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U.S. Department of the Interior
Bureau of Land Management

Approved Record of Decision and Amendments/ Record of Decision for Utility-Scale Solar Energy Development

Volume I: Chapters 1-8, Appendices A-D

Mission statement

The Bureau of Land Management sustains the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

On the cover

Gemini Solar Project, Nevada (Credit: Bureau of Land Management)

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Prepared for the Bureau of Land Management by

Argonne National Laboratory
Environmental Science Division
9700 S. Cass Ave.
Lemont, IL 60439

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Acronyms and Abbreviations

ACEC	area of critical environmental concern
ACHP	Advisory Council on Historic Preservation
AIM	Assessment, Inventory, and Monitoring (strategy)
APE	area of potential effect
BESS	battery energy storage system
BLM	Bureau of Land Management
CDCA	California Desert Conservation Area
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
DLA	designated leasing area
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DRECP	Desert Renewable Energy Conservation Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973 (as amended)
FLPMA	Federal Land Policy and Management Act of 1976
FR	*Federal Register*
GIS	geographical information system
Km	kilometer(s)
km^2	square kilometer(s)
kV	kilovolt(s)
MBTA	Migratory Bird Treaty Act
mi	mile(s)
MW	megawatt(s)
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	National Conservation Area
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NMFS	National Marine Fisheries Service
NOI	Notice of Intent

NPS	National Park Service
NRHP	*National Register of Historic Places*
NSHT	National Scenic and Historic Trail
NST	National Scenic Trail
PFYC	Potential Fossil Yield Classification
POD	plan of development
PV	photovoltaic
RECO	Renewable Energy Coordination Office
REDA	Renewable Energy Development Area
RFDS	reasonably foreseeable development scenario
RMP	resource management plan
ROD	Record of Decision
ROW	right-of-way
SEZ	solar energy zone
SHPO	State Historic Preservation Officer
SRMA	special recreation management area
U.S.C.	*United States Code*
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	visual resource management

1 Record of Decision

1.1 Introduction

This Record of Decision (ROD) describes the U.S. Department of the Interior (DOI) Bureau of Land Management's (BLM's) decisions to amend resource management plans (RMPs) in service of modifying its current solar energy program, and approval of these decisions by the DOI Principal Deputy Assistant Secretary for Land and Minerals Management. In accordance with the Federal Land Policy and Management Act (FLPMA), public lands are generally managed under principles of multiple use and sustained yield and in a manner that takes into account the long-term needs of future generations for renewable and non-renewable resources.

The changes to the BLM's solar energy program reflected in this ROD improve and expand the BLM's utility-scale solar energy[1] planning in response to national priorities and goals for renewable energy development and changes in solar technologies since 2012 and update the *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States* (BLM 2012; the "2012 Western Solar Plan"). The 2012 Western Solar Plan applied to Arizona, California, Colorado, Nevada, New Mexico, and Utah. In this ROD, the BLM is expanding its solar energy planning to include Idaho, Montana, Oregon, Washington, and Wyoming. The two sets of states, taken together, make up the 11-state planning area, which includes approximately 162 million acres of lands that are administered by the BLM (also called public lands).[2]

This ROD and associated RMP amendments (also referred to as "land use plan" amendments) were preceded by a robust environmental evaluation through the preparation of the *Final Programmatic Environmental Impact Statement and Proposed Resource Management Plan Amendments for Utility-Scale Solar Energy Development* (Solar Programmatic EIS) (BLM 2024b).

The Solar Programmatic EIS analyzed a range of alternatives representing different options for addressing land use allocations for utility-scale photovoltaic (PV) solar projects, permitting processes, and programmatic design features. The Solar Programmatic EIS evaluated the environmental, social, and economic impacts of those alternatives and the agency's proposed action in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ's) regulations for implementing NEPA (Title 40, Parts 1500–1508 of the *Code of Federal*

[1] *Utility-scale solar energy development* is defined to encompass projects of 5-MW nameplate capacity or higher that connect to the electric transmission grid.

[2] The planning area includes all BLM-managed land in the 11 states except lands covered by California's Desert Renewable Energy Conservation Plan (DRECP).

Regulations [40 CFR Parts 1500–1508]),[3] the DOI's NEPA implementing procedures (43 CFR Part 46), and applicable BLM and DOI authorities.[4]

1.2 Decision

The decision is hereby made to approve the RMP Amendments to existing BLM land use plans described in Appendix A of this ROD, and to apply new land use allocations and incorporate updated programmatic design features for utility-scale solar development as described under the Approved Plan in Section 3.1. The Approved Plan responds to national priorities and goals for renewable energy development and increased developer interest in siting solar energy facilities on public lands, addresses changes in solar technologies since 2012, and expands the BLM's solar energy planning to include BLM-administered lands in the 11-state planning area.[5]

1.2.1 What the Decision Provides

This ROD records the decision of the BLM Principal Deputy Director and approval of this decision by the Principal Deputy Assistant Secretary for Land and Minerals Management to amend BLM land use plans in the 11-state planning area as they pertain to utility-scale solar energy development. The land use plan amendments address both land use allocations (lands available or unavailable for solar development) and design features that will apply to utility-scale solar projects on BLM-administered land. These decisions will guide the processing of all new utility-scale solar energy applications on BLM-administered lands in the planning area.

Understanding and considering the diverse values of public lands and existing resources and other uses is crucial to informing the BLM's land management decisions. The BLM's mission to manage public land under principles of multiple use and sustained yield is best achieved by conducting environmental reviews and analyses that are appropriately scaled. In the context of this effort, the BLM intends to first allocate lands with the greatest potential for successful solar energy development and a higher likelihood of compatibility with other public lands resources and uses. This initial planning helps identify areas with the greatest potential for successful solar energy development including areas where utility-scale solar energy development is more likely

[3] The Solar Programmatic EIS was prepared consistent with the CEQ NEPA regulations that were effective at the time the BLM initiated its NEPA review in December 2022. The BLM is aware of the November 12, 2024, decision in *Marin Audubon Society, et al. v. Federal Aviation Administration, et al.,* No. 23-1067, (D.C. Cir., Nov. 12, 2024). To the extent that a court may conclude that the CEQ regulations implementing NEPA are not judicially enforceable or binding on this agency action, the BLM has nonetheless elected to follow those regulations at 40 CFR Parts 1500–1508, in addition to DOI's regulations implementing NEPA at 43 CFR Part 46, to meet the agency's obligations under NEPA, 42 U.S.C. 4321 *et seq*.

[4] For the BLM, these authorities include the BLM's *NEPA Handbook* (BLM 2008) and Chapter 11 of the DOI's *Departmental Manual* (DOI 2020).

[5] The Approved Plan will not affect the BLM's management of certain lands in the Spokane District in western Washington that are not currently managed under the Spokane District RMP.

to be compatible with existing land uses. The more detailed environmental reviews and evaluations can only be performed once specific projects are proposed.

1.2.2 What the Decision Does Not Provide

This ROD and associated land use plan amendments do not authorize any solar development projects. They also do not eliminate the need for project-specific analysis and stakeholder engagement for proposed solar energy project rights-of-way (ROWs). Rather, the broad identification and allocation of lands as open, avoidance, or exclusion areas for utility-scale solar energy development is an important step to guide solar developers to locations where the BLM anticipates there will be fewer conflicts with critical resources or other land uses. Making these decisions at the broad planning level increases management consistency and reduces the cost and time associated with evaluating proposed solar projects in unsuitable areas.

Under the land use plan amendments associated with this ROD, approximately 32 million acres of public lands are allocated as "open" or "avoidance" areas, meaning they are available for utility-scale solar project proposals. While these areas are available for solar applications, this does not imply that the BLM has determined them to be suitable for solar energy development. The BLM anticipates that up to 700,000 acres of BLM-administered lands across the 11-state planning area may be used to support solar deployment over the next 20 years, and all proposed projects would be subject to applicable programmatic design features and project-specific reviews. In addition, the ROD and associated land use plan amendments do not predetermine or mandate the specific locations — such as state, county, or site — where solar deployment will take place. The designation of broad areas of public land as available for utility-scale solar development ensures significant flexibility, allowing for adjustments to address local concerns and issues that may necessitate siting modifications and project reconfiguration during the project-specific review process. When a solar energy project ROW application is received, the BLM performs a project-specific environmental review in accordance with applicable laws and regulations, including all requirements for public engagement. The project-specific evaluation will analyze, as appropriate, potential site-specific impacts on resources and other uses to determine suitability of the proposed solar energy project. The BLM may tier to relevant analysis provided in the Solar Programmatic EIS but will need to consider site-specific issues, impacts, and public concerns for each project prior to any agency decision. Where the BLM tiers to a relevant programmatic analysis in the course of a project-specific NEPA review, the BLM will reevaluate the programmatic environmental document, as appropriate, in accordance with NEPA.

ROW applications for solar energy projects on BLM-administered lands must comply with regulations at 43 CFR Part 2800, under which the BLM may require submission of a project's plan of development (POD) that addresses all known or potential conflicts with sensitive resources and values and includes proposed measures to avoid, minimize, or compensate for impacts on those resources. Furthermore, applications will be reviewed to: (1) identify and address aspects of the proposal that do not conform to the applicable land use plan; (2) incorporate consideration of applicable design features to

address local conditions and issues (for example, modifying a project area to avoid habitat or cultural resources); and (3) solicit feedback and concerns from local community members and consider project modifications to address those concerns. Appropriate project siting configurations must be determined with local input, and the BLM may consider implementing design features that include appropriate setbacks from or otherwise avoid resources, even within areas allocated as available for development under this ROD and associated land use plan amendments. The project review process may result in the BLM granting, granting with modifications, or denying an application. During the project-specific analysis the BLM may incorporate current and relevant information and data that were not available at the time of the Solar Programmatic EIS.

1.3 Management Considerations and Rationale for the Decision

The Draft Solar Programmatic EIS (see Chapter 5 of BLM 2024a) and Final Solar Programmatic EIS (see Chapters 5 and 6 of BLM 2024b) present an analysis of the BLM's alternatives and Proposed Plan in terms of their effectiveness in meeting the objectives outlined as part of the BLM's purpose and need for action. The Final Solar Programmatic EIS also includes a summary of programmatic-level analysis on the potential impacts on resources and resource uses from solar energy development by alternative. These considerations were used as the basis for the BLM's Proposed Plan and selection of the Approved Plan.

The Approved Plan's focus on lands proximate to transmission and previously disturbed lands meets the BLM's objective of guiding applications for utility-scale solar energy projects on BLM-administered lands to areas with generally lower potential resource conflicts that are more likely to be developed. Proximity to transmission infrastructure is one of the most important economic parameters for successful utility-scale solar energy deployment. In response to comments on the Draft Solar Programmatic EIS, the BLM modified the scope and definition of the transmission proximity and previously disturbed lands criteria to provide sufficient available lands to allow for flexibility to identify potentially suitable locations for solar projects while ensuring that areas with resource concerns are protected. The resource-specific comparisons presented in Chapter 6 of the Final Solar Programmatic EIS illustrate that the Approved Plan will generally minimize land disturbance, and reduce habitat fragmentation, resource degradation, and environmental and cultural resource impacts.

The Approved Plan provides ample acreage to support the level of future development that the BLM anticipates, based in part, on the reasonably foreseeable development scenario (RFDS) projections developed as part of the Solar Programmatic EIS. Based on the BLM's multiple-use land management mission and experience it is appropriate for broad-scale planning efforts to make orders-of-magnitude more lands available for a given use than the BLM expects would in fact be put to that use. Making broader areas available allows the BLM to manage land more effectively by ensuring that different uses — like energy projects, recreation, conservation, and grazing — can be balanced without locking out future opportunities. By planning this way, the BLM maintains

adaptability, ensuring public lands can meet evolving needs while protecting environmental, ecological, and cultural resources. Complexity and controversy involved in navigating technical challenges, environmental concerns, community interests, and other potential uncertainties involved in the deliberative permitting process make that approach prudent. Making significantly more acres available than the BLM estimates will be developed will help to ensure solar projects are not only sited for feasibility and legal compliance but also in a way that is environmentally responsible and that works for local communities. By making approximately 32 million acres available for potential project siting, when the BLM estimates that approximately 700,000 acres of BLM-administered lands may be used for utility-scale solar energy generation over the next 20 years (2% of the lands available, and less than 0.5% of all BLM-administered lands in the 11 western states), the Approved Plan provides the BLM flexibility to identify and respond to local siting issues and concerns.

This decision will facilitate the initial siting of solar projects in areas with higher feasibility and reduce major conflicts and environmental impacts while maintaining sufficient flexibility to account for site-specific resource considerations on a case-by-case basis under subsequent project-specific analysis. As an important part of this dynamic, this decision amends certain land use plans in the 11-state planning area to exclude solar energy development from areas that warrant durable protection for other management objectives and priorities.

This decision aligns with the recently promulgated Conservation and Landscape Health Rule (commonly known as the Public Lands Rule), which went into effect on June 10, 2024 (89 FR 40308 [May 9, 2024]). The Rule complements the BLM's general planning regulations by providing for certain actions to be taken during plan development and revision. Those actions, however, lie outside the scope of this targeted plan amendment effort intended solely to address the utility-scale solar elements of BLM land use plans.[6] For instance, the BLM is aware of a number of nominations for areas of critical environmental concern (ACECs) that have been made by members of the public, including those that were identified in protests filed on the Proposed Plan (see Section 4.3.1 for detail on the protest resolution process). Because designation of ACECs is outside of the scope of this plan amendment effort, and consistent with the BLM's discretion to defer consideration of ACEC nominations, including to a future planning effort, the BLM has not evaluated those nominations in the course of reaching this decision. 43 CFR 1610.7-2(i).

The Public Lands Rule also calls on the BLM generally to "[p]romote opportunities to support conservation and other actions that work toward achieving land health standards and ecosystem resilience" and "avoid authorizing uses of the public lands

[6] Moreover, BLM guidance clarifies that the Public Lands Rule was not intended to apply to planning efforts already underway at the time the final rule went into effect. Instruction Bulletin 2024-048, *Land Use Planning and the Conservation and Landscape Health Rule* (August 6, 2024).

that permanently impair ecosystem resilience." 43 CFR 6102.5(a)-(b).[7] Because this decision amends land use plans but does not authorize any solar projects, it does not impair, let alone permanently impair, ecosystem resilience. Further, the BLM expects that this decision will promote achievement of land health standards and ecosystem resilience consistent with the Public Lands Rule because this decision excludes from solar development lands with a higher likelihood of resource conflict and directs solar projects instead to lands likely to have fewer conflicts, while allocating enough land to provide for siting flexibility to respond to resource conflicts identified on a case-by-case basis.

This decision aligns with the BLM's mission centered on the principles of multiple use and sustained yield. It also responds to the Energy Act of 2020; E.O. 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619) issued in February 2021; and E.O. 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (86 FR 70935), issued in December 2021, which direct the Secretary of the Interior to support national renewable energy goals on public lands.

[7] The Public Lands Rule defines *ecosystem resilience* to mean "*the capacity of ecosystems (e.g., old-growth forests and woodlands, sagebrush core areas) to maintain or regain their fundamental composition, structure, and function (including maintaining habitat connectivity and providing ecosystem services) when affected by disturbances such as drought, wildfire, and nonnative invasive species*" (43 CFR 6101.4(d)).

2 Alternatives

In the Solar Programmatic EIS, the BLM evaluated six alternatives for managing utility-scale solar energy development on BLM-administered lands within the 11-state planning area (see Section 2.1 of the Final Solar Programmatic EIS). These alternatives included five action alternatives and a no action alternative. The BLM identified a Proposed Plan in the Final Solar Programmatic EIS as the BLM's preferred alternative. The Proposed Plan is a blend of the alternatives analyzed in the Draft Solar Programmatic EIS.

2.1 Alternative 1

Under Alternative 1, the BLM would identify BLM-administered lands in the 11-state planning area as either available for or excluded from solar development. This alternative would exclude lands by application of the resource-based exclusion criteria to protect known areas that contain important cultural, environmental, or other resources from the impacts of solar energy development (see Section 2.1.1.6 of the Final Solar Programmatic EIS). The remaining BLM-administered lands in the planning area would be available for utility-scale solar ROWs.

2.2 Alternative 2

As in Alternative 1, this alternative would exclude BLM-administered lands from utility-scale solar energy development by application of the resource-based exclusion criteria identified in Section 2.1.1.6 of the Final Solar Programmatic EIS. Lands with greater than 10% slope would also be excluded under this alternative.

Although PV solar development is technically feasible on slopes that exceed 10%, the BLM received extensive comments during the scoping process for the Solar Programmatic EIS advocating that the slope exclusion criterion present in the 2012 Western Solar Plan be retained as a way to avoid resource impacts such as increased erosion and impacts on cultural resources, surface hydrology, Tribal interests, visual resources, wildlife, and wildlife movement. In light of these concerns, the BLM retained a slope-based exclusion criterion for all alternatives except Alternative 1. Consistent with many comments, the BLM proposes setting that limitation at 10%, which is greater than the 5% threshold set by the 2012 Western Solar Plan.

2.3 Alternative 3

Alternative 3 focuses on proximity to electricity transmission infrastructure. As under Alternative 2, this alternative would exclude lands from utility-scale solar energy development by application of the resource-based exclusion criteria and would exclude lands with greater than 10% slope (see Section 2.1.1.6 of the Final Solar Programmatic EIS). Available areas would be the remaining areas also within 10 mi of existing and

planned transmission lines with capacities of 100 kV or greater.[1,2] Available areas would also include areas within 10 mi of the centerline of most Section 368 energy corridors. Lands farther than 10 mi from these transmission lines would not be available for solar development.

2.4 Alternative 4

Alternative 4 focuses on previously disturbed lands. As under Alternatives 2 and 3, this alternative would exclude lands from utility-scale solar energy development by application of the resource-based exclusion criteria and would exclude lands with greater than 10% slope (see Section 2.1.1.6 of the Final Solar Programmatic EIS).

Available areas would be the remaining areas also identified as previously disturbed lands, identified on the basis of a substantial departure from baseline resource conditions according to the U.S. Geological Survey (USGS) Landscape Intactness model (Carter et al. 2017), or where there is a presence of invasive annual weeds at pixel densities greater than 40%, based on analysis of herbaceous cover data prepared by the Multi-Resolution Land Characteristics consortium (MRLC 2023), and making a general assumption that lands with invasive weeds at this level or greater would encounter substantial challenges to restoration. Lands with less than 40% annual weed cover and where the USGS Landscape Intactness model does not show a substantial departure from baseline resource conditions would be excluded from solar energy development, thereby preserving these lands for other uses including potential future restoration, as appropriate.

2.5 Alternative 5

Alternative 5 combines the criteria from Alternatives 3 and 4 and identifies lands as available for solar development if they are both near transmission infrastructure and previously disturbed. As under Alternatives 2–4, this alternative would exclude lands from utility-scale solar energy development by application of the resource-based exclusion criteria and would exclude lands with greater than 10% slope (see Section 2.1.1.6 of the Final Solar Programmatic EIS).

Available areas would be the remaining areas that are also: (1) within 10 mi of existing and planned transmission lines with capacities of 100 kV or greater (as described above for Alternative 3); and (2) previously disturbed (as described in Section 2.4 for Alternative 4). Remaining lands that are more than 10 mi from transmission lines or

[1] Planned transmission line projects are included that cross BLM-administered lands (as listed in Appendix J, Table J-5, of the Final Solar Programmatic EIS) and areas within 10 mi of west-wide energy corridors designated by the BLM pursuant to Section 368 of the Energy Policy Act of 2005 to accommodate aboveground development.

[2] Transmission capacity is the amount of electricity that can be transmitted along a single line. Lower-capacity lines are less efficient, losing more power when transporting electricity over longer distances. Transmission lines with capacities less than 100 kV are relatively minor components of the transmission grid (NERC 2018).

have moderate or high intactness or invasive weeds present at less than 40% would not be available for solar development.

2.6 No Action Alternative

The No Action Alternative continues the current management of utility-scale solar energy development in Arizona, California, Colorado, Nevada, New Mexico, and Utah under the 2012 Western Solar Plan, as amended. That plan excludes lands from utility-scale solar energy development by application of resource-based and technology-based exclusion criteria, and designates priority areas, called solar energy zones (SEZs), which are specific locations well suited for utility-scale solar energy generation where the BLM prioritizes development.[3] The 2012 Western Solar Plan also allows for utility-scale solar energy development proposals on lands outside of priority areas that are not otherwise excluded. Any such proposals are subject to the variance process set out in the 2012 Western Solar Plan ROD (BLM 2012). The 2012 Western Solar Plan amended the land use plans in the six-state planning area to reflect the identification of excluded lands, SEZs, and variance lands to facilitate permitting utility-scale solar energy generation projects (there defined as solar energy facilities with nameplate capacity of 20 megawatts [MW] or greater that transmit electricity to the transmission grid) and to require programmatic design features. The Arizona Restoration Design Energy Project ROD (BLM 2013) further refined the BLM's planning for utility-scale solar development in Arizona and identified lands across the State that may be suitable for the development of renewable energy and designated these areas as Renewable Energy Development Areas (REDAs). That ROD identified REDAs and one new SEZ in Arizona.

The resource-based exclusions that would continue to apply in areas subject to the 2012 Western Solar Plan under the No Action Alternative are identified in Table 2.1-4 of the Final Solar Programmatic EIS. In addition, in areas subject to the 2012 Western Solar Plan, technology-based criteria apply to exclude lands with solar insolation levels less than 6.5 kWh/m^2/day and lands with slope greater than 5%.

For the five states and parts of Utah not subject to the 2012 Western Solar Plan, the No Action Alternative would continue the status quo. Under it, solar applications would be evaluated under the existing terms of approved RMPs.

2.7 Proposed Plan

The BLM developed the Proposed Plan, described in Chapter 6 of the Final Solar Programmatic EIS, based on feedback from the public and cooperating agencies on the Draft Solar Programmatic EIS. The Proposed Plan describes the BLM's proposed approach for implementing utility-scale PV solar energy development on BLM-

[3] Priority areas designated through the 2012 Western Solar Plan included 17 SEZs. Amendments to the 2012 Western Solar Plan include addition of the Agua Caliente SEZ in Arizona, the West Chocolate Mountain SEZ in California, the Dry Lake East DLA in Nevada, REDAs in Arizona, and solar emphasis areas in Colorado and deletion of the Fourmile East SEZ in Colorado (see Section 1.3 of the Final Solar Programmatic EIS).

administered land and is a blend of elements from the range of alternatives analyzed in the Draft Solar Programmatic EIS. The Proposed Plan would amend RMPs in the 11-state planning area to identify areas available for solar development. Under the Proposed Plan, a proposed ROW would only be approved following an appropriate project-specific review, in compliance with NEPA and other applicable laws.

For land allocations, the Proposed Plan begins with Alternative 5, which combines the transmission proximity concept of Alternative 3 with the previously disturbed lands concept of Alternative 4. However, rather than require both criteria be present, as under Alternative 5, the Proposed Plan requires that only one or the other criterion be present. Moreover, the Proposed Plan includes modifications to both the transmission proximity and disturbed lands criteria. The result of these modifications is that more land is available for application under the Proposed Plan than under Alternative 5 (and Alternatives 3 or 4). All additional lands available by virtue of these modifications under the Proposed Plan are lands that are available under Alternatives 1 and 2, and the impacts from utility-scale solar development on those lands were disclosed and analyzed in the Solar Programmatic EIS through the discussion of those alternatives.

Similar to the action alternatives, the Proposed Plan applies resource-based exclusions (see Table 6-2 of the Final Solar Programmatic EIS), and lands with slopes 10% or greater are also excluded to provide additional general resource protection. For resource-based exclusion criteria (see Table 6-2 of the Final Solar Programmatic EIS), the Proposed Plan begins with Alternatives 2 through 5, which included a common suite of resource-based exclusion criteria as well as a general exclusion of lands with slope greater than 10%. As described in the Final Solar Programmatic EIS, most of those resource-based exclusions are carried forward in the Proposed Plan, but exclusions 2 and 4 are modified to incorporate elements of the No Action Alternative. As under the No Action Alternative, under the Proposed Plan “known occupied habitat” is not excluded, and not all SRMAs are excluded. Finally, the Proposed Plan includes modifications to exclusion 9 that exclude more lands and does not make any previously excluded lands available, thereby reducing potential resource impacts compared to those analyzed in the Solar Programmatic EIS under the No Action Alternative and action alternatives. Data for some of the resource-based exclusion criteria were updated in the Final Solar Programmatic EIS.

Under the Proposed Plan, lands that are not otherwise excluded are available for solar development where they meet *either* the transmission infrastructure proximity *or* the previously disturbed lands criteria. This approach uses elements from Alternatives 3 and 4 while only requiring that either criterion be met, and not both, as is the case under Alternative 5. Each criterion applies as follows:

- Lands available are those within 15 mi of existing and planned transmission lines with a capacity of 69 kV or greater or within 15 mi of most Section 368 energy corridors, unless otherwise excluded by resource-based criteria. This is a change from Alternatives 3 and 5 in the Draft Solar Programmatic EIS, under which lands within 10 mi of existing and planned transmission lines with capacities of 100 kV

or greater are available, unless otherwise excluded by resource-based criteria.[4] The changes to the distance and voltage thresholds were made in response to public comments indicating that the thresholds used in the Draft Solar Programmatic EIS were too restrictive, resulting in the exclusion of lands that may potentially be appropriate for development. The voltage threshold is reduced from 100 to 69 kV because 69-kV lines may be upgraded to make them suitable for carrying the power loads from solar energy facilities.

- Previously disturbed lands (regardless of transmission proximity) not otherwise excluded are available for solar development. Based on public and cooperating agency feedback, the BLM updated the parameters used to identify lands as previously disturbed to better reflect appropriate parameters for arid versus non-arid lands (see Appendix K of the Final Solar Programmatic EIS). To ensure further that these lands are properly identified, a design feature (PW-4) was added that requires verification of disturbed status for projects proposed on disturbed lands more than 15 mi from existing and planned transmission lines.

Based on public input, the Proposed Plan includes a land use allocation category of "Avoidance" to identify areas supporting sensitive resources where solar energy projects may be allowed only if they can demonstrate that they would not disrupt the important functions these areas serve. Two types of lands are designated as avoidance: (1) big game migration corridors (non-high-use); and (2) areas designated as avoidance for solar development in existing BLM land use plans. See Table 6-3 of the Final Solar Programmatic EIS for more information.

Like the action alternatives analyzed in the Solar Programmatic EIS, the Proposed Plan eliminates the 2012 Western Solar Plan's variance process and removes existing land use allocations for variance lands. In accordance with existing regulations, policy, and procedures (see 43 CFR Part 2800), the BLM will continue to screen and prioritize solar applications and engage with relevant agencies and the public. As part of screening for land use plan conformance, the BLM will specifically evaluate each application to (1) identify and change or eliminate any aspects of the project not in conformance with the applicable land use plan; (2) incorporate consideration of appropriate design features developed to address local conditions and issues (for example, modifying a project area to avoid habitat or cultural resources); and (3) solicit feedback and concerns from local community members and consider project modifications to address those concerns. The Category 1 plan-wide programmatic design features to mitigate potential impacts identified in Appendix B of this ROD are required, as applicable, for all projects.[5] These programmatic design features also require screening for presence of certain resources as described in Appendix E, Volume 2 of this ROD.

[4] Similar to Alternative 3 described above and in Section 2.1.1.3 of the Final Solar Programmatic EIS, planned transmission line projects that cross BLM-administered lands (listed in Appendix J, Table J-5 of the Final Solar Programmatic EIS) and areas within 15 mi of west-wide energy corridors designated by the BLM pursuant to Section 368 of the Energy Policy Act of 2005 to accommodate aboveground development are included.

[5] Appendix C of this ROD includes a glossary of terms used in the Final Solar Programmatic EIS, including terms used in the Appendix B Design Features.

The BLM will also comply with NEPA when deciding in the future whether to authorize proposed solar projects.

As with all action alternatives, all designations of priority areas except for the Los Mogotes SEZ in Colorado and the REDAs in Arizona are carried forward. The Los Mogotes SEZ would be deallocated and excluded from utility-scale solar energy development. The REDAs in Arizona would no longer be allocated as designated leasing areas (DLAs), but some land within the current REDAs will remain available for development based on the land allocations made by this ROD.

The Proposed Plan also includes programmatic design features (see Section 6.3 and Appendix B of the Final Solar Programmatic EIS). The BLM received substantial input on both the structure of the design features and on the specifics of individual design features identified in Appendix B of the Draft Solar Programmatic EIS. For the Proposed Plan, in Appendix B of the Final Solar Programmatic EIS the BLM further refined and organized the design features to make them clearer and easier to use and presented them in three categories: Category 1: Mandatory, Plan-Wide; Category 2: Mandatory, Resource-Specific; and Category 3: Project Guidelines. Category 3 project guidelines may be required by the BLM authorized officer for a particular project based on the project-specific evaluation.

Finally, the BLM explained in Section 6.5 of the Final Solar Programmatic EIS how the Proposed Plan would apply to project applications that are currently under review.

