife receptor locations shall be identified.

- Conducting assessments for noise impacts by qualified individuals using appropriate and commonly accepted software, procedures, and past project examples.

- Evaluating impacts from noise as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.

A.4.1.14.2 Site Characterization, Siting and Design, Construction

N2-1 The siting and design of solar facilities, structures, roads, and other project elements shall seek to minimize impacts on sensitive noise receptors.

(a) Methods to minimize project impacts on sensitive noise receptors may include, but are not limited to, the following:

- Enclosing noisy equipment when located near sensitive receptors.

- Posting warning signs at high-noise areas and implementing a hearing protection program for work areas with noise in excess of 85 dBA.

- Implementing a noise complaint process and hotline, including documentation, investigation, evaluation, and resolution of legitimate project-related noise complaints.

- Maintaining project equipment in accordance with manufacturers' specifications. For example, suitable mufflers and/or air-inlet silencers shall be installed on all internal combustion engines (ICEs) and certain compressor components.

- Limiting low-altitude (under 1,500 ft [457 m]) helicopter flights for installation of transmission lines near noise-sensitive receptors to locations where only helicopter activities can perform the installation.

- Scheduling construction activities to minimize disruption to nearby residents and existing operations surrounding the project areas.

- Planning noisy construction activities near sensitive receptors to take place during the least noise-sensitive times of day (i.e., daytime between 7 a.m. and 7 p.m.), and on weekdays.

- Coordinating individual noisy activities to occur at the same time to reduce the frequency of site boundary noise.

- Implementing noise control measures (e.g., erection of temporary wooden noise barriers) where activities are expected near sensitive receptors.

- Notifying nearby residents in advance of noisy activities, such as blasting or pile driving, before and during the construction period.

- Considering siting immobile construction equipment (e.g., compressors and generators) away from nearby residences and other sensitive receptors.

- Siting permanent sound-generating facilities (e.g., compressors, pumps) away from residences and other sensitive receptors. The use of acoustic screening may be required.

- Incorporating low-noise systems (e.g., for ventilation systems, pumps, generators, compressors, and fans) and selecting equipment without prominent discrete tones.

- Siting louvered side(s) of wet cooling tower(s) away from sensitive receptors. Noise impacts may be further reduced by selecting quieter fans and fans that operate at a lower speed, particularly if they operate at night. Silencers on fan stacks may also be used.

- Including noise reduction measures such as siting noise sources to take advantage of existing topography and distances and constructing engineered sound barriers and/or berms or sound-insulated buildings to reduce potential noise impacts at the locations of nearby sensitive receptors.

- Incorporating environmental inspection and monitoring measures into PODs or other relevant plans to monitor and respond to impacts from noise during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

A.4.1.14.3 Operations and Maintenance

N3-1 Compliance with the terms and conditions for noise shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications as necessary and approved by the BLM.

(a) Methods for maintaining compliance with the noise design elements during operations and maintenance may include, but are not limited to, the following:

- Managing noise levels from cooling systems and dish engine technology so that levels at the nearest residences and sensitive receptor areas near the facility boundary are kept within applicable guidelines.

- Operating vehicles traveling within and around the project area in accordance with posted speed limits to reduce vehicle noise levels.

- Scheduling activities to minimize disruption to nearby residents and existing operations surrounding the project areas.

- Notifying nearby residents in advance of noisy activities, such as blasting or pile driving, before and during the reclamation and decommissioning activities.

- Monitoring and maintaining transformer noise levels. Considering installation of new transformers with reduced flux density, which generate noise levels as much as 10 to 20 dB lower than National Electrical Manufacturers Association (NEMA) standard values, or use of barrier walls, partial enclosures, or full enclosures to shield or contain the noise.

A.4.1.14.4 Reclamation and Decommissioning

N4-1 Reclamation of the construction site shall minimize the project's noise impacts on sensitive noise receptors.

A.4.1.15 Design Features for Paleontological Resources

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on paleontological resources from solar energy development that were identified and discussed in Sections 5.14.1 and 5.14.2 of the Draft and Final Solar PEIS.

A.4.1.15.1 General

P1-1 Project developers shall coordinate with the BLM early in the project planning process to identify and minimize impacts on paleontological resources.

(a) Identifying paleontological resources shall include, but is not limited to, the following:

- Determining in coordination with the BLM whether paleontological resources exist in a project area.

- Determining the potential presence of paleontological resources on the basis of the following: the sedimentary context of the area and its potential to contain paleontological resources (potential fossil yield classification [PFYC] class, if it is available); a records search of published and unpublished literature for past paleontological finds in the area; coordination with paleontological researchers working locally in potentially affected geographic areas and geologic strata; and/or depending on the extent of existing information, the completion of a paleontological survey.

(b) Methods to minimize impacts on paleontological resources may include, but are not limited to, the following:

- Instituting BMPs, such as training/education programs (see WEAP bullet below), to reduce the amount of inadvertent destruction to paleontological sites (see also P2-2 below). Project-specific management practices shall be established in coordination with the BLM, incorporating BLM IM 2009-011.

- Planning for management and mitigation of paleontological resources of the project area for areas of known presence or high potential of presence.

- Identifying measures to prevent potential looting/vandalism or erosion impacts and addressing the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.

- Incorporating key elements to mitigate the impacts on paleontological resources into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key mitigation efforts for paleontological resources of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and shall incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.

- Incorporating environmental inspection and monitoring measures into PODs and other relevant plans to monitor and respond to paleontological resource impacts during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

A.4.1.15.2 Site Characterization, Siting and Design, Construction

P2-1 Project developers shall use a qualified paleontological monitor during excavation and earthmoving activities in areas with high potential for paleontological resources.

P2-2 Project developers shall notify the BLM immediately upon discovery of fossils. Work shall be halted at the fossil site and continued elsewhere until qualified personnel, such as a paleontologist, can visit the site, determine the significance of the find, and, if significant, make site-specific recommendations for collection or other resource protection. The area of the discovery shall be protected to ensure that the fossils are not removed, handled, altered, or damaged until the site is properly evaluated and further action determined.

A.4.1.16 Design Features for Cultural Resources

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on cultural resources from solar energy development that were identified and discussed in Sections 5.15.1 and 5.15.2 of the Draft and Final Solar PEIS.

A.4.1.16.1 General

CR1-1 Project developers shall coordinate with the BLM early in the planning process to identify and minimize cultural resource impacts; the BLM will consult with other Federal, tribal, state, and local agencies as appropriate.

(a) Determining cultural resource impacts shall include, but is not limited to, the following:

- Initiating Section 106 consultations between the BLM, SHPOs, Indian tribes, and other consulting parties early in the project planning process. Thresholds for the involvement of and review by the Advisory Council on Historic Preservation (ACHP) include non-routine interstate and/or interagency projects or programs; undertakings adversely affecting National Historic Landmarks; undertakings that the BLM determines to be highly controversial; and undertakings that will have an adverse effect and with respect to which disputes cannot be resolved through formal agreement between the BLM and SHPO, such as a Memorandum of Agreement (MOA).

- Conducting site-specific Section 106 review for individual projects. The BLM will require the completion of inventory, evaluation, determinations of effect, and treatment in accordance with the Solar PA. This Solar PA is titled "Programmatic Agreement among the United States Department of the Interior, Bureau of Land Management, the Arizona State Historic Preservation Officer, the California State Historic Preservation Officer, the Colorado State Historic Preservation Officer, the New Mexico State Historic Preservation Officer, the Nevada State Historic Preservation Officer, the Utah State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Solar Energy Development on Lands Administered by the Bureau of Land Management."

(b) General methods to minimize cultural resource impacts may include, but are not limited to, the following:

- If historic properties that could be adversely affected are present in the project location, developing an MOA tiered to the Solar PA to address the mitigation steps that will be followed to avoid, minimize, or mitigate adverse effects on historic properties.

- Where the BLM determines that a specific proposed solar energy project has the potential to adversely affect historic properties

but those effects cannot be determined prior to its approval, the BLM may elect to review a proposed solar energy project using an undertaking-specific PA executed pursuant to 36 CFR 800.6, instead of following the procedures outlined in the overarching Solar PA.

- Using training/educational programs for solar company workers to reduce occurrences of disturbances, vandalism, and harm to nearby historic properties. The specifics of these sensitivity training programs shall be established in project-specific consultations between the applicant, BLM, SHPO, and affected Indian tribes, and will be articulated in a WEAP. Such education and awareness plans will incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.

- Securing a performance and reclamation bond for all solar energy generation facilities to ensure compliance with the terms and conditions of the ROW authorization. When establishing bond amounts and conditions, the BLM authorized officer shall require coverage of all expenses tied to cultural resources identification, protection, and mitigation. These may include, but are not limited to, costs for ethnographic studies, inventory, testing, geomorphological studies, data recovery, curation, monitoring, treatment of damaged sites, and generation and submission of reports (see ROW authorization policies, Section 2.2.1.1 of the Final Solar PEIS).

A.4.1.16.2 Site Characterization, Siting and Design, Construction

CR2-1 Solar facilities shall be characterized, sited and designed, and constructed in coordination with the BLM to minimize cultural resource impacts.

(a) Methods to minimize impacts on cultural resources shall include, but are not limited to, the following:

- The BLM determining the APE for each proposed solar energy project, to include a review of existing information, and efforts to seek information from and views of tribes and other parties likely to have knowledge of or concerns with historic properties in the APE. This information will be supplemented by discussions at pre-application meetings with the solar energy project applicant, SHPO, and affected tribes regarding project designs, sacred sites, traditional cultural properties (TCPs), and proposed cultural resource inventory strategies.

- The BLM consulting the SHPO, affected tribes (regarding the treatment of adverse effects for those property types on which the tribes indicate at pre-application or other meetings they wish to provide input), and any other consulting parties, if *National Register of Historic Places* (NRHP)-eligible properties are present at the site and would be adversely affected. The BLM will seek agreement to avoid, minimize, or mitigate adverse effects on historic properties. The BLM will execute an MOA with the SHPO to conclude the Section 106 process and will file a copy with the ACHP. Where the BLM and the SHPO are unable to execute an MOA, the BLM will invite the ACHP to participate in an undertaking-specific MOA. The MOA will specify the treatment for which the BLM will be responsible, and which will be implemented by the solar applicant.

- Undertaking a Class III inventory of the APE. If the BLM decides to require less than a Class III inventory for the entire APE, the BLM will seek additional views of the SHPO, affected tribes, and other parties and determine the final inventory strategy that best represents a reasonable and good-faith effort to carry out appropriate identification efforts.

- Conducting inventories according to the standards set forth in the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716); BLM Handbook H-8110 (*Handbook for Identifying Cultural Resources*); revised BLM Manual 8110; and applicable BLM or SHPO survey, site record, or reporting standards. All inventory data must be provided to the BLM in digitized or paper format that meets BLM accuracy standards, including shape files for surveyed areas.

- Bringing any unexpected discovery of cultural resources during any phase of development (construction, operations and maintenance, or decommissioning) to the attention of the responsible BLM authorized officer immediately, as specified in the PA. Work shall be halted in the vicinity of the find. The area of the find shall be protected to ensure that the resources are not removed, handled, altered, or damaged while they are being evaluated and to ensure that appropriate mitigative or protective measures can be developed and implemented.

(b) Methods to minimize cultural resource impacts may include, but are not limited to, the following:

- Including in the MOAs measures for management of historic properties, in situations where historic properties require management or monitoring for avoidance and protection within or near a project's boundaries. Such measures will specify the preparation and implementation of steps to lessen the adverse effects of the undertaking upon those aspects of NRHP eligibility criteria that make the historic properties eligible for nomination to the NRHP.

- Requiring that surface disturbance be restricted or prohibited within the viewshed of such property types when their eligibility is tied to their visual setting to protect NRHP-eligible traditional cultural properties, sacred sites, or historic trails from visual intrusion and to maintain the integrity of their historic setting unless acceptable mitigation is proposed.

- Employing cultural field monitors (appropriate for the resource anticipated) to monitor ground-disturbing activities (for example in geomorphic settings, such as in shifting sands, where buried deposits may be present) in cases where there is a probability of encountering cultural resources during construction that could not be detected during prior Class III inventories. Monitoring plans shall be specified within MOAs.

- Encouraging the use of previously disturbed lands and lands determined by archeological inventories to be devoid of historic properties.

A.4.1.16.3 Reclamation and Decommissioning

CR3-1 Prior to reclamation activities, the BLM may require further planning for treatment of historic properties or planning for mitigation addressing reclamation activities.

CR3-2 The BLM shall be notified prior to the demolition or substantial alteration of any building or structure. If judged necessary by the BLM, the developer will be required to evaluate the structures for their significance employing professionally qualified architects or historic architects. If structures slated for demolition are found to be eligible for listing on the NRHP, they will be recorded to Historic American Building Survey and/or Historic American Engineering Record standards before alteration or removal.

CR3-3 Project developers shall confine soil-disturbing reclamation and decommissioning activities to previously disturbed areas. Known historic properties will be avoided during these activities.

A.4.1.17 Design Features for Native American Concerns

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts in areas of Native American concern regarding solar energy development; they are identified and discussed in Sections 5.16.1 and 5.16.2 of the Draft and Final Solar PEIS.

A.4.1.17.1 General

NA1-1 The BLM shall consult with federally recognized Indian tribes early in the planning process to identify issues and areas of concern regarding any proposed solar energy project as required by the National Historic Preservation Act (NHPA) and other authorities to determine whether construction and operation of a project is likely to disturb traditional cultural properties or sacred sites, impede access to culturally important locations, disrupt traditional cultural practices, affect movements of animals important to tribes, or visually affect culturally important landscapes.

(a) Identifying issues and areas of concern to federally recognized Indian tribes shall include, but is not limited to, the following:

- Covering planning, construction, operation, and reclamation activities during consultation. Agreements or understandings reached with affected tribes shall be carried out in accordance with the terms of MOAs or State Specific Procedures as defined within the Solar PA.

- The BLM consulting with affected Indian tribes during the Section 106 process at the points specified in the Solar PA.

- The BLM consulting with Indian tribes under the terms of the Native American Graves Protection and Repatriation Act (NAGRA). Any planning for treatment of historic properties or mitigation will take such consultations into account.

- The BLM seeking, during consultation, to develop agreements with affected tribes on how to appropriately respond to input and concerns in advance to save time and avoid confusion.

(b) Methods to minimize issues and areas of concern to federally recognized Indian tribes may include, but are not limited to, the following:

- Employing standard noise design features for solar facilities located near sacred sites to minimize the impacts of noise on culturally significant areas.

- Employing health and safety design features for the general public for solar facilities located near Native American traditional use areas in order to minimize potential health and safety impacts on Native Americans.

- Avoiding known human burial sites. Where there is a reasonable probability of encountering undetected human remains and associated funerary objects by a solar energy project, the BLM will carry out discussions with Indian tribes before the project is authorized, in order to provide general guidance on the treatment of any cultural items (as defined by NAGPRA) that might be exposed.

- Avoiding visual intrusion on sacred sites through the selection of the solar facility location and solar technology. When complete avoidance is not practicable or economically feasible, the BLM shall engage in timely and meaningful consultation with the affected tribe(s) and shall attempt to formulate a mutually acceptable plan to mitigate or reduce the adverse effects.

- Avoiding rock art (panels of petroglyphs and/or pictographs). These panels may be just one component of a larger sacred landscape, in which avoidance of all impacts may not be possible. Mitigation plans for eliminating or reducing potential impacts on rock art shall be formulated in consultation with the appropriate tribal cultural authorities.

- Avoiding springs and other water sources that are or may be sacred or culturally important. If it is necessary for construction, maintenance, or operational activities to take place in proximity to springs or other water sources, appropriate measures, such as the use of geotextiles or silt fencing, shall be taken to prevent silt from degrading water sources. The effectiveness of these mitigating barriers shall be monitored. Measures for preventing water depletion impacts on springs shall also be employed. Particular mitigations shall be determined in consultation with the appropriate Indian tribe(s).

- Avoiding culturally important plant species. When it is not possible to avoid affecting these plant resources, consultations shall be undertaken with the affected Indian tribe(s). If the species is available elsewhere on agency-managed lands, guaranteed access may suffice. For rare or less-common species, establishing (transplanting) or propagating an equal amount of the plant resource elsewhere on agency-managed land accessible to the affected tribe may be acceptable (e.g., for mesquite groves

and rice grass fields, identified as tribally important plant species in the ethnographic studies).

- Avoiding culturally important wildlife species and their habitats. When it is not possible to avoid these habitats, solar facilities shall be designed to minimize impacts on game trails, migration routes, and nesting and breeding areas of tribally important species. Mitigation and monitoring procedures shall be developed in consultation with the affected tribe(s).

- Securing a performance and reclamation bond for all solar energy generation facilities to ensure compliance with the terms and conditions of the ROW authorization. When establishing bond amounts and conditions, the BLM authorized officer shall require coverage of all expenses tied to identification, protection, and mitigation of cultural resources of concern to Indian tribes. These may include, but are not limited to, costs for ethnographic studies, inventory, testing, geomorphological studies, data recovery, curation, monitoring, treatment of damaged sites, and generation and submission of reports (see ROW authorization policies, Section 2.2.1.1 of the Final Solar PEIS).

A.4.1.17.2 Site Characterization, Siting and Design, Construction

NA2-1 Prior to construction, the project developer shall provide training to contractor personnel whose activities or responsibilities could affect issues and areas of concern to federally recognized Indian tribes.

A.4.1.17.3 Operations and Maintenance

NA3-1 Consultation with affected federally recognized Indian tribes shall be ongoing during the life of the project.

NA3-2 The project developer shall train facility personnel regarding their responsibilities to protect any known resources of importance to federally recognized Indian tribes.

A.4.1.17.4 Reclamation and Decommissioning

NA4-1 The project developer shall confine reclamation and decommissioning activities to previously disturbed areas and existing access roads to the extent practicable.

NA4-2 The project developer shall return the site to its pre-construction condition, to the extent practicable and approved by the BLM.

A.4.1.18 Design Features for Socioeconomic Impacts

The following design features have been identified to avoid, minimize, and/or mitigate potential socioeconomic impacts from solar energy development identified and discussed in Sections 5.17.1 and 5.17.2 of the Draft and Final Solar PEIS.

A.4.1.18.1 General

S1-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize potential socioeconomic impacts.

(a) Identifying socioeconomic impacts shall include, but is not limited to, the following:

- Assessing the potential for socioeconomic impacts associated with the proposed project in coordination with the BLM and other qualified experts. Project developers shall collect and evaluate available information describing the socioeconomic conditions in the vicinity of the proposed project, as needed, to predict potential impacts of the project.

- Evaluating socioeconomic impacts as part of the environmental impact analysis for the project and considering options to minimize and/or mitigate impacts in coordination with the BLM.

(b) Methods to minimize socioeconomic impacts may include, but are not limited to, the following:

- Developing a community monitoring program that would be sufficient to identify and evaluate socioeconomic impacts resulting from solar energy development. Measures developed for monitoring may include the collection of data reflecting the economic, fiscal, and social impacts of development at the state, local, and tribal level.

- Developing community outreach programs that would help communities adjust to changes triggered by solar energy development.

- Establishing vocational training programs for the local workforce to promote development of skills required by the solar energy industry.

- Developing instructional materials for use in area schools to educate the local communities on the solar energy industry.

- Supporting community health screenings.

- Providing financial support to local libraries for the development of information repositories on solar energy, including materials on the hazards and benefits of commercial development. Electronic repositories established by the project developer could also be of great value.

A.4.1.19 Design Features for Environmental Justice Impacts

The following design features have been identified to avoid, minimize, and/or mitigate potential environmental justice impacts from solar energy development identified and discussed in Sections 5.18.1 and 5.18.2 of the Draft and Final Solar PEIS.

A.4.1.19.1 General

EJ1-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize the potential for environmental justice impacts.

(a) Identifying environmental justice impacts shall include, but is not limited to, the following:

- Assessing the potential for environmental justice impacts associated with the proposed project in coordination with the BLM and other qualified experts. Project developers shall collect and evaluate available information describing the socioeconomic conditions in the vicinity of the proposed project, as needed, to predict potential environmental justice impacts of the project (i.e., environmental, economic, cultural, and health impacts on low-income and minority populations). This will include the identification of all environmental justice communities in proximity to a proposed project.

- Evaluating environmental justice impacts as part of the environmental impact analysis for the project and consider options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.

(b) Methods to minimize environmental justice impacts may include, but are not limited to, the following:

- Developing and implementing focused public information campaigns to provide technical and environmental health information directly to low-income and minority groups or to local agencies and representative groups. Including key

information such as any likely impact on air quality, drinking water supplies, subsistence resources, public services, and the relevant preventative/minimization measures that may be taken.

- Providing community health screenings for low-income and minority groups.

- Providing financial support to local libraries in low-income and minority communities for the development of information repositories on solar energy, including materials on the hazards and benefits of commercial development.

- Establishing vocational training programs for the local low-income and minority workforce to promote development of skills for the solar energy industry.

- Developing instructional materials for use in area schools to educate the local communities on the solar energy industry.

- Providing key information to local governments and directly to low-income and minority populations on the scale and timeline of expected solar energy projects and on the experience of other low-income and minority communities that have followed the same energy development path.

- Considering making available information about planning activities that may be initiated to provide local infrastructure, public services, education, and housing.

A.4.1.20 Design Features for Transportation Impacts

The following design features have been identified to avoid, minimize, and/or mitigate potential transportation impacts from solar energy development identified and discussed in Sections 5.19.1 and 5.19.2 of the Draft and Final Solar PEIS.

A.4.1.20.1 Site Characterization, Siting and Design, Construction

T2-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize impacts on transportation.

(a) Identifying impacts on transportation shall include, but is not limited to, the following:

- Assessing the potential for transportation impacts associated with the proposed project in coordination with the BLM and other

appropriate state and local agencies. Consulting land use plans, transportation plans, and local plans as necessary. The developer may be required to perform traffic studies, analyses, or other studies of the capacity of existing and proposed new roads to physically handle the added wear and tear from increased construction commuter and truck traffic.

- Evaluating transportation impacts as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.

(b) Methods to minimize impacts on transportation may include, but are not limited to, the following:

- Incorporating site access into the local and regional road network. Incorporation must be done under the supervision of the pertinent local, county, state, and Federal agencies.

- Considering public roadway corridors through a site to maintain proper traffic flows and retain more direct routing for the local population.

- Considering implementing local road improvements, providing multiple site access locations and routes, staggering work schedules, and implementing a ride-sharing or shuttle program to minimize daily commutes of construction workers.

- Implementing traffic control measures to reduce hazards for incoming and outgoing traffic and streamline traffic flow, such as intersection realignment and speed limit reductions; installing traffic lights and/or other signage; and adding acceleration, deceleration, and turn lanes on routes with site entrances.

- Incorporating environmental inspection and monitoring measures into the POD and other relevant plans to monitor and respond to transportation impacts during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.

A.4.1.21 Design Features for Hazardous Materials and Waste

The following design features have been identified to avoid, minimize, and/or mitigate potential hazardous materials and waste impacts from solar energy development identified and discussed in Sections 5.20.1 and 5.20.2 of the Draft and Final Solar PEIS.

A.4.1.21.1 General

HMW1-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process to assess hazardous material and waste concerns and to minimize potential impacts.

(a) Assessing hazardous material and waste concerns shall include, but is not limited to, the following:

- Identifying expected waste generation streams at the solar energy site and hazardous waste storage locations for consideration in the environmental analysis evaluating the proposed project.

- Conducting site characterization, construction, operation, and decommissioning activities in compliance with applicable Federal and state laws and regulations, including the Toxic Substances Control Act of 1976, as amended (15 USC 2601, et seq.). An example of complying with applicable law is reporting any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, Section 102b.

- Evaluating impacts related to potential hazardous material and waste as part of the environmental impact analysis for the project and considering options to minimize and/or mitigate impacts in coordination with the BLM.

(b) Methods to minimize hazardous material and waste related impacts shall include, but are not limited to, the following:

- Developing a Hazardous Materials and Waste Management Plan that addresses the selection, transport, storage, and use of all hazardous materials needed for construction, operations, and decommissioning of the facility for local emergency response and public safety authorities and for the designated BLM land manager. Furthermore, the plan shall address the characterization, on-site storage, recycling, and disposal of all resulting wastes.[4] At minimum, the plan will discuss facility identification; comprehensive hazardous materials inventory; Material Safety Data Sheets (MSDSs) for each type of hazardous

[4] It is not anticipated that any solar energy facility would have hazardous chemicals present on-site in such quantities as to require development of a Risk Management Plan as specified in 40 CFR Part 68.

material; emergency contacts and mutual aid agreements, if any; site map showing all hazardous materials and waste storage and use locations; copies of spill and emergency response plans, and hazardous materials–related elements of a Decommissioning and Site Reclamation Plan.

- Planning for waste management will address all solid and liquid wastes that may be generated at the site in compliance with the CWA requirements to obtain the project's NPDES or similar permit.

- Considering fire management in developing hazardous materials and waste management measures.

- Identifying and implementing prevention measures, including material substitution of less hazardous alternatives, recycling, and waste minimization.

- Establishing procedures for fuel storage and dispensing that consider health and safety of personnel and methods for safe use (i.e., fire safety, authorized equipment use).

- Ensuring vehicles and equipment are in proper working condition to reduce potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.

- Considering establishing schedules regular removal of wastes (including sanitary wastewater generated in temporary, portable sanitary facilities) for delivery and removal by licensed haulers to appropriate off-site treatment or disposal facilities.

A.4.1.21.2 Site Characterization, Siting and Design, Construction

HMW2-1 Solar facilities shall be characterized, sited and designed, and constructed to minimize hazardous materials and waste management design elements.

(a) Methods to minimize hazardous material and waste management impacts may include, but are not limited to, the following:

- Indemnifying the United States against any liability arising from the release of any hazardous substance or hazardous waste on the facility or associated with facility activities.

- Providing a copy of any report required or requested by any Federal agency or state government as a result of a reportable

release or spill of any toxic substances shall be furnished to the BLM authorized officer concurrent with the filing of the reports to the involved Federal agency or state government.

- Designing and operating systems containing hazardous materials in a manner that limits the potential for their release.
- Establishing measures for construction with compatible materials in safe conditions.
- Establishing dedicated areas with secondary containment for offloading hazardous materials transport vehicles.
- Implementing "just-in-time" ordering procedures designed to limit the amounts of hazardous materials present on the site to quantities minimally necessary to support continued operations. Excess hazardous materials shall receive prompt disposition.
- Surveying project sites for unexploded ordnance, especially if projects are within 20 mi (32 km) of a current DoD installation or formerly utilized defense site.
- Siting refueling areas away from surface water locations and drainages and on paved surfaces; features shall be added to direct any spilled materials to sumps or safe storage areas where they can be subsequently recovered.
- Designating hazardous materials and waste storage areas and facilities. Limiting access to designated areas to authorized personnel only.

A.4.1.21.3 Operations and Maintenance

HMW3-1 Compliance with the terms and conditions for hazardous materials and waste management shall be monitored by the project developer. Consultation with the BLM shall be maintained through the operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

(a) Methods for maintaining compliance with the terms and conditions for hazardous materials and waste management during operations and maintenance of the project may include, but are not limited to, the following:

- Installing sensors or other devices to monitor system integrity.

- Implementing robust site inspection and repair procedures.

A.4.1.21.4 Reclamation and Decommissioning

HMW4-1 Project developers shall maintain emergency response capabilities throughout the reclamation and decommissioning period as long as hazardous materials and wastes remain on-site.

HMW4-2 All design features developed for the construction phase shall be applied to similar activities during the reclamation and decommissioning phases.

A.4.1.22 Design Features To Ensure Health and Safety

The following design features have been identified to avoid, minimize, and/or mitigate potential health and safety impacts from solar energy development identified and discussed in Sections 5.21.1 and 5.22.2 of the Draft and Final Solar PEIS.

A.4.1.22.1 General

HS1-1 Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process to identify project health and safety risks and methods to minimize those risks.

(a) Assessing project health and safety risks shall include, but is not limited to, the following:

- Identifying and establishing Federal and state occupational health and safety standards, such as the Occupational Health and Safety Administration's (OSHA's) Occupational Health and Safety Standards, 29 CFR Parts 1910 and 1926, respectively, for all phases of the project.

- Identifying safety zones or setbacks for solar facilities and associated transmission lines from residences and occupied buildings, roads, ROWs, and other public access areas that are sufficient to prevent accidents resulting from various hazards during all phases of development.

(b) Methods to minimize project health and safety risks may include, but are not limited to, the following:

- Identifying and accounting for general project injury prevention within the POD and the Health and Safety Plan, such as established PPE requirements, respiratory protection, hearing conservation measures, electrical safety considerations, hazardous materials safety and communication, housekeeping

and waste handling, confined space identification, and rescue response and emergency medical support, including on-site first-aid capability.

- Implementing training and awareness measures for workers and the general public to minimize and address standard practices (such as OSHA's) for the safe use of explosives and blasting agents; occupational electric and magnetic field (EMF) exposures; fire safety and evacuation procedures; and safety performance standards (e.g., electrical system standards and lighting protection standards). Consider further training for additional health and safety risks from the solar energy project and its ancillary facilities.

- Establishing measures to document training activities and reporting of serious accidents to appropriate agencies.

- Assessing cancer and noncancer risks to workers and the general public from exposure to facility emission sources that exceed threshold levels.

- Considering implementation of measures to reduce site emissions and the cancer and noncancer from exposure to facility emissions.

- Implementing a reporting structure for accidental release of hazardous substances to the environment where project developers shall document the event, including a root cause analysis, a description of appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the permitting agencies and other Federal and state agencies within 30 days.

- Considering manufacturer requirements, and Federal and state standards, when establishing safety zones or setbacks for solar facilities and associated transmission lines.

- Project developers coordinating with the BLM and appropriate agencies (e.g., the DOE and Transportation Security Administration [TSA]) to address critical infrastructure and key resource vulnerabilities at solar facilities in order to minimize and plan for potential risks from natural events, sabotage, and terrorism.

A.4.1.22.2 Site Characterization, Siting and Design, Construction

HS1-1 Solar facilities shall be characterized, sited and designed, and constructed to minimize risk to health and safety.

(a) Methods to minimize risk to health and safety may include, but are not limited to, the following:

- Designing electrical systems to meet all applicable safety standards (e.g., National Electrical Code [NEC]) and to comply with the interconnection requirements of the transmission system operator.

- Complying with applicable FAA regulations, including lighting requirements, to avoid or minimize potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.

- Considering temporary fencing and other measures for staging areas, storage yards, and excavations during construction or decommissioning activities to limit public access to health and safety risks.

- Planning for traffic management of site access to ensure that traffic flow would not be unnecessarily affected and that specific issues of concern (e.g., the locations of school bus routes and stops) are identified and addressed. Planning may include measures such as informational signs and temporary lane configurations. Planning shall be coordinated with local planning authorities.

- Considering use of alternative dielectric fluids that do not contain sulfur hexafluoride (SF_6) to reduce the global warming potential.

- Considering measures to reduce occupational EMF exposures, such as backing electrical generators with iron to block the EMF, shutting down generators when work is being done near them, and otherwise limiting exposure time and proximity while generators are running.

A.4.1.22.3 Operations and Maintenance

HS3-1 Compliance with the terms and conditions for health and safety shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project,

employing an adaptive management strategy and modifications, as necessary and approved by the BLM.

A.4.1.23 Design Features for National Scenic and Historic Trails, Suitable Trails, and Study Trails

The following design features have been identified to avoid, minimize, and/or mitigate potential impacts on trails from solar energy development that were identified and discussed in Sections 5.3, 5.12 and 5.15 of the Draft and Final Solar PEIS.

A.4.1.23.1 General

NSHT1-1 Project developers shall consult with the BLM and the trail administering agency early in the project planning to help determine the proposed project's conformance with trail management prescriptions and other potential trail-related constraints.[5]

(a) Assessing conformance to trail management prescriptions and other potential trail related constraints shall include, but is not limited to, the following:

- Considering National Trail management corridors established through the land use planning process as exclusion areas (see Section 2.2.2.1 of the Final Solar PEIS) in order to prevent substantial interference with the nature and purposes of designated National Scenic and Historic Trails, and to make efforts to avoid activities incompatible with trail purposes (NTSA Sec. 7(c)). Where no National Trail management corridor is established in a land use plan, or in adequate protections for suitable trails or trails under study, an accepted National Trail inventory process must be conducted by the applicant, in consultation with the trail administering agency. The inventory process will identify the potential area of adverse impact on the resources, qualities, values, and associated settings, and the primary use or uses of the trails within the viewshed; prevent substantial interference; and determine any areas unsuitable for development. Residual impacts on trails will be avoided, minimized, and/or mitigated to the extent practicable according to program policy standards.

- Determining the size of the area of possible adverse impact through the results of the required inventory, in consultation with the trail administering agency. There is no current established

[5] Further guidance will be included in the forthcoming BLM National Trails System manual series and other NLCS-related policy manuals.

minimum or maximum limit on the size of the area of possible adverse impact. Other design feature requirements and coordination requirements, such as those for Cultural Resources, Recreation and Visitor Services, Visual Resources, or NLCS must also be met.

- Review adequacy of information from National Scenic or Historic Trail inventory projects underway during the development of the Solar PEIS by the BLM at the field office level in coordination with the trail administering agency, and application of the data to determine the area of possible adverse impact for any anticipated development. Such inventory projects may reveal unanticipated or undocumented remnants, artifacts, trail tread or trace, the location of high potential historic sites and high-potential route segments, trail features, and/or the associated settings for National Scenic or Historic Trails adjacent to or within SEZ.

- Applying on-site or off-site mitigation for any residual adverse impact according to program policy standards, and mitigation or impact reduction measures identified for related program areas in this document.

A.4.2 SEZ-Specific Design Features

The SEZ-specific design features identified in the Final Solar PEIS are listed in Table A-5.

REFERENCES FOR APPENDIX A

BLM (Bureau of Land Management), 2005, *Land Use Planning Handbook*, H-1601-1, U.S. Department of the Interior, Washington, D.C., March.

BLM and DOE (Bureau of Land Management and U.S. Department of Energy), 2010, *Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*, DES 10-59, DOE/EIS-0403, Dec.

BLM and DOE, 2011, *Supplement to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*, DES 11-49, DOE/EIS-0403D-S, Oct.

USFWS (U.S. Fish and Wildlife Service), 2009, *Desert Tortoise (Mojave Population) Field Manual (*Gopherus agassizii*)*, Region 8, Sacramento, CA.