2.8 Alternatives Considered but Not Analyzed in Detail

In the Solar Programmatic EIS, the BLM identified seven alternatives considered but not analyzed in detail. A summary of the rationale for considering but eliminating these alternatives follows, and more detail as to each of these alternatives can be found in Section 2.3 of the Final Solar Programmatic EIS.

A solar insolation exclusion alternative was eliminated from detailed analysis because of advances in solar PV technologies. Alternatives that would identify new SEZs and/or variance areas, similar to those identified in the 2012 Western Solar Plan, were eliminated as the present effort took a different approach for identifying lands available for solar development and exclusion lands. An alternative that would restrict development to previously contaminated lands was eliminated because it would not identify enough lands as available to accommodate the level of development on public lands that the BLM anticipates will occur over the next 20 years (based, in part, on the RFDS) and would therefore not meet the BLM's purpose and need for taking this action. A distributed generation, energy conservation, and private lands alternative was eliminated from detailed analysis as the BLM does not have authority over those means of solar energy development and energy efficiency achievement; as a result, such an alternative would not meet the BLM's purpose and need for taking this action. The Western Alliance "Smart from the Start" alternative was proposed by multiple cooperating agencies but was eliminated from detailed analysis as the elements therein either already exist within the BLM's regulation, policy, or procedures, or are

substantially similar to elements within alternatives carried forward for detailed analysis. Finally, an alternative that would include fewer exclusion criteria and design features was eliminated from detailed analysis as it would not sufficiently identify areas with fewer resource conflicts and would therefore not meet the BLM's purpose and need for taking this action.

2.9 Environmentally Preferable Alternative

Factors considered in determining the environmentally preferable alternative include the extent to which the various alternatives:

- Address climate-change-related effects.
- Address disproportionate and adverse effects on communities with environmental justice concerns.
- Protect, preserve, or enhance historic, cultural, Tribal, and natural resources, including rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders (E.O.s).
- Cause damage to the biological and physical environment.

Accounting for the purpose and need for this decision, the BLM, in identifying the environmentally preferrable alternative, has also considered the extent to which each of the alternatives would:

- Facilitate initial siting of utility-scale PV solar energy development proposals by focusing applications into areas with higher feasibility and reducing anticipated major conflicts and environmental impacts while maintaining flexibility to account for site-specific resource considerations during project-specific NEPA analysis.
- Align with the BLM's mission centered on the principles of multiple use and sustained yield.
- Respond to the Energy Act of 2020, E.O. 14008, and EO 14057, which direct the Secretary of the Interior to support renewable energy goals on public lands.

The BLM has determined that the Proposed Plan is the environmentally preferable alternative because it provides a balanced and flexible programmatic approach to solar energy development. While the Proposed Plan makes more lands available than Alternatives 3, 4, and 5, it will enable solar development in locations best suited for that development while providing latitude to modify project siting proposals based on project-specific local input to avoid sensitive resources and avoid or minimize adverse effects on historic, cultural, Tribal, and natural resources. As such, the Proposed Plan is anticipated to facilitate environmentally preferable outcomes from solar energy development across public lands within the 11 western states, help to replace fossil fuel sources of energy, reduce climate-change impacts on the biological and physical environment, and advance environmental justice.

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3 Approved Plan and Land Use Plan Amendments

3.1 Approved Plan

The Approved Plan describes the BLM's approach for implementing utility-scale PV solar energy development on BLM-administered land. The Approved Plan is the same as the Proposed Plan described in Section 2.7 of this ROD, except as provided in Section 3.3 of this ROD.

The Approved Plan amends RMPs in the 11-state planning area to identify areas available for solar development. A proposed ROW would only be approved following an appropriate project-specific review, in compliance with NEPA and other applicable laws and regulations.

As described in Section 3.1.1 of this ROD, the Approved Plan applies resource-based exclusions (see Table 3-2 of this ROD), and lands with slopes 10% or greater are also excluded to provide additional general resource protection. The Approved Plan also includes the same avoidance areas as the Proposed Plan (see Table 3-3 of this ROD). Areas are also excluded unless they are either within 15 mi of a qualifying existing or planned transmission line with a capacity of 69 kV or greater or most Section 368 energy corridors, or qualify as "previously disturbed" lands (as described in more detail in Section 3.1.1). All remaining public lands are available for solar development. The intent of the Approved Plan is to limit impacts associated with utility-scale solar energy on lesser-disturbed lands and focus development into areas closer to the transmission grid.

Like the action alternatives and the Proposed Plan analyzed in the Solar Programmatic EIS, the Approved Plan eliminates the 2012 Western Solar Plan's variance process and removes existing land use allocations for variance lands. In accordance with existing regulations, policy, and procedures (see 43 CFR Part 2800), the BLM will continue to screen and prioritize solar applications while engaging with relevant agencies and the public. As part of screening for land use plan conformance, the BLM will specifically evaluate each application to: (1) identify and change or eliminate any aspects of the project not in conformance with the applicable land use plan; (2) incorporate consideration of appropriate design features to address local conditions and issues (for example, modifying a project area to avoid habitat or cultural resources); and (3) solicit feedback and concerns from local community members and consider project modifications to address those concerns. As described in Section 3.1.2 of this ROD, the Approved Plan includes programmatic design features and project guidelines for utility-scale solar projects. The Category 1, Plan-Wide programmatic design features to mitigate potential impacts identified in Appendix B of this ROD are required, as applicable, for all projects. These programmatic design features also require screening for presence of certain resources as described in Appendix E, Volume 2 of this ROD. The BLM will comply with NEPA when deciding whether to authorize proposed solar projects.

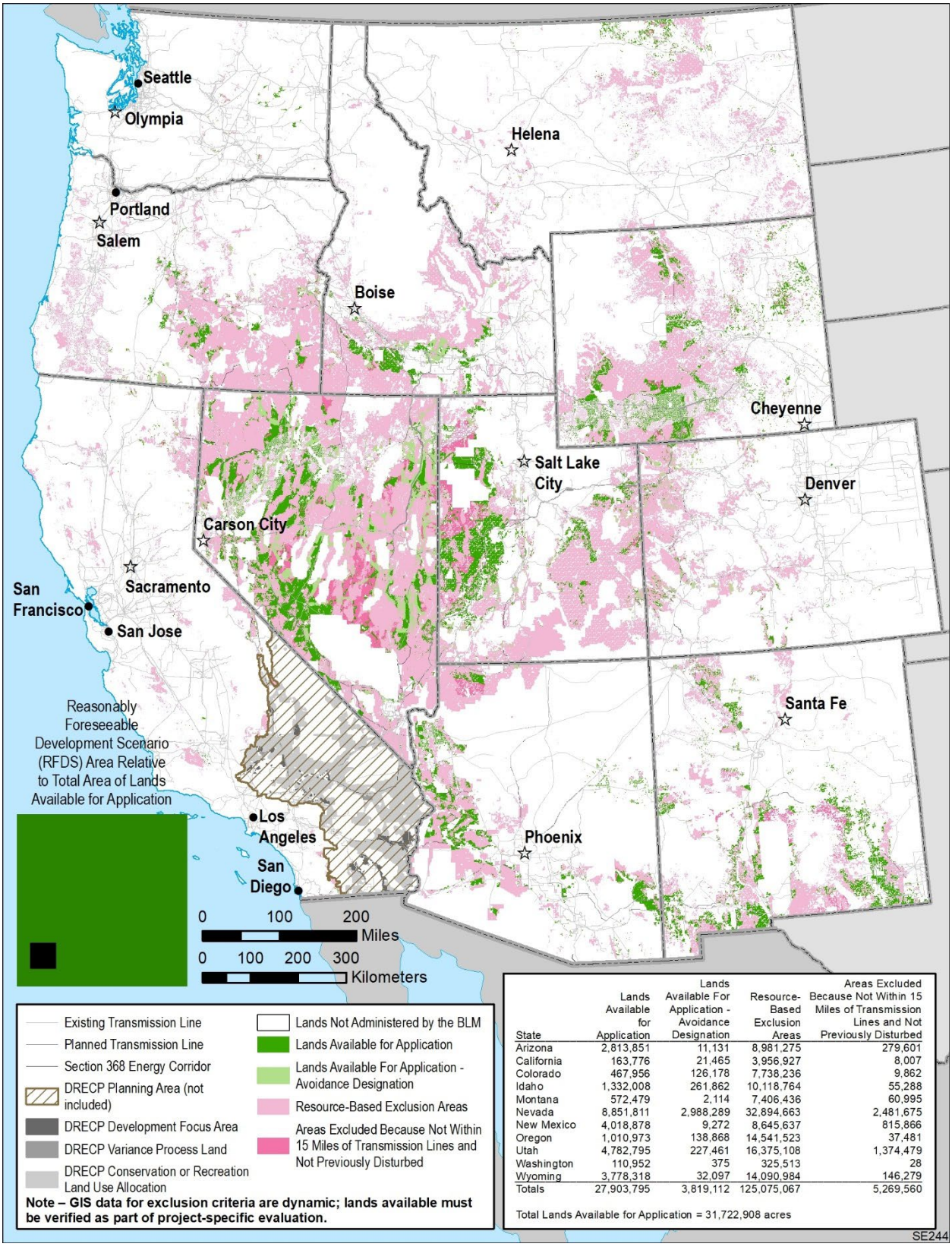
All designations of priority areas except for the Los Mogotes SEZ in Colorado and the REDAs in Arizona are carried forward. The Los Mogotes SEZ will be deallocated and excluded from utility-scale solar energy development. The REDAs in Arizona will no longer be allocated as DLAs, but some land within the current REDAs will remain available for development based on the land allocations made by this ROD.

Table 3-1 summarizes the BLM-administered lands available for development by state and in total for the Approved Plan. Note that the acreages identified in Table 3-1 are estimates of the actual areas available for development, because some types of exclusions could not be mapped for the planning effort. The lands available for solar development under the Approved Plan are shown in Figure 3-1.

Table 3-1. BLM Land Use Allocations in the Approved Plan[a,b]

Planning Area State	BLM Planning Area	Lands Available for Application			Exclusion Areas		
		General	Designated Avoidance Lands	Total Lands Available for Application	Resource-Based	Additional Areas Not Meeting Transmission Proximity and Disturbed-Lands Criteria	Total Exclusion Areas
Arizona	12,085,859	2,813,851	11,131	**2,824,982**	8,981,275	279,601	**9,260,877**
California[c]	4,150,175	163,776	21,465	**185,241**	3,956,927	8,007	**3,964,934**
Colorado	8,342,232	467,956	126,178	**594,134**	7,738,236	9,862	**7,748,099**
Idaho	11,767,922	1,332,007	261,862	**1,593,869**	10,118,764	55,288	**10,174,052**
Montana	8,042,023	572,479	2,114	**574,593**	7,406,436	60,995	**7,467,430**
Nevada	47,216,438	8,851,811	2,988,289	**11,840,100**	32,894,663	2,481,675	**35,376,338**
New Mexico	13,489,653	4,018,878	9,272	**4,028,150**	8,645,637	815,866	**9,461,503**
Oregon	15,728,844	1,010,973	138,868	**1,149,841**	14,541,523	37,481	**14,579,004**
Utah	22,759,843	4,782,795	227,461	**5,010,256**	16,375,108	1,374,479	**17,749,587**
Washington[d]	439,868	110,952	375	**111,327**	325,513	28	**325,541**
Wyoming	18,047,678	3,778,318	32,097	**3,810,415**	14,090,984	146,279	**14,237,262**
TOTAL	162,067,535	27,903,795	3,819,112	**31,722,908**	125,075,067	5,269,560	**130,344,627**

[a] All areas are in acres; the Approved Plan excludes lands subject to the California DRECP, approximately 27 million acres. Parcels 20 acres or smaller are not included in the calculations.
[b] Lands allocations are best estimates based on mapped exclusions. The geographic boundaries for exclusion categories will change over time as land use plans are revised or amended and new information on resource conditions is developed. For example, crucial and severe winter range were not mapped as exclusions in the calculation of lands available for application. Availability of lands for application will be verified during project-specific analysis.
[c] These numbers differ from the Final Programmatic EIS due to the issuance of the 2024 Northern California Integrated Plan.
[d] These numbers differ from the Final Programmatic EIS due to the removal from the BLM Planning Area of 2,975 acres of land not covered under the Spokane RMP.



State	Lands Available for Application	Lands Available For Application - Avoidance Designation	Resource-Based Exclusion Areas	Areas Excluded Because Not Within 15 Miles of Transmission Lines and Not Previously Disturbed
Arizona	2,813,851	11,131	8,981,275	279,601
California	163,776	21,465	3,956,927	8,007
Colorado	467,956	126,178	7,738,236	9,862
Idaho	1,332,008	261,862	10,118,764	55,288
Montana	572,479	2,114	7,406,436	60,995
Nevada	8,851,811	2,988,289	32,894,663	2,481,675
New Mexico	4,018,878	9,272	8,645,637	815,866
Oregon	1,010,973	138,868	14,541,523	37,481
Utah	4,782,795	227,461	16,375,108	1,374,479
Washington	110,952	375	325,513	28
Wyoming	3,778,318	32,097	14,090,984	146,279
Totals	27,903,795	3,819,112	125,075,067	5,269,560

Total Lands Available for Application = 31,722,908 acres

Figure 3-1. BLM-Administered Lands Excluded and Available for Application in the 11-State Planning Area under the Approved Plan.

3.1.1 Exclusion Criteria and Avoidance Areas in the Approved Plan

Under the Approved Plan, lands are excluded from solar energy development if they meet any of the resource-based exclusion criteria presented in Table 3-2.

In addition to the resource-based exclusion criteria described in Table 3-2, the Approved Plan excludes land based on three additional criteria:

- Areas with 10% or higher slope are excluded. Although areas with up to 10% slope are available under the Approved Plan, the BLM will evaluate, as appropriate, the potential for soil erosion and other impacts associated with construction in higher-sloped areas. Construction in areas with greater than 10% slope will require a land use plan amendment.
- Areas further than 15 mi from existing and planned transmission lines with capacities of 69 kV or greater, and further than 15 mi from the centerlines of most Section 368 energy corridors (see Appendix J of the Final Solar Programmatic EIS) are excluded unless they are previously disturbed, as described below.
- Previously disturbed lands, as described in Appendix K of the Final Solar Programmatic EIS, are available for development unless excluded by one or more other criterion. Lands that do not qualify as previously disturbed lands are excluded, unless they are in sufficient proximity to transmission, as described above.

The extent of the land area excluded by these criteria will change dynamically over time as land use plans are revised, amended, or updated through plan maintenance by the BLM based on new information and data on resource conditions. For example, under resource-based exclusion 2, which excludes designated and proposed critical habitat for species protected under the ESA, if new critical habitat is proposed in the future, that critical habitat will be excluded upon its proposal.

The map of the Approved Plan presented in Figure 3-1 presents the exclusion criteria to the extent that available geographical information system (GIS) data allow; however, some resource exclusions are unmapped due to information sensitivity or lack of complete geospatial data for the 11-state planning area at the time of the publication of this ROD. Lands are excluded if they satisfy any one of the exclusion criteria as written in Table 3-2, regardless of whether they are reflected on the map in Figure 3-1. The BLM will assess and verify excluded lands for all solar project applications based on the most comprehensive and current information and data maintained by the BLM office(s) with jurisdiction during project-specific review.

Table 3-2. Resource-Based Exclusion Criteria in the Approved Plan

Exclusion No.	Exclusion Name	Exclusion Description	Mapping Status[a]
1	Areas of Critical Environmental Concern (ACECs)	All ACECs identified in applicable land use plans.	Partially mapped
2	Threatened and Endangered Species	All designated and proposed critical habitat areas for U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) species protected under the Endangered Species Act (ESA) (USFWS 2023a; NOAA undated). In addition, specified areas for 40 specific ESA-listed species.[b]	Mapped
3	Lands with Wilderness Characteristics	All areas for which an applicable land use plan establishes protection for lands with wilderness characteristics.	Mapped
4	Recreation	Developed recreational facilities. In Arizona, California, Colorado, and New Mexico, all SRMAs identified in applicable land use plans. In Utah, all SRMAs except those in the Box Elder, Pony Express, House Range, and Warm Springs planning areas.[c]	Mapped
5	Biological Conservation Agreements/ Strategies	All areas where the BLM has agreements with USFWS, NMFS, or state agency partners and other entities to manage sensitive species habitat in a manner that would preclude large-scale impacts/disturbance, such as solar energy development, including habitat protection and other recommendations in conservation agreements/strategies.[d]	Unmapped
6	Greater Sage-Grouse and Gunnison Sage-Grouse	Greater sage-grouse and Gunnison sage-grouse habitat as identified for exclusion in applicable land use plans.[e]	Mapped
7	Land Use Designations	All areas designated as no surface occupancy (NSO) in applicable land use plans. All ROW exclusion areas identified in applicable land use plans. All ROW avoidance areas identified in applicable land use plans to the extent the purpose of the ROW avoidance is incompatible with solar energy development.	Mapped
8	Desert Tortoise	Mojave desert tortoise existing and future translocation sites identified by the USFWS in coordination with the BLM; crucial connectivity areas; and additional habitat areas identified in coordination with the USFWS. (Note: this exclusion is mapped as part of exclusion 2, additional habitat areas for ESA-listed species.)	Mapped

Exclusion No.	Exclusion Name	Exclusion Description	Mapping Status[a]
9	Big Game	All big game areas identified in applicable land use plans to the extent the land use plan decision prohibits large-scale impacts/disturbance, such as utility-scale solar energy development (Note: This portion of the exclusion is not mapped. This information is maintained by BLM state offices). The portions of big game migratory corridors mapped as "high use" in Figure 3-2 (CDFW 2023; IDFG 2023; Kauffman et al. 2024; MFWP 2024; UDWR 2023; WGFD 2023). Migration pinch points/bottle necks, parturition areas, stopover areas, and crucial and severe winter range (Note: This portion of the exclusion is not mapped.)[f]	Partially mapped
10	Natural Areas and Other Conservation Areas	Research Natural Areas and Outstanding Natural Areas identified in applicable land use plans.[g] All Backcountry Conservation Areas identified in applicable land use plans.	Partially mapped
11	Visual Resources	Lands classified as visual resource management (VRM) Classes I or II throughout the 11-state planning area and, in Utah and small parts of Arizona and Colorado, some lands classified as Class III[h] in applicable land use plans.	Mapped
12	National Scenic Byways	All National Scenic Byways, including all BLM Back Country Byways (BLM state director approved) identified in applicable BLM land use plans, including any associated corridor or lands identified for protection through an applicable land use plan.	Unmapped
13	National Recreation, Water, or Side and Connecting Trails	All Secretarially designated National Recreation Trails (including National Water Trails) and Connecting and Side Trails identified in applicable BLM and local land use plans, including any associated corridor or lands identified for protection through an applicable land use plan.	Unmapped

Exclusion No.	Exclusion Name	Exclusion Description	Mapping Status[a]

14	National Conservation Lands	All units of BLM National Conservation Lands:
		• National monuments
		• National conservation areas and other areas similarly designated for conservation, including cooperative management and protection areas, outstanding natural areas,[g] forest reserves, and national scenic areas.
		• National Trails System
		  ○ All national scenic and historic trails designated by Congress, trails recommended as suitable for designation through a congressionally authorized National Trail Feasibility Study, or such qualifying trails identified as additional routes in law, including any trail management corridors identified for protection through an applicable land use plan,[i]
		  ○ Trails undergoing a Congressionally authorized National Trail Feasibility Study will also be excluded pending the outcome of the study.
		• National wild and scenic rivers:
		  ○ All designated wild and scenic rivers, including any associated corridor and lands identified for protection through an applicable river corridor plan (or comprehensive river management plan). Absent a river plan, protection corridors are 0.25 mi to either side of the river from the ordinary high-water mark, unless otherwise provided by law.
		  ○ Areas outside a designated wild and scenic river corridor when the project would "invade the area or unreasonably diminish" the wild and scenic river's river values.
		  ○ All segments of rivers determined to be eligible or suitable for wild or scenic river status as identified in applicable land use plans, including any associated corridor and lands identified for protection through an applicable land use plan.
		• Wilderness areas and wilderness study areas
			Mapped

15	National Natural Landmarks	National Natural Landmarks identified in applicable land use plans, including any associated lands identified for protection through an applicable land use plan.	Mapped
16	*National Register of Historic Places* (NRHP)	Lands within the boundaries of properties listed in the NRHP, including national historic landmarks, and any additional lands outside the designated boundaries identified for protection through an applicable land use plan.	Partially mapped
17	Tribal Interest Areas	Traditional cultural properties and Native American sacred sites that are identified through consultation with Tribes and recognized by the BLM or that are the subject of a memorandum of understanding between the BLM and a Tribe or Tribes.	Partially mapped
18	Old Growth Forests	Old growth forests identified in applicable land use plans.	Unmapped

Exclusion No.	Exclusion Name	Exclusion Description	Mapping Status[a]
19	Lands Previously Found to Be Inappropriate for Solar Energy Development	Lands found to be inappropriate for solar energy development through a prior environmental review process.[j]	Mapped
20	Acquired Lands	All lands acquired by the BLM using funds from the Land and Water Conservation Fund or the Southern Nevada Public Land Management Act, as amended (Public Law 105-263).	Mapped
21	State- or Area-Specific	In Nevada, lands in the Ivanpah Valley, Coal Valley, and Garden Valley. Area surrounding Chaco Culture National Historical Park consistent with Public Land Order No. 7923. Rio Grande Natural Area (as established by Public Law 109-337).	Mapped

[a] "Mapped" means the exclusion is depicted in Figure 3-1 based on geospatial data across the 11-state decision area, including publicly available data and ESA-species habitat data from USFWS; "unmapped" means the exclusion is not depicted in Figure 3-1 either because geospatial data are not available at the scale of the 11-state decision area or because the data are sensitive and not being disclosed for that reason, but these exclusions would be assessed at the project-specific level; "partially mapped" means that part of the excluded area is depicted in Figure 3-1 based on available geospatial data for the decision area, but the exclusion will be further assessed at the project-specific level. Details on geospatial data included in the analysis are provided in Appendix G of the Final Solar Programmatic EIS. The extent of the land area excluded by application of exclusion criteria will change over time for all exclusion criteria as land use plans are revised or amended and new information on resource conditions is developed. Lands are excluded if they satisfy any one of the exclusion criteria as written, regardless of whether they are mapped in Figure 3-1.

[b] Available spatial data from USFWS and NMFS for designated and proposed critical habitat is mapped. For designated and proposed critical habitat spatial data available as linear features (e.g., rivers), the exclusion area mapped was a polygon 0.25 mi wide on each side of the line. Additional specific areas for the following 40 ESA-listed or proposed listed species created in coordination with USFWS are also mapped and excluded: autumn buttercup, bi-state sage-grouse, blowout penstemon, bonytail, Carsons wandering skipper, clay reed-mustard, clay-loving wild buckwheat, Colorado hookless cactus, Colorado pikeminnow, Debeque phacelia, Dixie valley toad, Dudley bluffs bladderpod, Dudley bluffs twinpod, dwarf bear poppy, gypsum wild buckwheat, grizzly bear, Holmgren milkvetch, humpback chub, Jones cycladenia, Kendall's warm spring dace, Knowlton's cactus, last chance townsendia, Lee pincushion cactus, Mojave desert tortoise, northern aplomado falcon, north park phacelia, pariette cactus, pecos sunflower, razorback sucker, San Rafael cactus, Shivwits milkvetch, shrubby reed-mustard, Siler pincushion cactus, Sneed pincushion, Sonoran pronghorn, Uinta basin hookless cactus, Ute ladies-tresses, Winkler cactus, Wright fishook cactus, and Wyoming toad.

[c] SRMAs are not excluded in Nevada, Wyoming, Washington, Oregon, Idaho, Montana, and portions of Utah (Box Elder, Pony Express, House Range, and Warm Springs planning areas). This exclusion in the Approved Plan reflects the No Action Alternative regarding SRMAs.

[d] Excluded Dixie valley toad habitat, Wyoming toad habitat, and Carson wandering skipper habitat now fall within exclusion 2.

[e] Greater sage-grouse: The BLM amended or revised land use plans in 2014 and 2015 in the states of California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, and Wyoming (2015 Sage-Grouse Plan Amendments) to provide for greater sage-grouse conservation on public lands. Subsequently, the BLM amended several of those plans in 2019 in the states of California, Colorado, Idaho, Nevada, Oregon, Utah, and Wyoming (BLM 2019). On October 16, 2019, the U.S. District Court for the District of Idaho preliminarily enjoined the BLM from implementing the 2019 amendments (BLM 2019). The 2015 Sage-Grouse Plan Amendments, therefore, are currently in effect. To meet the objectives of BLM's sage-grouse conservation policy, the BLM initiated a land use planning process to evaluate alternative management approaches to contribute to the conservation of greater sage-grouse and sagebrush habitats and to evaluate the impacts of any land use planning decisions directed toward greater sage-grouse and sagebrush habitat conservation (BLM 2023a). The land use planning process will address the management of greater sage-grouse and sagebrush habitat on BLM-managed public lands in the states of California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, and Wyoming (see 86 FR 66331). The exclusion in this ROD is coextensive with the treatment of utility-scale solar energy development as provided in the 2015 Sage-Grouse Plan Amendments. The exclusion is also dynamic and subject to potential future changes to those plans. Therefore, because the BLM is evaluating the extent to which solar development should be excluded in sage-grouse habitat as part of its latest sage-grouse planning efforts, the scope of this exclusion may change. The Draft Greater Sage-Grouse RMP Amendment/EIS (BLM 2024c) was published on March 15, 2024 (89 FR 18963), and the Greater Sage-Grouse Proposed RMP Amendment/Final EIS was published on November 15, 2024 (89 FR 90311) (BLM 2024e). Due to data availability at the time the Approved Plan in this ROD was prepared, the mapped exclusion in Figure 3-1 reflects the 2015 Greater Sage-Grouse Plan Amendments. Regardless of the data mapped in Figure 3-1, any areas identified as exclusion areas for utility-scale solar in the Greater Sage-Grouse RMP Amendment (BLM 2024e) are also excluded under this Approved Plan. The exclusion is also dynamic and subject to potential future changes to those plans.

Bi-State sage-grouse population: Specific bi-state sage-grouse habitat is covered by exclusion 2.

Gunnison sage-grouse: On October 17, 2024, the BLM signed a ROD and Approved RMP Amendment (BLM 2024d) amending the land use plans of BLM field offices, national monuments, and National Conservation Areas (NCAs) containing occupied and unoccupied habitat for the threatened Gunnison sage-grouse (*Centrocercus minimus*; BLM 2024d). The exclusion in this ROD is coextensive with the treatment of utility-scale solar energy development under applicable land use plans. Due to data availability at

the time the Approved Plan was prepared, the mapped exclusion in Figure 3-1 does not reflect the BLM 2024d RMP. Regardless of the data mapped in Figure 3-1, any areas identified as exclusion areas for utility-scale solar in the Approved Gunnison Sage-Grouse RMP Amendment are also excluded under this Approved Plan. The exclusion is also dynamic and subject to potential future changes to those plans.

[f] Available datasets identify big game crucial and severe winter range and high use portions of migration corridors for bighorn sheep, elk, mule deer, and pronghorn. While high use big game migratory corridors are mapped based on these datasets, this exclusion will be dynamic (that is, the BLM will consider additional datasets and update the exclusion through plan maintenance over time, as appropriate).

[g] There are also Outstanding Natural Areas and Research Natural Areas administratively designated in land use plans. These are excluded under a separate criterion for clarity.

[h] In Utah and small areas of Arizona and Colorado, VRM Class III lands that are within 25 mi of Zion, Bryce, Capital Reef, Arches, and Canyonlands national parks would be excluded under this criterion because these locations near those national parks are highly sensitive.

[i] National scenic trails (NSTs) are 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 (National Trails System Act 3(a)(2)). National historic trails (NHTs) are federal protection components 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 5(b)(A) and 7(c)). NHTs or other types of historic trails may also contain properties listed or eligible for listing on the NRHP including national historic landmarks. NHTs are protected and identified as required by law (NTSA 3(a)(3)) through BLM inventory and planning processes. See design feature SDLW-3 (Appendix B of this ROD) and Appendix E, Section E.4 of Volume 2 of this ROD, for more information about consideration of NSTs and NHTs.

[j] This criterion applies to 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. This criterion also applies to lands determined to be inappropriate for solar energy development during preparation of the 2012 Western Solar Plan including 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 and Los Mogotes East SEZs in Colorado; parts of the Amargosa Valley SEZ in Nevada, and areas identified during consultation with cooperating agencies and Tribes excluded to protect sensitive natural, visual, and cultural resources (total of 1,066,497 acres [4,316 km^2]; see 2012 Western Solar Plan, Figure A-1). The entire Fourmile East SEZ in Colorado was deallocated and is excluded. Note: This ROD deallocates and excludes the remaining area of the Los Mogotes East SEZ due to Tribal concerns.