TABLE A-5 Solar Energy Zone-Specific Design Features

SEZ	SEZ-Specific Design Features[a]
Arizona	
Brenda	*Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. *Acoustic Environment*: Because of the proximity of the proposed Brenda SEZ to nearby residences and the Plomosa SRMA and the relatively high noise levels around the SEZ due to U.S. 60, refined modeling would be warranted along with background noise measurements during project-specific assessments.
Gillespie	*Lands and Realty*: Priority consideration should be given to utilizing the existing Agua Caliente Road to provide construction and operations access to the SEZ. Any potential impacts on the existing country road should be discussed with the county. *Recreation.* Because of the potential for solar energy to sever current access routes departing the county road within the SEZ, legal access to the areas to the south should be maintained consistent with existing land use plans. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. *Wildlife (Mammals)*: The fencing around the solar energy development should not block the free movement of mammals, particularly big game species. *Visual Resources*: Due to potential visual impacts on two Wilderness Areas, visual impact mitigation should be considered for any solar development within the SEZ. (Note: Section 8.3.14.3 of the Final Solar PEIS incorrectly includes an SEZ-specific design feature stating that development of power tower facilities should be prohibited within the SEZ. This error will be corrected through the ROD for the Final Solar PEIS.) *Cultural Resources:* Recordation of historic structures through Historic American Building Survey/Historic American Engineering Record protocols through the National Park Service would be appropriate and could be required if any historic structures or features would be affected; for example, if the Gillespie Dam Highway Bridge were used as part of an off-site access route for a solar energy project.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
California	
Imperial East	*Specially Designated Areas and Lands with Wilderness Characteristics:* Because of the potential increase in human use of the two adjacent ACECs, once solar energy facility construction begins, monitoring of the resources of the ACECs will be used to determine whether additional protection measures are needed to protect existing prehistoric resources. *Military and Civilian Aviation*: If power tower facilities are proposed for the SEZ, coordination across the international border should be required to ensure that there is no airspace management concern associated with the Mexicali Airport. *Minerals*: To protect the potential for geothermal leasing under solar energy facilities, ROW authorizations for solar energy facilities should be made subject to future geothermal leasing with no surface occupancy stipulations. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. *Wildlife (Amphibians and Reptiles)*: The potential for indirect impacts on several amphibian species could be reduced by maximizing the distance between solar energy development and the All American Canal. *Wildlife (Amphibians and Birds)*: Wetland habitats along the southern boundary of the SEZ boundary shall be avoided to the extent practicable. The wetlands along the southern boundary of the SEZ have been designated as undevelopable, but other wetland areas may exist within the SEZ. *Wildlife (Mammals):* Solar project development shall not prevent mule deer free access to the unlined section of the All American Canal. *Special Status Species*: Occupied habitats for species that are designated as California fully protected species should be completely avoided. Under California Fish and Game Code Sections 3511, 4700, 5050, and 5515, take or possession of these species is prohibited at any time. Minimization and mitigation measures cannot be developed for California fully protected species. This policy applies to the following California fully protected species that may occur in the affected area of the Imperial East SEZ: California black rail and Yuma clapper rail.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
California (Cont.)	
Imperial East *(Cont.)*	*Acoustic Environment*: Because of the proximity of the proposed Imperial East SEZ to nearby residences and the East Mesa ACEC, and relatively high noise levels around the SEZ due to I-8 and State Route 98, refined modeling, along with background noise measurements, should be conducted in conjunction with project-specific analyses. *Cultural Resources*: Consultation efforts should include discussions on significant archaeological sites and traditional cultural properties and on sacred sites and trails with views of the proposed SEZ. The possibility for discovering human burials in the vicinity of the proposed Imperial East SEZ, and its location along the Yuma-San Diego Trail interconnecting a sacred landscape and its associated sites should be discussed. Tribal participation in the Section 106 process will take place according to the Solar Programmatic Agreement (PA), including opportunities for tribal input regarding inventory design and treatment decisions and procedures for inadvertent discoveries during construction and operations.
Riverside East	*Specially Designated Areas and Lands with Wilderness Characteristics:* Once construction of solar energy facilities begins, the BLM would monitor whether there are increases in human traffic to the seven ACECs in and near the SEZ and determine whether additional design features are required to protect the resources in these areas. *Recreation:* A buffer area should be established between the Midland Long Term Visitor Area (LTVA) and solar development to preserve the setting of the LTVA. The size of the buffer should be determined based on the site and visitor-specific criteria. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled or dry-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet- or dry-cooled projects should utilize water conservation practices. During site characterization, coordination and permitting with CDFG regarding California's Lake and Streambed Alteration Program would be required for any proposed alterations to surface water features. The use of groundwater in the Chuckwalla Valley and Palo Verde Mesa should be planned for and monitored in cooperation with the BOR and the USGS in reference to the Colorado River Accounting Surface and the rules set forth in the Law of the River.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
California (Cont.)	
Riverside East *(Cont.)*	*Wildlife (Mammals)*: The fencing around the solar energy development should not block the free passage of mule deer between the Colorado River and mountains or foothills. *Wildlife and Special Status Species:* Within the SEZ, two north–south wildlife corridors of sufficient width (a minimum width of 1.3 mi ([2 km], but wider if determined to be necessary through future site-specific studies) should be identified by the BLM in coordination with the FWS and the California Department of Game and Fish. These corridors should be identified as non-development areas within the SEZ on the basis of modeling data and subsequent field verification of permeability for wildlife. *Visual Resources:* Special visual impact mitigation shall be considered for solar development on lands in the SEZ within areas west of Township 005S and Range 017E and north of Township 006S and Range 016E, as well as north of Sections 26, 27, 28, and 29 of Township 005S and Range 017E. *Cultural Resources*: Consultation efforts should include discussions on significant archaeological sites and traditional cultural properties and on sacred sites and trails with views of the proposed SEZ, such as the Salt Song, Cocomaricopa, and *Xam Kwatchan* Trails, which connect spiritual landscapes and sacred sites in the area. The possibility of discovering human burials in the vicinity of the proposed Riverside East SEZ should also be discussed. Significant resources clustered in specific areas, such as those surrounding Ford Dry Lake or within the DTC/C-AMA area, which retain sufficient integrity, should be avoided unless impacts can be sufficiently minimized or mitigated. Monitoring is recommended in sand sheet and colluvium environments similar to those in which buried sites were recently discovered during construction of the Genesis Solar development. Because the proposed Riverside East SEZ is located adjacent to or near six ACECs, it is possible that the ACECs could be subject to an increase in human and vehicle traffic. Potential construction vehicle corridors should be discussed prior to development of the proposed SEZ in order avoid possible impacts on historic resources within these ACECs and to determine alternative roads or paths to the development area.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado	
Antonito Southeast	*Lands and Realty*: Management of the 1,240-acre (5.0-km^2) area of public land west of the proposed SEZ boundary should be addressed as part of the site-specific analysis of any future solar development within the SEZ. *Specially Designated Areas and Lands with Wilderness Characteristics:* The SEZ-specific design features for visual resources for this SEZ should be adopted, as they would provide some protection for visual related impacts on the Old Spanish Trail, the CTSR, and the San Antonio WSA. Early consultation should be initiated with the entity responsible for developing the management plan for the Sangre de Cristo NHA to understand how development of the SEZ could be consistent with NHA plans/goals. *Recreation:* As projects are proposed for the SEZ, the potential impacts on tourism should be considered and reviewed with local community leaders. *Water Resources*: Groundwater analyses suggest full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects would have to reduce water requirements to less than approximately 1,000 ac-ft/yr (1.2 million m^3/yr) in order to secure water rights and comply with water management in the San Luis Valley. *Wildlife (Birds)*: If present, prairie dog colonies (which could provide habitat or a food source for some raptor species) should be avoided to the extent practicable. *Wildlife (Mammals)*: Construction should be curtailed during winter when big game species are present, particularly within elk severe winter range. Disturbance near the elk and mule deer resident population areas should be avoided.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado (Cont.)	
Antonito Southeast *(Cont.)*	Where big game winter ranges intersect or are within close proximity to the SEZ, use of motorized vehicles and other human disturbances should be controlled (e.g., through road closures). Development in the 253-acre (1-km^2) portion of the SEZ that overlaps the pronghorn summer concentration area should be avoided. *Visual Resources*: The development of power tower facilities should be prohibited within the SEZ. Special visual impact mitigation shall be considered for solar development on lands in the SEZ visible from and within 3 mi (5 km) of the centerline of the West Fork of the North Branch of the Old Spanish Trail. Special visual impact mitigation shall be considered for solar development on lands in the SEZ visible from and within 3 mi (5 km) of the CTSR ACEC and San Antonio WSA. *Paleontological Resources*: Avoidance of PFYC Class 4 or 5 areas is recommended for development within the proposed Antonito Southeast SEZ (i.e., the 4-acre [0.016-km^2] parcel in the north part of the SEZ). Where avoidance of Class 4 or 5 deposits is not possible, a paleontological survey or monitoring would be required by the BLM. *Cultural Resources*: Development of a Memorandum of Agreement (MOA) may be needed among the BLM, Colorado SHPO, and other parties, such as the Advisory Council on Historic Preservation (ACHP) to address the adverse effects of solar energy development on historic properties. The agreement may specify avoidance, minimization, or mitigation measures. Should a MOA be developed to solve adverse effects on the Old Spanish Trail or the West Fork of the North Branch of the Old Spanish Trail, the Trail Administration for the Old Spanish Trail (BLM-NMSO and National Park Service [NPS] Intermountain Trails Office, Santa Fe) should be included in the development of that MOA. Additional coordination with the CTSR Commission is recommended to address possible mitigation measures for reducing visual impacts on the railroad.
De Tilla Gulch	*Recreation:* As projects are proposed for the SEZ, the potential impacts on tourism should be considered and reviewed with local community leaders.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado (Cont.)	
De Tilla Gulch *(Cont.)*	*Water Resources*: Application of the design features regarding intermittent/ephemeral water bodies and storm water management should emphasize the need to maintain groundwater recharge for disturbed surface water features within the De Tilla Gulch SEZ. *Wildlife (Birds)*: Prairie dog colonies (which could provide habitat or food resources for some bird species) should be avoided to the extent practicable. *Wildlife (Mammals)*: The extent of habitat disturbance should be minimized within elk severe winter range and pronghorn winter concentration area. Construction should be curtailed during winter when big game species are present. Where big game winter ranges intersect or are within close proximity to the SEZ, motorized vehicles and other human disturbances should be controlled (e.g., through road closures). *Visual Resources*: The development of power tower facilities should be prohibited within the SEZ. *Cultural Resources*: Development of a Memorandum of Agreement (MOA) may be needed among the BLM, Colorado SHPO, and other parties, such as the Advisory Council on Historic Preservation (ACHP) to address the adverse effects of solar energy development on historic properties. The agreement may specify avoidance, minimization, or mitigation measures. Should a MOA be developed to resolve adverse effects on the Old Spanish Trail or the West Fork of the North Branch of the Old Spanish Trail, the Trail Administration for the Old Spanish Trail (BLM-NMSO and National Park Service [NPS] Intermountain Trails Office, Santa Fe) should be included in the development of that MOA
Fourmile East	*Specially Designated Areas and Lands with Wilderness Characteristics:* As part of project-specific analysis, early consultation should be initiated with the entity responsible for developing the management plan for the Sangre de Cristo NHA to understand how development could be consistent with goals of the NHA.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado (Cont.)	
	Recreation: As projects are proposed for the SEZ, the potential impacts on tourism should be considered and reviewed with local community leaders. *Soil Resources:* The need for a study of the eolian processes that maintain the sand dune fields in Great Sand Dunes National Park should be determined. The study would support the assessment of whether building a solar facility close to the park could have impacts on the sand dunes there (by disrupting these processes). *Water Resources*: Groundwater analyses suggest full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects would have to reduce water requirements to less than approximately 1,000 ac-ft/yr (1.2 million m^3/yr) in order to secure water rights and comply with water management in the San Luis Valley. *Wildlife (Birds and Mammals)*: If present, prairie dog colonies (which could provide habitat or a food source for some raptor species) should be avoided to the extent practicable. This would also reduce impacts on species such as the desert cottontail and thirteen-lined ground squirrel. To the extent practicable, construction activities should be avoided while pronghorn are on their winter range within the immediate area of the proposed Fourmile East SEZ. *Visual Resources*: The development of power tower facilities should be prohibited within the SEZ. Special visual impact mitigation shall be considered for solar development on lands in the SEZ visible from and within 5 mi (8 km) of the Sangre de Cristo WA and of the centerline of the high-potential segment of the Old Spanish National Historic Trail.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado (Cont.)	
Fourmile East *(Cont.)*	*Paleontological Resources*: The depth to the Alamosa Formation within the proposed Fourmile East SEZ should be determined to identify any design features that might be needed in that area if solar energy development occurs. *Cultural*: Development of an MOA may be needed among the BLM, Colorado SHPO, and other parties, such as the ACHP, to address the adverse effects of solar energy development on historic properties. The agreement may specify avoidance, minimization, or mitigation measures. Should an MOA be developed to resolve adverse effects on the Old Spanish National Historic Trail, the Trail Administration for the Old Spanish Trail (BLM-NMSO and National Park Service [NPS] Intermountain Trails Office, Santa Fe) should be included in the development of that MOA. The possibility of encountering Native American human remains in the vicinity of the proposed Fourmile East SEZ should be discussed during consultation.
Los Mogotes East	*Specially Designated Areas*: Early consultation should be initiated with the entity responsible for developing the management plan for the Sangre de Cristo NHA to understand how development of the SEZ could be consistent with NHA plans and goals. *Recreation:* As projects are proposed for the SEZ, the potential impacts on tourism should be considered and reviewed with local community leaders. *Water Resources*: Groundwater analyses suggest full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects would have to reduce water requirements to less than approximately 1,000 ac-ft/yr (1.2 million m^3/yr) in order to secure water rights and comply with water management in the San Luis Valley.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Colorado (Cont.)	
Los Mogotes East *(Cont.)*	*Wildlife (Amphibians, Reptiles, Birds)*: The access road should be sited and constructed to minimize impacts on wetlands and riparian areas (if present within the finalized access road location). *Wildlife (Birds and Mammals)*: Prairie dog colonies should be avoided to the extent practicable to reduce impacts on species such as raptors, desert cottontail and thirteen-lined ground squirrel. *Wildlife (Mammals)*: Construction should be curtailed during winter when big game species are present. Where big game winter ranges intersect or are close to the SEZ, motorized vehicles and other human disturbances should be controlled (e.g., through temporary road closures when big game are present). *Visual Resources*: The development of power tower facilities should be prohibited within the SEZ. *Paleontological Resources:* Avoidance of PFYC Class 4/5 areas is recommended for development within the proposed Los Mogotes East SEZ and for access road placement. Where avoidance of Class 4/5 deposits is not possible, a paleontological survey would be required. *Cultural Resources*: Development of a Memorandum of Agreement (MOA) may be needed among the BLM, Colorado SHPO, and other parties, such as the Advisory Council on Historic Preservation (ACHP) to address the adverse effects of solar energy development on historic properties. The agreement may specify avoidance, minimization, or mitigation measures. Should a MOA be developed to resolve adverse effects on the Old Spanish Trail or the West Fork of the North Branch of the Old Spanish Trail, the Trail Administration for the Old Spanish Trail (BLM-NMSO and National Park Service [NPS] Intermountain Trails Office, Santa Fe) should be included in the development of that MOA. Additional coordination with the CTSR Commission is recommended to address possible mitigation measures for reducing visual impacts on the CTSR.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Nevada	
Amargosa Valley	*Specially Designated Areas and Lands with Wilderness Characteristics:* Water use for any solar energy development should be reviewed to ensure that impacts on Death Valley NP, the Ash Meadows National Wildlife Refuge, and ACECs would be neutral or positive. *Recreation:* Relocation of the designated route used for desert racing and commercial tours should be considered at the time specific solar development proposals are analyzed. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet- and dry-cooled projects should utilize water conservation practices.
Dry Lake	*Water Resources*: Groundwater analyses suggest that full build-out of dry-cooled and wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed dry- or wet-cooled projects should utilize water conservation practices. *Wildlife (Mammals)*: The fencing around the solar energy development should not block the free movement of mammals, particularly big game species. *Cultural Resources*: Coordination with the Trail Administration for the Old Spanish Trail and Old Spanish Trail Association is recommended for identifying potential mitigation strategies for avoiding or minimizing potential impacts on the congressionally designated Old Spanish National Historic Trail and also on any remnants of the NRHP-listed sites associated with the Old Spanish Trail/Mormon Road that may be located within the SEZ. Avoidance of the Old Spanish Trail NRHP-listed site within the southeastern portion of the proposed SEZ is recommended. *Native American Concerns:* The Moapa Band of Paiute Indians have specifically requested formal government-to-government contact when construction or land management projects are being proposed on and/or near the Muddy River, the Virgin River, the Colorado River, the Arrow Canyon Range, Potato Woman, and the Apex Pleistocene Lake. Compensatory programs of mitigation could be implemented to provide access to and/or deliberately cultivate patches of culturally significant plants, like the mesquite groves present within the Dry Lake SEZ, on other public lands nearby where tribes have ready access.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Nevada (Cont.)	
Dry Lake *(Cont.)*	The BLM should consider assisting the Moapa Band of Paiute Indians with the preparation of forms to nominate identified sacred places as Traditional Cultural Properties, if it is found that all the proper eligibility requirements are met.
Dry Lake Valley North	*Lands and Realty*: Priority consideration should be given to utilizing existing County roads to provide construction and operations access to the SEZ. Any potential impacts on existing County roads would be discussed with the County. *Rangeland Resources (Livestock Grazing):* Within the Ely Springs cattle allotment, solar development should be sited to minimize the number of pastures affected, and existing range improvements should be relocated in coordination with the grazing permittee. *Rangeland Resources (Horses and Burros)*: Installation of fencing and access control, provision for movement corridors, delineation of open range, traffic management (e.g., vehicle speeds), compensatory habitat restoration, and access to or development of water sources should be coordinated with the BLM. *Recreation:* Because of the 11-mi (18-km) length of the SEZ and the potential for solar development to sever current east–west travel routes, legal vehicular access through the area should be maintained. *Water Resources*: Groundwater analyses suggest that full build-out of dry-cooled and wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed dry- or wet-cooled projects should utilize water conservation practices. *Wildlife (Mammals)*: The fencing around the solar energy development should not block the free movement of mammals, particularly big game species. *Cultural Resources:* The existing access road that connects the proposed SEZ to U.S. 93 should be upgraded instead of constructing a new access road to reduce ground disturbances and the potential for impacts on cultural resources.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Nevada (Cont.)	
Gold Point	*Water Resources*: Groundwater analyses suggest that full build-out of wet- and dry-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet- and dry-cooled projects should utilize water conservation practices. *Wildlife (Amphibians and Reptiles, Birds, and Mammals)*: Wash and playa habitats should be avoided. The major wash (significant unnamed intermittent stream) in the SEZ has been identified as a non-development area, but other avoidable washes may exist within the SEZ. *Wildlife (Mammals)*: The fencing around the solar energy development should not block the free movement of mammals, particularly big game species. *Acoustic Environment*: Because of the differences in elevation between the proposed Gold Point SEZ and nearby residences to the south, refined modeling will be warranted along with background noise measurements as a part of project-specific analyses.
Millers	*Recreation:* Alternative routes for the Las Vegas–Reno race should be considered consistent with local land use plan requirements. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. *Wildlife (All)*: Wash and playa habitats should be avoided. The Ione Wash and a small wetland area in the SEZ have been identified as non-development areas, but other avoidable wash and playa habitats may exist within the SEZ. *Wildlife (Mammals)*: The fencing around the solar energy development should not block the free movement of mammals, particularly big game species.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Nevada (Cont.)	
Millers *(Cont.)*	*Cultural Resources:* Areas with a high potential for containing significant cultural resources or with a high density of cultural resources should be avoided. However, because of the high likelihood that the area contains prehistoric sites associated with Lake Tonopah and the presence of historic period sites related to the development of the Millers town site, complete avoidance of NRHP-eligible sites may not be possible. In particular, it may not be possible to fully mitigate the loss of such a large number of sites associated with one Pleistocene lake system.
New Mexico	
Afton	*Specially Designated Areas and Lands with Wilderness Characteristics*: The SEZ-specific design features for visual resources should be adopted, as they would provide some protection for visual-related impacts on the Aden Lava Flow WSA. *Water Resources*: Groundwater analyses suggest that full build-out of dry-cooled and wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed dry- or wet-cooled projects should utilize water conservation practices. *Wildlife (Amphibians and Reptiles, Birds, and Mammals)*: Impacts on wash, riparian, playa, rock outcrop, and wetland habitats, which may provide more unique habitats for some species, should be avoided, minimized, or mitigated. *Visual Resources*: Special visual impact mitigation should be considered for solar development on lands in the SEZ visible from and within 5 mi (8 km) of the Aden Lava Flow WSA. *Paleontological Resources*: Avoidance of the eastern edge of the SEZ may be warranted if a paleontological survey results in findings similar to those known south of the SEZ. *Cultural Resources*: Design features for reducing visual impacts on the El Camino Real National Historic Trail, the Butterfield Trail, and Mesilla Plaza National Historic Landmark would also reduce impacts on these cultural resources. Coordination with trails associations and historical societies regarding impacts on El Camino Real de Tierra Adentro, the Butterfield Trail, and Mesilla Plaza, as well as other NRHP-listed properties should be conducted.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Utah	
Escalante Valley	*Lands and Realty*: Priority consideration should be given to utilizing existing county roads to provide construction and operational access to the SEZ. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. During site characterization, coordination and permitting with the Utah DWR regarding Utah's Stream Alteration Program would be required for any proposed alterations to surface water features. *Wildlife (All)*: Ephemeral washes shall be avoided. *Wildlife (Birds):* The steps outlined in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* should be followed. *Cultural Resources*: Avoidance of significant resources clustered in specific areas, such as those in the vicinity of the dunes, is recommended.
Milford Flats South	*Lands and Realty*: Priority consideration shall be given to utilizing existing county roads to provide construction and operational access to the SEZ. *Water Resources*: Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. During site characterization, coordination and permitting with Utah DWR regarding Utah's Stream Alteration Program would be required for any proposed alterations to surface water features. *Wildlife (Birds)*: The steps outlined in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* should be followed.

TABLE A-5 (Cont.)

SEZ	SEZ-Specific Design Features[a]
Utah (Cont.)	
Wah Wah Valley	*Lands and Realty:* Development may need to be restricted in the northern portion of the SEZ near the ranch development on private land to provide a buffer between private land developments and solar energy facility development. *Water Resources:* Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices. During site characterization, coordination and permitting with Utah DWR regarding Utah's Stream Alteration Program would be required for any proposed alterations to surface water features. *Wildlife (Birds)*: The steps outlined in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* should be followed. *Wildlife (Mammals)*: The inter-mountain basins big sagebrush shrubland cover type in the southeastern portion of the SEZ, which is the only identified suitable land cover for the elk and sagebrush vole and about a third of the suitable habitat for the American black bear in the SEZ, should be avoided. *Native American Concerns*: Compensatory programs of mitigation could be implemented to provide access to and/or deliberately cultivate patches of culturally significant plants, like the Indian ricegrass fields present within the Wah Wah Valley SEZ, on other public lands nearby where tribes have ready access.

Footnotes on next page.

TABLE A-5 (Cont.)

Abbreviations: ACEC = Area of Critical Environmental Concern; ACHP = Advisory Council on Historic Places; ADWR = Arizona Department of Water Resources; AUM = animal unit month; AZGFD = Arizona Game and Fish Department; BLM = Bureau of Land Management; BMP = best management practice; CDFG = California Department of Fish and Game; CDOW = Colorado Division of Wildlife; CESA = California Endangered Species Act; CTSR = Cumbres & Toltec Scenic Railroad; DOE = Department of Energy; DWMA = Desert Wildlife Management Area; EPA = U.S. Environmental Protection Agency; ESA = Endangered Species Act; KSLA = known sodium leasing area; LTVA—long-term visitor area; NDOW = Nevada Department of Wildlife; NDWR = Nevada Division of Water Resources; NHA = National Heritage Area; NMDGF = New Mexico Department of Game and Fish; NMOSE = New Mexico Office of the State Engineer; NP = National Park; NRHP = *National Register of Historic Places*; PA = Programmatic Agreement; PEIS = programmatic environmental impact statement; PYFC = potential fossil yield classification; ROW = right-of-way; SEZ = solar energy zone; SHPO = State Historic Preservation Office; SNWA = Southern Nevada Water Authority; SRMA = Special Recreation Management Area; USFWS = U.S. Fish and Wildlife Service; VRM = visual resource management; WA = Wilderness Area; WRM = water resource management; WSA = Wilderness Study Area.