The Approved Plan includes the land use allocation category of “Avoidance” for certain areas that are available for solar development, but which have sensitive environmental resources that are particularly vulnerable to disturbance. The areas allocated as “Avoidance” include the portions of big game migration corridors that are not identified as high-use, and other areas currently allocated as avoidance for solar development in existing BLM RMPs. Consistent with the approach for available lands described in Section 1.1.5 of the Final Solar Programmatic EIS, applications for solar energy development in avoidance areas will require evaluation to: (1) identify and change or eliminate any aspects of the project not in conformance with the applicable land use plan; (2) incorporate consideration of appropriate design features to address local conditions and issues (for example, modifying a project area to avoid habitat or cultural resources); and (3) consider feedback and concerns from local community members and project modifications to address those concerns. Table 3-3 provides details on the areas allocated as avoidance areas, and Figure 3-2 maps the migratory corridors and winter range exclusion and avoidance areas for the Approved Plan. Unless otherwise excluded, the avoidance areas shown in Figure 3-2 are an Avoidance land allocation for utility-scale solar.

Table 3-3. Resource-Based Avoidance Criteria in the Approved Plan

Avoidance No.	Avoidance Name	Avoidance Description	Mapping Status
1	Big game migratory corridors	All portions of big game migratory corridors that are not identified as "high-use" in state or federal wildlife agencies' migration corridor datasets (BLM 2023b; CDFW 2023; CPW 2023; IDFG 2023; Kauffman et al. 2024; MFWP 2024; NDOW 2023; UDWR 2023; and WGFD 2023) are avoidance areas unless otherwise excluded (see Figure 3-2 for data mapped as big game migration corridors). Includes avoidance areas for bighorn sheep, elk, mule deer, pronghorn, and white-tailed deer. These avoidance areas are dynamic and will incorporate updated state, federal, and Tribal datasets for big game over time. The BLM will evaluate updated datasets periodically and perform plan maintenance to incorporate new data, as appropriate. Projects in these avoidance areas shall comply with design features for ecological resources (Appendix B, Section B.2.4, and particularly ER-5g, ER-14g, and ER-1w).	Mapped
2	Other	Areas designated as avoidance for solar development in existing BLM land use plans are avoidance areas unless otherwise excluded.	Mapped

Figure 3-2. Migratory Corridors and Winter Range Mapped Exclusion and Avoidance Areas for the Approved Plan (Note: crucial and severe winter range were not mapped as exclusions in the calculation of lands available for application; data may be updated during project-specific evaluation or plan maintenance, as appropriate).

3.1.2 Design Features in the Approved Plan

Design features are project requirements that have been incorporated into the Approved Plan to avoid, minimize, or compensate for adverse impacts. The 2012 Western Solar Plan established design features applicable to utility-scale solar energy development on BLM-administered lands in the six states where it applied. Through this planning process, the BLM reviewed the design features from the 2012 Western Solar Plan and updated them, taking into account BLM experience in permitting and monitoring PV solar energy facilities, as well as public and cooperating agency input.

The design features incorporated in the Approved Plan are presented in Appendix B of this ROD in three categories: Category 1: Mandatory, Plan-Wide; Category 2: Mandatory, Resource-Specific; and Category 3: Project Guidelines. The design features address resource conflicts associated with utility-scale solar energy development. In addition, projects on BLM-administered lands are required to follow all applicable federal, state, and local laws and regulations, such as the ESA and NHPA, which may impose additional requirements to avoid or minimize resource impacts. The design features will be incorporated into future authorizations for utility-scale solar energy projects, as appropriate, as enforceable permit conditions.

For those impacts that cannot be avoided or minimized, the BLM may implement compensatory mitigation to offset unavoidable residual impacts, with a goal of ensuring viability of resources over time. The BLM has previously taken action to compensate for impacts of solar energy development. For example, to address unavoidable residual impacts of solar energy development in SEZs, the BLM produced several regional mitigation strategies after the 2012 Western Solar Plan was established (BLM 2014, 2016a,b, 2017), based on the framework for developing regional mitigation plans presented in Appendix A, Section A.2.5, of the 2012 Final Solar Programmatic EIS (BLM and DOE 2012). This regional mitigation strategy framework may be valuable to consider, as appropriate, to compensate for unavoidable residual impacts from solar energy development under this Approved Plan.

3.1.3 Applicability to Projects under Review

Where the BLM has completed review of a solar project application and issued an authorization, the Approved Plan does not apply. The BLM has numerous solar energy project applications already under review (or “pending”) that are at various stages in the review process, ranging from just received to near a decision. The extent to which the elements of the Approved Plan apply to these project applications depends on the degree to which the BLM has progressed its review of the application. To maintain the orderly administration and management of the public lands, the following criteria will be applied to each project application received prior to this ROD to determine whether it is fully exempt, partially exempt, or not exempt from the Approved Plan. The fully exempt and partially exempt applications are listed in Appendix D of this ROD. Applications under review that are not listed in Appendix D are considered not exempt. This section describes how the provisions of the Approved Plan apply to applications under review and does not change any project-specific legal requirements. All applications must be

individually reviewed in compliance with NEPA, the ESA, the National Historic Preservation Act (NHPA), and other applicable laws and regulations.

Certain elements of the Approved Plan apply to all applications under review (including fully exempt and partially exempt applications). First, applications under review are not subject to the variance process established by the 2012 Western Solar Plan (see 2012 Western Solar Plan ROD, Appendix B.5) even if a proposed ROW overlaps so-called variance areas or variance lands, in whole or in part. Second, the decisions made in this ROD to identify lands as available for solar development apply to all applications under review. In other words, a fully or partially exempt application will not require a land use plan amendment to address the availability of land within the proposed ROW area if that land is made available by this ROD.

Other elements of the Approved Plan apply to only some applications under review, depending on whether they qualify as fully exempt or partially exempt, as described below, including (1) the land allocations designating avoidance and exclusion areas, and (2) the programmatic design features in Appendix B of this ROD.

Amendments to applications under review or assumptions of applications under review by a new applicant will not affect the applications' exemption status (i.e., an amended partially exempt application will remain partially exempt), provided that such amendments or assumptions either (1) do not expand the boundaries of the 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.

3.1.3.1 Fully Exempt

Fully exempt project applications are not subject to decisions made in this ROD to (1) allocate lands as exclusion or avoidance areas or (2) require the design features identified in Appendix B of this ROD. A project application qualifies as fully exempt if either of the following apply:

- The BLM published a Draft EIS or environmental assessment (EA) by August 30, 2024; or
- The BLM issued a decision authorizing a ROW grant or lease before the date of this ROD.

3.1.3.2 Partially Exempt

Project applications that do not meet the fully exempt criteria but do meet any of the criteria below are not subject to decisions in this ROD that allocate lands as exclusion or avoidance areas. However, they are subject to the programmatic design features adopted in this ROD (see Appendix B of this ROD).

Project applications are considered partially exempt if the applicant and the BLM executed a Cost Recovery Agreement by April 18, 2024 (the close of the 90-day

comment period for the Draft Solar Programmatic EIS), or if one or more of the following milestones were reached by August 30, 2024:

1. Projects in a DLA for which the BLM has already issued a lease for solar energy development, but for which a ROW amendment is necessary;
2. Projects for which the BLM identified a preferred applicant under a competitive process pursuant to BLM ROW regulations;
3. Projects for which the BLM determines that the applicant has adequately complied with the requirement to conduct at least two preliminary application review meetings required under BLM ROW regulations; or
4. Projects for which the BLM has initiated NEPA by either: (a) publishing a Notice of Intent (NOI) to prepare an EIS, or (b) initiating public involvement on an EA through scoping.

Because the programmatic design features will apply to partially exempt applications, for projects for which the BLM published a Draft EIS or EA after publication of the Final Solar Programmatic EIS but before publication of this ROD, the BLM will assess whether the project complies with the programmatic design features in the Approved Plan. Before the BLM issues a final NEPA document or decision for these projects, the BLM must either (1) determine that the project complies with the applicable programmatic design features, including allowable variations as described in Appendix B of this ROD; or (2) incorporate any programmatic design features that are determined to be absent and applicable to the proposed project. The BLM will coordinate with the USFWS, NMFS, state resource management agencies, and Tribes, as appropriate, during this consistency review process.

3.1.3.3 Not Exempt

Projects that do not meet the fully exempt or partially exempt criteria are subject to the land allocations and programmatic design features in this ROD, notwithstanding the fact that the application may have been submitted prior to issuance of this ROD.

3.1.3.4 Elimination of the Variance Process Clarification

As discussed above, the Approved Plan eliminates the variance process described in Appendix B.5. of the 2012 Western Solar Plan. The Approved Plan clarifies that the BLM will not apply that variance process to any applications under review or future applications, including those that may be partially or fully exempt from other decisions made in this ROD. The BLM has determined that the variance process is unnecessary and redundant with other processes. For the same reasons the variance process would be eliminated under all action alternatives, the process is also eliminated for fully and partially exempt applications under the Approved Plan. This clarification does not change the anticipated effects of the Approved Plan because under all alternatives the BLM will evaluate, screen, and prioritize applications consistent with the regulations.

3.1.3.5 Project-Specific Land Use Plan Amendment Clarification

The Approved Plan clarifies that the decisions made in this ROD to identify lands as available for solar development apply to all applications under review. Fully and partially exempt applications, therefore, do not require a land use plan amendment to address the availability of land within the proposed ROW area if that land is made available by this ROD. For example, if the BLM is reviewing a partially exempt application where the proposed ROW includes lands allocated as excluded under the 2012 Western Solar Plan that will instead be allocated as available under the Approved Plan, a land use plan amendment to change the land allocation will not be required. The potential effects of changing land allocations from excluded to available were evaluated in the Solar Programmatic EIS.

3.1.3.6 Application Amendment and Assumption Clarification

The Approved Plan clarifies whether elements of the Approved Plan will apply to a fully exempt application if a solar developer amends the project application. The BLM is aware that project developers regularly submit amendments to their ROW applications describing modifications to their proposed projects, often in response to feedback from the public or the BLM. If the original application meets the criteria to be fully exempt from the decisions adopted by this ROD, the amended application will remain fully exempt, provided that the amendments either (1) do not expand the boundaries of the fully exempt ROW applications; or (2) are related to avoiding resource or land use conflicts, adapting the proposed project to third-party owned infrastructure constraints, or using or designating translocation or mitigation lands. This is consistent with the process described in the Proposed Plan, and adopted in the Approved Plan, for partially exempt applications, and reflects the BLM's interest in minimizing disruption to ongoing reviews where the amendments would reduce the potential impacts of the proposed project. The Approved Plan also clarifies that if a new applicant assumes a pending application, the application exemption status does not change. The Approved Plan clarifies that the same considerations apply to both fully exempt and partially exempt applications: an amendment to an application or an assumption will not affect the application's exemption status (i.e., an amended or assumed partially exempt application will remain partially exempt, and an amended or assumed fully exempt application will remain fully exempt), provided the amendment or assumption is consistent with the criteria outlined above.

3.2 Land Use Plan Amendments

This ROD amends land use plans within the 11-state planning area (see Appendix A of this ROD) to:

- Identify certain BLM-administered lands as available for utility-scale solar energy development applications;
- Exclude certain BLM-administered lands from utility-scale solar energy development applications;

- Identify certain BLM-administered lands as avoidance areas for utility-scale solar energy development applications;
- Remove variance area (sometimes referred to as variance land) allocations and eliminate the variance process;
- Remove the designation of the Los Mogotes SEZ in Colorado as a solar energy DLA and exclude this area from utility-scale solar energy development;
- Remove the existing designations of REDAs in Arizona, and allocate the land presently within the REDAs as available, avoidance, or excluded from solar energy development consistent with the allocation criteria in this ROD (see Section 2.1.1 of the Final Solar Programmatic EIS for details); and
- Update programmatic design features for utility-scale solar energy development to support environmentally responsible development of solar energy.

The Approved Plan Amendments affect land allocations for and management of utility-scale solar energy development on BLM-administered lands. They do not affect the availability of land for any required supporting linear infrastructure, such as roads, transmission lines, natural gas or water pipelines or stand-alone battery energy storage systems (BESSs). The existing applicable land use plans determine land availability and provide management direction pertaining to supporting linear infrastructure. 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 Approved Plan applies only to the siting of utility-scale solar energy generation facilities.

The allocations by land use plan and BLM field office are provided in Appendix A of this ROD, Tables A-1 through A-10. In total, these decisions allocate approximately 32 million acres as available for solar development (including approximately 3.8 million acres of designated avoidance lands) and 130.3 million acres as exclusion areas. Note that the figures in these tables reflect data available at the time of this ROD and that estimates of the acreage of available lands may change with updates to resource information, including for unmapped resource exclusions. Note also that most exclusion criteria in the Approved Plan are dynamic in nature, so the scope of the exclusions may change as the status, designation, and presence of resources on the underlying public lands changes.

3.3 Clarifications to the Approved Plan

Clarifications consist of minor corrections to and explanations of content in the Final Solar Programmatic EIS, including changes made from the Proposed Plan presented in the Final Solar Programmatic EIS to the Approved Plan presented in this ROD.

To aid reader review, where helpful, the relevant text from the Final Solar Programmatic EIS is included here along with the Section number and page number from that document.

- *Clarification*: Appendix A of this ROD has been revised to reflect recent RMP amendments made through other planning efforts. The Northwest California Integrated RMP, adopted on November 6, 2024, amended and replaced the Arcata and Redding RMPs in California. The Approved Plan will amend the Northwest California Integrated RMP as outlined in Appendix A of this ROD.
- Section 6.1 (Description of the Proposed Plan) of the Final Solar Programmatic EIS states in two locations (bottom of page 6-3 and top of page 6-4) that approximately 33 million acres of land would be available for solar projects under the Proposed Plan.

  Clarification: Approximately 32 million acres of land would be available for solar projects under the Proposed Plan (and are available under the Approved Plan). In all other locations of the Final Solar Programmatic EIS, the amount of land available under the Proposed Plan is correctly identified as 31,726,373 acres, or approximately 32 million acres.
- Section 6.1 (Description of Proposed Plan), page 6-2, bullet 1, states (in part): *"Lands available are those within 15 miles of existing and planned transmission lines with a capacity of 69 kV or greater or within 15 miles of* ***an existing designated energy corridor****, unless otherwise excluded by resource-based criteria."*

  Clarification: The text in bold above is incorrect. The text should have been identical to that used to describe Alternative 3; the sentence should state "or within 15 miles from the centerlines of most Section 368 energy corridors, unless." Under the Approved Plan only proximity to Section 368 energy corridors designated to accommodate aboveground development is considered, other designated energy corridors (e.g., locally designated corridors identified in RMPs) are not considered.
- Footnote 1 on page 6-2 of the Final Solar Programmatic EIS states: *"Similar to Alternative 3 described in Section 2.1.1.3, planned transmission line projects that cross BLM-administered lands (listed in Appendix J, Table J-5) and areas within 15 mi of Section 368 corridors designated to accommodate aboveground development (***except for Corridors of Concern; see Section J.1.5.1***) are included. One planned corridor (Southwest Intertie Project) has been added to those analyzed in the Draft Programmatic EIS.*"

  Clarification: The text in bold above is incorrect. Areas within 15 mi of all Section 368 corridors designated to accommodate aboveground development are considered proximate to potential future transmission facilities and included as lands available for solar development. See Appendix J of the Final Solar Programmatic EIS, page J-8, footnote 2, which correctly states: "*However, for the Final Programmatic EIS, Corridors of Concern were included in the transmission proximity analysis because most already include transmission lines. Sensitive resource evaluations would be conducted during project-specific evaluations.*"
- Table 6-2, Resource-Based Exclusion Criteria in the Proposed Plan, page 6-13 of Final Solar Programmatic EIS: footnote a: "*'Mapped' means this Proposed Plan incorporated publicly available geospatial data across the 11-state decision area;*

"unmapped" means this Proposed Plan did not incorporate geospatial data but these exclusions would be mapped at the project-specific level; "partially mapped" means this Propose[d] Plan incorporated some geospatial data for the study area as available but some exclusion areas would be mapped at the project-specific level. Details on geospatial data included in the analysis are provided in Appendix G. The extent of the land area excluded by application of exclusion criteria will change over time for all exclusion criteria as land use plans are revised or amended and new information on resource conditions is developed."

Clarification: The footnote has been clarified in this ROD (see Section 3.1.1, Table 3-1, footnote a) to explain that the "mapped," "unmapped," and "partially mapped" categories relate to the map of the Approved Plan land designations, Figure 3-1 of this ROD. The revised footnote also clarifies that lands are excluded if they satisfy any one of the exclusion criteria as written, regardless of whether they are mapped in Figure 3-1.

- Table 6-2, Resource-Based Exclusion Criteria in the Proposed Plan, page 6-8 of the Final Solar Programmatic EIS: Exclusion 5 was titled "Species Conservation Agreements/Strategies."

  Clarification: The title of this exclusion has been changed to "Biological Conservation Agreements/Strategies" (see Section 3.1.1, Table 3-1) in this ROD to clarify that this exclusion covers agreements that relate to sensitive species habitat which may include sensitive ecosystems. This clarification reflects the BLM's consultation with USFWS.

- Table 6-2, Resource-Based Exclusion Criteria in the Proposed Plan, footnote b, page 6-13 of Final Solar Programmatic EIS reads: "*Available spatial data from USFWS and NMFS for designated and proposed critical habitat is mapped. Additional specific areas for the following 40 ESA-listed or proposed listed species created in coordination with USFWS are also mapped and excluded: autumn buttercup, bi-state sage-grouse, blowout penstemon, bonytail, Carsons wandering skipper, clay reed-mustard, clay-loving wild buckwheat, Colorado hookless cactus, Colorado pikeminnow, Debeque phacelia, Dixie valley toad, Dudley bluffs bladderpod, Dudley bluffs twinpod, dwarf bear poppy, gypsum wild buckwheat, grizzly bear, Holmgren milkvetch, humpback chub, Jones cycladenia, Kendall's warm spring dace, Knowlton's cactus, last chance townsendia, Lee pincushion cactus, Mojave desert tortoise, northern aplomado falcon, north park phacelia, pariette cactus, pecos sunflower, razorback sucker, San Rafael cactus, Shivwits milkvetch, shrubby reed-mustard, Siler pincushion cactus, Sneed pincushion, Sonoran pronghorn, Uinta basin hookless cactus, Ute ladies-tresses, Winkler cactus, Wright fishook cactus, Wyoming toad.*"

  Clarification: The following text is added to clarify how this exclusion is mapped in instances where designated critical habitat is a linear feature (see Section 3.1.1, Table 3-1, footnote b of this ROD): "For designated and proposed critical habitat spatial data available as linear features (e.g., rivers), the exclusion area mapped was a polygon 0.25 mi wide on each side of the line."

- *Clarification*: Section 3.1.3 of this ROD provides the following clarifications to Section 6.5 of the Final Solar Programmatic EIS, Applicability to Projects under Review:
    - Neither fully nor partially exempt applications are subject to the variance process established by the 2012 Western Solar Plan.
    - The decisions made in this ROD to identify lands as available for solar development apply to all applications under review. Fully and partially exempt applications do not require a land use plan amendment to address the availability of land within the proposed ROW area if that land is made available by this ROD.
    - Applications that qualify as fully or partially exempt that are later amended or assumed may remain fully or partially exempt if the amendments or assumptions satisfy certain criteria.
- The following clarifications are made to the presentation of the design features in Appendix B of the Final Solar Programmatic EIS, Design Features. The design features included in the Approved Plan are presented in Appendix B of this ROD:
    - Appendix B of the Final Solar Programmatic EIS reads: "*PW-29 Areas of Special Coordination — National Park Service (NPS): If a proposed project is within 25 mi (40 km) of a National Park, or other NPS-managed lands, project developers, **in coordination with the BLM and NPS**, shall consider the proposed project's potential impacts to eight identified resource elements (Dark Night, Points of Entry, Upstream Watersheds, Wind Erodibility, Water Erodibility, Landscape Intactness, Viewshed Key Observation Points, and NRHP Key Observation Points) and determine appropriate mitigation. Refer to Appendix H for maps and more information.*"

      Clarification: The text in bold above has been changed to "in coordination with the BLM and with NPS participation as available." This change clarifies that the BLM will invite the NPS to participate in these reviews but NPS involvement is voluntary and subject to availability.
    - Appendix B of the Final Solar Programmatic EIS reads: "*SDLW-3 - The project developer shall coordinate with the BLM field office, National Scenic and Historic Trail (NSHT) administrators, Tribes, and partner organizations to review the adequacy of information in available RMPs and NSHT inventory reports for any proposed solar project that may impact NSHT management corridors. They must ensure that the project design avoids substantial interference and adverse impacts on NSHT management corridors and determine any areas unsuitable for development, following the BLM national trail inventory process as outlined in the NSHT manuals (6250/6280) and Inventory, Assessment, and Monitoring (IAM) technical references. Developers should avoid, minimize, or compensate for impacts on NSHTs to the maximum extent practicable (see glossary) according to program policy standards. If NSHT management corridors are not adequately inventoried in an RMP, developers shall refer to the DRAFT*

Inventory Analysis Units (IAU) established for NSHTs in the 11-state planning area. These areas, though not excluded from lands available for application under the NCL exclusion criterion, will require further consideration, inventory, and analysis by the BLM or project developer, including the refinement of IAUs at the local level during the solar project application process. This inventory may reveal unanticipated or undocumented remnants, artifacts, trail tread or trace, high potential historic sites and route segments, trail features, and associated settings for NSHTs adjacent to or within the proposed project site. For more information, see Appendix H, Section H.4."

Clarification: In response to questions received through the protest process, SDLW-3 is clarified in the Approved Plan to better explain how project developers and the BLM will consider NSHTs during project-specific reviews, consistent with BLM policies. As included in Appendix B of this ROD, SDLW-3 states: *"SDLW-3 Project developers must ensure that the project design avoids substantial interference and adverse impacts on NSHTs. If a proposed project is within the DRAFT IAUs established for NSHTs in the 11-state planning area (see Appendix E, Section E.4 of Volume 2 of this ROD) the project developer shall coordinate with the BLM field office, NSHT administrators, Tribes, and partner organizations to review the adequacy of information in available RMPs and NSHT inventory reports. The BLM will review the applicable RMP and any NSHT inventory reports to determine whether the existing inventories for potentially affected NSHTs comply with the BLM national trail inventory process as outlined in the NSHT manuals (6250/6280) and Inventory, Assessment, and Monitoring (IAM) technical references. If NSHT management corridors are not adequately inventoried in an RMP, developers shall, in coordination with the BLM, NSHT administrators, Tribes, and partner organizations, conduct further inventory, consistent with NSHT manuals (6250/6280), and analysis, including the refinement of Inventory Analysis Units at the local level during the solar project application process. This inventory may reveal unanticipated or undocumented remnants, artifacts, trail tread or trace, high potential historic sites and route segments, trail features, and associated settings for NSHTs adjacent to or within the proposed project site that the BLM must consider in identifying any areas unsuitable for development. The BLM may update the relevant RMP regarding NSHTs, consistent with NSHT manuals (6250/6280), as appropriate during project-specific reviews or future planning actions. For more information, see Appendix E, Section E.4 of Volume 2 of this ROD."*

- Appendix M (Comments and Responses) of the Final Solar Programmatic EIS, Section M.2.1.10, Applications Submitted Prior to Completion of Programmatic EIS, reads:

  "Section 6.5 discusses how "pending applications" would be affected by and managed under the Proposed Plan. The BLM defines "pending" applications as applications that have executed Cost Recovery Agreements by April 18,

> *2024 (i.e., the close of the 90-day comment period for the Draft Solar Programmatic EIS) or where one or more specific milestones are reached by August 30, 2024. Applications that are approved by a final BLM decision before the date of the Solar Programmatic EIS record of decision (ROD) will not be subject to any decisions adopted by that ROD.*
>
> *The programmatic design features adopted in the Solar Programmatic EIS ROD (proposed design features are presented in Appendix B), would apply to pending applications except for (1) projects for which a Draft EIS or EA has been published by January 20, 2024, and (2) projects for which BLM has issued a solar development lease by August 30, 2024.*
>
> *Pending applications will not be subject to the other management decisions adopted by the Solar Programmatic EIS ROD (including the decisions allocating land as available or excluded for solar application). Amendments to pending applications would also be subject to the design features, but not other decisions adopted by the Solar Programmatic EIS 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."*

Clarification: The description of applications under review ("pending" applications in Appendix M of the Final Programmatic EIS, Section M.2.1.10), was incorrect and did not align with the explanation of fully exempt and partially exempt applications in Section 6.5 of the Final Programmatic EIS. The BLM clarified how elements of the Approved Plan apply to applications under review in Section 3.1.3 of this ROD.

- *Clarification*: Section 1.2 of this ROD clarifies that the scope of this planning decision in Washington State is limited to lands covered by the Spokane District RMP. As such the Approved Plan will not apply to certain BLM-administered lands in western Washington.

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4 Public Engagement

4.1 Scoping

The BLM published a NOI to prepare a Programmatic EIS to Evaluate Utility-Scale Solar Energy Planning and Amend RMPs for Renewable Energy Development in the *Federal Register* (FR) and on the BLM's *National NEPA Register* on December 8, 2022 (87 FR 75284). The NOI sought public comment on whether the BLM should expand this planning effort to include five additional states: Idaho, Montana, Oregon, Washington, and Wyoming. The BLM also sought public comment on whether the DRECP should be included in the planning area, the definition of utility-scale, the variance process, and incentivizing development in preferred areas. The public scoping period lasted a total of 84 days and closed on March 1, 2023.

The BLM hosted 15 public scoping meetings: three virtual meetings and 12 in-person meetings (Table 7-1 of the Final Solar Programmatic EIS). The purpose of these meetings was to inform the public about the project and to provide an opportunity for individuals to submit oral comments.

The BLM received 297 unique written submittals and heard 75 oral comments at the public meetings, resulting in 2,026 unique comments during the scoping period. Many of the unique comments during the scoping process responded to issues and questions posed by the BLM in the NOI (42%) or were related to the NEPA process (23%). The remaining comments were about resource-specific concerns.

In addition to unique submissions from individuals and organizations, several organizations asked their members to submit form letters (called "campaign" letters in the Scoping Summary Report). Nine different campaign letters associated with six different organizations were received; a summary of issues raised in the campaign letters is provided in Table 3 of the Scoping Summary Report, and a copy of each of the nine letters is available in Appendix A of that report. In total, 22,925 campaign letters were received.

The scoping summary report and copies of all written comments submitted by email, mail, or online comment form are available on the project website (https://eplanning.blm.gov/eplanning-ui/project/2022371/510). Transcripts from the public meetings are also available on the website.

4.2 Draft Solar Programmatic EIS

The Notice of Availability for the Draft Solar Programmatic EIS was published in the *Federal Register* on January 19, 2024 (89 FR 3687), initiating a 90-day public comment period. The comment period closed on April 18, 2024. The BLM held eight informational public meetings during the comment period on the Draft Solar Programmatic EIS: two of these meetings were virtual and six were held in person. Table 7-3 in the Final Solar Programmatic EIS summarizes these meeting dates and locations.

Comments on the Draft Solar Programmatic EIS were submitted via the BLM ePlanning website (https://eplanning.blm.gov/eplanning-ui/project/2022371/510), by email, by U.S. mail, in writing at public meetings, and by phone message.

The BLM received more than 64,000 pieces of correspondence from a mix of commentors, including individual members of the public; federal, state, and local governmental agencies; Tribes; nongovernmental organizations; and industry groups. Approximately 95% of the correspondence was submitted as part of campaigns organized by different groups. Of the total correspondence received, 1,195 pieces were identified as unique, meaning they contained either entirely unique content or, in the case of campaign letters, additional unique content. Each piece of correspondence was reviewed to identify individual comments. A total of 4,329 individual comments were identified.

Appendix M of the Final Solar Programmatic EIS contains summaries of public comments on the Draft Solar Programmatic EIS along with responses to comments.

4.3 Proposed Plan Amendments and Final Solar Programmatic EIS

The NOA for the Proposed Plan Amendments and Final Solar Programmatic EIS was published in the *Federal Register* on August 30, 2024 (89 FR 70660), initiating a 30-day protest period on the Proposed Plan amendments. The BLM also provided the Proposed Plan amendments to the governors of the 11 states within the planning area for a 60-day review period to identify inconsistencies with state and local plans (see Section 5.3 of this ROD).

4.3.1 Protests on the Proposed Land Use Plan Amendments

Pursuant to the BLM's land use planning regulations at 43 CFR 1610.5-2, any person who participated in this land use planning process and has an interest that may be adversely affected by the land use planning decisions had an opportunity to protest the proposed planning decisions described in the Final Solar Programmatic EIS. The BLM received 163 protest letters on the proposed land use plan amendments, a subset of which contained valid protest issues. After careful consideration of all issues raised in these protests, the BLM 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 compliance with the following:

- The National Environmental Policy Act (e.g., the impacts analysis and information used, the range of alternatives considered, changes in the Proposed Plan, and the BLM's public participation process and response to comments).

- The Federal Land Policy and Management Act (e.g., policies and requirements related to ACECs, the BLM's land use planning regulations, the BLM's multiple use mandate and obligation to prevent unnecessary or undue degradation, resource inventories, and consistency with state and local plans).
- The Endangered Species Act.
- The National Trails System Act.
- The National Historic Preservation Act.
- Tribal consultation and requirements related to religious practice.