[a] The SEZ-specific design features listed in this table are proposed as an element of BLM's Solar Development Program. With the signing of the ROD for the Final PEIS, the design features will be required for utility-scale solar energy projects within the applicable SEZs.

[b] The scientific names of all plants, wildlife, aquatic biota, and special status species are provided in Chapters 8 through 13.

APPENDIX B—SOLAR ENERGY PROGRAM POLICIES

B.1 INTRODUCTION

The following policies and procedures have been developed in support of the land use allocations decisions being made in this ROD (see Appendix A). Appendix B of the ROD describes updated and revised BLM policies and procedures relating to solar energy development on public lands. These policies and procedures provide internal administrative guidance to the BLM regarding the processing of right-of-way (ROW) applications for utility-scale solar energy projects.

B.1.1 New Applications

The BLM defines "new" applications as any applications filed within proposed SEZs after June 30, 2009, and any applications filed within proposed variance and/or exclusion areas after the publication of the Supplement to the Draft Solar PEIS (October 28, 2011). All new applications will be subject to the program elements adopted by the Solar PEIS ROD.

New solar energy ROW applications for lands inside SEZs will be subject to the decisions adopted by this ROD. The BLM may proceed with pre-application meetings as provided for in the regulations at 43 CFR 2804.10(a), as well as public outreach on new applications in SEZs to assist in developing future competitive lease parcels. The BLM may also consider new applications in SEZs as nominations under the competitive leasing process that the BLM is currently considering through rulemaking. The BLM's Advance Notice of Proposed Rulemaking was published on December 29, 2011 (Volume 76, page 81,906 of the *Federal Register*). New applications in variance areas will be subject to the variance process described in Appendix B, Section B.5, of this ROD.

B.1.2 Pending Applications

The BLM defines "pending" applications as any applications (regardless of place in line) filed within variance and/or exclusion areas before the publication of the Supplement to the Draft Solar PEIS (October 28, 2011), and any applications filed within SEZs before June 30, 2009. Pending applications are not subject to any of the decisions adopted by this ROD. A current list of first-in-line pending applications is maintained by the BLM on the Solar PEIS project Web page at http://solareis.anl.gov. Although the BLM may process qualified second-in-line and subsequent applications through competitive bid procedures, or if the first-in-line application is closed, these additional applications will not be included on the Web page to avoid double counting of acres and megawatts.

The BLM will process pending solar applications consistent with existing land use plan decisions in place prior to amendment by this ROD. When processing these applications, the BLM will consider its current policies and procedures (e.g., IM 2011-060 [BLM 2011a] and IM 2011-061 [BLM 2011b]), including interagency coordination with DOI agencies, or other applicable policies and procedures that the BLM might adopt in the future. These applications will be treated as project-specific undertakings under Section 106 of the NHPA and the BLM's National Programmatic Agreement. Amendments to pending applications would also not be subject to the

decisions adopted by this ROD, provided that such amendments either (1) do not change the boundaries of the pending ROW applications; or (2) are related to avoiding resource or land use conflicts, adapting the project to third-party-owned infrastructure constraints, or using or designating translocation or mitigation lands.

The BLM has determined that, in appropriate circumstances, it can rely on the broad discretion it has under FLPMA to deny ROW applications prior to completing the NEPA process if such applications do not meet due diligence requirements and/or environmental criteria. Such decisions must be made with regard for the public interest and be supported by reasoned analysis and an adequate administrative record. Decisions to deny applications must be assessed on a case-by-case basis. The BLM's denial of an application is generally subject to administrative appeal to the Interior Board of Land Appeals (IBLA).

B.1.3 Approved Projects

This ROD recognizes all approved solar energy projects on BLM-administered lands. The ROD does not affect the status of any of these approved projects.

B.2 GENERAL AUTHORIZATION POLICIES FOR SOLAR ENERGY DEVELOPMENT ROWs

The following authorization policies are applicable to all solar energy ROWs on BLM-administered lands. Note that the BLM is currently undertaking rulemaking to consider establishing a competitive process for offering public lands for solar as well as wind energy development within designated leasing areas (i.e., SEZs). Once the rulemaking has been completed, the rule may supersede some of the authorization policies identified in this ROD.

- ***ROW Authorizations.*** Applications for utility-scale solar energy facilities will be authorized as ROWs under Title V of FLPMA and 43 CFR Part 2800. Applications submitted to the BLM for utility-scale solar energy development will use Form SF-299, Application for Transportation and Utility Systems and Facilities on Federal Land (available at https://www.blm.gov/FormsCentral/show-form.do?nodeId=1011), consistent with the requirements of 43 CFR Part 2804.

  The Secretary of the Interior, with respect to public lands, is authorized to grant, issue, or renew ROWs over, upon, under, or through such lands for systems for generation, transmission, and distribution of electric energy (43 USC 1761(a)(4)). The term "ROW," as defined by FLPMA, includes an easement, lease, permit, or license to occupy, use, or traverse public lands (43 USC 1702(f)). The BLM has prepared a template ROW lease/grant that would be used to authorize utility-scale solar energy development projects (see http://www.blm.gov/wo/st/en/prog/energy/solar_energy.html). Authorizations will include the solar collectors, tower, turbine generator, fossil-fired generator for hybrid systems, thermal storage, access roads, electrical and transmission facilities, and other testing and support facilities.

- ***Competing Applications.*** If the BLM determines that competition exists, the BLM has the regulatory authority to use competitive bid procedures (43 CFR 2804.23). Multiple applications for the same lands can provide an indication of the need to consider a competitive process. The purpose of a competitive process under existing regulations is to determine which application would be processed.

- ***Term of ROW.*** In accordance with Title V of FLPMA and the BLM's ROW regulations, the term or length of a solar energy ROW authorization is limited to a reasonable term (43 USC 1764(b); 43 CFR 2805.11(b)). The BLM will issue all solar energy ROW authorizations for a term not to exceed 30 years; shorter terms may be justified in some cases. Thirty years provides a reasonable period consistent with the expected needs of a solar energy facility; it also provides for operation periods that are consistent with typical Power Purcahse Agreements. The BLM will also include in each solar energy ROW authorization a specific provision allowing for renewal, consistent with the regulations at 43 CFR 2807.22.

- ***Renewal of ROW.*** An application for renewal must be submitted at least 120 days prior to the expiration of the existing authorization. The BLM authorized officer will review the application for renewal to ensure the holder is complying with the terms, conditions, and stipulations of the existing authorization instrument and applicable laws and regulations. If renewed, the ROW authorization shall be subject to the regulations existing at the time of renewal and any other terms and conditions the authorized officer deems necessary to protect the public interest.

- ***Cost-Recovery Payments.*** Applicants must submit a complete an acceptable application and provide a cost-recovery payment before the BLM will initiate processing of a ROW application for utility-scale solar energy development. It is anticipated that most ROW applications for solar energy development will be Category 6, full cost-recovery applications.

- ***Valid Existing Rights.*** All solar energy ROW authorizations will be issued subject to valid existing rights.

- ***Rental Fees.*** In accordance with the requirements of Section 504(g) of FLPMA and the provisions of 43 CFR Part 2806, the BLM will require payment of annual rent for use of the public lands for utility-scale solar energy development on the basis of a rental schedule. FLPMA does not provide existing or current authorities for the collection of royalties. The BLM will calculate rents on all solar energy ROW authorizations consistent with the provisions of 43 CFR Part 2806. Some holders or facilities may be exempt from rent pursuant to the Rural Electrification Act of 1936 (REA), as amended (43 CFR 2806.14(d)). Electric facilities that are financed, or are

eligible for REA financing, qualify for a rent exemption under the provisions of the Act.

The holder of a solar energy ROW authorization must pay an annual rent in conformance with the regulations (43 CFR 2806.10(a)). Consistent with the current regulations at 43 CFR 2806.50, the BLM has developed a schedule to calculate rental fees for solar energy ROW authorizations. This rental schedule includes a base rent for the acreage of public land included within the solar energy ROW authorization and an additional MW capacity fee based on the total authorized MW capacity for the approved solar energy project on the public land administrated by the BLM. The details of BLM's current rental policy can be found in IM 2010-141, issued June 10, 2010 (BLM 2010) (see Section A.1 of Appendix A of the Draft Solar PEIS).

The BLM may adjust the rental whenever necessary, to reflect changes in fair market value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices. The rental provisions of the authorization may also be modified consistent with the provisions of any regulatory changes or pursuant to the provisions of new or revised statutory authorities.

- ***Due Diligence—Applicant Qualifications.*** The ROW regulations (43 CFR 2804.12(a)(5)) require all solar energy applications to include information on the financial and technical capability of the applicant to construct, operate, maintain, and decommission the project. In addition, the BLM will include provisions requiring diligent development in each solar energy ROW authorization. The regulations (43 CFR 2804.26(a)(5)) provide authority to the BLM to deny any application where the applicant cannot demonstrate the technical or financial capability to construct the project or operate the facilities within the ROW.

  The ROW regulations set forth the qualifications that an individual, business, or government entity must possess in order to hold a ROW authorization, including the requirement that the potential grantee be technically and financially able to construct, operate, maintain, and terminate the use of the public lands covered by the authorization (43 CFR 2803.10(b) and 2804.12(a)(5)). In carrying out its obligation to limit ROW authorizations to qualified individuals or entities and to prevent such individuals or entities from holding ROW authorizations merely for the purposes of speculating, controlling, or hindering development on the public lands, the BLM will focus on ensuring that the applicant meets the qualification requirements in the regulations.

  In ensuring that an applicant meets the regulatory requirement to demonstrate its technical and financial capability to construct, operate, maintain, and terminate the proposed solar energy facility (43 CFR 2803.10(b) and

43 CFR 2804.12(a)(5)), the BLM will consider a variety of factors, including the following: (1) applicant qualifications can be demonstrated by international or domestic experience with solar or wind energy projects on either Federal or nonfederal lands; (2) the applicant should provide information on the availability of sufficient capitalization to carry out development, including the preliminary study phase of the project and the environmental review and clearance process; and (3) applicants in bankruptcy or with other financial difficulties would generally present financial risk and should be required to provide additional information regarding financial capability. Failure to provide such additional information can be the basis for the BLM authorized officer to deny the application pursuant to the regulations (43 CFR 2804.26(a)(5)). Further evidence of financial and technical capability can include conditional commitments of DOE loan guarantees; confirmed PPAs; engineering, procurement, and construction (EPC) contracts; and supply contracts with credible third-party vendors for the manufacture and/or supply of key components for the solar energy project facilities.

During the assessment of technical and financial capability, the BLM authorized officer should also inform applicants that such requirements are continuous during the application process, and the BLM may periodically seek confirmation of these requirements. The BLM authorized officer should also inform applicants that such technical and financial capability will become a condition of any ROW authorization, and failure to sustain technical and financial capability for the development of an approved project could be grounds for termination of the authorization.

- ***Due Diligence—Plan of Development (POD).*** The BLM requires that a plan of development (POD) be submitted for all solar energy development ROW applications, consistent with the provisions of 43 CFR 2804.25(b). The BLM will not accept a POD that is simply a conceptual plan. The POD must be of sufficient detail to provide the basic information necessary to begin the environmental analysis and review process for a proposed solar or wind energy project on the public lands (technology to be used, proposed location of generation facilities, buildings, infrastructure, etc.). It is critically important that due diligence be demonstrated by the applicant in the timely submittal of an acceptable POD to ensure that the BLM processes those applications that are most likely to result in appropriate renewable energy development on the public lands.

  The BLM authorized officer initiates the due diligence process by requesting, in writing, submittal of a sufficiently detailed POD to the BLM for review. The applicant will be requested to provide the POD within 90 days. If the applicant does not respond within 90 days, or if the applicant has responded and the information is not sufficient, the BLM authorized officer will send a second written request with a 60-day response. A final 30-day show cause letter will be provided to the applicant prior to issuing any decision to deny

the application for failure to respond pursuant to the regulations (43 CFR 2804.26(a)(6)).

The BLM may also deny an application if the applicant does not provide in a timely manner the processing fees required by 43 CFR 2804.14.

- ***Notification to Livestock Grazing Operators.*** The BLM will coordinate with any potentially affected grazing permittee/lessee to discuss how a proposed solar energy project may affect grazing operations and to address possible alternatives as well as mitigation and compensation strategies. Upon acceptance of a POD that is likely to adversely affect a current livestock grazing operation, the BLM authorized officer will send a certified letter to the permittee/lessee to serve as the 2-year notification of the BLM's potential decision to cancel the permit/lease, in whole or in part, and devote the public lands to a public purpose that may preclude livestock grazing, as required by 43 CFR 4110.4-2(b). The intent of the 2-year notification is to provide the grazing permittee/lessee time to make any necessary financial, business, or management adjustments should the permit/lease be cancelled (in whole or in part). The letter will also inform the permittee/lessee of its ability to unconditionally waive the 2-year prior notification.

  Upon completion of an environmental assessment (EA) or draft environmental impact statement (EIS) for a solar energy project that may preclude livestock grazing, the BLM authorized officer will issue a separate proposed grazing decision to the grazing permittee/lessee. The proposed grazing decision will (1) state that the effective date of the permit/lease cancellation and issuance of any new permit/lease for any remaining permitted use will be 2 years from the permittee's/lessee's receipt of the certified letter sent by the BLM authorized officer to the permittee/lessee as described in the preceding paragraph; (2) address compensation for range improvements (43 CFR 4110.4-2); and (3) address grazing management changes for the new permit/lease, as well as interim grazing adjustments as appropriate. The BLM will send by certified mail or personal delivery the proposed grazing decision to the affected ROW applicant, grazing permittees/lessees, and any agent and lienholder of record who are affected by the proposed action, terms and conditions, or modifications relating to applications, permits, and agreements. Copies of proposed decisions shall also be sent to the interested public (see 43 CFR 4160.1). The proposed grazing decision will become final unless protested.

- ***Performance and Reclamation Bond.*** Title V of FLPMA and the ROW regulations authorize the BLM to require a ROW holder to provide a bond to secure the obligations imposed by the ROW authorization (43 USC 1764(i) and 43 CFR 2805.12(g)). The BLM will require a Performance and Reclamation bond for all solar energy projects to ensure compliance with the terms and conditions of the ROW authorization.

Acceptable bond instruments include cash; cashier's or certified check; certificate or book entry deposits; negotiable U.S. Treasury securities equal in value to the bond amount; surety bonds from the approved list of sureties (U.S. Treasury Circular 570) (Department of the Treasury 2011) payable to the BLM; irrevocable letters of credit payable to the BLM issued by financial institutions that have the authority to issue letters of credit and whose operations are regulated and examined by a Federal agency; or a policy of insurance that provides the BLM with acceptable rights as a beneficiary and is issued by an insurance carrier that has the authority to issue insurance policies in the applicable jurisdiction and whose insurance operations are regulated and examined by a Federal or state agency. The BLM will not accept a corporate guarantee as an acceptable form of bond. If a state regulatory authority requires a bond to cover some portion of environmental liabilities, such as hazardous material damages or releases, reclamation, or other requirements for the project, the BLM must be listed as an additional name insured on the bond instrument. This inclusion would suffice to cover the BLM's exposure, should a holder default in any environmental liability listed in the respective state bond. Each bond instrument will be reviewed by the appropriate Regional or Field Solicitor's Office for the DOI prior to its acceptance by the BLM.

The BLM authorized officer will review all bonds on an annual basis to ensure adequacy of the bond amount. The bond will also be reviewed at the time of any ROW assignment, amendment, or renewal. The BLM authorized officer may increase or decrease the bond amount at any time during the term of the ROW authorization, consistent with the regulations (43 CFR 2805.12(g)).

The BLM authorized officer will identify the total amount of the Performance and Reclamation bond in the decision that supports the issuance of the ROW authorization. The BLM will require the holder to post the portion of the bond associated with the activities to be approved by the Notice to Proceed (Form 2800-15; available at https://www.blm.gov/FormsCentral/show-form.do?nodeId=1666) prior to the issuance of that notice. For example, if the Notice to Proceed is limited to an initial phase of development, the bond amount required to be posted before issuance of the Notice to Proceed will be limited to that phase. The bond amount required to be posted would increase with the issuance of a Notice to Proceed for future phases of the project.

The Performance and Reclamation bond will consist of three components for purposes of determining its amount. The first component will address environmental liabilities, including hazardous materials liabilities, such as risks associated with hazardous waste and hazardous substances. This component may also account for herbicide use, petroleum-based fluids, and dust control or soil stabilization materials. If a holder uses herbicides extensively, this component of the bond amount may be significant. The

second component will address the decommissioning, removal, and proper disposal, as appropriate, of improvements and facilities. All solar energy projects involve the construction of substantial surface facilities, and the bond amount for this component could be substantial. The third component will address reclamation, revegetation, restoration, and soil stabilization. This component will be determined based on the amount of vegetation retained on-site and the potential for flood events and downstream sedimentation from the site that may result in off-site impacts, including CWA violations or other violations of law. The holder of the ROW authorization can potentially reduce the bond amount for this component by limiting the amount of vegetation removal as part of the project design and limiting the amount of grading required for project construction.

The BLM may also require bond coverage for all expenses tied to cultural resources identification, protection, and mitigation. This may include, but is not limited to, costs associated with ethnographic studies, inventory, testing, geomorphological studies, data recovery, compensatory mitigation programs, curation, monitoring, treatment of damaged sites, and the preparation and submission of reports. Bonding for cultural resource identification, protection, and mitigation is necessary in the event that a ROW holder disturbs a site where such resources are present but discontinues development before taking the necessary steps to complete all analysis, documentation, and proper curation of site contents, and to stabilize or reclaim the cultural and historic properties so that they are returned to a secure condition.

Ultimately, the Performance and Reclamation bond will be a single instrument to cover all potential liabilities. The entire bond amount could be used to address a single risk event, such as hazardous materials release or groundwater contamination, regardless of the fact that in calculating the total bond amount other risks were also considered. If the bond is used to address a particular risk, the holder would then be required to increase the bond amount to compensate for this use. This approach to establishing a bond is preferable to one allowing holders to maintain separate bonds for each contingency. If separate bonds are held, an underestimation of one type of liability may leave the BLM responsible for making up the difference, because the funds associated with one bond may not be applicable for the purposes of another. Requiring a single, larger bond will ensure that the holders are bonded with a surety that has the capacity to underwrite the entire amount associated with the authorization.

The regulations authorize the BLM to require that applicants submit a Decommissioning and Site Reclamation Plan (DSRP) that defines the reclamation, revegetation, restoration, and soil stabilization requirements for the project area as a component of their POD (43 CFR 2804.25(b)). The DSRP shall require expeditious reclamation of construction areas and the revegetation of disturbed areas to reduce invasive weed infestation and

erosion and must be approved by the BLM authorized officer prior to the authorization of the ROW. The approved DSRP will be used as the basis for determining the standard for reclamation, revegetation, restoration, and soil stabilization of the project area and, ultimately, in determining the full bond amount.