While the Director's resolution of protests did not identify any issues to be remanded, the BLM has made clarifications to the Approved Plan as a result of protests, comments, and internal BLM review. These are discussed in Section 3.3 of this ROD.

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5 Consistency and Consultation

5.1 Agency Cooperation, Consultation, and Coordination

5.1.1 Cooperating Agencies

The BLM invited federal, Tribal, state, and local government agencies to participate in preparation of the Solar Programmatic EIS as cooperating agencies. A total of 78 agencies, including 38 counties, agreed to work with the BLM as cooperating agencies. The BLM held regular meetings with cooperating agencies and solicited reviews of draft analysis.

The cooperating agencies were given the opportunity to review and comment on key portions of the Draft and Final Solar Programmatic EIS prior to their release; cooperating agency comments were considered and addressed to the extent appropriate and possible.

5.1.2 National Historic Preservation Act (NHPA) — Section 106 Consultation

In accordance with the requirements of Section 106 of the NHPA, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800, the BLM consulted with the State Historic Preservation Officers (SHPOs) for each of the 11 states in the planning area. At the same time that it released its NOI to prepare the Solar Programmatic EIS, the BLM notified each of the SHPOs to initiate consultation under Section 106.

In December 2023, the BLM provided a consultation package to each SHPO that included (1) a description of the proposed undertaking, that is, the land use plan amendments made by this decision; (2) consultation efforts to that point; (3) identification of the area of potential effect (APE); (4) efforts to identify historic properties within the APE; (5) analysis of the potential effects of the then-proposed land use plan amendments on historic properties; and (6) the BLM's proposed finding. The proposed APE encompassed all 11 states (excluding the DRECP in California), and the BLM proposed to make a finding under 36 CFR 800.4(d)(1) that the undertaking would have no effect on historic properties within that APE.

Under 36 CFR 800.4(d)(1), when an agency proposes a finding of no effects on historic properties, the SHPO concerned may object to that finding. On May 2, 2024, the California SHPO registered its objection to the BLM's proposed finding, expressing concerns that the land use plan amendments might lead to industrialization of significant areas of California's deserts and mountains, potentially causing cumulative adverse effects on both identified and unidentified historic properties, including cultural

landscapes. The California SHPO also expressed concern about BLM's effort to identify historic properties within the APE.[1]

Consistent with the Section 106 regulations, the BLM forwarded the California SHPO's objection to the Advisory Council on Historic Preservation (ACHP) on October 4, 2024. 36 CFR 800.4(d)(1)(ii). In forwarding the California SHPO's objection, the BLM explained the basis for its position that this land use planning decision does not authorize any individual solar project or any ground disturbance and so will not affect historic properties. The BLM also explained that its identification efforts were adequate in the context of a decision that approves no projects or other ground disturbance. Additional identification efforts and consideration of cumulative impacts would occur in the course of reviewing project applications, and any approval of a solar ROW must itself comply with Section 106 of the NHPA.

The ACHP responded to the BLM's referral on November 8, 2024. The ACHP concluded that "the BLM made a reasonable and good faith effort to identify historic properties, assess effects, and reach a finding of 'no historic properties affected'" (Koeppel 2024). In reaching that conclusion, the ACHP provided comments and guidance to the BLM for its implementation of this programmatic planning decision. The ACHP advised the BLM to consult further with interested Tribes on the process for future project-level reviews, clarify how it plans to assess and account for cumulative effects across multiple prospective solar projects, consult early and often with SHPOs, interested Indian Tribes, and other consulting parties on future project proposals, consider developing a Programmatic Agreement to provide a consistent approach to Section 106 reviews, and identify and propose adaptive management practices to ensure that cumulative impacts are addressed proactively during future project-level reviews.

Having considered the ACHP's comments, and recognizing the ACHP's advice regarding steps that the BLM may take moving forward to facilitate effective project-level consultation with SHPOs, interested Tribes, and other stakeholders, the BLM affirms its proposed finding that this decision will have no effect on historic properties. A summary of the BLM's finding, including evidence of its consideration of the ACHP's opinion was sent to the ACHP and SHPOs on December 11, 2024 (36 CFR 800.4(d)(1)(iv)(C)).

5.1.3 Endangered Species Act — Section 7 Interagency Cooperation

The BLM completed programmatic consultation with the USFWS and NMFS under Section 7(a)(2) of the ESA to ensure that the BLM's Proposed Plan would not jeopardize the continued existence of any threatened or endangered species. The BLM submitted programmatic biological assessments (BAs) to the USFWS on July 30, 2024, and an amended BA on December 11, 2024 (BLM 2024f). The BLM submitted a programmatic BA to the NMFS on August 14, 2024 (BLM 2024g), The BAs described potential effects on ESA-listed species and designated critical habitat from potential utility-scale solar development on lands available under the Proposed Plan and any appropriate

[1] The SHPOs for the other ten states did not object. Some raised questions or concerns in the course of continuing consultation, and the BLM worked with the SHPOs to address those issues.

mitigation, minimization, and avoidance measures. Further Section 7(a)(2) consultation will occur, as necessary, in connection with BLM decisions to grant ROWs for individual solar energy projects and will benefit from the preceding programmatic consultations and resulting concurrence and programmatic Biological Opinions.

The BLM's programmatic BAs identified 143 entities (including species and their individual distinct population segments or evolutionarily significant units) that utility-scale solar energy development under the Approved Plan "may affect but is not likely to adversely affect." The BAs also included an effects determination for all proposed and designated critical habitat of "may affect, not likely to adversely affect" because critical habitat would be excluded from solar development under the Proposed Plan (and Approved Plan) and many design features require project developers to mitigate impacts on listed species and their habitats The USFWS concurred with these determinations of "may affect, not likely to adversely affect" through its programmatic Biological Opinion dated December 13, 2024 (USFWS 2024). The NMFS concurred with these determinations in its concurrence letter dated October 10, 2024 (NMFS 2024).

The BLM's programmatic BA submitted to USFWS identified 124 entities under USFWS jurisdiction as likely to be adversely affected by solar energy development. The USFWS concluded in its programmatic Biological Opinion, dated December 13, 2024 (USFWS 2024), that solar energy development is not likely to jeopardize the continued existence of these entities.

In coordination with the USFWS, the BLM designed the Approved Plan in this ROD to be consistent with Section 7(a)(1) of the ESA by including conservation measures that proactively conserve endangered species and threatened species. These measures are incorporated as exclusions and design features in the Approved Plan.

5.2 Government-to-Government Consultation

The federal government works on a government-to-government basis with federally recognized Tribes. Under E.O. 13175 and 86 FR 7491, federal agencies have an obligation to conduct formal government-to-government consultation with federally recognized Tribes. As a matter of practice, the BLM engages in consultation with all Tribal governments, associated Native communities and Tribal organizations, and Tribal individuals whose interests might be directly and substantially affected by activities on public lands. *Tribal Relations: BLM Manual 1780* (BLM 2016c) provides further guidance for Tribal consultation. The BLM has prioritized effective government-to-government consultations for this planning effort and has provided multiple opportunities for Tribal consultation.

In December 2022 the BLM sent letters to 241 Tribes, chapters, and bands (listed in Appendix D, Section D.1 of the Final Solar Programmatic EIS), sharing information about the BLM's intent to begin this planning process, inviting those Tribes to be cooperating agencies under NEPA and consulting parties under Section 106 of the NHPA, and offering to engage in government-to-government consultation. Two Tribal informational webinars were held May 10 and June 14, 2023, to inform interested Tribes about the

Solar Programmatic EIS and ways to participate. The BLM sent an additional letter to 248 Tribes on January 22, 2024, inviting them to an informational webinar to share information, gather feedback, and answer questions about the Draft Solar Programmatic EIS; this webinar was held February 20, 2024 (see Appendix D, Table D.2 of the Final Solar Programmatic EIS).

As of November 2024, 23 Tribes had responded with unique requests for information, concerns and recommendations, or requests for consultation. Thirteen federally recognized and one non-federally recognized Tribe requested consultation. One Tribe retracted their request after review of the Solar Programmatic EIS materials.

5.3 Consistency with State and Local Land Use Plans

Section 202 of FLPMA directs the BLM to coordinate planning efforts with Native American Indian Tribes, other federal departments, and agencies of state and local governments. To accomplish this, the BLM is directed to keep apprised of state, local, and Tribal plans; ensure that consideration is given to such plans; and assist in resolving inconsistencies between such plans and federal planning. FLPMA goes on to state in paragraph (c)(9), "Land use plans of the Secretary [of the Interior] under this section shall be consistent with state and local plans to the maximum extent [s]he finds consistent with federal law and the purposes of this Act" (43 U.S.C. 1712(c)(9)).

The BLM's FLPMA planning regulations provide additional details, requiring that BLM RMPs be consistent with officially approved or adopted resource-related plans of other federal agencies, and state, local, and Tribal governments, so long as the RMPs are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands (43 CFR 1610.3-2).

Thus, FLPMA does not require the BLM to adhere to or adopt the plans of other federal agencies and state, local, or Tribal governments, 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 or policies.

In keeping with the provisions of the planning regulations, the BLM established regular opportunities for interaction with state and local officials, including inviting them to be cooperating agencies in accordance with 43 CFR 46.225(a)(3). As cooperating agencies, state and local officials reviewed and provided input on the alternatives prior to and after release of the Draft Solar Programmatic EIS, and on the Proposed Plan in the Final Solar Programmatic EIS. From these interactions, the BLM understands that some counties would prefer to limit solar energy development to disturbed lands where conflicts with resources and other land uses would be minimized. Some state and local cooperating agencies also expressed interest in excluding lands that have wilderness characteristics and adding buffers between solar energy development and certain resources or areas (such as private property or town boundaries).

Appendix L of the Final Solar Programmatic EIS includes a table describing the BLM's review of officially approved or adopted state, local, and Tribal land use plans that may apply to utility-scale solar projects. The BLM found that only a limited number of states and counties within the planning area also have resource and land use policies and plans that identify criteria for lands available for utility-scale solar energy development. The BLM considered plans approved and adopted by cooperating agencies, and from entities that are not cooperating agencies but that submitted comments about plan consistency on the Draft Solar Programmatic EIS. As described below, the BLM also considered information provided by governors within the planning area and has determined that, to the maximum extent consistent with applicable law and the purposes of FLPMA, the Approved Plan is consistent with officially approved or adopted resource related plans, policies, and programs of other federal agencies, state and local governments, and Tribes. This planning decision does not authorize any solar projects, and the exclusion criteria, avoidance criteria, and programmatic design features in the Approved Plan generally align with the considerations in identified state, local, and Tribal plans. Further, the BLM will engage with state, local, and Tribal governments and consider additional site-specific and other local concerns during subsequent project-specific reviews.

5.3.1 Governor's Consistency Review

In accordance with the BLM planning regulations at 43 CFR 1610.3-2(e), the BLM submitted the Final Solar Programmatic EIS and Proposed Plan to each governor within the 11-state planning area for a 60-day review period to identify inconsistencies with approved or adopted state or local resource-related plans, policies, or programs. The BLM received letters from the governors of California, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, and Wyoming. The governors of Arizona, Colorado, and Washington did not provide a formal response; so, in accordance with the BLM's planning regulations at 43 CFR 1610.3-2(e), the BLM's Proposed Plan is presumed to be consistent with state or local plans, policies, or programs in Arizona, Colorado, and Washington.

The State of California indicated that there are inconsistencies between the Proposed Plan and the California Public Utility Commission's Integrated Resource Planning, which made assumptions regarding solar energy development in southern Nevada based on the 2012 Western Solar Plan. The California Public Utility Commission recommended reconsidering land allocations for solar energy development in Southern Nevada. The BLM considered this recommendation but declines to revise the Approved Plan because it appropriately incorporates exclusions to protect sensitive resources and provides adequate land in Nevada (and California) to support the anticipated demand for future solar energy projects on public lands.

The State of Idaho did not identify inconsistencies between the Proposed Plan and approved or adopted state or local plans, policies, and programs, but did express concerns about availability of reliable and affordable electricity and potential impacts of utility-scale solar development on public health, safety, natural resources, and grazing. Idaho requested that the BLM engage with state agencies during project-specific

reviews. The State of Idaho recommended that the BLM evaluate individual solar applications to assess impacts on resources (including wildlife, vegetation, grazing, and recreation) and engage with the Idaho Governor's Office of Energy and Mineral Resources, state agencies, and communities during those reviews, which the BLM will continue to do. The BLM considered these concerns and declines to revise the Approved Plan because these considerations are already reflected in the Approved Plan.

The State of Montana did not identify inconsistencies between the Proposed Plan and approved or adopted state or local plans. However, the State of Montana did express concern about elements of the Proposed Plan, including potential impacts on natural resources including wildlife and other uses of public lands and the BLM's method to identify previously disturbed lands that would be available for solar projects. The State of Montana recommended that the BLM revise the plan and consider the expertise of state agencies in evaluating and mitigating potential impacts on wildlife. The BLM considered these concerns and declines to revise the Approved Plan because the Approved Plan already incorporates exclusions and design features that address these resource concerns, and the BLM will continue to engage with state agencies in reviewing solar project applications.

The State of Nevada wrote that the Proposed Plan is misaligned with the priorities of the state and local communities and expressed other concerns about the Proposed Plan that did not relate to inconsistencies with approved or adopted state or local plans. The State of Nevada recommended that the BLM work closely with Nevada's state agencies and local governments to update BLM RMPs and consider state and local priorities, which the BLM did throughout this planning effort and will continue to do in future RMP revisions and project-specific reviews. The BLM thoroughly analyzed the potential impacts of the Proposed Plan at a programmatic level and the Approved Plan includes exclusion criteria and programmatic design features to reduce and mitigate the potential impacts of solar projects on important land uses and resources. The BLM considered all comments from the public and cooperating agencies—including agencies from Nevada—in developing the Proposed Plan, and declines to further revise the Approved Plan.

The State of New Mexico did not identify inconsistencies between the Proposed Plan and approved or adopted state or local plans, policies, and programs, but did express a concern about potential solar projects in areas with slopes steeper than 5%. The BLM considered these concerns and declines to revise the Approved Plan.

The State of Oregon indicated that the exclusions in the Proposed Plan may be inconsistent with state wildlife policies and recommended that the BLM establish clear timelines and processes for mapping and incorporating data relating to wildlife habitat, including for big game migration corridors and sage-grouse. As described in the Proposed Plan and in this ROD, the resource-based exclusions will incorporate updated information and inventories, and the BLM intends to make a web-based mapping tool available following publication of this ROD. The State of Oregon also recommended that the BLM coordinate with state agencies in implementing its solar program and

reviewing solar project applications, which the BLM will continue to do. The BLM considered these concerns but declines to revise the Approved Plan.

The State of Utah indicated that the Proposed Plan is inconsistent with the Utah State Energy Policy, the Utah State RMP, and the Beaver County RMP. The State of Utah suggested that by not excluding lands with geothermal resources, the Proposed Plan conflicts with the State Energy Policy and provisions of the Utah State RMP that prioritize development of geothermal resources. The BLM declines to revise the Approved Plan in response to this issue because the BLM's Proposed Plan does not preclude or decrease access to geothermal development and the BLM will consider potential conflicts with geothermal resources during project-specific reviews. The State of Utah also recommended that the BLM consider other alternatives to reduce impacts on land uses, including livestock grazing, and resources including aesthetic values and migratory birds — values embedded in the Utah State RMP and Beaver County RMP. Finally, the State of Utah indicated that the amount of land available under the Proposed Plan is too extensive and is inconsistent with provisions of the Utah State RMP and Beaver County RMP related to resources and land uses such as grazing. The BLM declines to revise the Approved Plan in response to these issues because the BLM thoroughly analyzed the potential impacts of the Proposed Plan at a programmatic level and the Approved Plan includes exclusion criteria and programmatic design features to reduce and mitigate the potential impacts of solar projects on important land uses and resources.

The State of Wyoming indicated that the Proposed Plan may be inconsistent with state industrial siting policies, E.O.s related to sage-grouse and migration corridors, and county land use plans. The State of Wyoming recommended that the BLM follow state policies, consider the work that Wyoming has done and use the scientific data collected in this planning process—which the BLM has done—or at the project level—which the BLM will continue to do. Alternatively, the State of Wyoming recommended that Wyoming be excluded from the scope of this planning effort. The BLM considered these concerns and recommendations and declines to revise the Approved Plan, including its application to public lands in Wyoming, in response to these issues because the exclusion criteria, avoidance criteria, and programmatic design features address these concerns consistent with the BLM's purpose and need and federal policies.

After careful consideration of the concerns raised by the governors, the relevant State Directors decided not to adopt the recommendations made by the governors and sent a written response to each respective governor.

The governors of California and Utah appealed the respective State Director's decisions to the BLM Director. In reviewing these appeals, the regulations at 43 CFR 1610.3-2(e) state that "[t]he Director shall accept the [consistency] recommendations of the Governor(s) if he/she determines they provide for a reasonable balance between the state's interest and the national interest." On December 19, 2024, the BLM issued a response to each governor that appealed the State Director's decision, detailing the reasons that the recommendations did not meet this standard. The BLM found that no changes to the Approved Plan are necessary in response to the

governors' concerns as they either do not identify inconsistencies with approved or adopted State and local plans, policies, and programs or do not provide for a reasonable balance between the State's interest and the national interest (43 CFR 1610.3-2(e)).

5.4 Coordination of BLM State and Field Offices

The Solar Programmatic EIS and Approved Plan was prepared by the BLM headquarters office in coordination with BLM State and Field Offices in order to improve management consistency for solar energy development throughout the 11-state planning area. In 2022 the BLM established Renewable Energy Coordination Offices (RECOs) pursuant to the Energy Act of 2020. The national RECO within BLM headquarters maintains program oversight by providing direction and guidance while the state and regional RECOs support the various aspects of processing priority projects including interagency coordination and regular coordination with the national RECO.

BLM headquarters regularly communicated and coordinated with BLM state and field office staff, including RECOs, to inform the development of the Solar Programmatic EIS and Approved Plan.

BLM headquarters will work with state and field office staff following the release of the ROD to support implementation of these RMP amendments.

6 Plan Implementation

6.1 General Implementation Schedule

The decisions on the Plan Amendments go into effect upon signature of the ROD.

6.2 Consideration of Other BLM Plans and Policies

This ROD amends land use plans in the 11-state planning area and updates land use allocations and designations to identify which lands are available for solar development (including avoidance areas) and which lands are unavailable (exclusion areas). The land use plans amended by this decision are listed in Tables A-1 through A-10 in Appendix A of this ROD. 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. The Approved Plan and this ROD amend land use plans within the 11-state planning area only to make the changes identified in this ROD for utility-scale solar development. The Approved Plan does not amend any other elements of existing land use plans as they relate to other resources and land uses. In evaluating a solar project application in an area allocated as available under the Approved Plan, the BLM may nonetheless determine that the project is inconsistent with other elements of the applicable land use plan and may, at that point, modify the proposal to avoid the inconsistency, address the inconsistency through a project-specific land use plan amendment, or deny the application, as appropriate. The BLM must follow all applicable laws and policies in the course of completing any project-specific land use plan amendment.

6.3 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, 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 EIS.

The map of the Approved Plan presented in Figure 3-1 is representative of the exclusion criteria to the extent that available GIS data allow at the time of this ROD, and some resource exclusions are unmapped due to information sensitivity or lack of complete geospatial data for the 11-state planning area. Lands will be excluded if they satisfy any one of the exclusion criteria as written, regardless of whether they are reflected on the map in Figure 3-1. Most exclusion criteria are dynamic and will change automatically as BLM land use plan(s) are updated to reflect current conditions and as other land designations change (e.g., new designated critical habitat for threatened and endangered species will be automatically excluded under exclusion 2). The most comprehensive and current GIS data for exclusions will be available at the BLM office(s)

with jurisdiction. When the BLM receives a solar project application, the field office(s) with jurisdiction will assess current data to determine whether any exclusion or avoidance areas may be present in the vicinity of the proposed project. This application screening process will consider the latest data (geospatial and otherwise) for all exclusions and avoidance areas, regardless of whether they are mapped, unmapped, or partially mapped in Figure 3-1 of this ROD.

6.4 Plan Monitoring and Adaptive Management

In accordance with BLM land use planning regulations at 43 CFR 1610.4-9, this section establishes intervals and standards by which the BLM will monitor and evaluate the land use plan amendments associated with the Solar Programmatic EIS. In determining whether to amend or revise the plan, the BLM will consider:

- The number of utility-scale solar projects and total number of acres permitted and developed, both across the 11-state planning area and on a state-by-state basis, as compared to the RFDS described in Chapter 2.2 of the Final Solar Programmatic EIS. While the RFDS is not a limit on development, the BLM will consider whether changing estimates of the level of demand for BLM-administered land for solar energy development warrant further plan amendment.
- Changes in utility-scale solar technologies and market conditions. As stated in Section 1.1.4 of the Final Solar Programmatic EIS, most applications received by the BLM to date have been for PV solar energy facilities. The BLM will monitor changes in technologies and may engage in a similar programmatic planning effort to address other technologies.
- BLM's Assessment, Inventory, and Monitoring (AIM) strategy. As described in Section 2.1.1.8 of the Final Solar Programmatic EIS, the AIM strategy provides a basis for long-term solar monitoring and adaptive management. The BLM will consider this information, which "*will provide understanding of the condition and trend of BLM-managed lands within and near solar energy projects located on BLM-administered land and can support informed decision-making across jurisdictional boundaries*."

In addition to monitoring and evaluating the plan, the BLM will also evaluate ROW applications for solar energy projects on available public lands under NEPA (see Section 1.1.5 of the Final Solar Programmatic EIS).

7 Final Agency Action

7.1 Decision

It is the decision of the Bureau of Land Management to approve the Resource Management Plan Amendments for the plans in the 11-state planning area listed in Appendix A, as described in this Record of Decision. The Proposed Plan Amendments and related Final Programmatic Environmental Impact Statement were published on August 30, 2024, in the *Federal Register* (89 FR 70660). 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. The approval is effective on the date this Record of Decision is signed.

Approved by:

NADA CULVER

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Date: 2024.12.19 16:15:14 -05'00'

Nada Wolff Culver
Principal Deputy Director
Bureau of Land Management

Date

7.2 Secretarial Approval

I hereby approve the land use plan decisions. My approval of the land use plan decisions constitutes the final decision of the Department of the Interior. Any challenge to these land use plan decisions must be brought in Federal district court.

Approved by:

STEVEN FELDGUS

Digitally signed by STEVEN FELDGUS
Date: 2024.12.19 16:25:57 -05'00'

Steven H. Feldgus
Principal Deputy Assistant Secretary
Land and Minerals Management

Date

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Appendix A: Approved BLM Land Use Plan Amendments

In this ROD, the BLM amends land use plans within the 11-state planning area to adopt elements of the BLM's new solar energy development program.

Tables A-1 through A-10 provide information on the existing land use plans that are amended and display the areas (acres) that are available for utility-scale solar energy development application, including lands allocated as "avoidance," for the states in the 11-state planning area.[1] These land use plans are also amended to require that solar projects implement the programmatic design features specified in Appendix B of this ROD. All other lands are excluded from solar energy development, and approval of solar energy development right-of-way (ROW) applications in excluded areas requires land use plan amendments.

Note that areas identified as available for solar energy development applications in these tables are representative of the mapped resources at the time of this analysis and that acreages of lands available for application may change with further plan amendments or updates to resource information, including for unmapped resource exclusions.

[1] Land use plans for Oregon and Washington are presented in a single table as they are administered by the combined BLM Oregon and Washington State Office.

Table A-1. Lands Available for Application for Solar Energy Development in Arizona

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Agua Fria NM Resource Management Plan (RMP)	2010	70,998	0	0
Arizona Strip RMP	2008	1,679,663	187,844	11,133
Bradshaw Harquahala RMP	2010	899,815	187,708	0
Grand Canyon-Parashant NM RMP	2008	809,368	0	0
Ironwood Forest NM RMP	2013	129,633	0	0
Kingman RMP	1995	2,336,487	693,597	0
Lake Havasu RMP	2007	1,310,989	505,230	182
Las Cienegas RMP	2003	51,317	0	0
Lower Gila North MFP	1983	140,181	61,854	0
Lower Sonoran RMP	2012	911,194	191,485	0
Phoenix RMP	1989	430,445	265,772	0
Safford RMP	1992/1994	1,401,883	605,437	0
San Pedro Riparian NCA RMP	2019	56,219	0	0
Sonoran Desert NM RMP	2012	486,512	0	0
Vermilion Cliffs NM RMP	2008	279,736	0	0
Yuma RMP	2010	1,230,469	115,219	0

[a] Lands available for application include priority areas (for example, solar energy zones), as amended since issuance of the 2012 Western Solar Plan. Note that the Renewable Energy Development Areas (REDAs) identified in the 2012 Western Solar Plan are un-designated and allocated as exclusion lands or lands available for solar application, as appropriate, to maintain program consistency of land use allocations across the BLM.

Table A-2. Lands Available for Application for Solar Energy Development in California

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Alturas RMP	2008	500,735	42,971	2,775
Bakersfield RMP[a]	2014	408,125	25,565	0
Bishop RMP[a]	1993, 2016	752,073	37,787	6,384
California Coastal NM RMP	2005	20,026	558	0
California Desert Conservation Area Plan[a]	2016	10,615,940	0	0
Carrizo Plain NM RMP	2010	212,049	0	0
Clear Creek RMP	2014	82,789	0	0
Eagle Lake RMP	2008	1,011,721	41,230	10,178
Eastern San Diego County RMP[a]	2008	97,311	6,901	0
Headwaters Forest Reserve RMP	2004	7,531	0	0
King Range NCA RMP	2005	61,763	0	0
Northwest California Integrated Plan	2024	386,501	4,505	169
Santa Rosa and San Jacinto Mountains NM RMP[a]	2004	101,569	0	0
Sierra RMP	2007	230,346	6,864	0
South Coast RMP[a]	1994	137,165	4,145	0
Southern Diablo Mountain Range and Central Coast of California RMP	2007	288,536	787	0
Surprise RMP	2008	1,246,712	88,881	15,085
Ukiah RMP	2006	269,137	1,590	0

[a] Solar development applications for lands within the Desert Renewable Energy Conservation Plan (DRECP) boundary will remain subject to processing under the DRECP ROD; these areas are not included under total planning boundary or Alternative Lands Available. Because all priority areas in California fall within the DRECP boundary, no priority areas are included in Lands Available for Application.

Table A-3. Lands Available for Application for Solar Energy Development in Colorado

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Browns Canyon NM RMP	2020	9,779	0	0
Canyons of the Ancients NM RMP	2010	172,986	0	0
Colorado River Valley RMP	2015	570,469	4,523	511
Colorado River Valley Roan Plateau RMP	2016	66,688	987	0
Dominguez-Escalante NCA RMP	2017	210,213	0	0
Eastern Colorado RMP	2024	645,047	26,980	295
Grand Junction RMP	2015	1,063,792	22,114	3,243
Gunnison Gorge NCA RMP[b]	2004	96,149	125	113
Gunnison RMP	1993	659,244	961	10,115
Kremmling RMP	2015	377,266	18,087	4,507
Little Snake RMP	2011	1,337,755	80,859	37,052
McInnis Canyons NCA RMP	2004	123,458	0	0
San Luis RMP	1991	499,634	103,030	1,148
Tres Rios RMP	2015	458,305	51,475	3,633
Uncompahgre RMP	2020	672,138	80,490	31,692
White River RMP	1997	1,449,875	78,681	33,875

[a] Lands available for application include priority areas (for example, solar energy zones, solar emphasis areas), as amended since issuance of the 2012 Western Solar Plan. The Fourmile East SEZ was de-allocated in 2018 and the Los Mogotes SEZ has been de-allocated through this ROD; these areas are not included in the lands available for application.

[b] This plan includes lands both within and outside of the boundaries of the National Conservation Land unit identified. Therefore, while all lands identified within the unit are excluded from application under all action alternatives, certain lands managed in the land use plan but outside of the specially designated area may be identified as available for application.