The BLM has issued policy guidance for determining bonding requirements for 43 Part CFR 3809 mining operations on the public lands (IM 2009-153 [BLM 2009a]) that provides detailed information about the process for determining the appropriate financial guarantees for intensive land uses on the public lands. This guidance can also be used to assist in calculating the bond amount for utility-scale solar energy development projects on public lands. The guidance requires that mining operators submit a Reclamation Cost Estimate (RCE) to the BLM authorized officer for review to assist in determining the bond amount. Although the ROW regulations do not specifically require that a holder of a ROW submit a RCE to the BLM, the BLM can require a ROW applicant to submit a POD in accordance with 43 CFR 2804.25(b). Because an RCE is key to determining the bond amount, a figure that is set forth in any decision authorizing a solar energy project on the public lands, BLM policy requires all solar energy ROW applicants to submit an RCE as part of the DSRP and the overall POD for a solar energy project. Attachment 1 to IM 2009-153 provides Guidelines for Reviewing RCEs and can be used as a guideline to assist in reviewing RCEs submitted for solar energy projects.

- ***Notice to Proceed.*** All solar energy ROW authorizations will include a provision that specifies that ground-disturbing activities cannot begin until the BLM authorized officer issues a Notice to Proceed. Each Notice to Proceed will authorize construction or use and occupancy only as therein expressly stated and only for the particular location or use and occupancy therein described (i.e., a construction phase or site location). The holder will not initiate any construction or other surface-disturbing activities on the ROW without such prior written authorization of the BLM authorized officer. The issuance of a BLM Notice to Proceed by the authorized officer could be delayed pending completion of a requirement(s) imposed by another Federal, state, and/or local entity (e.g., permit issuance, mitigation compliance, or biological, opinion issuance).

- ***Administrative Appeal.*** All final decisions issued by the authorized officer in connection to the authorization of solar energy projects can be appealed under 43 CFR Part 4 and 43 CFR 2801.10. ROW authorizations are issued as full force and effect decisions (43 CFR 2801.10(b)) and will remain effective during any appeal period. Final decisions issued by the Secretary, Deputy Secretary, or Assistant Secretary will not be subject to administrative appeals to the IBLA.

- ***Air Navigation Hazards.*** Upon issuance of a ROW authorization that includes meteorological or power towers, or other tall structures that could pose a hazard to air navigation (including DoD training and operations), the BLM, after coordination with the Federal Aviation Administration (FAA) and DoD, will ensure that the locations of such facilities are noted on aerial navigation hazard maps for low-level flight operations that may be undertaken by the BLM and other Federal or state agencies for fire operations, wild horse and burro censuses and gathers, wildlife inventories, facility maintenance, or other activities.

- ***Cadastral Survey Policies.*** Prior to approval of any solar energy ROW application that (1) is within 0.25 mi (0.4 km) of a boundary as described in BLM IM 2011-122 issued May 24, 2011 (BLM 2011a); (2) does not conform to the Public Land Survey System (PLSS); (3) can be located only by protraction diagram; or (4) may potentially affect a body of water, the responsible field office will coordinate with the respective State Office Chief Cadastral Surveyor to ensure adequate Cadastral Survey review of Boundary Evidence. The applicant shall be liable to the BLM for the reasonable cost of such review under the ROW application cost-recovery agreement with the BLM.

  All authorizations for solar energy development on BLM-administered lands will contain the following stipulation:

  > Evidence of the PLSS and related Federal property boundaries will be identified and protected prior to commencement of any ground-disturbing activity. This will be accomplished by contacting BLM Cadastral Survey to coordinate data research, evidence examination and evaluation, and locating, referencing or protecting monuments of the PLSS and related land boundary markers from destruction. In the event of obliteration or disturbance of the Federal boundary evidence, the responsible party shall immediately report the incident, in writing, to the authorizing official. The BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence, the responsible party will be instructed to use the services of a Certified Federal Surveyor (CFedS), procurement shall be per qualification-based selection, or reimburse the BLM for costs. All surveying activities will conform to the *Manual of Surveying Instructions* (Manual) (BLM 2009b) and appropriate state laws and regulations. Local surveys will be reviewed by Cadastral Survey before being finalized or filed in the appropriate state or county office. The responsible party shall pay for all survey, investigation, penalties, and administrative costs.

- ***Diligent Development.*** The ROW regulations specify that a ROW authorization conveys to the holder only the rights that the authorization expressly contains (43 CFR 2805.14) and that the holder must comply with all

terms and conditions included in the authorization (43 CFR 2805.12). In order to facilitate efficient development of solar energy on the public lands, the BLM will include a requirement in each ROW authorization that the holder begin construction of the initial phase of development within 12 months after issuance of the Notice to Proceed, but no later than 24 months after the effective date of the ROW authorization. Each authorization will also specify that construction must be completed within the timeframes in the approved POD, but no later than 24 months after the start of construction unless the project has been approved for phased development as described below. A Notice to Proceed will be issued for each phase of development.

The BLM will not authorize more than three development phases for any solar energy ROW authorization. If an approved POD provides for phased development, the ROW authorization will include provisions specifying that construction of each phase (following the first) must begin within 3 years of the start of construction of the previous phase.

The BLM authorized officer may suspend or terminate the authorization when the holder fails to comply with the diligent development terms and conditions of the authorization (43 CFR 2807.17). The regulations provide that before suspending or terminating the authorization, the BLM will send the holder a written notice that gives the holder a reasonable opportunity to correct any noncompliance or to start or resume use of the ROW (43 CFR 2807.18). This notice may be satisfied by the BLM sending a Notice of Failure to Ensure Diligent Development.

To address a failure to comply with an authorization's diligent development provisions, the holder must show good cause for any delays in construction, provide the anticipated date of completion of construction, and evidence of progress toward the start or resumption of construction, as well as submitting a written request for extension of the time lines in the approved POD. Good cause may be shown, for example, by delays in equipment delivery, legal challenges, and acts of God. This procedure will apply whether a project has multiple development phases or a single phase.

If, following receipt of a Notice of Failure to Ensure Diligent Development, the holder has satisfactorily complied with each of the requirements of the procedure described above, the authorized officer may grant the holder's request for an extension of the timelines in the approved POD. If, following receipt of such Notice, the holder does not satisfactorily comply with each of the requirements of this procedure, the authorized officer may elect to suspend or terminate the ROW authorization pursuant to 43 CFR 2807.17, where such action is justified.

Each ROW authorization for solar energy development will include terms and conditions requiring the holder to maintain all on-site electrical generation

equipment and facilities in accordance with the design standards in the approved POD. In addition, the authorization will specify that any idle, improperly functioning, or abandoned equipment or facilities that have been inoperative for any continuous period of 3 months must be repaired, placed into service, or removed from the site within 30 days from receipt of a written Notice of Failure to Ensure Diligent Development, unless the holder is provided an extension of time by the BLM authorized officer. Upon receipt of such Notice from the BLM authorized officer, the holder must repair, place into service, or remove the equipment or facilities described in the Notice in a timely manner. Alternatively, the holder must show good cause for any delays in repairs, use, or removal; estimate when corrective action will be completed; provide evidence of diligent operation of the equipment and/or facilities; and submit a written request for an extension of the 30-day deadline. If the holder satisfies neither approach, the BLM authorized officer may elect to suspend or terminate the authorization in accordance with 43 CFR 2807.17–2807.19, where such action is justified. In addition, the BLM may use the posted Performance and Reclamation bond to cover the costs for removal of any idle or abandoned equipment and/or facilities.

All solar energy ROW authorizations must include the diligent development provisions as described above in the terms and conditions of the authorization, consistent with the requirements of 43 USC 1765(b) and the ROW regulations at 43 CFR 2801.2.

- ***Operating Standards.*** The authorization holder shall perform all operations in a good and workmanlike manner, consistent with the approved POD, so as to ensure protection of the environment and the health and safety of the public. To ensure compliance with the terms and conditions of the ROW authorization and to ensure that operations are conducted consistent with those terms and conditions, the BLM authorized officer will conduct inspections of such operations and can issue notices of violations. The authorized officer may also order an immediate temporary suspension of operations, orally or in writing, in accordance with 43 CFR 2807.16, to protect public health or safety or the environment.

- ***Access to Records.*** The BLM may require the holder of a solar energy development ROW authorization to provide any pertinent environmental, technical, and financial records, reports, and other information, including PPAs and Interconnection Agreements, related to project construction, operations, maintenance, and decommissioning, including the production and sale of electricity generated from the approved facilities on public land (43 CFR 2805.12(p); 43 USC 1765(b); 43 USC 1764(g); 43 USC 1761(b)). The BLM may use this information for the purpose of monitoring the authorization and for periodic evaluation and adjustment of rental fees or other financial obligations under the authorization.

Upon the request of the BLM authorized officer, the appropriate records, reports, or information shall be made available for inspection and duplication by such officer. Any information marked confidential or proprietary will be kept confidential to the extent allowed by law. Failure to cooperate with such request, provide data, or grant access to information or records, may, at the discretion of the BLM authorized officer, result in suspension or termination of the ROW authorization. All solar energy ROW authorizations must include such disclosure provisions in the terms and conditions of the authorization in accordance with the regulations (43 CFR 2807.17).

- ***Changes to Terms and Conditions.*** The BLM authorized officer may change the terms and conditions of the authorization as a result of changes in legislation, regulations, or as otherwise necessary to protect public health or safety or the environment in accordance with 43 CFR 2801.15(e).

- ***Upgrades or Changes to Facility Design or Operation*.** Operators of solar power facilities on BLM-administered lands shall coordinate with the BLM and other appropriate Federal, state, and local agencies regarding any planned upgrades or changes to the solar facility design or operation. Proposed changes of this nature may require additional environmental analysis and/or revision of the POD.

- ***10-Year Review.*** The solar ROW authorization, shall, at a minimum, be reviewed by the BLM authorized officer at the end of the tenth year and at regular intervals thereafter not to exceed 10 years.

- ***Transfers or Assignments Require BLM Approval.*** The ROW authorization may be assigned (i.e., transfer of interest) consistent with the provisions of the regulations (43 CFR 2807.21(b)). However, all assignments shall be approved by the BLM authorized officer, and the qualifications of all assignees must comply with 43 CFR 2803.10 and the due diligence requirements of the regulations (43 CFR2807.21(c)(1) and 43 CFR 2807.21(d)). The assignment shall not interfere with the BLM's enforcement of the terms and conditions of the authorization or management of the associated public lands. Transfers other than assignments must be approved by the BLM and may result in requirements for submittal of a new application or a Notice of Termination.

B.3 MONITORING AND ADAPTIVE MANAGEMENT

The BLM has committed to developing and incorporating into its Solar Energy Program a monitoring and adaptive management strategy to ensure that data and lessons learned about the impacts of solar energy projects will be collected, reviewed, and, as appropriate, incorporated into the BLM's Solar Energy Program and individual projects in the future. The BLM presented a framework for developing a monitoring and adaptive management plan for the Solar Energy Program in the Final Solar PEIS (Section A.2.4 of Appendix A). This framework is based on the

BLM's Assessment, Inventory and Monitoring (AIM) Strategy for condition and trend monitoring of BLM-managed resources and lands. The BLM commenced a pilot effort for establishing a monitoring and adaptive management strategy for the Solar Energy Program in the summer of 2012. Results of the pilot will be used by the BLM to refine the framework and establish a monitoring and adaptive management strategy for the Solar Energy Program. The BLM will make information about the pilot available through the Solar Energy Program Web site (http://solareis.anl.gov). This will include notification of opportunities for public and stakeholder involvement. The BLM will issue policy and guidance as necessary following the completion of the pilot.

B.4 SOLAR ENERGY ZONE POLICIES

B.4.1 Authorization Process for Projects in SEZs

The BLM intends to proceed with a competitive leasing process to facilitate solar energy development projects in SEZs, and has initiated a rulemaking to consider the establishment of such a process. The Advance Notice of Proposed Rulemaking was published on December 29, 2011 (Volume 76, page 81,906 of the *Federal Register*).

Section 501 of FLPMA authorizes the Secretary of the Interior, with respect to public lands, to grant, issue, or renew ROWs over, upon, under, or through such lands for systems for the generation, transmission, and distribution of electric energy (43 USC 1761(a)(4)). This authority includes the issuance of ROW lease authorizations for solar energy generation systems. The existing ROW regulations (43 CFR 2804.23(c)) currently provide authority for identifying public lands under competitive bidding procedures, but limit the competitive process to responding to ROW applications. The purpose of a competitive process under existing regulations is to determine which application would be processed. Through rulemaking, the BLM intends to provide broader authority and a new competitive process for making lands available for solar energy development within SEZs (i.e., designated leasing areas).

The proposed rule may include the following provisions for a competitive process for lands within SEZs:

- **Call for nominations.** A call for nominations would be published in the *Federal Register* to solicit expressions of interest for parcels of land within individual SEZs. A nomination of a specific parcel would require payment of a nomination fee to be determined by the regulations. (Section 504 of FLPMA provides authority to the BLM to establish reasonable filing fees.)

- **Review of nominations.** The BLM would review the nominations to determine parcels of land to offer in individual SEZs. The BLM would complete the work necessary to prepare the selected parcels for the competitive offer.

  In preparing selected parcels for competitive offer, the BLM would review existing analysis for an SEZ and consider any new or changed circumstances

that may affect the development of the SEZ. The BLM would also work with appropriate Federal, state, and local agencies, and tribes, as necessary, to ensure that the consideration of potential environmental, cultural, or other resource conflicts is brought forward into the review, including information provided through the Solar PEIS. This would include areas identified as having a high potential for conflict with sensitive natural, visual, or cultural resources. This work would ultimately inform how a parcel would be offered competitively (e.g., parcel size and configuration, technology limitations, mitigation requirements, and parcel-specific competitive process). Prior to issuing a notice of competitive offer, the BLM would complete appropriate NEPA analysis to support the offer. This analysis would tier to the analysis for SEZs in the Solar PEIS to the extent practicable.

- **Notice of competitive offer.** A Notice would be published at least 30 days prior to the competitive offer. The Notice would include a legal description of the lands involved, the process for conducting the competitive offer, any development requirements or restrictions, a minimum bid requirement, and the due diligence requirements for the successful bidder to submit a POD for the lands involved in the competitive offer.

- **Bonus bid competitive process or other competitive procedures.** A variety of competitive bid procedures could be defined by the new regulations. These other competitive procedures could include sealed bids, oral auctions or continuous bidding, two-stage bidding, or multiple factor bidding methods. Bonus bids would be handled as Treasury receipts. The accepted bonus bid would be nonrefundable.

- **Issuance of competitive ROW lease authorization.** A ROW lease authorization (lease) would be issued to the successful bidder. The lease would be a 30-year, fixed-term lease with a fixed rental fee. The holder of the lease would be required to submit a POD and cost-recovery fees within the timeframes specified in the lease.

- **Administration of competitive ROW leases.** The leaseholder would submit a POD for authorization prior to the start of any construction. A NEPA review would be required prior to approval of the POD; this NEPA review would be tiered to all previous NEPA analyses for the SEZ and parcel offered competitively. The BLM would include a requirement in each competitive solar ROW lease that the holder begin construction within the timeframes approved in the POD and comply with terms and conditions requiring the holder to maintain all facilities in accordance with the design standards in the approved POD. The BLM would require that a minimum performance bond be provided for all competitive solar ROW leases to ensure compliance with the provisions of the regulations and the terms and conditions of the lease.

All solar energy ROW applications received *before* June 30, 2009 for lands in SEZs (defined as "pending" applications; see Section B.1.2) will be processed consistent with existing land use plan decisions in place prior to amendment by this ROD; these applications will not be subject to any decisions adopted by this ROD.

All solar energy ROW applications received *after* June 30, 2009 for lands in SEZs (defined as "new" applications; see Section B.1.1), will be subject to the decisions adopted by this ROD. The BLM may proceed with pre-application meetings as provided for in the regulations at 43 CFR 2804.10(a), as well as public outreach on new applications in SEZs to assist in developing future competitive lease parcels. The BLM may also consider new applications in SEZs as nominations under the competitive leasing process that the BLM is currently considering through rulemaking.

B.4.2 Review for Projects in SEZs

Utility-scale solar energy development projects in SEZs will be required to comply with NEPA and other applicable laws, including, but not limited to, ESA and NHPA, and applicable regulations and policies. The BLM has taken a number of important steps through the Solar PEIS to facilitate future development in SEZs in a streamlined and standardized manner. For projects in SEZs, the BLM expects to comply with applicable laws, regulations, and policies in the manner described below.

The DOI Secretary, Deputy Secretary, or Assistant Secretary will authorize all utility-scale solar energy projects in SEZs, and the BLM authorized officer will issue authorizations consistent with the Secretary's, Deputy Secretary's, or Assistant Secretary's decision. Authorization of projects in SEZs will therefore not be subject to administrative appeals to the IBLA.

B.4.2.1 Land Use Plan Conformance

Through this ROD, the BLM is amending land use plans in the six-state study area to adopt those elements of the new Solar Energy Program that pertain to planning. No additional land use plan amendments are expected to be required to approve projects in SEZs.

B.4.2.2 NEPA

The BLM will complete a site-specific environmental review of all solar energy projects in SEZs in accordance with NEPA prior to issuing a project authorization. As part of the Solar PEIS, the BLM has conducted a thorough environmental review of the proposed SEZs so that future reviews of projects within SEZs can tier to the existing NEPA analysis, thereby limiting the required scope and effort of additional project-specific NEPA analyses. Tiering is defined as using the coverage of general matters in broader NEPA documents in subsequent, narrower NEPA documents (40 CFR 1508.28, 40 CFR 1502.20, 43 CFR 46.140). This allows the tiered NEPA document to concentrate solely on the issues not already addressed.

All future projects in SEZs will tier to the analysis in the Solar PEIS and, as appropriate, the NEPA analysis completed to support the competitive offer. The extent of this tiering, however,

will vary from project to project, as will the necessary level of NEPA documentation. While the SEZ analysis in the Solar PEIS analyzes the likely environmental effects of utility-scale solar energy development and identifies required SEZ-specific design features to address many resource conflicts, further evaluation will typically be required for individual projects.

The BLM authorized officer must determine whether potential environmental impacts associated with a project are within the scope of analysis considered in the Solar PEIS for a given SEZ and/or the NEPA analysis completed to support the competitive offer. If not, the authorized officer must determine the potential significance of any impacts outside the scope of existing analysis and complete appropriate NEPA analysis. No matter the level of NEPA documentation, tiered analyses for projects in SEZs are expected to be narrowly focused on those issues not already adequately analyzed in the Solar PEIS and/or the NEPA analysis completed to support the competitive offer. Field offices are instructed to incorporate by reference the relevant portions of the NEPA documents to which project-specific NEPA documents will be tiered.

The level of NEPA documentation to be required for an individual solar energy project in an SEZ will be determined by the BLM authorized officer in coordination with the BLM Washington Office, consistent with the Council on Environmental Quality's NEPA regulations (40 CFR Parts 1500-1508), DOI NEPA procedures (43 CFR Part 46), and the BLM NEPA Handbook (H-1790-1).

An EA prepared in support of an individual action can tier to a programmatic EIS. An EA can be prepared for an action with significant effects, whether direct, indirect, or cumulative, if the EA tiers to a broader EIS that fully analyzed those significant effects. Tiering to the programmatic EIS would allow the preparation of an EA and Finding of No Significant Impact (FONSI) for the individual action, so long as any additional effects of the individual action not analyzed in the programmatic EIS are not significant. The FONSI in these circumstances may also be called a "Finding of No New Significant Impact" (43 CFR 46.140(c)). However, if an individual action is anticipated to have significant effects not considered in the programmatic EIS, tiering to the EIS cannot provide the necessary analysis to support a FONSI for the individual action. In these cases, an EIS would need to be prepared that tiers, to the extent practicable, to the programmatic EIS (BLM NEPA Handbook H-1790-1, Section 5.2.2 [BLM 2008]; 43 CFR 46.140(c)).