Table A-4. Lands Available for Application for Solar Energy Development in Idaho

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)	
			Lands Available for Application	Avoidance Lands Available for Application
Bennett Hills Timmerman Hills MFP	1980	563,679	9,465	22,211
Big Desert MFP	1981	651,160	106,340	1,617
Big Lost MFP	1982	162,055	838	3,599
Bruneau MFP	1983	1,445,097	204,558	25,497
Cassia RMP	1985	466,607	163,950	1,986
Challis RMP	1999	792,047	170	760
Coeur d'Alene RMP	2007	99,862	336	31
Cottonwood RMP	2009	132,256	29	0
Craters of the Moon Monument RMP	2007	274,732	0	0
Four Rivers RMP	2023	783,920	40,593	8,190
Jarbidge RMP	2015	1,372,853	390,552	0
Lemhi RMP	1987	493,790	24	0
Little Lost and Birch Creek MFP	1985	341,944	160	166
Magic MFP	1980	27,262	0	0
Medicine Lodge RMP	1985	659,467	3,197	7,374
Monument RMP	1986	751,270	285,214	176,634
Morley Nelson Snake River Birds of Prey NCA RMP	2008	471,074	0	0
Owyhee RMP	1999	1,258,999	18,372	9,136
Pocatello RMP	2012	599,790	6,220	4,215
Sun Valley MFP	1981	241,718	46	309
Twin Falls MFP	1982	233,325	101,857	139

Table A-5. Lands Available for Application for Solar Energy Development in Montana

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)	
			Lands Available for Application	Avoidance Lands Available for Application
Billings RMP	2015	434,104	3,493	0
Butte RMP	2009	311,646	8,781	1,139
Dillon RMP	2006	905,668	11,673	519
HiLine RMP	2015	2,438,343	473,121	0
Lewistown RMP	2021	655,628	20,199	142
Miles City RMP	2015	2,750,541	54,481	314
Missoula RMP	2021	175,639	731	0
Pompeys Pillar NM RMP	2015	58	0	0
Upper Missouri River Breaks NM RMP	2008	374,936	0	0

Table A-6. Lands Available for Application for Solar Energy Development in Nevada

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Black Rock Desert-High Rock Canyon NCA RMP	2004	1,205,268	11,484[b]	0
Carson City RMP	2001	4,737,863	1,307,786	195,890
Elko RMP	1987	3,190,449	248,335	81,001
Ely RMP	2008	11,413,614	1,226,248	1,093,637
Las Vegas RMP	1998	3,080,338	319,536	29,015
Nevada Test and Training Range RMP	2004	1,136	760	0
Red Rock Canyon NCA RMP	2005	196,126	0	0
Shoshone-Eureka RMP	1986	4,383,120	693,691	324,087
Sloan Canyon NCA RMP	2006	48,445	0	0
Tonopah RMP	1997	6,070,058	2,153,385	365,869
Wells RMP	1985	4,252,515	520,243	544,890
Winnemucca RMP	2015	7,211,972	2,248,619	340,518

[a] Lands available for application include priority areas (for example, solar energy zones, the Dry Lake East Designated Leasing Area), as amended since issuance of the 2012 Western Solar Plan.

[b] While all lands within this NCA are excluded from application for solar energy development, the NCA RMP includes management of certain areas outside of the NCA boundary. These lands do not meet any of the other exclusion criteria and are therefore available for application.

Table A-7. Lands Available for Application for Solar Energy Development in New Mexico

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Carlsbad RMP	1988	2,091,111	943,484	0
El Malpais NCA RMP	2001	229,529	0	0
Farmington RMP	2003	1,424,064	254,635	9,021
Kasha-Katuwe Tent Rocks NM RMP	2007	4,629	0	0
Mimbres RMP	1993	3,065,927	1,144,864	0
Prehistoric Trackways NM RMP	2015	5,262	0	0
Rio Puerco RMP	1986	758,043	263,177	0
Roswell RMP	1997	1,476,879	620,382	0
Socorro RMP	2010	1,508,693	430,554	0
Taos RMP	2012	597,946	18,550	251
White Sands RMP	1986	2,308,573	343,294	0

[a] Lands available for application include priority areas (i.e., the Afton solar energy zone), as amended since issuance of the 2012 Western Solar Plan.

Table A-8. Lands Available for Application for Solar Energy Development in Oregon and Washington

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)	
			Lands Available for Application	Avoidance Lands Available for Application
Andrews RMP	2005	1,217,283	12,672	2,366
Baker RMP	1989	426,470	9,108	70
Brothers La Pine RMP	1989	708,078	34,206	0
Cascade-Siskiyou NM RMP	2008	65,889	0	0
John Day Basin RMP	2015	467,007	6,430	4,151
Lakeview RMP	2003	3,204,123	416,677	17,350
Northwestern and Coastal Oregon RMP	2016	1,253,261	8,136	0
San Juan Islands NM RMP	2023	713	0	0
Southeastern Oregon RMP	2002	4,642,349	196,900	68,590
Southwestern Oregon RMP	2016	1,214,980	39,635	43,433
Spokane District RMP	1987	422,219	110,952	375
Steens Mountain Cooperative Management and Protection Area RMP	2005	428,610	0	0
Three Rivers RMP	1992	1,618,717	123,228	2,887
Two Rivers RMP	1986	88,274	9,644	0
Upper Deschutes RMP	2005	403,428	154,053	0
Upper Klamath Basin and Wood River Wetland RMP	1996	3,172	0	0
West Eugene Wetlands RMP	2015	1,339	270	0

Table A-9. Proposed Lands Available for Application for Solar Energy Development in Utah

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)[a]	
			Lands Available for Application	Avoidance Lands Available for Application
Bears Ears NM - RMPs for the Indian Creek and Shash Jaa Units	2020	169,383	0	0
Beaver Dam Wash NCA RMP	2016	63,581	0	0
Box Elder RMP	1986	1,077,388	169,643	8,694
Cedar Beaver Garfield Antimony RMP	1986	893,597	204,104	44,724
Grand Staircase-Escalante NM RMP	2020	1,004,440	0	0
House Range RMP	1987	2,189,525	748,966	47,675
Isolated Tract Planning Analysis	1985	1,761	51	0
Kanab RMP	2008	553,819	21,409	12,480
Kanab-Escalante RMP	2020	862,618	0	0
Moab RMP	2008	1,837,693	93,617	21,208
Monticello RMP	2008	1,617,639	20,956	4,921
Park City MFP	1975	1,689	0	0
Pinyon MFP	1983	1,199,633	498,218	15,035
Pony Express RMP	1990	2,031,356	824,094	18,442
Price RMP	2008	2,473,554	345,169	3,003
Randolph MFP	1980	171,554	0	243
Red Cliffs NCA RMP	2016	45,459	0	0
Richfield RMP	2008	2,126,876	171,421	12,273
St. George RMP	1999	519,482	8,723	7,350
Vernal RMP	2008	1,687,529	285,800	17,560
Warm Springs RMP	1987	2,230,669	1,390,698	14,028

[a] Lands available for application include priority areas (for example, solar energy zones), as amended since issuance of the 2012 Western Solar Plan.

Table A-10. Proposed Lands Available for Application for Solar Energy Development in Wyoming

Land Use Plan Name	Land Use Plan Approval Year	Total BLM-Administered Acres in Planning Boundary	Lands Available for Application for Solar Energy Development (acres)	
			Lands Available for Application	Avoidance Lands Available for Application
Buffalo RMP	2015	920,090	119,479	0
Casper RMP	2007	1,546,900	353,052	0
Cody RMP	2015	1,086,618	152,290	0
Green River RMP	1997	3,606,761	728,094	4,554
Kemmerer RMP	2010	1,421,087	424,164	0
Lander RMP	2014	2,388,590	318,972	0
Newcastle RMP	2000	516,002	265,181	0
Pinedale RMP	2008	923,432	115,873	1,681
Rawlins RMP	2008	3,531,896	1,122,176	25,862
Snake River RMP	2004	969	0	0
Worland RMP	2015	2,099,390	179,036	0

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Appendix B: Programmatic Design Features and Project Guidelines

Introduction

The Bureau of Land Management (BLM) has identified a set of programmatic design features and project guidelines that may be required for utility-scale photovoltaic (PV) solar energy projects on BLM-administered lands in the 11-state planning area. Design features are project requirements to avoid, minimize, or compensate for adverse impacts. Design features provide mitigation for project impacts as defined under Council on Environmental Quality (CEQ) regulations at Title 40 in the Code of Federal Regulations, Section 1508.1(y) (40 CFR 1508.1(y)).[1] The design features presented in this section update the design features established through the 2012 Western Solar Plan (BLM 2012) that are currently in effect in the states subject to that Plan. Following the issuance of the ROD in this planning effort, applicants seeking approvals to construct, operate, maintain, and decommission utility-scale solar energy projects on BLM-administered lands are required to implement the final design features established by this record of decision (ROD) to avoid, minimize, or compensate for the impacts associated with their projects.

The programmatic design features in this section are intended to address the broad range of potential direct and indirect impacts that may result from utility-scale PV solar energy development on BLM-administered lands, as described in Chapters 5 and 6 of this Final Solar Programmatic Environmental Impact Statement (BLM 2024b). The impacts evaluated include those from the solar facilities themselves as well as associated infrastructure such as transmission facilities and roads. While the programmatic design features that follow address utility-scale solar energy projects along with associated infrastructure within the direct and indirect site footprints, the land use plan allocation decisions to be made through this ROD (for example, exclusion areas, avoidance areas, and lands available for application) only apply to siting of utility-scale solar energy generation facilities. Decisions to grant rights-of-way (ROWs) for separate (i.e., offsite) infrastructure will continue to be made in accordance with existing land use plan decisions and applicable law.

The design features and project guidelines in this appendix are organized into three categories, two categories of mandatory design features and a third category that consists of project guidelines.

[1] The CEQ regulations (as amended in May 2024) define mitigation as actions that address project impacts by: (1) avoiding impacts by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying impacts by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating impacts over time by preservation and maintenance operations during the life of the action; and (5) compensating for impacts by replacing or providing substitute resources or environments. All five aspects of mitigation can, as a practical matter, be summarized as avoidance, minimization, and compensation.

- Category 1: Mandatory, Plan-Wide — The plan-wide design features (Section B.1) are those that are not tied to any one resource and shall be implemented for all projects. The mandatory plan-wide design features specify items that project developers must implement in early project siting, planning, and design.
- Category 2: Mandatory, Resource-Specific — The resource-specific design features (Sections B.2.1–B.2.21) will be required for projects only when relevant resource-specific issues exist at the proposed project location or where necessary to mitigate impacts of specific project activities, as identified through existing condition assessments under PW-1 or project-specific National Environmental Policy Act **(**NEPA) analysis.
- Category 3: Project Guidelines — Project guidelines (Sections B.3.1–B.3.21) provide additional methods and considerations that may support achievement of the required outcomes of the mandatory plan-wide and resource-specific design features. These guidelines may be applied in whole or in part at the discretion of the BLM authorized officer based on the project siting issues, local conditions, and advice from BLM resource staff. The BLM will identify applicable project guidelines during project-specific reviews based upon existing land use plans, information gathered during project-specific condition assessments, and NEPA analyses.

Variations in design features will be permitted consistent with the land use plan amendments made through this ROD and without the need for an additional, project-specific land use plan amendment if the project proponent can demonstrate to the BLM's satisfaction that at least one of the following conditions is true:

- A specific design feature is determined to not be applicable to the site-specific conditions of the project/activity (for example, due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not render a design feature be varied or rendered inapplicable or require that it be adjusted.
- An alternative design feature or a state-approved conservation measure is determined to provide equal or better protection for the resource(s) in question.
- A specific design feature will provide no additional protection to the resource(s) in question, considering application of other design features.

Applicants will be required to work with the BLM to address proposed variations of any mandatory design feature(s) and to discuss options for mitigation of potential resource conflicts. Variations in mandatory design features, including any determinations about applicability of design features, will require appropriate analysis, disclosure, and BLM approval as part of individual project authorizations.

Applicants will not be expected to study resources or collect data beyond what is necessary to analyze and disclose potential impacts from a proposed project and develop reasonable measures to avoid, minimize, or compensate for those impacts, as appropriate.

The BLM will require that applicable mandatory design features be identified and disclosed as part of the project's Plan of Development (POD) (see definition in Appendix C of this ROD, Glossary). In some cases, the authorized officer will require development of separate plans that specify how specific issues (for example, stormwater runoff and pollution, management of hazardous materials and waste; see Table B-1) will be addressed for the project. In situations where similar activities are required to meet other federal, state, or local requirements, the BLM encourages developers, in coordination with the BLM, to address these related requirements directly with the relevant regulatory body and append information related to compliance with those obligations to their POD.

Table B-1. Examples of Plans to Support Project-Level Evaluations

Plan Name
Bird and bat survey plan
Cultural Resource Survey Plan
Decommissioning and Site Reclamation Plan
Environmental Justice outreach plan
Hazardous Materials and Waste Management Plan
Restoration plan
Spill Prevention and Emergency Response Plan
Stormwater Pollution Prevention Plan
Training, education and awareness plans
Vegetation/Weed Management Plan

Each design feature also identifies the party responsible for implementing it. While usually this is the project developer or operator, in some cases it is the BLM.[2] In this appendix, the term "project developer" refers to the entity seeking approval for a proposed project from the BLM and implementing the project with a BLM authorization including during any and all phases of the project. This entity may change numerous times over the course of multiple project phases or remain the same. A project developer may also be known as an applicant, grantee, project operator, ROW holder, permittee, etc., depending on the phase of the project and local naming conventions.

The design features and project guidelines are numbered to aid in tracking status of completion through each phase of a solar development project. Mandatory plan-wide design features include the prefix "PW" and are numbered consecutively. For resource-specific design features, the numbering system consists of a one-or two-letter prefix code to represent the resource, and then each design feature or project guideline is numbered consecutively (for example, N-1 is the first design feature for Acoustic Environment). Project guidelines are indicated by "PG" in the numbering code (for

[2] Project developers and the BLM are required to comply with all applicable laws and regulations. While these design features identify some potentially applicable legal requirements where they may be relevant to mitigating impacts to resources, the design features are not intended to be a comprehensive catalog of all potentially applicable legal requirements. Project developers are responsible for identifying and complying with applicable requirements.

example, N-PG-3 is the third project guideline for Acoustic Environment). For three resources, ecological, visual, and water resource design features and project guidelines there are additional categorizations.

B.1 Category 1: Mandatory Plan-Wide Design Features (PW)

PW-1 As part of the requirements under 43 CFR 2804.12(b), project developers shall conduct an assessment of existing resource conditions for each of the resources discussed in Sections B.2.1–B.2.21, if present, for areas within the proposed project site and potentially affected areas outside the project site to evaluate potential impacts to sensitive resources and refine the list of mandatory resource-specific design features applicable to the proposed project.

PW-2 As part of the requirements under 43 CFR 2804.12(b)(2), project developers shall consider the potential impacts to potentially sensitive ecological resources including, but not limited to: waters of the United States, surface waters of the State, and other aquatic features (such as rivers, lakes, wetlands [both jurisdictional and non-jurisdictional], springs, seeps, washes, streams [ephemeral, intermittent, and perennial], 100-year floodplains, ponds, fens, or playas); vulnerable, rare, or unique biological communities (such as biological soil crusts, remnant vegetation associations, wetland and riparian habitats; habitat for ESA listed and proposed species, BLM sensitive species, big game and other BLM priority species; designated and proposed critical habitat for ESA listed species; and other culturally important habitats located within or in the vicinity of the project site proposed by the applicant.

PW-3 Project developers shall secure qualified professionals in accordance with BLM policies to maintain oversight and compliance with applicable design features for the protection of sensitive resources (including, but not limited to acoustic, ecological, cultural, historic, paleontological, and visual resources).

PW-4 For projects proposed in areas identified as “previously disturbed” as described under this Plan (see Section 6.1 and Appendix K), applicants shall verify that the area meets the criteria described and coordinate with the BLM. If the proposed project site is included in the BLM’s Restoration Landscapes (see Appendix E, Section E.1 of Volume 2 of this ROD), the project developer shall confirm that restoration activities have not been initiated, completed, or are not imminent.

PW-5 Worker Environmental Awareness Training (WEAT) - Prior to any environmental disturbance, project developers shall educate all persons (contractors, subcontractors, volunteers, public, etc.) participating in any part of the project on applicable laws, regulations, and measures to minimize environmental and other impacts including: identification and protection of special status and priority species; prevention of the collection, harassment, or disturbance of plants, wildlife, and their habitats; identification of federal and state recognized noxious weeds; identification of federal and state recognized invasive species (plant and wildlife); identification and protection of paleontological resources; identification and response to discovery of Native American Graves Protection and Repatriation (NAGPRA) artifacts and other cultural

artifacts and remains; fuel spill prevention and response; fire protection measures; cultural awareness training where activities could affect issues and areas of concern to federally recognized Indian Tribes; and mitigation of other project-specific impacts. Project developers shall also inform project personnel of any relevant jurisdictional boundaries, including international borders, and all laws and regulations that they may be subject to, such as ESA Section 9 incidental take prohibitions, MBTA take prohibitions, BGEPA harassment and take prohibitions, limitations on the removal of salable materials such as stone or wood from a project site for personal use, and restrictions on the use of vehicles in limited-access areas. Project developers shall maintain a list of all pertinent design features on-site at all times during work hours, including with all crew supervisors, project leads, monitors, etc. Project developers shall provide educational materials and training to personnel prior to their entry to the project worksite. Project developers shall provide personnel training on a regular basis. Project developers shall develop cultural awareness training with input from Tribes. The BLM shall review and must approve all educational materials and the timing of trainings prior to the issuance of a Notice to Proceed.

PW-6 Project developers shall design the project to minimize soil erosion, dust impacts, and impacts from runoff into surface water bodies on relevant resources (including but not limited to air quality, ecological resources, geology and soil resources, human health and safety, and visual resources), and be in compliance with relevant state and local requirements. Multiple methods of dust suppression (e.g., water, paving, clean gravel, or regulation-compliant palliatives) must be considered.

PW-7 To prevent the establishment and spread of invasive species and noxious weeds, project developers shall prepare a Vegetation/Weed Management Plan, in coordination with the BLM, for species most likely to spread. Project developers shall carry out integrated weed management actions during all phases of activities that at a minimum include the following:

- clear treatment timelines, removal and treatment timelines, and remedial actions for weed management to ensure non-native vegetation species within the project site are treated before the non-native vegetation has gone to seed;
- a plan to monitor and quickly implement control measures to ensure early detection and eradication of invasive weeds and non-native species on site and in adjacent off-site areas. Measures may include use of biological controls (BLM 2007; 2016); and
- requirements that ensure equipment and vehicles are cleaned prior to use such that invasive seed materials are not carried into site areas or aquatic habitats. As part of this, project developers shall establish a controlled inspection and cleaning area to wash and visually inspect construction equipment and vehicles arriving at the project site and to remove soil and collect seeds that may be adhering to tires and other equipment surfaces. All equipment must be pressure washed prior to entering new areas.

PW-8 Project developers shall coordinate with the BLM and relevant Federal and state agencies early in the project design process to site the project in a location that avoids perennial drainages and maintains water flow. If multiple projects are in close proximity, the BLM will encourage applicants to align drainage avoidance areas to maintain water flow throughout the landscape.

PW-9 Project developers shall design the project to avoid adverse impacts to aquatic resources, riparian areas, wetlands, perennial, intermittent and ephemeral water courses, washes, dry lake beds, and other aquatic areas except for those that do not unacceptably compromise the functionality of the resource (see glossary), as determined by the BLM, to protect wildlife habitat, cultural and historic resources, and hydrologic function. Project developers shall avoid such impacts by configuring the project with appropriate setbacks from the riparian and aquatic areas, measured from the outer edge of the resource. Appropriate setbacks will be based on site-specific soils, slopes, hydrology, and wildlife and SSS habitat needs and will be developed through coordination among developers, the BLM, and relevant Federal and state agencies (for example, USFWS, Army Corps of Engineers, state wildlife agencies).

PW-10 Project developers shall avoid using stream channels, riparian areas, steep slopes, sensitive soils, and other sensitive environmental areas for equipment or materials storage or stockpiling; construction staging or maintenance activities; field offices; hazardous material or fuels storage; solid waste storage; hauling; or temporary access roads. Project developers shall refuel equipment a resource-safe distance away from the official high water, riparian vegetation, or wetland boundary to avoid and minimize the potential for contamination. The BLM will require or concur with proposed specific refueling distances based on site-specific conditions such as steep slopes.

PW-11 Project developers shall avoid long-term disruption to sensitive habitats and plant communities to prevent adverse impacts associated with all project activities based on the best available information and science and in consultation with the BLM, USFWS, relevant state agencies, and other credible experts, as appropriate. Sensitive habitats and plant communities could include: springs, fens, playas, riparian areas, mesquite bosques, microphyll woodlands, sand dunes, desert washes, etc. Project developers will incorporate appropriate avoidance areas in their project development configuration based on the ecosystem function necessary to protect sensitive habitats and vegetation.

PW-12 Project developers shall include measures, in the POD, for interim reclamation of temporary disturbed areas by revegetation, soil stabilization, soil compaction, soil erosion, and habitat restoration. The plan must detail mitigation measures (avoid, minimize, or compensate for impacts) and include clear compliance metrics. Developers shall reseed disturbed areas, consistent with the most up-to-date techniques necessary to reestablish native vegetation and impacted habitat types, using certified weed-free seed mixes that include native, geographically appropriate, pollinator-friendly species. Project developers must implement restoration measures during construction, operations, and decommissioning as soon as impacting activities cease.

PW-13 Project developers shall incorporate, into the POD, appropriate fire prevention, fire management, and response measures.

PW-14 Project developers shall incorporate, into the POD, plans to maintain vehicles and other equipment in proper working condition and only store them in designated containment areas where runoff is collected or controlled and located outside of project-specific setbacks from streams, riparian areas, water courses, washes, and distributary networks to avoid and minimize accidental fluids release and hazardous materials spills.

PW-15 Project developers shall incorporate, into the POD, plans to immediately contain, report, and clean up hazardous material leaks, spills, or releases, and repair equipment before entering new areas. Project developers shall dispose of spill and related clean-up materials at an approved off-site waste facility.

PW-16 Project developers shall seek to maintain the maximum amount of undisturbed soil and vegetation that is practicable for the project design and avoid construction practices such as grading, disc and roll, and other techniques that disturb soil and that completely remove vegetation – to the maximum extent practicable (see glossary). Development shall minimize ground-disturbing activities, such as soil compaction, excavation, and vegetation removal as well as the number and size/length of roads, fences, mineral materials sites (borrow areas), and laydown and staging areas.

PW-17 Project developers shall incorporate, into the POD, environmental inspection and monitoring measures or other relevant plans to monitor and respond to potential resource impacts for each of the resources discussed in Sections B.1 through B.21 during construction, operations, and decommissioning of a solar energy facility, including adaptive management protocols for reasonable modifications to operations and maintenance over the term of the project to mitigate issues that arise throughout the project life.

PW-18 Project developers shall incorporate, into the POD, plans to use herbicides and pesticides consistent with the most current (at the time of application) BLM and DOI policies, including the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision (BLM 2007)*, the *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision (BLM 2016)*, and standard operating procedures. Project developers shall use only EPA-registered pesticides/herbicides that also comply with state and local regulations. Only herbicides and pesticides identified on their label as safe for the aquatic environment may be used in the wetted area of any waterbody or where riparian vegetation is present.

PW-19 Project developers shall incorporate, into the POD, strategies or plans to decommission project facilities and reclaim/restore the disturbed lands and resources within the authorized right-of-way, as soon as practicable after operations cease. These plans shall include coordination with and approval by the BLM's authorized officer in advance of interim/final reclamation.

PW-20 Project developer shall develop and implement a cultural resource survey plan consistent with regulations under 36 CFR 800. Following field surveys, the developer must provide a technical report that includes all necessary information for documenting and evaluating each resource's eligibility for the *National Register of Historic Places* (NRHP), ensuring it meets the satisfaction of the BLM authorized officer.

PW-21 Project developers shall implement training, education, and awareness plans for construction, operation, and maintenance activities to minimize occurrences of disturbances, vandalism, and harm to nearby historic properties. The specifics of these sensitivity training plans should be established through project-specific consultations between the applicant, the BLM, SHPO/THPO, affected Indian Tribes, and other stakeholders.

PW-22 Project developers shall integrate indigenous knowledge, in collaboration with/approval of Tribe(s) and, as appropriate and available, identify resource concerns, develop mitigation strategies, and inform decisions, while maintaining confidentiality of information.

PW-23 Project developers shall incorporate, into the POD, a Stormwater Pollution Prevention Plan (including appropriate hydrologic modeling) that avoids or minimizes adverse impacts to surface water or groundwater quality or flow and that meets the requirements of all applicable federal, state, and county regulations, permits, and building codes to prevent and reduce soil erosion and prevent flooding. Stormwater facilities shall be designed to route flow through or around the facility using existing washes when feasible, instead of concrete-lined channels.

PW-24 To the maximum extent practicable developers shall confine vehicular traffic to designated open routes of travel to and from the project site, and prohibit cross-country vehicle and equipment use outside of approved designated work areas within project boundaries to prevent unnecessary ground and vegetation disturbance.

PW-25 Pets are prohibited at project sites at all times. This prohibition does not apply to service animals, as defined by the American with Disabilities Act.

PW-26 Project developers shall incorporate, into the POD, wildlife deterrence techniques during construction and operation of the project to dissuade interest from, use by, and mortality of wildlife.

PW-27 Project developers shall avoid or minimize night lighting during construction and operation of the project. Lighting must be directed downward and away from riparian and aquatic areas to minimize attracting wildlife.

PW-28 Project developers shall clearly mark all sensitive resource and avoidance areas within the project site to prevent adverse impacts to these areas during all phases of the project.

PW-29 Areas of Special Coordination – National Park Service: If a proposed project is within 25 mi (40 km) of a National Park, or other NPS-managed lands, project developers, in coordination with the BLM and with NPS participation as available, shall

consider the proposed project's potential impacts to eight identified resource elements (Dark Night, Points of Entry, Upstream Watersheds, Wind Erodibility, Water Erodibility, Landscape Intactness, Viewshed Key Observation Points, and NRHP Key Observation Points) and determine appropriate mitigation. Refer to Appendix E, Section E.5 of Volume 2 of this ROD for maps and more information.

PW-30 Areas of Special Coordination – USFWS National Refuge System Lands: If a proposed project is within 10 miles of USFWS National Refuge System lands, project developers, in coordination with BLM and USFWS, shall consider the proposed project's potential impacts to refuge resources and determine appropriate mitigation.

PW-31 Areas of Special Coordination – Oil and Gas Leases: When proposing a solar project within an area with existing oil and gas leases, the project developer must coordinate with the current lessee in advance to assess the feasibility and compatibility of the solar project. Refer to Appendix E, Section E.2 of Volume 2 of this ROD for more information.

B.2 Category 2: Mandatory Resource-Specific Design Features

B.2.1 Acoustic Environment (Noise) – Mandatory Resource Specific Design Features

N-1 Project developers shall evaluate, implement, and coordinate with the BLM to apply measures that avoid, minimize, or compensate for adverse noise impacts. These measures should include the use of noise control technologies and noise reduction devices such as barriers, berms, mufflers, and enclosed equipment. Activities must be planned to reduce noise near sensitive receptors, including wildlife, SSS populations, priority species, Native American communities, and culturally significant Tribal sites. Construction, operational, and decommissioning activities must be scheduled to minimize noise impacts during sensitive periods, such as wildlife breeding, nesting, and wintering seasons, and should occur during the least noise-sensitive times (e.g., one hour after sunrise and one hour before sunset). Explosives are to be used only at specified times and distances from sensitive wildlife or surface waters as established by the BLM or other relevant authorities. Permanent sound-generating facilities shall be sited away from residences and sensitive areas to further mitigate noise impacts.

B.2.2 Air Quality and Climate (AQC) – Mandatory Resource Specific Design Features

AQC-1 If existing condition assessments under PW-1 indicate concerns regarding emissions of particulate matter PM_{10} and $PM_{2.5}$ from the solar energy project and its facilities, project developers shall develop a mitigation plan.

AQC-2 Project developers shall evaluate the cumulative impacts on air quality and air quality-related values in Prevention of Significant Deterioration (PSD) Class I areas.

AQC-3 Project developers shall avoid use of dust palliatives in areas in close proximity to sensitive soil, water courses, and aquatic environments to avoid contamination and impacts to soil characteristics and ecological features.

AQC-4 Project developers shall limit access to the site and staging areas to authorized vehicles only through designated roads/routes.

B.2.3 Cultural Resources (CR) – Mandatory Resource Specific Design Features

CR-1 Project developers shall work with the BLM and stakeholders to avoid or minimize surface, auditory, and atmospheric disturbance near or on historic properties when their eligibility is based on their visual or auditory setting or on an aspect of integrity related to feeling and association. This measure shall be implemented to protect NRHP-eligible TCPs, sacred sites, cultural landscapes, and historic trails, among other historic properties, present in the APE from visual or auditory intrusion and to maintain the integrity of their historic setting unless a different acceptable resolution of adverse effects is proposed.

CR-2 The project developer shall employ archaeological field monitors or Tribal cultural specialists (as appropriate for the resources anticipated) to monitor ground-disturbing activities in areas with a high-probability of encountering cultural resources during construction that could not be detected during prior Class III archaeological inventories (for example, in geomorphic settings, such as in shifting sands, where buried deposits may be present) and when the use of monitors has been identified and agreed to during BLM's consultation with the affected Tribes.

CR-3 Project developers, in coordination with the BLM, shall develop plans to minimize impacts on lands within or adjacent to historic properties, sites with Tribal interests, or sites that contain high potential for NRHP-eligible properties.

B.2.4 Ecological Resources (ER) – Mandatory Resource Specific Design Features

Design features to address potential impacts on ecological resources are listed for the following categories: all terrestrial and aquatic species and habitats (g) - Section B.2.4.1; vegetation communities (v) - Section B.2.4.2; fish and aquatic species and habitats-general (aq) - Section B.2.4.3; BLM special status species and their habitats (SSS[3]) - Section B.2.4.4; and wildlife species-general(w) – Section B.2.4.5.

[3] BLM SSS include: (1) species listed as threatened or endangered under the ESA; (2) species that are proposed for listing or candidates for listing under the ESA; (3) federally delisted species (within 5 years of delisting); and (4) species that are listed by the BLM as sensitive. BLM sensitive species are identified at the state-level by each BLM State Director and are generally those species that are native, occur on BLM lands, and require special management consideration to avoid potential future listing under the ESA. SSS species include terrestrial and aquatic wildlife and plants. (BLM Manual 6840 Rel. 6-125, or as revised.)

B.2.4.1 All Terrestrial and Aquatic Species and Habitats

ER-1g Project developers shall, in coordination with the BLM, USFWS, NMFS, and relevant state agencies as appropriate, avoid disturbance activities in terrestrial and aquatic environments during site characterization, design, and construction activities until determinations are made by qualified biologists, and subject to BLM concurrence, regarding whether unique flora, fauna, or their habitats (for example, BLM special status species, state-managed wildlife, pollinators) are present and, if so, avoidance, minimization and compensatory design features are identified and implemented. Vegetation mapping, species habitat associations, and species surveys may be used to make the determinations. Habitat may be used as a surrogate for species presence, especially when survey methodologies are not statistically robust enough to reasonably infer species absence.

ER-2g Project developers shall ensure that only federally permitted biologists may handle ESA-listed species (including plants), eagles, and other migratory birds according to specialized protocols approved by the USFWS and NMFS. Project developers shall inform project personnel, including through the WEAT program and other methods, of this requirement. Federally permitted biologists may also be necessary to conduct approved protocol surveys for some species. Developers will coordinate with the BLM, USFWS, NMFS, and relevant state agencies to plan for monitoring, capture, and relocation of animals that could be harmed and are unable to leave the site on their own. Developers will coordinate with the BLM, USFWS, and relevant state agencies to plan for the destruction, removal and possibly transplant of ESA listed or proposed plants that could be impacted by project development. Project developers will use an adequate number of qualified biological monitors (as determined by the BLM, in coordination with the USFWS, NMFS, and relevant state agencies) to be onsite during initial site preparation and during the construction period. Appropriate state and federal handling permits will be obtained prior to conducting ecological surveys or species removals/translocations.

ER-3g In the planning criteria/analysis of the management situation document, NEPA documents, and decision documents, the BLM shall, as appropriate:

- Disclose all areas of habitat connectivity within the project site, including the location, habitat components, and species for which each was assessed.
- Describe how management of areas of habitat connectivity would occur under each alternative.
- Incorporate adaptive management (i.e., monitoring requirements, trigger thresholds, and management responses) into management direction and allocation decisions to provide for future management of habitat connectivity if disturbances alter habitats, species' needs or distributions change, future climate projections are refined, etc.
- Identify any analysis issues, analytical frameworks for analysis, and the approach for analyzing the effects of BLM decisions on the management of areas of

habitat connectivity across alternatives, including trade-offs associated with impacts to habitat connectivity across the alternatives.

ER-4g The BLM will coordinate with USFWS, NMFS, and relevant state agencies to identify any needed baseline studies relevant to their trust resources, and the relevant analyses needed in the BLM NEPA documentation.

ER-5g Project developers shall maximize the functionality of connectivity and migration corridors for BLM SSS and priority species connectivity in big game migration corridors by using innovative construction methods, site designs, corridor avoidance, wildlife crossings, and fencing designs. This includes maintaining BLM SSS and big game (including other priority species) corridors of sufficient size, width, and vegetation composition as determined by site-specific analysis, and field verification of habitat permeability.

ER-6g Project developers shall reduce the likelihood of adverse impacts to fish and wildlife from entrapment, entanglement, or mortality associated with site modifications, structures, and operations by implementing the following measures:

- Minimize the number of areas and structures where wildlife could hide or be trapped (for example, open sheds, pits, trenches, uncovered basins, and laydown areas).
- Permanently capping, screening, or otherwise covering open-topped vertical pipes on the project site.
- Install escape ramps on water developments, except for naturally occurring waters or closed tanks that are not accessible to wildlife, immediately upon completion of construction and before use. Prior to installation of escape ramps, all open pits and trenches will be inspected at least 3 times daily by a qualified biologist to identify and rescue any trapped animals; at least one of the inspections will be at sunrise to ensure that any trapped reptiles are rescued prior to warming temperatures.
- Install anti-perch devices where birds commonly nest or perch if they can become tangled or entrapped.
- Cover or enclose potential nesting surfaces with mesh netting or other exclusion material. Exclusion material must have openings or mesh sizes small enough to prevent nesting or entrapment and must be maintained and monitored.

ER-7g Project developers shall construct, improve, and maintain access roads to minimize potential fish and wildlife vehicle collisions, facilitate wildlife movement through the project site, minimize erosion, and minimize alterations to hydrology. Examples of measures to minimize impacts of roads on fish and wildlife include posting speed limits slow enough to facilitate avoidance of collisions with wildlife; installing fencing to preclude wildlife access to roadways; installing overpasses/underpasses to allow wildlife crossings and retain habitat connectivity; using appropriate-sized culverts or hardened wet crossing, as appropriate. Designs of fencing, culverts, and water crossings of any kind shall incorporate best available

science and technology advances and be approved by the BLM, in coordination with the USFWS, NMFS, and state wildlife agencies as appropriate.

ER-8g Project developers shall ensure that all project personnel keep water and food in closed containers inaccessible to wildlife during the workday and keep trash in closed containers inaccessible to wildlife and the weather.

ER-9g Project developers shall ensure that at the close of every workday and prior to completion of project activities each day, all trash, including micro-trash, food, and debris is removed from the site and disposed of properly.

ER-10g Prior to application of herbicide treatments, project developers shall employ a qualified biologist to conduct surveys or habitat associations with an assumption of species presence for priority species and habitats, such as migratory bird nests or burrows, aquatic habitats, pollinators, and BLM SSS to identify the necessary measures to avoid impacts to these resources.

ER-11g Project developers shall ensure that perennial vegetation is maintained to support the ecological function of the affected areas, including by contributing to their long-term sustainability, minimizing the spread of invasive non-native vegetation beyond the project boundaries, reducing environmental conditions (for example. temperature and humidity) emanating from the facility, and promoting the movement of wildlife around and through the facility. Project developers must maintain a minimum of 15% of existing native perennial vegetation cover or a minimum of 75% native perennial vegetation cover as compared with an adjacent reference site. Panels must be installed at a height above the ground not less than 24 inches that allows native vegetation to persist. Project developers will use adaptive management to adjust appropriate vegetation cover minimums to account for results of ongoing research and other changes to the best available science.

ER-12g Schedule major maintenance and repairs outside critical periods for fish and wildlife (for example, feeding, breeding, spawning, nesting, wintering, migrating), as identified by the BLM, USFWS, NMFS or relevant state agencies.

ER-13g Implement wildlife deterrence techniques at solar facility and transmission infrastructure to dissuade interest and use by species such as common ravens, bears, coyotes, rodents, raccoons, skunks, and feral cats and dogs. Example methods can include (but are not limited to) litter control programs including wildlife-proof garbage receptacles, carcass removal, open water source containment, structural modifications to deter raven nesting, and active monitoring and hazing, as necessary.

ER-14g Use road closures or other travel modifications (for example, lower speed limits, prohibition on foot travel) to avoid and reduce impacts to BLM SSS, big game and other BLM priority species during crucial life history periods (for example, extreme winter conditions, calving/fawning/spawning seasons, raptor nesting).

ER-15g Upgrade, maintain or create wildlife and water source crossings along linear facilities (for example, roads, railroads, and aqueducts) in the project site such that wildlife connectivity to habitat is not compromised.

ER- 16g Immediately report any vehicle-wildlife collisions, and observations of potential wildlife problems, including wildlife injuries or mortality, to the BLM or other appropriate agency authorized officer.

B.2.4.2 Vegetation

ER-1v Project developers shall, to the maximum extent practicable (see glossary), avoid development in areas with Joshua trees (*Yucca brevifolia/ jaegeriana*), substantial patches of other Yucca species, agave, and saguaros due to the importance of those species for many SSS, including pollinators and nectivorous bat and bird species. Where avoidance is not practicable, project developers shall develop and implement minimization and compensatory measures (including cactus salvage) specific to Yucca, agave, and cactus species in coordination with the BLM, USFWS, and relevant state agencies. During rehabilitation of construction disturbed sites and D/R, salvaged or nursery stock yuccas (all species) and cacti may be used.

B.2.4.3 Fish and Aquatic Species and Habitat - General

ER-1aq Project developers shall avoid and minimize impacts, and compensate for unavoidable impacts, to jurisdictional and non-jurisdictional wetlands and water resources.

ER-2aq Project developers shall avoid removal or trimming of vegetation that provides shading to aquatic resources to prevent water temperature increases.

ER-3aq Project developers shall design project facilities to reduce the number of stream crossings within a particular stream or watershed.

ER-4aq Project developers shall use temporary bridges over waterways when temporary access is needed across waterways and limit the use of low-water crossings (fords, wet crossings). If low water crossings are the only option available, project developers shall ensure they are used only during the driest time of the year and use rocked approaches on the shorelines. All water crossings should be returned to pre-existing stream channel conditions after the need for the crossing has passed.

ER-5aq Project developers shall design necessary stream crossings to provide in-stream conditions that allow for and maintain uninterrupted movement and safe passage of fish and other aquatic species throughout project construction and operations.

ER-6aq Project and ancillary facility structures (for example, staging areas) are not allowed within aquatic and wetland habitats, including riparian habitats.

ER-7aq Project developers shall design transmission lines such that adequate height clearance is provided for riparian vegetation including riparian trees.

ER-8aq Project developers shall minimize the amount of area covered by impervious surfaces through use of permeable pavement or other pervious surfaces to reduce runoff, erosion and significant changes to hydrology.

ER-9aq Project developers shall design all proposed bank and slope stabilization structures to incorporate bioengineering principles and the use of living and nonliving plant materials in combination with natural and synthetic support materials for slope stabilization, erosion reduction, and vegetative establishment.

ER-10aq Project developers shall ensure that equipment such as backhoes, excavators, dump trucks, trucks, and cranes does not operate from within a watercourse. When operating near a watercourse, such equipment shall be located in a stable area so as not to cause bank instability or erosions.

ER-11aq Project developers shall avoid surface water or groundwater withdrawals or discharges that adversely affect sensitive habitats (for example, aquatic, wetland, playa, microphyll woodland, and riparian habitats) and habitats occupied by BLM SSS. Mitigation is required for any unavoidable losses.

ER-12aq To reduce risk of non-native and nuisance aquatic species introductions, decontaminate equipment used in surface water, especially equipment used to convey water (e.g., pumps). Ensure source water would not introduce new aquatic invasive species or contaminants.

B.2.4.4 BLM Special Status Species and Habitat

ER-1sss Project developers shall avoid direct and indirect impacts to ESA-listed and proposed species, their habitat, and the ecological functions upon which the species and habitat depend, including by implementing appropriate avoidance areas established in coordination with the BLM, USFWS, NMFS, and relevant state agencies. Avoidance areas shall account for pollinator habitat and habitat connectivity as part of the ecological function of maintaining habitat. Any impacts to ESA-listed and proposed species, their habitat and ecological function shall be minor, minimized and residual impacts compensated for, as appropriate.

ER-2sss Project developers shall avoid direct and indirect impacts to BLM sensitive, big game and other priority species, their habitat, and the ecological functions upon which the species and habitat depend, to the maximum extent practicable (see glossary), including by implementing appropriate avoidance and minimization measures established in coordination with the BLM, USFWS, NMFS, and relevant state agencies. Avoidance measures shall account for pollinator habitat and habitat connectivity as part of the ecological function of maintaining habitat. Any residual unavoidable impacts shall be compensated for, as appropriate.

ER-3sss Project developers shall develop and implement measures to ensure mitigation (i.e., avoidance, minimization, compensation), monitoring, and adaptive management of impacts on BLM SSS, big game and other priority species, and their habitats, in coordination with the BLM, USFWS, NMFS and relevant state agencies, as

appropriate. Compensatory mitigation may be required for any residual unavoidable impacts to BLM SSS and priority species and their habitats. Project developers shall design compensatory mitigation, where required, in accordance with BLM's most recent policies and implement the compensation in accordance those same policies and resource management plans (RMPs).

ER-4sss Project developers shall acquire, protect, and restore if necessary, non-federal land or restore degraded public land, whichever approach or combination the BLM determines is appropriate for the habitat and species impacted, as compensation for residual impacts to habitats (i.e., no net habitat loss or net benefit; BLM H1794-1 Rel. No. 1-1808) of BLM SSS and big game and other priority species for impacts that cannot be avoided or adequately minimized. The compensation habitat shall be maintained and managed as designed and approved for at least the duration of the impacts of construction, operation, maintenance, and decommissioning. The acreage required for compensatory mitigation will be calculated based on the number of acres the project impacts and the nature and magnitude of impacts to habitat function. Acreages will be adjusted as appropriate for project alternatives, habitat function of the impacted resource, other proposed mitigation requirements, and future modifications made during implementation. Compensation will be provided for impacts at a ratio, acreage, or other metric determined by the BLM consistent with applicable mitigation policy and the resource being impacted.

ER-5sss Based on information from PW-4, project developers shall conduct seasonally appropriate BLM SSS surveys as determined necessary by the BLM, in coordination with the USFWS, NMFS, and relevant state agencies. The BLM shall approve the survey methodologies and biologists. Project developers shall notify the BLM upon discovery of any ESA-listed or proposed species during any phase of project design, implementation, operation and maintenance, or post-development restoration.

ER-6sss Consistent with ESA section 7(a)(1), project developers shall work with the BLM, USFWS, NMFS, and relevant state agencies to develop and implement proactive conservation efforts from recovery plans or conservation agreements/recovery efforts to assist with conservation and recovery of BLM SSS beyond mitigation requirements if such efforts are compatible with the project.

ER-7sss Project developers are prohibited from drafting water from surface waters that contain ESA-listed or proposed species or BLM SSS.

ER-8sss Project developers shall work with the BLM, USFWS, NMFS and relevant state agencies for site- and species-specific spatial and temporal setbacks for ESA-listed and proposed species and BLM SSS. For example, plant blooming timing limitations.

Bats

ER-9sss If a proposed solar project has the potential to impact an ESA-listed or proposed, or BLM special status bat species, the project developer shall prepare a bat survey plan, developed in coordination with the BLM, USFWS, and relevant state agencies. The survey plan shall be subject to the BLM's review and approval. The

project developer shall conduct surveys for SSS bats to document pre-project bat activity and provide information for the site-specific development and implementation of mitigation measures (i.e., avoidance, minimization, compensation) and proactive conservation measures.

- The project developer shall conduct surveys to determine bat use of the area during the spring, summer, and fall months. At a minimum, the developer shall conduct acoustic surveys using bat detectors throughout the project site. Additional surveys in adjacent habitats may be necessary based on habitat or other information.
- The project developer shall follow the most up-to-date established survey protocols set by the BLM, USFWS and state wildlife agencies. The current survey protocol available for all BLM SSS bats is the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines).

ER-10sss Project developers shall monitor for and use adaptive management to minimize bat mortalities associated with the solar project. Mortalities shall be reported to the BLM and the USFWS, if required for specific projects.

Black-footed Ferret

ER-11sss Project developers shall, to the maximum extent practicable (see glossary), avoid siting projects, including ancillary facilities in black-footed ferret reintroduction areas.

Grizzly Bear

ER-12sss Project developers shall, to the maximum extent practicable (see glossary), avoid siting projects, including ancillary facilities, in grizzly bear Recovery Zones (Primary Conservation Areas), grizzly bear Management Zone 1 and Demographic Monitoring Areas as defined in interagency grizzly bear ecosystem conservation strategies.

ER-13sss Across the range of the grizzly bear, during construction (and based on coordination with USFWS), project developers must:

- 1) Follow Interagency Grizzly Bear Committee attractant storage requirements (igbconline.org) and other requirements that the BLM or Statewide Order may impose.
- 2) Promptly clean up any project-related spills, litter, garbage, debris, etc.
- 3) Store all food, food-related items, petroleum products, antifreeze, garbage, and personal hygiene items inside a closed, hard-sided vehicle or commercially manufactured bear-resistant container to make it unavailable to bears.
- 4) Remove garbage from the project site daily and dispose of it in accordance with all applicable regulations.

- 5) Provide appropriate avoidance/safety training to personnel working in areas where they might encounter grizzly bears.
- 6) Carry bear spray (all individuals, including contractors, working alone or at least two individuals when working in a group).
- 7) Coordinate with the BLM and USFWS to determine necessary timing restrictions in grizzly bear seasonal spring and summer range and denning habitat.
- 8) Notify the BLM and USFWS Grizzly Bear Recovery Office of any grizzly bear/human conflicts within 24 hours after they occur. Conflict is any interaction between humans and bears in which the humans were surprised, attacked, or charged, deployed bear spray, or defended themselves in any way; where a grizzly bear is expected to have received a reward from an attractant (for example, food, animal carcass (including livestock), grills, stoves, dirty pots and pans, bird feeders, garbage); or where a bear could associate activities with an attractant.

Greater and Gunnison Sage-Grouse

ER-14sss Project developers shall not use helicopters within 4 miles (6.4 km) of sage-grouse leks in the springtime in order to minimize disturbance to lekking birds. Transmission lines shall not be constructed over sensitive greater and Gunnison sage-grouse habitats such as leks and nesting areas.

Mojave Desert Tortoise and Habitat

ER-15sss Project developers shall include in the POD a design and implementation plan for the solar development project that maximizes the functionality of Mojave desert tortoise habitat. The design and implementation plan should include considerations such as the layout of the site, the spacing of solar panels, and the utilization of technology that minimizes disruption to Mojave desert tortoise habitats and allows habitats to continue functioning effectively within the solar development area.

ER-16sss Project developers shall configure solar development projects to maintain existing desert tortoise habitat to facilitate occupancy and connectivity.

ER-17sss Project developers shall limit grading within Mojave desert tortoise habitat to the minimum size necessary for the project design, preferably around 15% of the project site.

ER-18 sss If native desert vegetation has established and is being managed and maintained as habitat for Mojave desert tortoise inside the project site project developers shall remove the tortoise exclusion fencing to allow tortoise reoccupation of the project site.

ER-19sss If project developers use riprap in Mojave desert tortoise habitat they shall use riprap that is small enough for a juvenile tortoise to move through without becoming entrapped.

ER-20sss On project sites designed to facilitate Mojave desert tortoise reoccupation, the project developer shall flag burrows in existence prior to construction and avoid these burrows to the maximum extent practicable (see glossary), so they are available if tortoise reoccupy the site.

B.2.4.5 Wildlife Species and Habitat - General

Big Game

ER-1w Big game migration corridors that are not otherwise excluded are an Avoidance land allocation. Project developers shall site and design project activities to avoid these areas unless projects can be sited in a manner that maintains their functionality, for example, maintaining connectivity between summer and winter ranges to allow for movement conducive to life history requirements (see glossary).

- The BLM will consider future changes to migration corridors and winter range identified by state resource management agencies, the BLM, USGS, Tribal wildlife agencies, and other similar entities and will update the Avoidance land allocation as appropriate.
- Refer to design features ER-2sss, ER-3sss and ER-4sss for mitigation requirements.

Birds and Bats

ER-2w For all project phases, project developers shall develop and implement measures to ensure protection of birds and bats in coordination with appropriate federal and state agencies (for example, the BLM, USFWS, and relevant state agencies). Measures may include but are not limited to, reducing the height of towers and avoiding transmission placement along known flight paths for birds and bats; avoiding, marking, or reducing the use of cables and guy wires; and using solar panel designs that reduce impacts on raptors and prey species for raptors. Additionally, project developers shall:

- Avoid, to the extent practicable, the use of guy wires to minimize impacts on birds and bats.
- Outfit support wires, shield wires, powerlines, etc., with markers and reflectors to minimize collisions of birds, bats, and other wildlife. Ideally these would include LED diverters to reduce attraction of nighttime migrants.
- Place mechanisms to visually warn birds (e.g., permanent markers or bird flight diverters) on transmission lines, guy wires, shield wires, and fences at regular intervals sufficient to prevent birds from colliding with the lines.
- Utilize techniques to reduce glare from panels to minimize bird and bat collisions where glare has been determined to have a substantial adverse effect on these species.

ER-3w Project developers, in coordination with the BLM, USFWS, and other appropriate agencies, shall develop and implement a Bird and Bat Conservation Strategy that

includes a Nesting Bird Management Plan to address nest searching and monitoring as part of pre-construction habitat disturbance, construction, and operations. Developers shall survey and confirm the species' dispersal prior to proceeding with habitat/resource removal, when necessary. Project developers shall develop and implement (in coordination with appropriate federal and state agencies [for example, the BLM, USFWS, and state wildlife management agencies]) measures to protect birds (including migratory species protected under the Migratory Bird Treaty Act [MBTA]). Any habitat disturbance shall be scheduled for outside the breeding season for sensitive birds, to the extent possible. Consult USFWS Migratory Bird Program for local breeding season at project site and recommended nest buffers to be used in the Nesting Bird Management Plan. Project developers shall include as part of the Bat Conservation Strategy a description of available information; survey requirements; recommendations for mitigation measures (i.e., avoidance, minimization, and compensation) if high concentrations of bats or important bat colonies, hibernacula, or other habitats (for example, roosting sites, migratory paths, important foraging habitat or plants (for example, agave), permanent water sources) occur; and monitoring and adaptive management strategies.

ER-4w Project developers shall develop and implement (in coordination with the BLM and USFWS) strategies for complying with regulatory requirements of the Bald and Golden Eagle Protection Act. For example, adhering to instruction in the most current bald and golden eagle guidance or pursuing an eagle take permit if it is not practicable to comply with applicable guidelines.

ER-5w Project developers shall avoid siting projects in or near key migratory flyways, pathways for water-associated birds, and near open water or other areas that are known to attract large numbers of birds, where practicable. If impacts to migrating birds that pass through the project sites are anticipated minimization and mitigation actions shall be determined in coordination with the BLM, USFWS, and state wildlife agencies.

ER-6w Project developers shall avoid habitat-altering activities, including vegetation removal or disturbance, during MBTA bird breeding season, to the maximum extent practicable (see glossary). If a project-related activity must occur during the breeding season, a qualified biologist shall survey the area for nests immediately prior to commencing construction activities. If active nests are detected, the nest area shall be flagged, and no activity shall take place near the nest in order to avoid disturbing the birds and causing nest failure. Flagging and avoidance distances must be determined in coordination with the BLM, USFWS, or appropriate state wildlife agencies. Flagging may be inappropriate for nests of ESA-listed bird species.

ER-7w Project developers shall coordinate with the USFWS and BLM project personnel in the event that a raptor nest is located on a transmission line support structure.

ER-8w Project developers shall monitor for and use adaptive management to minimize or mitigate bird mortalities (for example, raptors, migratory birds) associated with the solar project, in coordination with the BLM and USFWS. Mortalities shall be reported to the BLM and the USFWS.

ER-9w Project developers shall design transmission line support structures and other facility structures to discourage use by raptors for perching or nesting (for example, by using monopoles rather than lattice support structures or by use of anti-perching devices).

B.2.5 Environmental Justice (EJ) – Mandatory Resource-Specific Design Features

EJ-1 Project developers shall provide information early in the planning process, and throughout development, to potentially affected communities with environmental justice concerns regarding the potential scope and schedule of proposed projects, and potential impacts of a utility-scale solar project on air quality, water resources, water quality, and land resources, including post-project impacts. Informative outreach materials shall be accessible, relevant, and delivered to potentially affected low-income, minority, and Tribal communities and local governments.

EJ-2 The BLM and project developer shall develop, early in the planning process, an outreach plan for communities with environmental justice concerns regarding valley fever, where applicable.

EJ-3 The BLM and project developers shall initiate and maintain contact with communities with environmental justice concerns and create equitable and accessible opportunities for meaningful involvement to identify specific concerns regarding disproportionate and adverse effects and to engage communities with environmental justice concerns in co-developing equitable mitigation strategies.

EJ-4 The BLM and project developers shall make technical, physical, or other accommodations, as needed, to facilitate engagement with communities with environmental justice concerns.

EJ-5 The BLM and project developers shall use all available resources and strategies to minimize disproportionate and adverse impacts on communities with environmental justice concerns or impacts on human health and welfare generally. Such impacts include but are not limited to air quality, drinking water supplies, water supplies for agricultural and livestock use, local use of subsistence resources, and public services.

EJ-6 The BLM and project developers shall engage with communities with environmental justice concerns periodically during project construction, operation, and decommissioning regarding overall processes and outcomes to learn what worked well and what could be done differently to promote equitable environmental-justice-related processes and outcomes. Schedule ongoing reporting and coordination meetings with county government officials to identify and resolve emergent issues.

EJ-7 If project developers receive federal funding to support a proposed project they shall comply with applicable policy requirements of the Justice40 Initiative.

B.2.6 Geology and Soil Resources (GS) – Mandatory Resource-Specific Design Features

GS-1 Project developers shall identify soil erosion and geologic hazard concerns onsite and in proximity to the proposed project. In coordination with the BLM and Tribal, state, county, and local agencies, developers shall consider existing land use plans, updated inventories, soil surveys, and local factors that can cause slope instability (for example, groundwater conditions, precipitation, earthquake activity, slope angles, and the dip angles of geologic strata).The project developer shall incorporate into the POD, appropriate requirements to address erosion and geologic hazards.

GS-2 Project developers shall stabilize disturbed areas following grading in a manner appropriate to the soil type so that wind or water erosion is minimized.

GS-3 Project developers shall avoid ground disturbance from construction-related activities in areas with intact biological soil crusts and desert pavement and other areas where reclamation may be difficult. Project developers shall leave vegetation root systems in place to the maximum extent practicable (see glossary). When impacts to biological soil crusts cannot be avoided, developers shall salvage soil crusts for restoration, once construction or decommissioning has been completed.

GS-4 Project developers shall control water runoff from the construction area and direct it to settling or rapid infiltration basins.

GS-5 Project developers shall perform studies to determine the effects from construction activities on the aeolian processes that maintain any nearby sand dunes, if applicable, and design and conduct activities proposed within and near Aeolian sand transport corridors (including areas where sediment enters the corridor) to: (1) maintain the quality and function of Aeolian transport corridors and sand deposition zones, unless related to maintenance of existing facilities/operations/activities; (2) avoid a reduction in sand-bearing sediments within the Aeolian system; (3) minimize mortality dunes associated with sand dependent species.

B.2.7 Hazardous Materials and Waste (HMW) – Mandatory Resource-Specific Design Features

HMW-1 Project developers shall identify expected waste generation streams at the project site and hazardous waste storage locations in the POD.

HMW-2 Project developers shall incorporate, into the POD, a Hazardous Materials and Waste Management Plan that addresses the selection, transport, storage, and use of all hazardous materials needed for construction, operation, 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, onsite storage, recycling, and disposal of all resulting wastes.[4] The plan shall include: facility identification; comprehensive hazardous materials inventory; Safety Data Sheets for each type of hazardous material; emergency contacts and mutual aid agreements, if any; site map showing all hazardous materials and waste storage and use locations; and copies of spill and emergency response plans.

HMW-3 Project developers shall develop and implement a Spill Prevention Control and Emergency Response Plan as [er 43 CFR 112.

HMW-4 Project developers shall plan for waste management that will address all solid and liquid wastes that may be generated at the site, in compliance with applicable Clean Water Act requirements to obtain a National Pollutant Discharge Elimination System (NPDES) or similar permit.

HMW-5 Project developers shall, in the Hazardous Materials and Waste Management Plan, include provisions governing the handling, storage, application, and disposal of hazardous or toxic materials to prevent pollution to streams, lakes, or wetlands and injury to humans, land, animals, or plants. The plan will prohibit ”side casting” of road or other material into a stream, lake, wetland, or watercourse and the deposit of vegetative debris in streams, lakes, or other water bodies. The plan will also include measures to minimize impacts to Native American residential or traditional use areas.

HMW-6 Project developers shall identify and implement waste reduction measures, including recycling and waste minimization.

HMW-7 Project developers shall provide a copy of any report required or requested by any federal or state agency as a result of a reportable release or spill of any toxic substances or petroleum, oils, or lubricant spills in compliance with the Oil Pollution Act and Clean Water Act. Reports shall be furnished to the BLM authorized officer concurrent with the filing of the reports to the involved federal or state agency not more than five calendar days from the date of the release.

HMW-8 Project developers shall design and operate systems containing hazardous materials in a manner that limits the potential for their release and in compliance with titles 29 and 40 of the CFR.

HMW-9 Project developers shall **r**emediate any petroleum product leaks and chemical releases prior to completion of decommissioning.

HWM-10 Project developers shall maintain Hazardous Materials Spill Kits on site and train personnel in their use.

[4] It is not anticipated that any solar energy facility will have toxic and/or flammable substances identified under section 112(r) of the Clean Air Act present onsite in greater than threshold quantities (40 CFR Part 68 Subpart F § 68.130) as to require development of a Risk Management Plan as specified in 40 CFR Part 68.