B.4.2.3 Public Involvement

Through the Solar PEIS, extensive public involvement specific to solar energy development in SEZs has occurred. The BLM will use this input to inform future development in SEZs. Additional public involvement for projects in SEZs will not be required to exceed the requirements of NEPA.

B.4.2.4 Endangered Species Act

The BLM completed programmatic consultation with the USFWS on July 20, 2012 under Sections 7(a)(1) and 7(a)(2) of the ESA. The BLM, in consultation with the USFWS, completed a conservation review pursuant to Section 7(a)(1) of the ESA on the overall Solar Energy

Program. The BLM also completed a programmatic consultation with the USFWS on the potential effects on listed (endangered and/or threatened) species and designated critical habitat from expected solar energy development in SEZs under Section 7(a)(2) of the ESA. See Section 7.5 of this ROD for a summary of the findings and conclusions.

For future projects in SEZs, further Section 7(a)(2) consultation will occur, as necessary, at the level of individual solar energy projects and will benefit from the preceding programmatic consultation and resulting programmatic Biological Opinion for SEZs. As individual projects are proposed in SEZs under the programmatic consultation approach, project-specific information will be provided that (1) describes each proposed action and the specific areas to be affected; (2) identifies the species and critical habitat that may be affected; (3) describes the anticipated effects from the proposed project; (4) specifies whether the anticipated effects from the proposed project are consistent with those analyzed in the programmatic BO; (5) describes proposed measures to minimize potential effects of the action; and (6) describes additional effects, if any, not considered in the programmatic consultation. The USFWS will review this information and, if applicable, will complete a BO that includes a project-specific incidental take statement. This document will generally require less effort to complete as compared to standard Section 7(a)(2) consultation because of the ability to utilize the analysis in the programmatic BO.

B.4.2.5 National Historic Preservation Act

The BLM has taken numerous actions to comply with requirements of the NHPA in relation to the Solar PEIS, including SEZs. The BLM consulted with Indian tribes, the State Historic Preservation Offices (SHPOs) from the six states, the Advisory Council on Historic Preservation (ACHP), and the National Trust for Historic Preservation (NTHP). A Solar PA among the BLM, the six SHPOs, and the ACHP has been executed. The BLM provided drafts of the Solar PA to all consulting parties, including Indian tribes, as it was being developed and asked for input and criticism. Detailed suggestions from several tribes were incorporated into the Final Solar PA.

This agreement is titled "Programmatic Agreement among the United States Department of Interior, Bureau of Land Management, the Arizona State Historic Preservation Officer, the California State Historic Preservation Officer, the Colorado State Historic Preservation Officer, the New Mexico State Historic Preservation Officer, the Nevada State Historic Preservation Officer, the Utah State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Solar Energy Development on Lands Administered by the Bureau of Land Management." The Consulting Parties agreed to the final provisions of the Solar PA in August 2012. The final PA was signed by the Acting BLM Director on September 7, 2012, and was fully executed by all parties on September 24, 2012.

For future solar undertakings proposed on lands administered by the BLM, the agency will consult with the SHPO, Indian tribes, other consulting parties, and the ACHP regarding inventory, eligibility, effect, treatment, and the consideration of post-review discoveries in accordance with the terms of the PA. Requirements for additional archeological survey, ethnographic studies, or other actions needed to consider and protect historic properties shall be fully explained and agreed to as part of the submission of a POD. The terms and conditions of

the project authorization will require documentation of a completed BLM-approved cultural resources mitigation plan before ground disturbance and construction begin.

B.4.2.6 Tribal Consultation

As part of the Solar PEIS process, the BLM has consulted and engaged with tribes through various means in order to meet the agency's affirmative responsibilities under the NHPA, NEPA, E.O. 13007 ("Indian Sacred Sites," *Federal Register,* Volume 61, page 26771, May 24, 1996), the American Indian Religious Freedom Information Act, and other statutes. Beginning in 2008 and continuing through the Final Solar PEIS, the BLM has written to tribes, provided complete documentation, maps, and current information, and requested government-to-government consultation. Tribes were invited to and participated in public meetings regarding the Draft Solar PEIS and Supplement. Tribal comments regarding the Draft Solar PEIS affected decisions to eliminate certain SEZs and to reduce and reconfigure the boundaries of those carried forward.

The BLM considers tribal consultation to an open-ended and ongoing process. For future solar energy projects on lands administered by the BLM, field office cultural staff, in consultation with their Deputy Preservation Officer, will recommend to responsible BLM line officers whether to collect additional archeological or ethnographic data. These recommendations will be based on dialog resulting from government-to-government consultation and the active involvement of tribes in the evaluation of individual projects in SEZs. Should new ethnographic research, studies, or interviews be recommended, the BLM cultural staff, in consultation with tribal officials, will provide guidance to BLM line officers about the appropriate scope of work, provisions for safeguarding data confidentiality, and programs of mitigation.

Regional Mitigation Plans will be developed, first as a prototypes for the Dry Lake SEZ in Nevada, and then for all SEZs. As part of this process, the BLM will consult with Indian tribes, SHPOs, and the ACHP to devise more effective methods to solicit and consider tribal views on the effects of solar energy development on historic properties, traditional cultural properties, landscapes, and resources important in traditional tribal practices and beliefs.

B.4.3 Incentives for Projects in SEZs

The BLM intends to implement the following policies and procedures for projects in SEZs, and complete the rulemaking items and other initiatives described below, in an effort to help steer future utility-scale solar energy development to the SEZs.

B.4.3.1 Facilitate Faster and Easier Permitting in SEZs

- Consistent with applicable law, the BLM will endeavor to adhere internally to strict schedules for the completion of environmental reviews for projects in SEZs.

- The DOI will undertake interagency coordination to expedite service and provide priority processing to projects in SEZs, provide a single point of contact for all DOI agencies responsible for coordinating environmental

reviews and consultations, ensure timely performance of agencies, and facilitate stakeholder reviews.

- The BLM will maintain its Renewable Energy Coordination Offices in Washington, D.C.; California; Nevada; and Arizona, and will maintain Renewable Energy Coordination Teams in Colorado, New Mexico, and Utah as long as needed to assist with efficient authorization of projects in SEZs.

- The BLM may, through its rulemaking effort, establish a competitive process that results in the immediate issuance of a ROW lease authorization to the successful bidder.

B.4.3.2 Improve and Facilitate Mitigation

- The BLM will develop regional mitigation plans for SEZs. Regional mitigation plans will be composed of goals and objectives applicable to individual SEZs. As envisioned, regional mitigation plans will simplify and improve the mitigation process for future projects in SEZs. Regional mitigation plans will address mitigation for a variety of resources such as biological resources, ecological resources, cultural resources, visual resources, and socioeconomic factors, as appropriate. Regional mitigation plans can increase permit efficiencies and financial predictability for developers. Regional mitigation plans are also expected to enhance the ability of state and Federal agencies to invest in larger scale conservation efforts that benefit sensitive resources through higher quality habitat, improved connectivity between habitat areas, and long-term conservation of landscapes.

- Once regional mitigation plans are developed, the BLM expects that developers will be able to mitigate biological impacts for projects in SEZs through funding conservation priorities that are identified in a regional mitigation plan.

B.4.3.3 Facilitate the Permitting of Needed Transmission to SEZs

- The BLM will continue to evaluate transmission needs for the currently proposed SEZs, including consideration of available capacity on existing lines and the need for new or modified corridors; efforts will also be made to proactively plan for any new or expanded corridors that may be needed to serve currently proposed SEZs.

- As part of the identification process for new or expanded SEZs, the BLM will simultaneously evaluate their transmission needs, including the need to designate new corridors or modify existing corridors (e.g., modify widths or locations). Corridor designations or modifications may be achieved through a joint land use planning and NEPA process to the extent practicable.

- The BLM will offer incentives to projects that propose to bring transmission to SEZs (e.g., facilitated permitting of needed gen-ties, transmission lines and upgrades by Renewable Energy Coordination Office staff, and identification of priority transmission projects that will receive facilitated permitting).

- The BLM will commit staff from the BLM's Renewable Energy Coordination Offices and Teams to engage in ongoing and comprehensive regional transmission planning efforts, as well as subregional transmission planning affecting SEZs, to ensure the recognition of SEZs as a priority in transmission development. For example, the BLM will identify a BLM liaison to the Western Electricity Coordinating Council (WECC) and the appropriate subregional planning groups, as well as the California Independent System Operator (CAISO).

- The BLM will seek to establish cooperative agreements, Memoranda of Understanding (MOUs), and/or Memoranda of Agreement (MOAs) with Federal, state, local, and regional agencies, and tribes, as appropriate, to expedite permitting of needed transmission to support SEZ development.

- As part of the ongoing evaluation of the currently proposed SEZs, as well as the identification process for new or expanded SEZs, the BLM will consult with state and regional transmission planning and coordination authorities, state public utility commissions, state energy offices, and transmission system operators to evaluate available capacity on existing and proposed lines and to discuss other potential transmission-related barriers. In addition, the BLM will use its participation in WECC and subregional planning efforts to help inform the evaluation of currently proposed SEZs and the identification of new or expanded SEZs.

- As part of the Solar PEIS, the BLM requested that the SEZs be reviewed as a case study by the Transmission Expansion Planning Policy Committee (TEPPC) of the WECC as part of the 2012 Study Program.[6] This request was prioritized as high by the study program, meaning that it will be studied in the first round of TEPPC cases. For all new or expanded SEZs, the BLM will submit study requests for timely TEPCC analysis as appropriate.

- In preparing parcels in SEZs for competitive offer, the BLM will seek to make the most efficient use of existing corridors, consider opportunities for collocation, and avoid geographically stranding future projects from key transmission interconnection points.

6 The TEPPC analysis process is an existing, formal, biennial process used by WECC to assess system impacts across the interconnection when adding resources and/or transmission. It analyzes system congestion and system performance under reliable system operating criteria.

B.4.3.4 Encourage Solar Energy Development on Suitable Lands Adjacent to SEZs

- For projects located jointly on SEZ lands and suitable adjacent public, private, state, tribal, or DoD-withdrawn lands (e.g., lands with low resource conflict or degraded, disturbed, previously disturbed, or contaminated areas), DOI's permitting incentives as described for SEZs would apply to the entire project. However, additional effort may be required to collect necessary data and conduct appropriate environmental analysis for adjoining lands as compared to SEZ lands.

B.4.3.5 Provide Economic Incentives for Development in SEZs

- The BLM anticipates lower cost recovery for projects in SEZs because of the BLM's extensive upfront data collection and environmental review through the Solar PEIS.

- The BLM may, through its rulemaking effort, adopt a longer phase-in period for rental payments for projects in SEZs (e.g., 10 years), which could effectively reduce the overall cost to operators.

- The BLM may, through its rulemaking effort, establish a fixed megawatt capacity fee rental payment for the life of the authorization for projects in SEZs, which could effectively reduce the overall cost to operators.

- The BLM may, through its rulemaking effort, establish a limited base acreage rental payment for projects in SEZs, which could effectively reduce the overall cost to operators.

- The BLM may, through its rulemaking effort, restructure bonding requirements for projects in SEZs (e.g., a fixed or standard bond per acre), which could result in reduced costs to operators.

- The BLM may, through its rulemaking effort, establish a 30-year fixed term lease with a fixed rental fee for projects in SEZs, which could reduce uncertainty for operators.

B.4.4 Regional Mitigation Plans for SEZs

As described in the incentive for projects in SEZs (Section B.4.3), the BLM will establish regional mitigation plans for all SEZs. As envisioned, regional mitigation plans will simplify and improve the mitigation process for future projects in SEZs. The BLM presented a draft framework for developing regional mitigation plans for SEZs in the Final Solar PEIS (Section A.2.5 of Appendix A). The BLM commenced a pilot effort for regional mitigation planning in the Dry Lake SEZ in Nevada in summer of 2012. Results of the pilot will be used by the BLM to refine the framework for developing regional mitigation plans for SEZs. Lessons learned from the pilot will allow for replication of sound processes across the entire six-state

study area that makes up the Solar Energy Program. The BLM will make information about the pilot available through the Solar Energy Program Web site (http://solareis.anl.gov). This will include notification of opportunities for public and stakeholder involvement. The BLM will issue policy and guidance as necessary following the completion of the pilot.

B.4.5 Identification Protocol for New or Expanded SEZs

The BLM will identify new or expanded SEZs in the context of existing solar market conditions, existing and planned transmission systems, and new (or existing) state or Federal policies affecting the level and location of utility-scale solar energy development. The BLM will assess the need for new or expanded SEZs at least once every 5 years in each of the six states covered by the Solar PEIS. The process to identify new or expanded SEZs will be open and transparent, with opportunities for substantial involvement of multiple stakeholders. The BLM will identify new or expanded SEZs at the state or field office level as an individual land use planning effort or as part of an ongoing land use plan revision. In all cases, the planning of new or expanded SEZs will tier from the Solar PEIS and utilize information carried forward from the PEIS to assist in the analyses. It is BLM's goal to complete the work to identify new SEZs and amend applicable land use plans within 12 to 18 months of initiating such efforts.

The BLM will use the following step-by-step process when considering whether to identify new or expanded SEZs. SEZs should be relatively large areas that provide highly suitable locations for utility-scale solar energy development: locations where solar energy development is economically and technically feasible, where there is good potential for connecting new electricity-generating plants to the transmission distribution system, and where there is generally low resource conflict.

The four steps described below highlight a sequential process that first assesses demand for additional acres in SEZs; then identifies locations where solar energy development is economically and technically feasible; and then in these larger regions applies relevant environmental, cultural, and other screening criteria to find potential SEZs with low natural, cultural and visual resource conflicts. The BLM will subsequently use the NEPA and planning processes to make finer-scale adjustments and decisions regarding SEZs. The four steps are as follows:

- Assess the demand for new or expanded SEZs;
- Establish technical and economic suitability criteria;
- Apply environmental, cultural, and other screening criteria; and
- Analyze proposed SEZs through a planning and NEPA process.

B.4.5.1 Assess the Demand for New or Expanded SEZs

The BLM will assess the demand for new or expanded SEZs at least once every 5 years in each of the six states covered by the Solar PEIS. The assessment of demand may take place as part of

the regular land use planning process or as a separate effort to determine the role BLM-managed lands should play in broader energy and climate goals. While Federal, state, tribal, and local stakeholder involvement will be essential to the process, BLM State Offices will ultimately be responsible for making the determination that additional SEZ acreage is needed. Acknowledging that significant changes can occur in the interim between assessments, the BLM will also provide for an assessment triggered by a petition process.

Petitions for new or expanded SEZs must be submitted in writing to the appropriate BLM State Director with documentation supporting the request. Petitions must have a rational basis and should be linked to factors such as policy, environmental, and/or market changes (e.g., increase in state or National renewable standards, approval of a foundational transmission line, economic development, population growth, or availability of financial incentives). Developers, environmental stakeholders, local and state governments, industry associations, and others may collectively or individually petition the BLM to consider specific areas for new or expanded SEZs. Petitioners may also request changes in already identified SEZs, such as eliminating or revising boundaries due to changes in status of species or critical habitat under the ESA.[7] In addition to the petition process, the public may also raise the need for new or modified SEZs through the scoping process for individual land use plans.

When considering the demand for new or expanded SEZs, the BLM will take into consideration relevant policy goals and trends in the solar market. The BLM will rely on outside expert consultation, such as the DOE and state energy offices, regarding electricity demands, markets, and renewable energy policies. Utility-approved plans, state public utility forecasts, and regional planning outcomes such as those originating with the California Independent System Operator and the Western Electricity Coordinating Council can all provide useful input into the BLM's determination of demand for additional SEZ acreage. The BLM will also consider the availability of land in existing SEZs when it evaluates the need for new or expanded SEZs. The BLM's assessment of demand may require the development of new state-based Reasonably Foreseeable Development Scenarios that incorporate new Federal or state policies affecting projections.

B.4.5.2 Establish Technical and Economic Suitability Criteria

In addition to considering the demand for solar energy across a state or region, the BLM's process to identify new or expanded SEZs will take into account technological advances in solar energy generation systems and/or transmission infrastructure, energy load centers and associated flow, existing and planned transmission lines, and any known constraints to development. These additional factors will influence the decision regarding which general region will be chosen for new or expanded SEZs.

A number of factors determine the technical and economic suitability of an area for utility-scale solar energy development, including the quality of the solar resource, terrain, and proximity to existing load and infrastructure. These factors may vary by state and/or region and will continue

[7] Changes to SEZs established by the Solar PEIS ROD must be submitted through the State Director to the BLM Washington Office for the Director's concurrence.

to evolve over time. As part of its SEZ identification process, the BLM will work with outside experts, industry, transmission planning organizations, state and local agencies, and other stakeholders to establish and apply appropriate technical and economic suitability criteria.

B.4.5.2.1 Size Threshold

An SEZ should generally encompass an area large enough to accommodate multiple utility-scale solar energy projects, provide flexibility for siting, and provide opportunities for shared infrastructure. SEZs on public lands should also be large enough to generate ample quantities of solar-generated power to justify the effort and expense required to determine whether the area is well suited for solar energy development. Smaller areas of BLM-administered lands located adjacent to private, state, or other Federal lands that are suitable for solar energy development may, however, be appropriate for consideration as SEZs if they can be used in conjunction with adjacent areas.

B.4.5.2.2 Solar Insolation Level

Solar insolation levels in areas identified for new or expanded SEZs will typically be high, thus allowing for optimum power production. Higher insolation values provide significant benefits for solar generation facilities. For instance, a reduction of 1 kWh/m^2/day in insolation is equivalent to approximately a 10% reduction in efficiency and, in turn, a proportional increase in costs and land use footprint (due to the need for additional solar collection equipment to provide the same quantity of energy).

Under BLM's proposed Solar Energy Program, areas with direct normal solar insolation levels less that 6.5 kWh/m^2/day would not be available for individual applications without an associated land use plan amendment (i.e., they would be excluded). However, in light of expected technological advances, shifting market conditions, and evolving state and Federal policies, the BLM will allow the identification of new SEZs in areas with insolation levels lower than 6.5 kWh/m^2/day, as appropriate. Providing this type of flexibility for SEZs is consistent with the policy objective identified in this ROD of working with industry and other stakeholders to identify additional SEZs in which there is a combination of industry interest and reduced conflicts.

Different types of insolation are most relevant to the different large-scale solar generating technologies. For concentrating solar technologies, direct normal insolation is most pertinent, while for photovoltaic (PV) systems, global tilt insolation is the appropriate measure of the solar resource. As part of the process to identify new or expanded SEZs, the BLM may need to consider both direct normal insolation and global tilt insolation depending on the technologies being contemplated for a given SEZ.

B.4.5.2.3 Slope Threshold

Most solar generating technologies must be sited on relatively flat ground to ensure that the solar collectors can utilize the solar resource effectively. Depending on the technology, the required slope can range from less than 2% to more than 5%, although lower slopes are generally better

for siting solar energy generation. Under BLM's proposed Solar Energy Program, areas with slopes greater than 5% would not be available for individual applications (i.e., they would be excluded).

As part of the process to identify new or expanded SEZs, some flexibility in applying the slope criterion may be appropriate, particularly for PV or dish engine technologies that are more tolerant of lands with steeper slopes. In considering new or expanded SEZs, areas with higher slopes should be otherwise well suited for development. It is unlikely that lands with slopes of greater than 10% would be technically viable for utility-scale solar production.