HMW-11 Project developers shall establish dedicated areas with secondary containment for offloading hazardous materials transport vehicles.

HMW-12 Project developers shall survey project sites for unexploded ordnance, especially if projects are within 20 mi (32 km) of a current Department of Defense (DOD) installation or formerly utilized defense site.

HMW-13 During operations and at decommissioning, disposal of solar panels in landfills is prohibited unless the project developer demonstrates to the BLM that no recycling facilities are available in the U.S. at that time.

B.2.8 Health and Safety (HS) – Mandatory Resource-Specific Design Features

HS-1 Project developers shall identify 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. Consider manufacturer requirements, and federal and state standards, when establishing safety zones or setbacks for facilities and associated transmission lines.

HS-2 Project developers shall identify and account for general project injury prevention within the POD, such as 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 onsite first-aid capability.

HS-3 Project developers shall implement training and awareness measures for workers and the general public to minimize risk and incorporate standard practices (for example, OSHA requirements) for the safe use of explosives and blasting agents; occupational electromagnetic field (EMF) exposures; fire safety and evacuation procedures; safety performance standards (for example, electrical system standards and lighting protection standards); and further training, as warranted, for additional health and safety risks from the solar energy project and its ancillary facilities.

HS-4 Project developers shall establish measures to document training activities and report serious accidents to appropriate agencies.

HS-5 Project developers shall coordinate with the BLM and appropriate agencies (for example, the DOE and Transportation Security Administration) 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.

HS-6 Project developers shall design electrical systems to meet all applicable safety standards (for example, National Electrical Code) and to comply with the interconnection requirements of the transmission system operator.

B.2.9 Lands and Realty (LR) – Mandatory Resource-Specific Design Features

LR-1 Project developers shall identify legal access to private, state, and federal lands surrounding solar facilities, including any ancillary facilities, and the potential to create areas inaccessible to the public.

LR-2 Project developers shall identify and protect evidence of the Public Land Survey System (PLSS) and related federal property boundaries prior to commencement of any ground-disturbing activity. This is accomplished by contacting the BLM Cadastral Survey to coordinate data research, evidence examination and evaluation, and locating and protecting monuments of the PLSS and related land boundary markers from destruction, as well as any other land survey requirement. In the event of obliteration or disturbance of federal boundary evidence, the project developers shall immediately report the incident, in writing, to the Authorizing Official. The BLM Cadastral Survey shall determine how the marker is to be restored. In rehabilitating or replacing the evidence the project developers shall employ a qualified Certified Federal Surveyor or reimburse the BLM for costs. All surveying activities shall conform to the Manual of Surveying Instructions and appropriate state laws and regulations. Local surveys shall be reviewed by the BLM Cadastral Survey before being finalized or filed in the appropriate state or county office. The project developers shall pay for all survey, investigation, penalty, and administrative costs.

B.2.10 Military and Civilian Aviation (MCA) – Mandatory Resource-Specific Design Features

MCA-1 Project developers shall consult with or support the BLM consultation with the DoD, as appropriate, to minimize or eliminate impacts on military testing, training, and operations.

B.2.11 Minerals (M) – Mandatory Resource-Specific Design Features

M-1 Project developers shall, to the maximum extent practicable (see glossary), ensure that the solar energy project avoids areas of known high value mineral potential or ongoing mineral development.

B.2.12 Paleontological Resources (P) – Mandatory Resource-Specific Design Features

P-1 Project developers shall determine the potential presence of paleontological resources on the basis of the following: the geological context of the area and its potential to contain paleontological resources (potential fossil yield classification [PFYC] class, if available); a records search of published and unpublished literature and locality data for past paleontological finds in the area; coordination with paleontological researchers working in potentially affected geographic areas and geologic strata; and

depending on the extent of existing information, the completion of a paleontological survey.

P-2 Project developers shall avoid, to the maximum extent practicable (see glossary), high fossil potential areas based on PFYC classification and other sources (for example, ACEC designation, state data).

P-3 Project developers shall identify and implement measures to prevent looting/vandalism and erosion impacts to paleontological resources.

P-4 Project developers shall notify the BLM immediately if they discover fossils or possible fossils during project activities. Work shall be halted at the discovery site until a BLM paleontologist or a qualified BLM-permitted paleontological consultant visits the site, determines 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 from access to ensure that the fossils are not removed, handled, altered, or damaged until the site is properly evaluated and further action determined.

P-5 Project developers shall conduct a paleontology survey in areas that are known to contain paleontological resources as well as in areas of PFYC 4, 5, or U (unknown) prior to starting any construction. If the paleontological survey shows considerably high quantities of fossils or fossils of high scientific importance are present, a BLM-permitted paleontological consultant shall conduct data recovery activities and collection as considered appropriate by the BLM paleontologist.

B.2.13 Rangeland Resources – Mandatory Resource-Specific Design Features

B.2.13.1 Livestock Grazing (LG)

LG-1 Project developers shall coordinate with potentially affected grazing permittees/lessees pursuant to 43 CFR 2804.12(b)(3) or successor regulations and identify potential impacts to rangeland resources and grazing use in proximity to proposed projects.

B.2.13.2 Wild Horses and Burros (WH&B)

WHB-1 Project developers shall identify WH&Bs and their Herd Management Areas (HMAs) in proximity to the proposed project. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.

WHB-2 Where applicable, project developers and the BLM shall ensure access to or replacement of water sources for WH&B.

B.2.14 Recreation (R) – Mandatory Resource-Specific Design Features

R-1 Project developers, in coordination with the BLM, shall assess 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, including travel and recreation management plans. Developers and the BLM shall identify legal access to private, state, and federal lands surrounding the solar facilities to avoid rendering areas inaccessible to the public.

R-2 For projects located in special recreation management areas (SRMAs), project developers shall design the project to minimize conflicts with the SRMA's recreational values, to the maximum extent practicable (see glossary), in accordance with the applicable land use plan.

B.2.15 Socioeconomics (S) – Mandatory Resource-Specific Design Features

S-1 If the BLM determines that the project is likely to have a substantial negative impact on the economic or social conditions of local communities, the project developer shall work with state, local, and Tribal agencies and governments to develop a community monitoring program to identify and evaluate socioeconomic impacts of the proposed solar energy development. Monitoring programs shall collect data reflecting the economic, fiscal, demographic, and social impacts of development at the state, local, and Tribal levels. Parameters to be evaluated shall include impacts on local labor and housing markets, local consumer product prices and availability, local public services (police, fire, and public health), and educational services. Programs shall also monitor indicators of social disruption (for example, crime, alcoholism, drug use, and mental health) and the effectiveness of community welfare programs in addressing these problems. Project developers shall periodically provide updates to the BLM regarding the monitoring results.

B.2.16 Specially Designated Areas and Lands with Wilderness Characteristics (SDLW) – Mandatory Resource Specific Design Features

SDLW-1 Project developers shall, to the maximum extent practicable (see glossary), site, design, construct, operate, and decommission solar facilities and associated facilities to avoid, minimize, or compensate for impacts on the values of specially designated areas and LWCs.

SDLW-2 The project developer shall identify whether the lands within and immediately adjacent to the proposed solar energy project have been assessed for wilderness characteristics or have been included in a citizen’s wilderness inventory or proposal. If no current assessment exists and absent objectives to manage for wilderness character, the project developer shall conduct inventories and evaluations as per BLM Manual 6310 to determine the presence of wilderness characteristics. All relevant inventories and evaluations shall be included in the NEPA analysis and incorporated into the project decision.

SDLW-3 Project developers must ensure that the project design avoids substantial interference and adverse impacts on National Scenic and Historic Trails (NSHTs). If a proposed project is within the DRAFT Inventory Analysis Units established for NSHTs in the 11-state planning area (see Appendix E, Section E.4, in Volume 2 of this ROD) the project developer shall coordinate with the BLM field office, NSHT administrators, Tribes, and partner organizations to review the adequacy of information in available RMPs and NSHT inventory reports. The BLM will review the applicable RMP and any NSHT inventory reports to determine whether the existing inventories for potentially affected NSHTs comply with the BLM national trail inventory process as outlined in the NSHT manuals (6250/6280) (BLM 2012a,b) and Inventory, Assessment, and Monitoring (IAM) technical references. If NSHT management corridors are not adequately inventoried in an RMP, developers shall, in coordination with the BLM, NSHT administrators, Tribes, and partner organizations, conduct further inventory, consistent with NSHT manuals (6250/6280), and analysis, including the refinement of Inventory Analysis Units at the local level during the solar project application process. This inventory may reveal unanticipated or undocumented remnants, artifacts, trail tread or trace, high potential historic sites and route segments, trail features, and associated settings for NSHTs adjacent to or within the proposed project site that the BLM must consider in identifying any areas unsuitable for development. The BLM may update the relevant RMP regarding NSHTs, consistent with NSHT manuals (6250/6280), as appropriate during project-specific reviews or future planning actions. For more information, see Appendix E, Section E.4 in Volume 2 of this ROD.

B.2.17 Transportation (T) — Mandatory Resource-Specific Design Features

T-1 Project developers shall 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.

T-2 In coordination with the BLM, project developers shall identify appropriate easements for public roadway corridors through the project site to maintain proper traffic flows and retain more direct routing for the local population.

T-3 In coordination with the BLM, project developers shall identify and implement appropriate traffic control measures that address oversize or overweight components specific to solar energy development (for example, component size, weight, origin, destination, unique handling requirements, and alternative transportation approaches). Project developers shall also address the use of site access roads and public roads, including road design, construction, and management standards. Consultation with local planning authorities shall be conducted regarding traffic in general and specific issues such as school bus routes and stops.

B.2.18 Tribal Interests (TI) - Mandatory Resource-Specific Design Features

TI-1 Project developers shall avoid or minimize impacts to resources and landscapes important to Native American communities.

TI-2 Project developers shall avoid impacts to archaeological sites created by ancestral Native American populations to the maximum extent practicable (see glossary) and provide access for Tribes to visit culturally important or sacred sites. If impacts on archaeological sites are unavoidable, affiliated Tribe(s) shall be consulted, and the concerns of the affected descendant Native American population taken into account when developing a data recovery strategy.

TI-3 Project developer should identify in their NAGPRA Plan of Action if there is a reasonable potential to encounter undetected human remains and associated funerary objects during anticipated development activities and enable the BLM all necessary time to consult with appropriate Tribes before the project is authorized for general guidance on the treatment of any cultural items that might be exposed.

TI-4 Project developers shall avoid impacts to culturally important plant species and ensure Tribes retain access to such resources. When it is not practicable or economically feasible to avoid affecting these plant resources, project developers and the BLM shall consult with the affected Indian Tribe(s) to identify alternatives to mitigate the impact. For example, if the species is available elsewhere on BLM-administered lands, the BLM may guarantee access to the resource. For rare or less-common species (for example, mesquite groves and rice grass fields, identified as tribally important plant species in previous ethnographic studies), the BLM may establish (transplant) or propagate an equal amount of the plant resource elsewhere on BLM-administered lands accessible to the affected Tribe(s).

TI-5 Project developers shall avoid impacts to culturally important mineral resources and ensure Tribes retain access to such resources. When it is not practicable or economically feasible to avoid affecting these mineral resources, project developers and the BLM shall consult with the affected Indian Tribe(s) to identify appropriate mitigation.

TI-6 Project developers shall avoid impacts to culturally important wildlife species and their habitats and ensure Tribes retain access to such resources. When it is not practicable or economically feasible to avoid these habitats, project developers shall design the project 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).

TI-7 Project developers shall avoid damage to access roads or pathways that Tribes may use to practice treaty rights, such as hunting, fishing, or gathering, and accessing resources or areas of significant cultural importance. Project developers shall design

project infrastructure, including access roads and transmission lines, to maintain access to federal and non-federal lands where tribally significant resources are located.

B.2.19 Visual Resources (VR) - Mandatory Resource-Specific Design Features

Design features to address impacts are presented in two categories: (1) visual quality (vq) – Section B.2.19.1; and (2) night skies and natural darkness resources (ns) – Section B.2.19.2.

B.2.19.1 Visual Quality (vq)

VR-1vq Project developers shall consult with the appropriate BLM field office during the early phases of project planning to determine and ensure the project is in conformance with management decisions for visual resources in RMP. Project developers shall also consider the individual visual resource inventory (VRI) factors (scenic quality, sensitivity, and distance zones) to minimize the potential for a shift in value prior to any further project planning and design.

VR-2vq Project developers shall incorporate visual design principles that repeat the basic design elements (form, line, color, and textures) into project design to minimize visual impacts. Project developers shall also consider factors that influence a project's visibility including project location, scale, layout, and spatial relationships of project elements and incorporate measures to minimize visual impacts into the construction plans, details, drawings, and specifications for the project.

VR-3vq Project developers, in coordination with the BLM, shall consult with the public—including environmental justice communities and Tribes—and other interested parties to provide input on identifying important visual resources in and near the project site and provide information and input on project siting and visual site design elements.

VR-4vq Project developers shall consult on viewshed protection objectives and practices with the respective land management agencies for landscapes having special designations, including but not limited to Wilderness Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, National Parks, National Monuments, other NLCS units, and National Wildlife Refuges located within the project's viewshed. Developers shall demonstrate how they chose the site for the development and how they resolved concerns involving landscapes having special designations while recognizing that the BLM retains authority for project approval and establishing any terms and conditions.

VR-5vq Project developers shall perform visual mitigation and impact monitoring to periodically assess compliance with required mitigation, effectiveness of mitigation, and any actions needed to comply with requirements or ensure effectiveness.

VR-6vq Project developers shall minimize the profile of all facility-related structures to reduce visibility and visual dominance within the viewshed, including the viewshed of Tribal sacred sites and Tribally significant viewshed areas.

VR-7vq Project developers shall reduce visual dominance of projects to the maximum extent practicable (see glossary), but considering potential for increased ground disturbance and other resource impacts, by:

- siting projects outside the viewsheds of key observation points or as far away from them as possible;
- avoiding siting facilities on or near visually prominent landscape features that naturally draw an observer's attention;
- avoiding visual "skylining," i.e., placing structures, transmission lines, and other facilities on ridgelines, summits, or other locations where they would be silhouetted against the sky from KOPs; and
- siting linear features (for example, ROWs and roads) to follow natural land contours rather than straight lines and to follow edges of natural clearings.

VR-8vq Project developers shall choose building and structural materials and surface treatments (e.g., paints or powder coatings) designed to reduce contrast and reflectivity. Materials and surface treatments should blend with the project's backdrop, using the BLM Standard Environmental Color Paint Tool (PC01-PC10) to select colors. Materials, coatings, or paints having little or no reflectivity should be used whenever possible, including using nonspecular conductors and nonreflective coatings on insulators for electricity transmission/distribution projects, and color-treating the backs and supports of the solar panels to reduce visual contrast with the landscape setting consistent with the equipment warranties.

VR-9vq Project developers shall assess and quantify potential glint and glare effects from solar panel arrays or other facility components and determine the potential safety and visual impacts associated with glint and glare using appropriate and commonly accepted software, procedures, and past project examples. Developers shall provide acceptable design solutions to avoid or reduce offsite glare and confirm design solutions with the BLM.

VR-10vq Where offsite glare is unavoidable, project developers shall use screening (such as vegetation, berms, fabric barriers, or fencing with privacy slats) to limit offsite visibility of glint and glare if such measures would effectively reduce impacts given local site conditions and topography.

VR-11vq Project developers shall restore the project site to predevelopment visual conditions and the inventoried visual quality rating conditions to the maximum extent practicable (see glossary), or to conditions agreed upon by the BLM.

B.2.19.2 Night Skies and Natural Darkness Resources (ns)

VR-1ns Project developers shall develop and implement a detailed lighting plan prepared by a qualified lighting designer that complies with Section 5.1.1 in BLM Technical Note 457, *Night Sky and Dark Environments: Best Management Practices for Artificial Light at Night on BLM-Managed Lands* (Sullivan et al., 2023).

VR-2ns Project developers shall assess the anticipated effects of the project lighting on night skies and natural darkness and describe potential impacts on night sky appreciation and crepuscular/nocturnal wildlife in the POD. This assessment will guide identification of the appropriate lighting zone performance standards.

VR-3ns During project operations, lighting must conform to LZ0 or LZ1 lighting zone performance standards according to the IDA-IES Model Lighting Ordinance (IDA-IES 2011). The LZ0 lighting zone performance standards are appropriate in undeveloped areas of open space, near wilderness areas and preserves, areas near astronomical observatories, or any other area where the protection of a dark environment is critical. Where these sensitivities do not apply, LZ1 lighting zone performance standards shall be met. All permanent lighting shall be luminaires with a BUG (U0) rating, except as required to meet the minimum safety requirements.

VR-4ns Project developers shall use as few lights as possible, except as required to meet minimum safety requirements. Project developers shall not use lighting to serve an advertising function.

VR-5ns Project developers shall use minimum intensity lighting, except as required to meet minimum safety requirements.

VR-6ns Project developers shall select, site, and direct luminaires so that they illuminate only the area needed to support a particular task (for example, parking, driving, walking, working).

VR-7ns Project developers shall use lighting controls, such as timers, sensors, dimmers, or switches that are available to facility operators, except as required to meet minimum safety requirements.

VR-8ns When accurate color rendition is not required (for example, roadway, basic security), project developers shall use amber, orange, or red lighting. When whiter light is required for accurate color rendition, it shall be equal to or less than 3000° Kelvin color temperature.

B.2.20 Water Resources (WR) - Mandatory Resource Specific Design Features

Design features to address impacts are presented in five categories: (1) surface runoff (ro) - Section B.2.20.1; (2) hydrology (h) - Section B.2.20.2; (3) water use (w) – Section B.2.20.3; (4) surface water and groundwater ecosystems (e) – Section B.2.20.4; and (5) legal availability of water (l) – Section B.2.20.5.

B.2.20.1 Surface Runoff (ro)

WR-1ro Project developers 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. The project developer shall control project site drainage, erosion,

and sedimentation related to stormwater runoff. This shall be implemented within a Stormwater Pollution Prevention Plan and incorporated into the POD, as appropriate.

WR-2ro The project developer shall restore surface water flows to pre-disturbance conditions, including by removing stream crossings, roads, and pads, consistent with stormwater management objectives and requirements. Within the first planting season post-construction, the project developer shall revegetate any stabilized stream banks with native or other approved species.

WR-3ro Project developers shall conduct hydrologic analysis and modeling to define the 100-year, 24-hour rainfall and the 500-year, 24-hour rainfall for the project site and calculate projected runoff that these storm conditions would cause at the site. (G)

WR-4ro Project developers shall identify, avoid and minimize the location of salt-affected soils on the project site (for example, those in the Colorado River Basin).

WR-5ro Project developers shall demonstrate the project will not increase the potential for offsite flooding and include provisions for stormwater and sediment retention on the project site.

WR-6ro Project developers shall design culverts and water conveyances to comply with BLM, state, and local stormwater runoff standards, or to accommodate the runoff of a 100-year storm, whichever is larger.

WR-7ro Project developers shall design stormwater retention or infiltration and treatment systems for runoff from storm events up to and including a 100-year storm event.

WR-8ro Project developers shall maintain drilling fluids or cuttings in a manner so as not to come into contact with aquatic habitats. Temporary impoundments for storing drilling fluids and cuttings shall be lined to prevent potentially contaminated water from infiltrating into aquifers or to discharge to surface water bodies

B.2.20.2 Hydrology (h)

WR-1h Project developers shall conduct hydrologic study(ies) to assess local surface water and groundwater hydrology.

WR-2h Project developers shall determine the relationship of the project site hydrologic basin to other basins in the region.

WR-3h Project developers shall identify surface water bodies within the watershed of individual projects (including rivers, streams, ephemeral washes/drainages, lakes, wetlands, playas, and floodplains) and the 100-year floodplain nearest the site.

WR-4h Project developers shall identify aquifer systems that are hydrologically connected to the project site, areas of groundwater recharge and discharge (including springs and seeps), and phreatophytic vegetation.

WR-5h Project developers shall quantify physical characteristics of surface water features, including streamflow rates, stream cross-sections, channel routings, seasonal flow rates, and water quality parameters (for example, temperature, turbidity, salinity, suspended solids).

WR-6h Project developers shall quantify physical characteristics of the aquifers, such as approximate physical dimensions, confined/unconfined conditions, the transmissivity and storativity of the aquifer materials, and groundwater quality parameters (for example, dissolved solids).

WR-7h Project developers shall quantify the regional climate, including seasonal and long-term information on temperatures, precipitation, evaporation, evapotranspiration, and drought severity.

WR-8h Project developers shall avoid the creation of hydrologic conduits between two aquifers.

WR-9h Project developers shall monitor water quantity and quality in areas adjacent to or downstream from development areas throughout the life of the project to ensure that water flows and water quality are protected.

WR-10h Project developers shall maintain the existing channel form and dimension to the maximum extent practicable (see glossary).

B.2.20.3 Water Use (w)

WR-1w Project developers shall quantify anticipated water use requirements for site characterization, project construction, operations, and decommissioning.

WR-2w Project developers shall identify wastewater treatment measures and new or expanded facilities, if any, to be included as part of the facility's NPDES permit.

WR-3w Project developers shall utilize appropriate water sources with respect to management practices for maintaining aquatic, riparian, and other water-dependent resources.

WR-4w Project developers shall implement 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.

WR-5w Project developers shall restore the project site to predevelopment water conditions to the extent practicable.

B.2.20.4 Surface Water and Groundwater Ecosystems (e)

WR-1e Project developers shall develop measures to prevent potential groundwater and surface water contamination and incorporate them into the Spill Prevention and

Emergency Response Plan and POD, as appropriate. **This includes** utilizing block or check valves on both sides of waterways and riparian/riverine habitat to minimize product release from pipelines that transport hazardous liquids (for example, oils) that pass through aquatic or other habitats. Such pipelines shall be constructed of double-walled pipe at river crossings.

WR-2e Project developers shall dispose of excess excavated material according to applicable state and federal laws.

WR-3e Project developers shall use proper lining of holding ponds and tanks for any storage or treatment of wastewater onsite to prevent leaks.

B.2.20.5 Legal Availability of Water

WR-1l Project developers shall perform a water availability assessment to demonstrate that water is physically and legally available to meet the project's needs in accordance with the BLM's sustained yield mission. It is not sufficient to determine groundwater is available for proposed activities based solely upon the long-term average rate of recharge of an aquifer system. The assessment shall evaluate the potential effects on the availability of water for public land management. At a minimum, the assessment shall consider:

- Policies, designations, or declarations issued by federal, Tribal, state, and local water management agencies in response to drought and water shortages.
- Existing consumptive and non-consumptive uses of surface water and groundwater and points of diversion on BLM-administered lands at the relevant landscape scale.
- The reasonably foreseeable water needs on BLM-administered land in the project site.
- Sources of water supply to meet the project's needs.

B.2.21 Wildland Fire (WF) - Mandatory Resource-Specific Design Features

WF-1 Project developers shall assess the potential for fire risk associated with the proposed project, including risk to surrounding areas, paying close attention to distance from the Wildland-Urban interface zones. Assessment shall be done in coordination with the BLM, local governments, and other appropriate fire and emergency management organizations. Developers shall consult existing land use plans and fire management plans, including County Master Plans, as well as county permitting and building codes.

WF-2 Project developers shall site and design 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.

WF-3 Project developers shall incorporate 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.

WF-4 Project developers shall develop and implement vegetation management to reduce fuel loads in and around the project site, minimize the potential for wildland fires and prevent the establishment and spread of non-native, invasive species around the solar energy facility and its transmission lines and roads.

WF-5 Project developers shall design facility roadways with adequate rock base, turning radii and other design features to allow for all-weather access by fire fighting equipment, as determined by the local fire code authority.

WF-6 Project developers shall include specifications for the type and placement of battery energy storage systems (BESS), where utilized, within the project site. Project developers shall include fire management protocols specific to BESS, and the specific type of BESS being used, in the site's Fire Management Plan. Project developers shall provide the BLM with geospatial data and detailed maps of the site plan, including access roads, panel blocks, and BESS.

B.3 Category 3: Project Guidelines

B.3.1 Acoustic Environment (Noise) – Project Guidelines

The BLM authorized officer may require one or more of the following project guidelines (PGs) as appropriate and depending upon project- and site-specific factors.

N-PG-1 Implement a noise complaint process that provides for the documentation, investigation, evaluation, and resolution of legitimate, as determined by the BLM, project-related noise complaints.

N-PG-2 Maintain project equipment in accordance with manufacturers' specifications. For example, install suitable mufflers or air-inlet silencers on all internal combustion engines (ICEs) and certain compressor components.

N-PG-3 Limit low-altitude (under 1,500 ft [457 m]) helicopter flights for installation of transmission lines near noise-sensitive human and wildlife receptors to locations where the installation can only be performed using a helicopter.

N-PG-4 Schedule construction, operations, and decommissioning activities to minimize noise impacts above ambient levels for residents near the project site. Plan construction activities that significantly exceed ambient noise levels near residents during the least noise-sensitive times of day. For activities that significantly exceed ambient noise levels, notify nearby residents in advance.

N-PG-5 Incorporate low-noise systems (for example, for ventilation systems, pumps, generators, compressors, and fans) and select equipment without prominent discrete tones.

N-PG-6 Post warning signs at high-noise areas and implement a hearing protection program for work areas with noise in excess of 85 dBA.

B.3.2 Air Quality and Climate (AQC) - Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

AQC-PG-1 Use equipment that meets emission standards specified in state regulations and the applicable EPA Tier 4 (highly recommended) or Tier 3 (on a case-by-case basis if use of Tier-4 engine is infeasible) emissions requirements. Prioritize use of electric drive equipment, as available, and reformulated diesel for all diesel engines.

AQC-PG-2 Manage unpaved roads, disturbed areas (for example, 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 by maintaining site soils in a moist or crusted condition.

AQC-PG-3 Limit travel to stabilized roads, when possible.

AQC-PG-4 Access transmission lines from public roads and designated routes to minimize fugitive dust emissions.

AQC-PG-5 Cover vehicles that transport loose materials as they travel on public roads, use dust suppressants on truck loads, and keep loads below the freeboard of the truck bed.

AQC-PG-6 Install wind fences around disturbed areas that could affect the area beyond the site boundaries (for example, nearby residences).

AQC-PG-7 Suspend soil disturbing activities and travel on unpaved roads during periods of high winds. Site-specific wind speed thresholds would be determined on the basis of soil properties identified during site characterization.

AQC-PG-8 Use real-time onsite dust monitors to document wind/emission events and facilitate timely response. Monitors should remain installed for the lifespan of the project. Simple ways to monitor and summarize the data should be used. Experts should be employed to analyze the data. Real-time data should be accessible to the public and presented in a helpful context (for example, compared with public health standards).

AQC-PG-9 Consider atmospheric conditions when planning construction and decommissioning activities to minimize dust.

AQC-PG-10 Avoid construction and decommissioning activities under low wind and stable atmospheric conditions (i.e., temperature inversions), which may occur around sunrise in colder months and cause high 24-hr PM concentrations.

AQC-PG-11 Limit the idling time of off-road engines and equipment to no more than 2 minutes, unless idling must be maintained for proper operation (for example, drilling, hoisting, and trenching).

AQC-PG-12 Avoid use of chemical dust suppressants that emit volatile organic compounds within or near ozone nonattainment areas.

AQC-PG-13 Minimize onsite vehicle use and conduct routine preventive maintenance, including tuneups to meet the manufacturer's specifications, to ensure efficient combustion and minimal emissions.

AQC-PG-14 Stage construction/decommissioning to limit the areas exposed at any time and stabilize areas that are not actively being disturbed.

AQC-PG-15 Inspect and clean tires of all construction-related vehicles to ensure they are free of dirt before they enter paved public roadways.

AQC-PG-16 Clean up visible trackout or runoff dirt on public roadways (for example, by using a gravel apron, pipe-grid trackout-control device, or street vacuum/sweeping).

AQC-PG-17 Salvage topsoil from all excavations and construction and reapply to construction areas not needed for facility operation as soon as activities in that area have ceased.

AQC-18 Reduce commuter vehicle trips through car pools, commuter vans or buses, innovative work schedules, or work camps.

AQC-PG-19 Revegetate to minimize dust in areas that have been graded, scraped, bladed, compacted, or denuded. Continue to monitor and treat, as needed, areas of bare soil (for example, by applying water; approved dust suppressants).

B.3.3 Cultural Resources (CR) – Project Guidelines

None.

B.3.4 Ecological Resources (ER) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

ER- PG-1 Use natural materials such as water, mulch or straw to stabilize road surfaces and soils where needed. If it is necessary to use chemical road sealants and soil stabilizing agents, use nontoxic varieties. External substrates brought onto a project site can contain seeds from invasive species. Use weed free mulch, erosion control (straw waddles), gravel, or any external substrates brought onto the site. Map and

provide the BLM with the locations of all external substrates brought onto site. See also AQC-general design features (Section B.2.1).

ER- PG-2 Advise personnel to minimize stopping and exiting their vehicles in the winter ranges of large game while there is snow on the ground.