B.4.5.2.4 Load Areas to Be Served

When considering the appropriate locations for new or expanded SEZs, the BLM will determine the load areas likely to be served by needed solar generation. The BLM should rely on outside expert consultation regarding electricity demands, markets, and renewable energy policies (e.g., DOE, state energy offices). The BLM should also consider relevant Federal and state policy goals and trends, such as possible retirement of generating facilities and/or state Renewable Portfolio Standard policy (or policies). For example, the Renewable Portfolio Standard in a given state may have been met, and new solar energy development would be expected to serve demand in another state. The location for new SEZs would therefore have to consider existing transmission lines and capacity available to move new generation to load out of state. Consideration would also have to be made for the elements of the importing state's Renewable Portfolio Standard policy (or policies).

B.4.5.2.5 Infrastructure Access

As part of the identification of new or expanded SEZs, the BLM will consider proximity to existing infrastructure, such as transmission lines, utility corridors, roads, and a suitable workforce. Where SEZs can be located close to existing infrastructure, environmental disturbance may be minimized through use of the existing facilities (in some cases, however, transmission lines may be sited in environmentally sensitive areas that are not suitable for locating SEZs). Use of existing infrastructure may also reduce costs of construction and mitigation, making locations close to existing and useable infrastructure attractive to developers.

New or expanded SEZs should be located in areas sufficiently close to load or in areas where transmission can be reasonably expected to be available in time to serve the quantity of generation planned. Consideration of such factors will require meaningful participation by the BLM in planning processes for transmission. The BLM will consult with state and regional transmission planning and coordination authorities, state energy offices, and transmission system operators to evaluate available capacity on existing and proposed lines and to discuss other potential transmission-related barriers.

In considering potential locations for new or expanded SEZs, the BLM should catalog all existing and proposed transmission lines serving an area in relation to the power generation potential from a proposed SEZ. Consideration should also be given to foreseeable changes in load, such as retirement of generating facilities. Where new transmission lines are needed, they

should be planned to utilize existing ROWs or designated utility corridors to the extent practicable.

It is important to note that efforts to assess the feasibility and cost of supplying transmission to a specific area have a high degree of uncertainty, because new transmission lines are proposed, constructed, and added to the existing transmission grid over time, and because the available capacity on the grid also changes as demand increases and new power sources are added over time. Due to the remote locations of many prime solar resource areas, transmission upgrades and additions will generally be needed to connect those locations to the grid.

The ability to utilize existing paved roads for access to SEZs can also reduce impacts associated with development; therefore, SEZs should be located adjacent to major paved roads where possible. For potential SEZs where existing paved roads are located some distance away, existing dirt roads should be upgraded for site access to the greatest extent possible in order to minimize land disturbance. Finally, the proximity of the SEZ to a potential workforce should be considered to promote sustained workforce success in the SEZ region.

B.4.6 Apply Environmental, Cultural, and Other Screening Criteria

B.4.6.1 Program Exclusion Criteria

In an attempt to identify lands with low resource conflicts, BLM state and field offices will consider the presence of program exclusions established through the Solar PEIS on potential SEZ lands. As part of the Final Solar PEIS, the BLM identified a comprehensive list of lands that have been determined to be unsuitable for utility-scale solar energy development ROWs (see Section 2.2.2.1 of the Final Solar PEIS).

B.4.6.2 Relevant Land Use Plan Decisions

BLM state and field offices undertaking efforts to identify new or expanded SEZs will consider all relevant decisions in existing land use plans (e.g., ROW avoidance and exclusion areas, timing restrictions). Although amendment of existing land use plan decisions may be necessary as part of identifying new or expanded SEZS, such decisions serve as a valuable screen for potential conflicts.

B.4.6.3 Coordination and Outreach

In order to understand potential resource conflicts and opportunities and/or barriers for solar energy development, BLM state and field offices undertaking efforts to identify new or expanded SEZs will coordinate with appropriate Federal, state, and local agencies, and tribes (including, but not limited to, the agencies described below). The BLM also may decide to reach out to the local public and other stakeholders such as local sportsman groups. Such coordination and outreach would likely result in the development of locally relevant screening criteria to be applied in the identification of new or expanded SEZs.

The BLM will consult with state and local (county and/or municipal) governments to identify opportunities for new or expanded SEZs and to consider consistency with officially adopted local plans and policies (e.g., comprehensive land use plans, open space plans, conservation plans) and permit requirements (e.g., special use permits). The BLM will consult with state resource management agencies to discuss potential resource conflicts. The BLM will engage in government-to-government consultation with tribes to identify traditional cultural properties and sacred sites with areas related to new or expanded SEZs. The BLM will consult with appropriate land management agencies for consideration of areas in close proximity to special designations such as the National Parks, National Refuges, and National Forests. The BLM will consult with the DoD for consideration of impacts on military installations and operations. Such consultations may result in agreements not to locate SEZs near specific units, based on an agency's assessment of potential adverse impacts on those units.

B.4.6.4 Landscape-Scale Information

The BLM will use landscape-scale information (e.g., BLM's rapid ecological assessment, California's Desert Renewable Energy Conservation Plan (DRECP), The Nature Conservancy's eco-regional assessments, and state-level crucial habitat assessment tools) to identify, and to exclude from SEZs, areas of high ecological value or importance. For example, in areas with pre-existing landscape-scale conservation plans, such as the DRECP in California, future SEZs will not be considered in areas needed to achieve biological goals and objectives established in the plan. Other types of areas to screen for based on landscape-scale information may include areas with significant populations of sensitive, rare, and special status species or unique plant communities, important biological connectivity areas, designated wildlife habitat management areas, lands with wilderness characteristics, and areas with high concentrations of ethno-botanical resources of importance for Native American use. Potential landscape-scale information should be evaluated in coordination with relevant Federal, state, and local resource management agencies and tribes.

B.4.6.5 Degraded, Disturbed, or Previously Disturbed Sites

In identifying potentially suitable lands for SEZs, BLM state and field offices will seek opportunities to locate new or expanded SEZS in degraded, disturbed or previously disturbed areas. Examples include, but are not limited to, the following:

- Lands that have been mechanically altered, such as fallowed agricultural lands;

- Lands that have been "type-converted" from native vegetation through plowing, bulldozing, or other mechanical impact, often in support of agriculture or other land cover change activities (e.g., mining, clearance for development, or heavy offroad vehicle use);

- Brownfields and other contaminated or previously contaminated sites,[8] such as those identified by the EPA's RE-Powering America's Land Initiative (http://www.epa.gov/renewableenergyland) or state, local and/or tribal authorities;

- Idle or underutilized industrial sites;

- Lands adjacent to urbanized areas and/or load centers;

- Areas repeatedly burned and invaded by fire-promoting non-native grasses where the probability of restoration is determined to be limited; and

- Areas where collocation of solar energy development with other energy development may be feasible (e.g., wind or oil and gas development).

Amendment of existing land use plan decisions (e.g., ROW avoidance and exclusion areas) may be necessary to allow for new or expanded SEZs on degraded, disturbed, or previously disturbed areas. Sources of information on degraded, disturbed, or previously disturbed areas should include (1) landscape-scale information and landscape-scale ecological assessments (e.g., landscape conservation cooperatives, rapid ecological assessments, and state-level crucial habitat assessment tools), which identify converted or highly degraded lands on BLM-administered and adjacent Federal and nonfederal lands; (2) coordination with the EPA and relevant state agencies that catalog degraded, disturbed, or previously disturbed sites; and (3) outreach to local communicates and the public regarding possible degraded, disturbed, or previously disturbed sites.

B.4.6.6 Opportunities to Combine Other Federal and Nonfederal Lands

As part of the SEZ identification process, the BLM will take into account opportunities to partner with adjacent Federal and nonfederal landowners (e.g., private, state, tribal, or DoD-withdrawn lands). For example, small SEZs may be appropriate on BLM-administered lands when they are located adjacent to degraded, disturbed, or previously disturbed private lands. This combination of BLM-administered and nonfederal lands could allow for a combined use area, allowing for the expansion of renewable energy development onto well-suited adjacent lands.

B.4.6.7 Information from BLM Monitoring Efforts

As part of the SEZ identification process, the BLM will review and consider information gathered through its proposed long-term monitoring and adaptive management program (see Appendix A, Section A.2.4). Information gathered through monitoring studies will help the BLM regularly evaluate resource conditions, detect change, and augment its knowledge of potential resource conflicts associated with solar energy development. This information will be used to inform the identification of new priority areas for utility-scale solar energy development.

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8 The EPA and other parties have or will continue to characterize and cleanup these sites to ensure they are protective for people.

In addition, the BLM has expanded its knowledge of areas suitable/not suitable for development through the evaluation of individual solar energy ROW applications. Areas eliminated from ROW applications due to resource conflicts (e.g., rare vegetation or desert washes) may provide additional screening criteria for new or expanded SEZs.

B.4.7 Analyze Proposed SEZs through a Planning and NEPA Process

The BLM will publish a Notice of Intent (NOI) in the *Federal Register* stating its intent to prepare a Land Use Plan amendment (or amendments) to identify a new or expanded SEZ or multiple SEZs and prepare the associated NEPA documentation. The NOI will also begin the formal scoping process (40 CFR 1501.7). Through the scoping process, the BLM will solicit additional input on potential SEZs. The public will be invited to nominate proposed SEZs through the scoping process that meet the objectives of the planning effort. Based on scoping, the BLM will identify a potential SEZ or multiple SEZs or SEZ configurations to be analyzed through the planning and NEPA process. The BLM will document the results of its scoping in a publicly available scoping report (43 CFR 1610.2(d)).

When the BLM is preparing NEPA analyses for new SEZs, its goal will be to produce documents with comprehensive analyses of resources at a level of detail sufficient to allow for tiering of future solar energy projects within the SEZ. Analysis of SEZs will also include appropriate consultations pursuant to the ESA and the NHPA. The potential impacts associated with the development of transmission interconnection and other infrastructure to support the establishment of an SEZ will be considered as part of the NEPA review for the SEZ. The BLM will also seek opportunities to designate any necessary utility corridors that would support the establishment of new or expanded SEZs in a combined planning effort. The BLM will make the draft land use plan amendment and draft NEPA document available for a 90-day public comment period (43 CFR 1610.2(e)). Following the preparation of a proposed land use plan amendment and final NEPA document, and after reviewing and resolving any protests, the BLM would issue a decision about whether to amend affected land use plans.

Through the planning and NEPA process, the BLM will refine SEZ boundaries and may establish SEZ-specific management prescriptions based on resource-specific considerations. Chapter 5 of the Draft Solar PEIS, as updated in the Final Solar PEIS, includes a comprehensive description of the impacts of constructing and operating solar energy generation facilities and related infrastructure and possible mitigation measures in the categories below. This information will be used as a guide to inform the analysis of SEZs. The categories are as follows:

- Lands and realty;
- Specially designated areas and lands with wilderness characteristics;
- Livestock grazing;
- Wild horses and burros;
- Wildland fire;

- Recreation;
- Military and civilian aviation;
- Geologic setting and soil resources;
- Minerals;
- Water resources;
- Ecological resources;
- Vegetation and plant communities;
- Wildlife;
- Aquatic biota;
- Special status species;
- Air quality and climate;
- Visual resources;
- Acoustic environment;
- Paleontological resources;
- Cultural resources and Native American concerns;
- Socioeconomics;
- Environmental justice; and
- Cumulative impact considerations.

B.4.7.1 SEZ-Specific Design Features and Mitigation Plans

Establishing SEZs in areas where avoidance of sensitive resources is possible is generally the most effective means to ensure resource protection. When complete avoidance of all sensitive resources is not possible, it may be practical to include some areas within the boundaries of an SEZ, with requirements that no disturbance occur in these areas (i.e., solar facilities would be required to be constructed outside of such areas). To avoid possible isolation and/or fragmentation of resources, however, the BLM will generally endeavor to avoid designating SEZs with significant numbers and/or acreage of exclusion areas within them.

Design features can be effective in minimizing potential resource impacts in new SEZs. In addition to the programmatic design features to be established through this ROD, the BLM may identify and analyze additional SEZ-specific design features as necessary through its planning and NEPA processes. For those impacts expected to result from the build-out of a new SEZ that cannot be avoided or minimized, the BLM will determine appropriate mitigation actions to offset impacts. New SEZ proposals should include an accompanying regional mitigation plan (Section B.4.4).

B.4.8 SEZs Identified Subsequent to this ROD

The BLM expects that SEZs analyzed and identified through future planning efforts will generally be treated the same as SEZs identified through this ROD (i.e., that proposed projects in these SEZs will generally include the same level of analysis, follow the same authorization process, and receive the same incentives as projects located in SEZs identified through this ROD and refined through the ongoing rulemaking process.

B.5 VARIANCE AREA POLICIES

The BLM will consider ROW applications for utility-scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate Federal, state, and local agencies and tribes; and public outreach. The responsibility for demonstrating to the BLM and other coordinating parties that a proposal in a variance area will avoid, minimize, and/or mitigate, as necessary, sensitive resources will rest with the applicant. The applicant is also expected to demonstrate that the proposed project is compatible with state and local plans and is capable of acquiring all required permits and authorities to implement the project. The USFWS and National Park Service (NPS) have identified sensitive resources areas within variance areas that require special consideration as further described below. The BLM will use current information and best available science in its evaluation of ROW applications in variance areas.

In coordination with other agencies, the BLM will conduct preliminary screening of potential ROW applications in variance areas to assess likely conflicts with sensitive resources and will inform applicants of any anticipated issues with the siting of their project in a proposed location. ROW applications in variance areas will be deemed a lower priority for processing than applications in SEZs. The BLM will typically process ROW applications in variance areas on a first-come, first-served basis. However, the BLM has the discretion to apply competitive procedures to variance areas. In making this determination, the BLM may consider variables such as public interest, market demand for solar energy development in the region (including markets in other states), expressions of interest from other parties, authorized use and/or ownership of adjoining lands, and the purpose of the project.

All ROW applications in variance areas that the BLM determines to be appropriate for continued processing will, at the applicant's expense, be processed in compliance with NEPA and all other applicable laws, regulations, and policies. Applicants applying for a ROW in variance areas assume all risk associated with their application and should understand that their financial

commitments in connection with their applications will not be a factor in the BLM's evaluation process.

B.5.1 Required Preliminary Meetings

The BLM will require prospective applicants in variance areas to schedule and participate in two preliminary meetings with the BLM before filing a ROW application (43 CFR 2804.10(a)). The purpose of the first preliminary meeting is to discuss the status of BLM land use planning in the area; potential land use and siting constraints; potential environmental issues in the area; NPS and USFWS sensitive resource maps and information; potential alternative site locations for the project; and the variance process itself, including cost-recovery requirements, application requirements, consultation requirements, public involvement requirements, and associated timelines. The purpose of the second preliminary meeting is to initiate and ensure early coordination with Federal (e.g., NPS, USFWS, and DoD), state, and local government agencies and tribes as contemplated by the regulations (43 CFR 2804.10(b)). Cost-recovery fees will generally not be required for preliminary meetings.

Through these preliminary discussions, the BLM and coordinating agencies will identify the likely challenges in proceeding with an application in a proposed location and identify natural, visual, and/or cultural resource information that applicants would likely be required to gather to support the variance process. On the basis of internal review and collaboration with other agencies, the BLM may advise a potential applicant not to submit an application for a particular site and/or technology or to modify its proposed project. In providing such advice, the BLM will consider factors including, but not limited to the following:

- Lands within an SEZ could meet the potential applicant's needs, including consideration of access to transmission.

- The proposed project will be in conflict with landscape conservation strategies and/or landscape protection, conservation, or restoration objectives established in documents such as the DRECP or an applicable RMP.

- The proposed project poses a high potential for conflict with sensitive natural, visual, and/or cultural resources identified by the BLM, NPS, and/or USFWS.

B.5.2 ROW Applications in Variance Areas—Process

Following completion of the preliminary meetings described above, an applicant seeking to develop a project in a variance area will be required to submit a ROW application to the BLM (Form SF-299, Application for Transportation and Utility Systems and Facilities on Federal Land). The POD submitted with an application must be of sufficient detail (as determined by the BLM) to evaluate the suitability of the site for utility-scale solar energy development. Solar ROW applications in variance areas will typically be required to include a description of the proposed solar technology and the proposed location of solar panels or reflectors, buildings, and other infrastructure such as transmission lines and roads. Additional specific information

required for an application in a variance area is outlined below. The BLM will determine if and when the information is of sufficient detail to initiate coordination activities as described below.

Upon submission and BLM review of a ROW application, a cost-recovery agreement will be established with the applicant (43 CFR 2804.14). An applicant for a ROW in a variance area must establish a cost-recovery account sufficient to cover all costs of the United States associated with accepting, reviewing, and processing the application, including, but not limited to, conducting environmental review and related consultations; conducting inventories for resources such as cultural resources, visual resources, and special status species; and inspecting and monitoring the construction, operation, and decommissioning of the proposed ROW facility.

B.5.3 ROW Applications in Variance Areas—Factors to Be Considered

Applicants for utility-scale solar energy development ROWs in variance areas will be required to adhere to the data collection and survey protocols prescribed by resource agencies, including, but not limited to, those outlined below. The BLM will consider a variety of factors when evaluating ROW applications and associated data in variance areas. The focus of the proposed variance process is on collecting the right data and evaluating it with the right parties to assess the appropriateness of a given proposal, rather than on a prescriptive set of measures that would be established at the programmatic level. The BLM believes that this approach allows flexibility to adapt as data and science improve, recognizes the variability and tradeoffs associated with individual applications, and allows for satisfactory protection of resources of concern.

The BLM will consider the following factors, as appropriate, when evaluating ROW applications in variance areas:

- The availability of lands in an SEZ that could meet the applicant's needs, including access to transmission.

- Documentation that the proposed project will be in conformance with decisions in current land use plan(s) (e.g., visual resource management class designations and seasonal restrictions) or, if necessary, represents an acceptable proposal for a land use plan amendment.

- Documentation that the proposed project will be consistent with priority conservation, restoration, and/or adaptation objectives in the best available landscape-scale information (e.g., landscape conservation cooperatives, rapid ecological assessments, and state and regional-level crucial habitat assessment tools [CHATs]).

- Documentation that the proposed project can meet applicable programmatic design features adopted in this ROD (see Appendix A, Section A.4.1).

- Documentation that the applicant has coordinated with state and local (county and/or municipal) governments, including consideration of consistency with officially adopted plans and policies (e.g., comprehensive land use plans, open

space plans, and conservation plans) and permit requirements (e.g., special use permits).

- Documentation of the financial and technical capability of the applicant, including, but not limited to, the following:
  - International or domestic experience with solar energy projects on either Federal or nonfederal lands; and
  - Sufficient capitalization to carry out development, monitoring, and decommissioning, including the preliminary study phase of the project and the environmental review and clearance process.

- Documentation that the proposed project is in an area with low or comparatively low resource conflicts and where conflicts can be resolved (as demonstrated through many of the factors that follow).

- Documentation that the proposed project will optimize the use of existing roads.

- Documentation that the proposed project will optimize the capacity of existing and new transmission infrastructure, and avoid duplication in the use of or need for existing and new transmission and transmission interconnection facilities.

- Documentation that the proposed project will make efficient use of the land considering the solar resource, the technology to be used, and the proposed project layout.

- If applicable, documentation that the proposed project will be located in an area identified as suitable for solar energy development in an applicable BLM land use plan and/or by another related process such as the California DRECP (e.g., Development Focus Areas) or Arizona Restoration Design Energy Project (e.g., Renewable Energy Development Areas).

- If applicable, special circumstances associated with an application such as an expansion or repowering of an existing project or unique interagency partnership.

- If applicable, opportunities to combine Federal and nonfederal lands for optimum siting (e.g., combining BLM-administered land with adjacent previously disturbed private lands).

- If applicable, documentation that the proposed project will be located in, or adjacent to, previously contaminated[9] or disturbed lands such as brownfields

9 EPA and other parties have or will continue to characterize and cleanup these sites to ensure they are protective for people.

identified by the EPA's RE-Powering America's Land Initiative (http://www.epa.gov/renewableenergyland) or state, local and/or tribal authorities; mechanically altered lands such as mine-scarred lands and fallowed agricultural lands; idle or underutilized industrial areas; lands adjacent to urbanized areas and/or load centers; or areas repeatedly burned and invaded by fire-promoting non-native grasses where the probability of restoration is determined to be limited. Preference will be given to proposed projects that are located in, or adjacent to, previously contaminated or disturbed lands under the variance process, assuming all other factors are adequately considered.

- Documentation that the proposed project will minimize adverse impacts on access and recreational opportunities on public lands (including hunting, fishing, and other fish- and wildlife-related activities).

- Documentation that the proposed project will minimize adverse impacts on important fish and wildlife habitats and migration/movement corridors (e.g., utilizing the Western Wildlife CHAT, administered by the Western Governor's Wildlife Council [http://www.westgov.org/wildlife/380-chat] and coordinating with state fish and wildlife agencies).

- Documentation that the proposed project will minimize impacts on lands with wilderness characteristics and the values associated with these lands (e.g., scenic values, recreation, and wildlife habitat).

- Documentation that the proposed project will be designed, constructed, and operated to optimize their specific generation technology's efficiencies with respect to water impacts.

- Documentation that any groundwater withdrawal associated with a proposed project will not cause or contribute to withdrawals over the perennial yield of the basin, or cause an adverse effect on ESA-listed or other special status species or their habitats over the long term. However, where groundwater extraction may affect groundwater-dependent ecosystems, and especially within groundwater basins that have been over appropriated by state water resource agencies, an application may be acceptable if commitments are made to provide mitigation measures that will provide a net benefit to that specific groundwater resource over the duration of the project. Determination of impacts on groundwater will likely require applicants to undertake hydrological studies using available data and accepted models.

- Documentation that the proposed project will not adversely affect lands donated or acquired for conservation purposes, or mitigation lands identified in previously approved projects such as translocation areas for desert tortoise.

- Documentation that significant cumulative impacts on resources of concern should not occur as a result of the proposed project (i.e., exceedance of an established threshold such as air quality standards).

- *Desert Tortoise*

  Designated desert tortoise conservation areas are excluded from the BLM's proposed Solar Energy Program. These areas include, but are not limited to, critical habitat for desert tortoise and specially designated areas such as BLM-designated ACECs that specifically identified desert tortoise as one of the Relevant and Important Values, National Parks, National Recreation Areas, and NWRs (see Appendix A, Table A-2).

  The USFWS has identified certain other areas that may be important for desert tortoise connectivity (i.e., priority desert connectivity habitat). Recovering desert tortoises throughout their range requires that conservation areas be connected by habitat linkages in which tortoises reside and reproduce. Such areas will need to be free of large-scale impediments from anthropogenic activities. The BLM has excluded from the Solar Energy Program approximately 515,000 acres (2,084 km^2) of land that coincides with priority desert tortoise connectivity habitat (see Appendix A, Table A-1, Exclusion #32).

- Maps and supporting information regarding priority desert tortoise connectivity habitat are available through the Solar PEIS project Web site (http://solareis.anl.gov).[10] Developers that propose utility-scale solar energy projects in variance areas that overlap priority desert tortoise connectivity habitat identified on USFWS maps will be required to meet with the BLM and USFWS early in the process as part of the previously mentioned preliminary meetings to receive instructions on the appropriate desert tortoise survey protocols and the criteria the BLM and USFWS will use to evaluate results of those surveys (see outline below). Applicants will be required to work with the BLM and USFWS to survey an appropriately sized area (which may be three to four times larger than the proposed project area) in an attempt to find a suitable project location or configuration that minimizes impacts on desert tortoises. The BLM and USFWS will discourage applications in the highest priority areas, given the anticipated high conflict, higher survey costs, and high mitigation requirements. The survey and data collection activities outlined below will facilitate the assessment of site-specific data and ground-

[10] The USFWS expects to update its map of priority connectivity habitat to reflect new information about desert tortoise connectivity habitat. The USFWS will make these map updates available through the Solar PEIS project Web site (http://solareis.anl.gov). These updates to USFWS maps will provide the public with current information regarding USFWS and BLM considerations under the variance process. Any amendment of applicable land use plans, including a decision by the BLM to exclude additional lands from future solar energy development, would follow compliance with all applicable BLM land use planning procedures.

truthing of the information provided in the USFWS map to determine whether a site is an acceptable location for utility-scale solar energy development.

- Tortoise density and distribution surveys. Desert tortoise density and distribution surveys will be conducted consistent with approved survey protocols (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and will be conducted by USFWS-approved desert tortoise authorized biologists unless the USFWS determines authorized biologists are unnecessary (http://www.fws.gov/ventura/species information/protocols_guidelines/index.html). The spacing and intensity of surveys will be determined in consultation with the BLM and USFWS. Two consecutive survey passes of the potential project development area will be required; the orientation of the second survey pass will be determined in consultation with BLM and USFWS to determine the best orientation based on factors such as topography and glare. Once a refined project site has been selected within the larger survey area, additional surveys could be recommended to ensure effective avoidance of desert tortoises.
- Habitat quality analyses. Evaluate the presence and condition of native vegetation communities (including herbaceous plants), soils, and so forth in the survey area.
- Tortoise connectivity studies. The methodologies for connectivity studies must be approved by the BLM and USFWS and peer reviewed by an accredited scientist prior to data collection. A first study should demonstrate that the linkage area and adjacent Tortoise Conservation Areas (TCAs) contain suitable tortoise habitat of sufficient size to support desert tortoise populations. If sufficient habitat is present, a second study should demonstrate that demographic and genetic connections can be maintained once the proposed project is developed. This should include evaluating existing barriers to connectivity and opportunities for tortoise-to-tortoise interactions at a local and regional scale and the availability of "live-in habitat."
- Corridor width evaluation. Using the site-specific data collected, including desert tortoise density and distribution (from protocol surveys), habitat quality analysis, and the desert tortoise connectivity evaluation, an applicant should identify corridors that will adequately maintain the connectivity around the proposed project. Such corridors must be approved by the BLM and USFWS.
- Survey for areas suitable for tortoise translocation, if applicable.

In evaluating information provided by an applicant, the BLM and USFWS will consider cumulative effects and landscape-level information consistent with desert tortoise recovery goals and objectives and best available science to determine if a project will result in acceptable impacts on desert tortoise. The applicant must provide documentation to the satisfaction of the BLM and USFWS of the following, unless a project is otherwise determined by the BLM and USFWS to have acceptable impacts on desert tortoise:

- The project can be sited and constructed to allow for adequate connectivity corridors as determined by the BLM and USFWS that ensure that the project does not isolate or fragment tortoise habitat and populations;
- The proposed site contains low tortoise densities consistent with the best available information for the subject geographic area, including data on local desert tortoise densities, when available, and data from the long-term USFWS rangewide monitoring of the Mojave Population of the desert tortoise (http://www.fws.gov/nevada/desert_tortoise/dt_reports.html);
- The project will result in minimal translocation of adult and sub-adult tortoise to acceptable locations (>160 mm Midline Carapace Length) as determined by the BLM and USFWS;[11]
- Any necessary mitigation will improve conditions within the connectivity area, and if these options do not exist, necessary mitigation will be applied toward the nearest tortoise conservation area (e.g., an ACEC for which tortoise had been identified in the Relevant and Important Criteria or critical habitat); and
- A plan is in place to effectively monitor desert tortoise impacts, including verification that desert tortoise connectivity corridors are functional. The required ESA consultation will further define this monitoring plan.

- *Greater Sage-Grouse*

  Greater sage-grouse habitat (i.e., currently occupied, brooding, and winter habitat) as identified by the BLM in California, Nevada, and Utah will be excluded from BLM's proposed Solar Energy Program (see Section 2.2.2.1 of the Final Solar PEIS).

  Developers that propose utility-scale solar energy projects in variance areas that overlap the range of the greater sage-grouse will be required to provide documentation of the following, unless a project is otherwise determined by the BLM and USFWS and appropriate state wildlife agencies to have acceptable impacts on greater sage-grouse:[12]
  - Project is at least 4 mi (6 km) from the nearest lek;
  - Project will not adversely affect Preliminary Priority Habitat; and
  - Project will be mitigated through land acquisition or habitat enhancement at a ratio of at least 1:1 for any impact on Preliminary General Habitat as determined by accepted standards of habitat analysis (e.g., habitat

[11] For additional information on the criteria the USFWS will use to assess impacts on desert tortoise and desert tortoise connectivity habitat, see http://www.fws.gov/cno/energy.html.

[12] Preliminary Priority Habitat (PPH) comprises areas that have been preliminarily identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. Preliminary General Habitat (PGH) comprises areas of occupied seasonal or year-round habitat outside of priority habitat. PPH and PGH have been preliminarily identified by the BLM in coordination with respective state wildlife agencies (BLM 2011c).

equivalency analysis [HEA]) and in coordination with the USFWS and the appropriate state wildlife agencies.

- *Protecting Resources and Values of Units of the National Park System and Other Special Status Areas under National Park Service Administration*

  The construction and operation of utility-scale solar energy projects and related transmission infrastructure near units of the National Park System and other special areas administered by the NPS, including National Historic Trails, may significantly affect park programs, resources, and values. For example, ecological resources (such as habitat and migration of species) and physical resources (such as wind, water, air, and scenic views) cross park boundaries, and park boundaries often do not represent all of the natural resources, cultural sites, and scenic vistas that make up resources and the quality of the park visitor's experience in these special places.

  The NPS has identified areas within the proposed variance areas where utility-scale solar energy development poses a high potential for conflict with the natural, cultural, and/or visual resources administered by the NPS. The BLM has excluded from the Solar Energy Program approximately 821,000 acres (3,322 km^2) of land that coincides with NPS-identified areas of high-potential conflict (see Appendix A, Table A-1, Exclusion #32).

  Maps and data documenting areas of high-potential conflict with National Parks, historic trails, and other areas under NPS administration are available through the Solar PEIS project Web site (http://solareis.anl.gov).[13] This information will promote public awareness and notify industry where additional documentation may be required to proceed with an application in variance areas. The maps and data are regarded as a first-order approximation of landscape-scale conditions and potential resource conflict and will be updated as new information and analytical tools are developed.

  The BLM will utilize these maps and data in the screening of proposed solar energy projects in variance areas. In cases where a utility-scale solar energy development ROW application is submitted in a variance area identified as having a high potential for conflict with the resources of a unit of the National Park System or special areas administered by the NPS, additional documentation will be required. This documentation may include information

[13] Maps and data document areas of high potential for conflict with sensitive natural and cultural resources near 33 National Parks and one National Historic Trail. The NPS intends to update its maps and data to reflect new information regarding potential conflicts associated with units of the National Park System and other special areas administered by the NPS. The NPS will make updated maps and data available through the Solar PEIS project Web site (http://solareis.anl.gov). These updates to NPS maps and data will provide the public with current information regarding NPS and BLM considerations under the variance process. Any amendment of applicable land use plans, including a decision by the BLM to exclude additional lands from future solar energy development, would follow compliance with all applicable BLM land use planning procedures.

to verify any or all of the following potential resource conditions resulting from the proposed project:

- Increased loading of fine particulates (criteria pollutants: $PM_{2.5}$ and PM_{10} [particulate matter with a diameter of 2.5 µm or less and 10 µm or less, respectively]) and reduced visibility in Class I and sensitive Class II areas;
- Vulnerability of sensitive cultural sites and landscapes, loss of historical interpretative value due to destruction or vandalism;
- Altered frequency and magnitude of floods, and water quantity and quality;
- Reduced habitat quality and integrity and wildlife movement and/or migration corridors, increased isolation and mortality of key species;
- Fragmentation of natural landscapes;
- Diminished wilderness, scenic viewsheds, and night-sky values on landscapes within and beyond boundaries of areas administered by the NPS; and
- Diminished cultural landscape qualities within and beyond boundaries administered by the NPS.

The documentation provided by an applicant must be sufficiently detailed as determined by the BLM and NPS. The documentation should represent the findings of science and the analyses of scientifically trained specialists in the appropriate natural, visual, and/or cultural resource disciplines. The NPS will prepare a response to the BLM regarding (1) whether the proposed project meets NPS protection, conservation, and/or restoration objectives; and (2) whether the resource conflict documentation is adequate to support a finding by the NPS and BLM that the proposed project is likely to avoid a high potential for conflict with resources and values associated with a National Park or other special status area under the administration of the NPS.

The NPS will continue to refine data for determining resource conflict and provide this information to the BLM for use in the variance process. The NPS will assist the BLM in identifying alternate project locations if there is insufficient information to verify potential resource conflict with sensitive resources and values of National Park and other NPS special status areas. In all cases, evaluations will be performed to ensure that natural, visual, and cultural resources of units of the National Park System and other special areas administered by the NPS are protected.

B.5.4 Public Outreach

To sufficiently gather information on potential issues and barriers and/or opportunities related to a ROW application in a variance area, the BLM will require that a minimum of one public meeting be held as part of the variance process to allow for participation by all interested parties. The public meeting shall be located in close proximity to the community most affected by the proposal and shall be adequately noticed. This variance process requirement for a public meeting will occur before the NEPA process is initiated; comments received, however, may be

used to inform the NEPA process for projects that the BLM decides to continue to process. The BLM will also make information regarding ROW applications in variance areas available to the public online via the BLM Web site (www.blm.gov) and the Solar PEIS project Web site (http://solareis.anl.gov).

B.5.5 BLM Coordination Activities

- As part of the variance process, the BLM will coordinate with appropriate Federal, state, and local government agencies and tribes. The review of ROW applications in coordination with these other entities will help the BLM determine the potential for impacts on important resources; explore ways to avoid, minimize, and/or mitigate such impacts; and ensure consistency with relevant plans, policies, and initiatives. Coordination activities will include the following:

- Consultation with tribes. Government-to-government consultation with tribal staff will provide opportunities for tribes to identify traditional cultural properties and sacred sites with applications in variance areas. Tribes will be invited to attend pre-application meetings with the applicant and the BLM. On the basis of information and discussions arising from the pre-application meetings, the BLM will determine whether there is a need for new ethnographic research to provide sufficient information to adequately consider the effects of solar energy development on issues and resources of concern to tribes. BLM field office cultural staff, including specialists assigned to Renewable Energy Coordination Offices where present, in consultation with their Deputy Preservation Officer, shall recommend to responsible BLM line officers whether to collect additional ethnographic data for a given solar application. Should new ethnographic research, studies, or interviews be recommended, the BLM cultural staff, in consultation with tribal officials, will provide guidance to BLM line officers about the appropriate scope of that work, provisions for safeguarding data confidentiality, and programs of mitigation.

- Coordination with the SHPO. The BLM will consult with the SHPO to determine the steps required to identify historic properties in the area of effect for the ROW application. Additional inventories may include Class II or Class III surveys in areas of direct and indirect effect, depending on the potential for impacts. On the basis of the results of the inventory, determinations of eligibility of sites to the NRHP, determinations of effect, and programs of mitigation would be approved by the BLM and carried out by the applicant prior to ground disturbance.

- Coordination with state fish and wildlife agencies.

- For applications in the DRECP planning area, the BLM will coordinate with California REAT agencies (BLM, USFWS, CDFG, and CEC) to ensure

consistency with any DRECP reserve and development area designs. The REAT agencies will evaluate applications in areas proposed for development, focus areas, and areas proposed for reserves on a case-by-case basis. The REAT agencies will consider the best available information, including data generated as part of the DRECP planning effort. The BLM may choose to defer or modify projects on a case-by-case basis if it determines that approval of the proposed project would harm resource values so as to limit the choice of reasonable alternative actions in the DRECP (H-1601-1—*Land Use Planning Handbook* [BLM 2005]).

- Coordination with the NPS to assess the potential for impacts on the resources and values of units of the National Park System and other special status areas under NPS administration (e.g., National Scenic or Historic Trails).

- Coordination with the NPS, USFS, and/or BLM National Trails System Office charged with trail-wide administration or management for National Scenic or Historic Trails to review inventory adequacy or needs, and to assess potential adverse impacts on trails (see Appendix A, Section A.2.2.23, for inventory requirements). Coordination is also required with the study agency for trails recommended as suitable in congressionally authorized Trail Feasibility Studies or trails undergoing such study. Coordination is also required with nonprofit National trail organizations for trails subject to exclusion provisions. Other related program coordination requirements must also be met, such as those for cultural resources, recreation and visitor services, visual resources, or NLCS.

- Coordination with the USFWS on any application that could result in impacts on ESA-listed species and their habitat (including, but not limited to, desert tortoise and sage-grouse), bald and golden eagles, and migratory birds.

- Coordination with state and local (county and/or municipal) governments to determine compatibility with officially adopted plans and policies (e.g., comprehensive land use plans, open space plans, conservation plans) and permit requirements (e.g., special use permits).

- Consultation with the DoD. The BLM will consult the DoD to minimize and/or eliminate impacts on military operations and encourage compatible development. This consultation will include both general discussions for early planning and detailed assessments of specific proposals at the local level. The BLM will accept formal DoD submissions once they have been vetted through both the Military Departments and the DoD Siting Clearinghouse.

- Coordination with the USACE.

- Coordination with the EPA.

- Coordination with state and regional transmission planning efforts (e.g., WGA, Nevada Renewable Energy Transmission Access Advisory Committee, New Mexico Renewable Energy Transmission Authority), transmission coordination authorities (e.g., WECC), state energy offices, and transmission system operators to identify any transmission issues associated with the proposed project (e.g., capacity and land use considerations).

- Coordination with railroad industry to determine potential for impacts on railroad ROWs and railroad operations.

- Coordination with any potentially affected grazing permittee/lessee to discuss how the proposed project may affect grazing operations and address possible alternatives, as well as mitigation and compensation strategies.

- Coordination with existing ROW holders to determine potential impacts on existing BLM authorizations.

- Coordination with the owner of any Federal mining claims and/or mineral leases located within the boundaries of the proposed project to determine the potential for impacts on mining claims and/or mineral leases and discuss ways to avoid, minimize, or mitigate such impacts.

B.5.6 Variance Process Determination

The BLM has determined that, in appropriate circumstances, it can rely on the broad discretion it has under FLPMA to deny ROW applications without completing the NEPA process. Such decisions must be made with regard for the public interest and be supported by reasoned analysis and an adequate administrative record. Decisions to deny pending applications must be assessed on a case-by-case basis. Denial of an application constitutes a "final agency action" and is therefore subject to administrative appeals to the IBLA.

On the basis of a thorough evaluation of the information provided by an applicant and the input of Federal, state, and local government agencies, tribes, and the public, the BLM will determine whether it is appropriate to continue to process, or to deny, a ROW application submitted through the variance process. Variance evaluations will be conducted and documented at the BLM state and field office levels. To ensure a consistent application of the variance process, all ROW applications in variance areas that are determined to be appropriate for continued processing will be submitted by the BLM State Director to the BLM Washington Office for the Director's concurrence.

ROW applications in variance areas that the BLM determines to be appropriate for continued processing will generally be processed, at the applicant's expense, in compliance with NEPA and all other applicable laws, regulations, and policies, including but not limited to the ESA, the NHPA, and the NPS Organic Act of 1916. Many of the actions taken under the variance process, however, could be incorporated into subsequent requirements such as NEPA. Proposed projects

in variance areas will require consideration of alternatives and will likely result in EIS-level NEPA documentation. Compliance with applicable laws, regulations, and policies could result in substantial changes to a project proposal or application denial.

B.6 REFERENCES

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