ER- PG-3 Prohibit project personnel from bringing firearms to project sites, except when required for safety in grizzly bear areas.

ER- PG-4 Wherever feasible, collocate solar development with parking lots, landfills, rooftops, abandoned mine lands, or other *developed* sites on BLM land and locate staging and parking areas within the disturbed footprint of the solar energy facility to minimize habitat disturbance.

ER- PG-5 To the maximum extent practicable (see glossary), avoid installing transmission lines over important or sensitive habitats. When not avoidable, installation of towers in such habitats should be minimized and conductors should span important or sensitive habitats within the limits of standard structure design.

ER-PG-6 Delineate proposed disturbance boundaries with temporary construction fencing and flagging prior to construction and confine disturbances, project vehicles, and equipment to the delineated project sites to protect and conserve sensitive resources and species of interest (for example, SSS, state-managed wildlife species), habitats, and plant communities.

ER- PG-7 To the maximum extent practicable (see glossary), minimize the area disturbed by pre-construction site monitoring and testing activities and installations.

ER- PG-8 Monitor cumulative temperature changes to plant communities and wildlife habitat, both in and outside of solar facilities, based on current research.

ER-PG-9 Use helicopters for construction where access roads do not exist or where access roads could not be constructed without compromising habitat functionality.

ER-PG-10 Maximize the use of materials such as tundra pads or other temporary road mats for temporary construction roads and other temporary facilities.

ER-PG-11 To reduce erosion and habitat loss and minimize natural vegetation removal, use overland travel methods or hand-cutting/mowing vegetation rather than removing it entirely.

ER-PG-12 Use techniques (for example, raising height of solar panels, increased spacing between panels, minimizing project footprint; using temporary fencing) to retain high percentages of native vegetation and biological soil crusts onsite and beneath and between solar panels as compared to a reference site or pre-construction conditions at the project site.

ER-PG-13v Retain short (for example, less than 18 in [46 cm] tall) native species in the project site during maintenance and operation activities as appropriate, based on the height of solar panels.

ER-PG-14v Educate project personnel on noxious weed identification, the manner in which noxious weeds spread, and methods for treating infestations.

ER-PG-15v Periodically monitor, report on, and immediately eradicate noxious weed or invasive species within all project sites.

ER-PG-16v Perform vegetation maintenance in the project site mechanically rather than with herbicides to the maximum extent practicable (see glossary).

ER-PG-17v Stockpile topsoil removed during decommissioning and replace it on-site when restoring the project site. Once decommissioning activity is complete, restore topsoil to assist in establishing and maintaining pre-construction native plant communities to the extent possible, consistent with landowner objectives.

ER-PG-18aq If used, key the largest riprap/rock material into the toe of the bank in riparian areas.

ER-PG-19aq If using wood in riparian areas, use wood that is intact, hard, and undecayed to partly decaying with untrimmed root wads to provide functional refugia habitat for fish. Wood shall be obtained from outside of the riparian channel.

ER-PG-20aq If using lean natural angular rock or stone to anchor or stabilize large wood in riparian areas, fill scour holes, prevent scouring or undercutting of an existing structure, or to construct a barb, weir or other properly designed and approved in-water structure, comply with Corps of Engineers' policy on prohibited materials.

ER-PG-21aq Individually place rock riprap in riparian areas without end dumping.

ER-PG-22aq For all repairs of previously existing bank protection structures in riparian areas, incorporate bioengineering principles, with minimal use of clean natural rock or stone and maximum revegetation of the bankline above the ordinary high water mark. If the entire structure has been destroyed or damaged beyond repair, replace the structure using bioengineering principles and methods, and incorporate native vegetation.

ER-PG-23sss Avoid, minimize, or compensate for impacts to monarch butterflies and other pollinators. Minimization measures shall include existing strategies (for example, Western Monarch Butterfly Conservation Recommendations [USFWS 2023]; BLM Strategic Plan for Pollinator Conservation). Include efforts to conserve and restore important habitats for western monarch butterflies and other pollinators when undertaking compensatory mitigation.

ER-PG-24sss Include protocols for translocation as part of compensatory mitigation measures only if (1) impacts are unavoidable and avoidance and minimization measures are not feasible; (2) translocation/transplantation is proven to work for the

specific species; and (3) translocation is approved by the BLM, USFWS, and NMFS and relevant state agencies for BLM SSS and priority species.

ER-PG-25sss Ensure project design demonstrates neutral or beneficial long-term hydrologic effects to federally listed fish and amphibian species and riparian and wetland habitat during project planning and prior to seeking authorization.

ER-PG-26sss Conduct post construction monitoring for BLM SSS and priority species for a minimum of five years post-construction. Monitoring shall focus on impacts to species, including but not limited to impacts to wildlife movements and increased mortality. The causes of impacts and adaptive management to resolve the impacts to the extent feasible will be addressed during the post construction monitoring period (i.e., is the solar field the cause of mortality and how can this be limited?).

ER-PG-27sss Leave the facility fencing in place for several years or replace it with new exclusion fencing to assist reclamation and restoration efforts (for example, 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 livestock and wildlife is low. Design features relevant to allowing wildlife and desert tortoise access to solar facilities will be maintained in any remaining facility fencing.

ER-PG-28sss Limit vehicle trips between panel arrays as much as possible once construction is complete. Limit vehicle trips to the established access roads and discontinue vehicle travel in vegetated areas to promote regrowth of existing vegetation and restoration efforts.

ER-PG-29sss Record and map landscape and habitat conditions prior to disturbance using unmanned aerial vehicle (UAV) systems throughout the project site in order to understand the contour of the landscape (hydrological features), vegetation structure (diversity and density of perennial plants), and other existing features or habitat disturbances (for example, evidence of previous wildfire, roads). A record of habitat conditions prior to ground disturbances will better inform habitat restoration needs for decommissioning and an understanding of cumulative impacts to ecological resources from solar energy development. Incorporate this record into the Decommissioning and Site Reclamation Plan.

ER-PG-30sss During operations, the BLM may consult with USFWS, on a case-by-case basis, on the appropriateness of allowing Mojave desert tortoises to reoccupy project sites. This evaluation may consider the density of Mojave desert tortoises in the area and potential recipient translocation sites connectivity, distance from existing infrastructure, etc. The BLM and USFWS may determine if allowing Mojave desert tortoises to reenter the project site is preferable given the site conditions. Where tortoise reoccupancy is considered, a minimum vegetation cover standard may be developed by the BLM and USFWS and maintained by the project developer. 75% of reference site cover is the minimum cover standard that shall be considered for sites considering Mojave desert tortoise reoccupancy. If authorized, Mojave desert tortoises shall be allowed to access and move through the sites through fence modifications (for

example, fences should be raised 8 inches to allow desert tortoise and other wildlife movement).

ER-PG-31sss If Mojave desert tortoise exclusion is required necessary , ensure access for other wildlife through project fencing by adding wildlife access. Raised fences are preferable to fence gaps when habitat is deemed suitable to minimize wildlife pacing as much as possible. Alternatively, wildlife-friendly/permeable fencing with wider-spaced chain link could be used to allow for wildlife access without the use of fence gaps.

ER-PG-32sss To ensure retention of suitable Mojave desert tortoise habitat, minimize scraping, grading, and leveling of the project site (including disc and roll, drive and crush) to the maximum extent practicable (see glossary), and limit use of those methods to designated main access roads, substations, operations and maintenance facilities, temporary laydown areas, and equipment pads, with a recommended goal of <20% within the project site within suitable Mojave desert tortoise habitat**.**

ER-PG-33sss Within areas impacted by the solar arrays, retain the agency-approved percentage of native vegetation cover (see vegetation Design Features in Section B.2.4.2). Within each block of panel arrays, leave topography, soils, and vegetation in place to the maximum extent practicable (see glossary), and install solar array components over existing soils and vegetative resources. If this threshold is not met once construction is complete, implement restoration until this goal is met per an approved site-specific Decommissioning and Site Restoration Plan.

ER-PG-34sss Avoid site-wide mowing and dozer soil compression to reduce impacts to Mojave desert tortoises and their habitats. Mowing or trimming could occur in select situations when necessary.

ER-PG-35sss For Mojave desert tortoise in suitable habitat, 1) do not engage in grading, disc and roll, and other development techniques that result in significant soil disturbance and completely remove vegetation, 2) conduct native/desirable revegetation in each solar panel array block as soon as construction is complete, and 3) minimize vehicular activities.

ER-PG-36sss Retain natural shelter sites whenever possible, such as boulder piles and burrows that may be used by Mojave desert tortoises for sheltering. If natural burrow sites must be removed, replace them with artificial burrows after construction in areas that would not interfere with production or maintenance. Consult with BLM and USFWS biologists to determine best location and design.

ER-PG-37sss Conduct research and project monitoring on projects designed for Mojave desert tortoise reoccupation to improve information about the success rate of native vegetation establishment and management and desert tortoise use of utility scale solar projects.

ER-PG-38sss On project sites designed to facilitate Mojave desert tortoise reoccupation, develop and implement an Access Management Plan to help avoid unnecessary ground disturbance from random driving patterns.

ER-PG-39sss Remove raven nests in Mojave desert tortoise habitat only when inactive (i.e., no eggs or young). The removal of raven nests may be addressed in the most current USFWS guidance (for example, FONSI, *Implementation of a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise, 2008*).

ER-PG-40sss Develop and implement a Mojave Desert Tortoise Habitat Management Plan, Mojave Desert Tortoise Habitat Linkage Management and Monitoring Plan and a Mojave Desert Tortoise Population Connectivity Effectiveness-Monitoring Plan for projects that affect desert tortoise linkages.

ER-PG-41sss Monitor for increase in predation of SSS from predators that are attracted to developed areas, and use adaptive management, agreed upon in coordination with the BLM and, if applicable, the USFWS to reduce predation.

ER-PG-42w 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.

ER-PG-43w Tilt solar panels upward where feasible to minimize moon-glare and associated risk of bat/bird collisions from the panels.

ER-PG-44w Monitor for, report, and use adaptive management to minimize or mitigate raptor and other bird mortality associated with solar projects (for example, collisions with panels and power lines), educate workers on the laws that protect raptors, and educate workers to report any illegal shooting of raptors.

ER-PG-45w Remove raptor nests (excluding eagles) only if the birds are not actively using the nest, only if necessary for facility operation, and only after coordination with the BLM, USFWS, and relevant state agencies.

ER-PG-46w Coordinate with the BLM, USFWS, and relevant state agencies if relocation of nests to nesting platforms is necessary and appropriate. Relocating migratory birds or bird nests containing eggs or chicks requires a permit from the USFWS Migratory Bird program and must be conducted by qualified biologists. The use of nest buffers (seasonal or spatial buffers) will protect nests with eggs or chicks until the young fledge the nest. Report relocated or destroyed nests to the appropriate federal or state agencies.

ER-PG-47w Avoid the addition of wildlife habitat enhancements or improvements such as ponds, guzzlers, rock or brush piles for small mammals, bird nest boxes, nesting platforms, and wildlife food plots that increase wildlife use of the facility, which may result in increased levels of injury or mortality.

ER-PG-48w Monitor and repair any fencing on at least a quarterly basis for possible damage, structural integrity, and unintended openings.

ER-PG-49w Avoid the use of evaporation ponds for water management when the water could harm birds or other terrestrial wildlife due to constituents of concern present in the wastewater (for example, selenium, hypersalinity, etc.). Configure any evaporation

ponds to minimize attractiveness to shorebirds (for example, maintain water depths over two feet; maintain steep slopes along edge; enclose evaporation ponds in long-term structures; or obscure evaporation ponds from view using materials that blend in with the natural surroundings).

B.3.5 Environmental Justice (EJ) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

EJ-PG-1 Support environmentally-just mining practices through responsible procurement. This would involve applying selection criteria for obtaining mineral resources and manufactured products from companies that prioritize ethical and ecologically sound mineral extraction and manufacturing practices (see OECD 2016, n.d.).

EJ-PG-2 Prioritize local minority, low-income, and Tribal populations for project-related employment opportunities, wherever feasible, by continuing support for the establishment of vocational training programs and the local low-income and minority workforce to promote development of skills for, and equitable employment opportunities within, the solar energy industry (local projects, if possible). Employ equitable labor standards and include workforce agreements and local hiring provisions for clean energy projects.

EJ-PG-3 Consider the needs and desires of low-income, minority, and Tribal populations in determining the specific conditions to which the land will be reclaimed.

EJ-PG-4 Engage with local organizations and partner agencies that are trusted in the communities potentially affected by the project (OMB 2021).

EJ-PG-5 Develop and apply community benefit agreements or good neighbor agreements, if appropriate.

B.3.6 Geology and Soil Resources (GS) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

GS-PG-1 To the maximum extent practicable (see glossary), minimize disturbance by restricting activities to existing roads, routes, and utility corridors and previously disturbed areas. Minimize the number and length/size of new roads, access routes, laydown, and borrow areas. Obtain mineral materials from authorized and permitted sites.

GS-PG-2 Avoid areas with soils that are highly susceptible to wind or water erosion.

GS-PG-3 Identify disturbance zone boundaries on the ground (for example, by using construction fencing) during construction and decommissioning to minimize conflict

with other resource concerns and avoid clearing and disturbing areas outside the identified boundaries.

GS-PG-4 Bury electrical lines along existing features (for example, roads or other paths of disturbance) to minimize the overall area of surface disturbance.

GS-PG-5 Integrate the natural contours of the land into the design and configuration of the project to minimize land grading.

GS-PG-6 Conduct construction grading (where necessary) in compliance with industry practice (for example, ASTM International standard methods) and other requirements (for example, BLM, state, and local grading or construction stormwater permits).

GS-PG-7 Site, design, and construct new roads and walking trails consistent with the appropriate design standards and criteria, such as those described in BLM Manual 9113 (BLM 2015) and 43 CFR 8342.1. Roads and trails should follow natural land contours and avoid environmentally sensitive resources. Hill cuts should be minimized in the project site.

GS-PG-8 Avoid excessive grades on roads, road embankments, ditches, and drainages during site preparation and construction, especially in areas with erodible soils.

GS-PG-9 Avoid the creation of excessive slopes during site preparation and construction (for example, during excavation); use special construction techniques in areas of steep slopes, erodible soil, and drainage ways; and stabilize disturbed slopes as quickly as possible.

GS-PG-10 Minimize the land footprint for the foundations of vertical support structures to reduce soil compaction and vegetation removal.

GS-PG-11 Retain sediment-laden waters from disturbed, active areas within the project using barriers and sedimentation devices (for example, berms, straw bales, sandbags, jute netting, or silt fences). Avoid use of such barriers and devices in wildlife crossing areas, however.

GS-PG-12 Prevent channel erosion from project runoff. Consider disconnection length between panels and the erosion potential of water dripping from panels in the site design to minimize erosion by water.

GS-PG-13 Control culvert outlets with appropriate structures (for example, rock lining or apron) to reduce soil erosion and scouring.

GS-PG-14 Use water or other stabilizing agents to wet unpaved roads in active construction areas, laydown areas, and other disturbed areas to minimize wind erosion of soil and fugitive dust emissions.

GS-PG-15 Implement construction in stages to limit areas of exposed and unstabilized soils. For example, clear only land that will be actively under construction in the near term (for example, within the next 6 to 12 months) of vegetation.

GS-PG-16 Reduce construction activity timeframes so that ground-disturbing activities take place over as short a timeframe as possible. If an activity requires an extended schedule, employ measures to limit wind and water erosion during the activity (rather than after the activity), to the maximum extent practicable (see glossary).

GS-PG-17 Use temporary stabilization devices (i.e., erosion matting blankets or soil stabilizing agents) for areas that are not actively under construction.

GS-PG-18 Build project structures in accordance with the design-basis recommendations in the project-specific geotechnical investigation report.

GS-PG-19 Avoid areas with high seismic risks or unstable slopes.

GS-PG-20 Perform routine site inspections to assess the effectiveness of maintenance requirements for erosion and sediment control systems.

GS-PG-21 Consider alternatives to herbicides and mowing for vegetation control, such as use of low-growing native vegetation and livestock grazing.

GS-PG-22 Maintain permanent barriers and sedimentation devices to ensure effective control of runoff and soil erosion.

GS-PG-23 Maintain catch basins, roadway ditches, and culverts to ensure proper function.

GS-PG-24 Ensure that permanent stabilization of disturbed areas occurs during final grading and landscaping of the site and is maintained through the life of the facility.

GS-PG-25 Re-establish, to the extent possible, the original grade and drainage pattern.

B.3.7 Hazardous Materials and Waste (HMW) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

HMW-PG-1 Identify and implement prevention measures, including substituting materials with less hazardous alternatives.

HMW-PG-2 Ensure vehicles and equipment are in proper working condition to reduce potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.

HMW-PG-3 Where practical, implement “just-in-time” ordering procedures that are designed to limit the amounts of hazardous materials present on the site to quantities minimally necessary to support continued operations. Excess hazardous materials shall be removed from the site within 48 hours of discovery or notice.

HMW-PG-4 Establish schedules of regular removal of wastes (including sanitary wastewater generated in temporary, portable sanitary facilities) for delivery and removal by licensed haulers to appropriate offsite treatment or disposal facilities; identify toxic

and other waste disposal facilities for disposal of toxic and other waste materials; and plan for reporting and coordination with local government authorities on hazardous materials and waste disposal issues.

HMW-PG-5 Site refueling areas away from surface water locations and drainages and on paved surfaces; refueling operations on paved surfaces shall be sloped and bermed to contain any release in compliance with the EPA amended Spill Prevention, Control, and Countermeasure rule; and features shall be added to direct any spilled materials to sumps or safe storage areas where they can be subsequently recovered. If equipment with hydraulic lines is used within streams, riparian areas, wetlands or near springs, ensure the hydraulic fluid being used in the equipment is non-toxic to aquatic species.

HMW-PG-6 Designate hazardous materials and waste storage areas and facilities away from environmentally sensitive areas and limit access to designated areas to authorized personnel only.

HMW-PG-7 Coordinate with local fire departments and emergency management departments to ensure emergency responders are fully informed regarding the project's hazardous material risks, how to safely respond to fires at the facility if needed, and any need for specialized training for emergency service providers.

HMW-PG-8 Recycle, to the greatest extent practicable all components of the system during the life of the system and at decommissioning, in compliance with solid and hazardous waste requirements. (Some states have enacted laws and regulations specific to the recycling and disposal of solar panels.)

B.3.8 Health and Safety (HS) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

HS-PG-1 Utilize temporary fencing and other measures to limit public access to staging areas, storage yards, and excavations to reduce health and safety risks.

HS-PG-2 Use alternative dielectric fluids that do not contain sulfur hexafluoride (SF_6) to reduce global warming potential.

HS-PG-3 Utilize 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.

B.3.9 Land and Realty (LR) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

LR-PG-1 Locate proposed generation-tie, interconnect, or transmission lines that are ancillary to a solar development project within corridors designated for transmission in applicable land use plans, where geographically and environmentally feasible. Where transmission corridors are not geographically or environmentally feasible, site lines related to the solar development project in areas where they are best compatible with the land use plan.

LR-PG-2 Avoid siting new solar development projects within designated energy corridors. For solar development projects proposed within designated energy corridors, design the project to be compatible with the uses for which the corridor was designated. The BLM will consider all solar proposals in designated energy corridors on a case-by-case basis and may deny any proposal or realign all or part of the corridor through a land use plan amendment.

B.3.10 Military and Civilian Aviation (MCA) – Project Guidelines

The BLM authorized officer may require the following PG as appropriate and depending upon project- and site-specific factors.

MCA-PG-1 Implement measures to reduce impacts from solar panel glint and glare on aviation activities (BLM 2018).

B.3.11 Minerals (M) – Project Guidelines

None.

B.3.12 Paleontological Resources (P) – Project Guidelines

The BLM authorized officer may require the following PG as appropriate and depending upon project- and site-specific factors.

P-PG-1 Monitor excavation and earthmoving activities in areas that are known to contain paleontological resources as well as in areas of PFYC 4, 5, or U.

B.3.13 Rangeland Resources – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

LG-PG-1 Design, construct, improve, and maintain project facilities and supporting infrastructure, including roads, to minimize their impact on grazing operations. Road design shall include fencing, cattle guards, gates, and speed control and information signs where appropriate.

LG-PG-2 Configure the boundaries of solar project ROWs to allow grazing operations to continue to the maximum extent practicable (see glossary).

LG-PG-3 For areas previously used for livestock grazing, build fences as necessary to exclude livestock from reclamation areas until the BLM determines that the area is reclaimed and that the area is suitable for livestock grazing**.**

WHB-PG-1 Site, design, construct, fence, and improve access roads to minimize potential WH&B collisions caused by project-related traffic. Construct fences and other structures to exclude WH&Bs from the solar energy project site. Exclude WH&B water sources or access routes to water sources from the solar energy project site, and provide alternate water sources or routes. Alternative water sources should not result in concentrating large numbers of animals in one area; water sources should be developed across the landscape.

B.3.14 Recreation (R) – Project Guidelines

None.

B.3.15 Socioeconomics (S) – Project Guidelines

None.

B.3.16 Specially Designated Areas and Lands with Wilderness Characteristics (SDLW) – Project Guidelines

None.

B.3.17 Transportation (T) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

T-PG-1 Appropriate traffic control measures may include intersection realignment coupled with speed limit reduction; the installation of traffic lights or other signage; and the addition of acceleration, deceleration, and turn lanes on routes with site entrances. These actions would reduce hazards for incoming and outgoing traffic, as well as expedite traffic flow. These types of measures would be considered during the siting and design phase.

T-PG-2 Minimize the number of vehicles used and the number of trips to the project site, for instance by using shuttle vans and carpooling. Limit project vehicle speeds in areas occupied by special status plant and animal species, on unpaved surfaces to avoid and reduce soil compaction and fugitive dust emissions, and near grazing areas to protect livestock. Traffic shall yield to wildlife, allowing safe road crossing.

T-PG-3 Manage site access to ensure that traffic flow is not unnecessarily affected and that specific issues of concern (for example, 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 authorities.

B.3.18 Tribal Interests (TI) – Project Guidelines

The BLM authorized officer may require the following depending upon project- and site-specific factors.

TI-PG-1 Consider limiting access to archaeological sites/sacred sites to non-Tribal members at certain culturally significant times of year or in some instances generally restricting access to sacred sites for non-Tribal members.

B.3.19 Visual Resources (VR) - Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

VR-PG-1vq Use existing topography and vegetation as screening or partial screening devices to reduce visual impacts of the project.

VR-PG-2vq Limit use of project construction signs to the maximum extent practicable (see glossary), consistent with safety requirements. 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 are prohibited.

VR-PG-3vq Minimize offsite visibility of all commercial symbols and signs and associated lighting, to the maximum extent practicable (see glossary) and consistent with applicable safety regulations. Make necessary signs from non-glare materials and utilize unobtrusive colors. Paint or coat the reverse sides of signs and mounts using a suitable color selected from the BLM Standard Environmental Color Tool to reduce contrasts with the existing landscape.

VR-PG-4vq Implement offsite compensatory mitigation of visual impacts. In some situations, offsite mitigation may serve to offset or recover the loss of visual landscape integrity. For example, offsite mitigation could include 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 offsite mitigation will be determined on a project-specific basis in consultation with the BLM.

VR-PG-5vq Locate linear right-of-way authorizations (for example, for transmission lines, pipelines, roads) at the edges of natural clearings or natural lines of transition between vegetation type and topography.

VR-PG-6vq Reduce 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 but still should respond to the local visual characteristics/setting.

VR-PG-7vq Design and install 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.

VR-PG-8vq Repeat the size, shape, and characteristics of naturally occurring openings in vegetation for facilities, structures, roads, etc.

VR-PG -9vq Preserve existing rocks, vegetation, and drainage patterns to the maximum extent practicable (see glossary).

VR-PG-10vq Avoid leaving topsoil piles and slash piles in sensitive viewing areas. (S/C)

VR-PG-11vq Reduce the visual color contrast of graveled surfaces with approved color treatment practices.

VR-PG-12vq Spread 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 visual impacts from piles.

VR-PG-13vq Remove stakes and flagging from the construction area after completion of construction.

VR-PG-14vq Segregate and spread topsoil from cut-and-fill activities on freshly disturbed areas to reduce color contrast.

VR-PG-15vq Mulch and spread slash from vegetation removal over fresh soil disturbances.

VR-PG-16vq Consider the appropriate choice of monopoles versus lattice towers for a given landscape setting to reduce visual impacts. Consider alternative means of construction access in visually sensitive areas, to preserve the natural landscape conditions between tower locations.

VR-PG-17vq Use rounded and varied road-cut slopes and cut-and-fill pitches to reduce contrasts in form and line; encourage slope cuts to preserve specimen trees and nonhazardous rock outcroppings.

VR-PG-18vq Sculpt and shape natural or previously excavated bedrock landforms (when excavation of these landforms is required) to blend in with the forms, lines, and textures of the existing landscape.

VR-PG-19vq Keep painted and color-treated facilities in good repair and repaint or retreat when the color fades or flakes.

VR-PG-20vq Include treatments, such as thinning and feathering vegetation along project edges, enhanced contour grading, and salvaging landscape materials from within decommissioning areas.

VR-PG-21vq Contour 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.

VR-PG-22vq Utilize native vegetation approved by the BLM field office to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape, where site conditions permit.

VR-PG-23vq Restore rocks, brush, and forest to approximate pre-existing visual conditions.

VR-PG-24ns Utilize retro-reflective or luminescent markers in lieu of permanent lighting to the maximum extent practicable (see glossary), consistent with safety requirements.

VR-PG-25ns Use vehicle-mounted lights rather than permanently mounted lighting for nighttime maintenance activities, consistent with safety requirements. Whenever possible, such vehicle-mounted lighting shall be aimed toward the ground to avoid causing glare and skyglow.

B.3.20 Water Resources (WR) – Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

WR-PG-1 Prevent the release of project waste materials into stormwater discharges.

WR-PG-2 Utilize geotextile matting to stabilize disturbed channels and stream banks.

WR-PG-3 Divert worksite runoff from entering disturbed streams using earth dikes, swales, and lined ditches.

WR-PG-4 Place sediment control devices so that sediment-laden water can pond, thus allowing sediment to settle out.

WR-PG-5 Consider placement of check dams (i.e., small barriers constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products) across swales or drainage ditches to reduce the velocity of flowing water.

WR-PG-6 Minimize land disturbance (including crossings) in natural drainage systems and groundwater recharge zones (i.e., ephemeral washes and dry lake beds) and locate and construct drainage crossing structures so as not to decrease channel stability or increase water volume or velocity. Consider special construction techniques in areas of erodible soil, alluvial fans, and stream channel/wash crossings.

WR-PG-7 Backfill foundations and trenches with originally excavated material.

WR-PG-8 Avoid washing equipment/vehicles in or near streams and wetlands.

WR-PG-9 Construct entry and exit pits in work areas to trap sediments from vehicles so they do not enter streams at stream crossings.

WR-PG-10 Provide for periodic removal of wastewater by a licensed hauler.

WR-PG-11 Monitor groundwater and surface water for a limited period of time following project decommissioning.

WR-PG-12 Manage runoff from parking lots, roofs, or other impervious surfaces.

WR-PG-13 Maintain natural drainages and pre-project hydrographs for the project ROW to the extent practicable.

WR-PG-14 Maintain pre-development flood hydrograph for all storms up to and including a 100-year rainfall event.

B.3.21 Wildland Fire (WF) - Project Guidelines

The BLM authorized officer may require one or more of the following PGs as appropriate and depending upon project- and site-specific factors.

WF-PG-1 Consult fire management personnel to determine actions, both active and passive (for example, vegetation manipulation, limiting flammable material onsite, limiting work during certain weather conditions), that may minimize the need for protective responses by the BLM and state and local fire organizations.

WF-PG-2 Develop and implement fire management measures that include worker training.

WF-PG-3 Prevent encroachments on the Minimum Vegetation Clearance Distances within project-associated transmission line ROWs (refer to NERC reliability standard FAC-003-4 Transmission Vegetation Management).

WF-PG-4 Employ fire hazard reduction measures, such as using spark arrestors on power equipment, ensuring that no metal parts are dragging from vehicles, and using caution with open flame and cigarettes).

B.4 References

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B.4.3 References for Military and Civilian Aviation

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B.4.4 References for Specially Designated Areas and Lands with Wilderness Characteristics

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BLM, 2012b, *Manual 6280 – Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation (Public)*, Release 6-139, U.S. Department of the Interior, Bureau of Land Management, Available at mediacenter_blmpolicymanual6280.pdf. Accessed December 2024.

B.4.5 References for Visual Resources

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Appendix C: Glossary

Abiotic: Non-living or non-biological; includes chemical and physical environments and processes.

Access Management: Proactive management of vehicular access points to land parcels adjacent to all manner of roadways.

Access roads: Gravel or dirt roads (rarely paved) that provide overland access to transmission line and pipeline ROWs and facilities for construction, inspection, maintenance, and decommissioning. Access roads have an average distance of 5 mi or less, have a nominal width of 15 ft, and exist within the center of a nominal 25-ft-wide ROW.

Activity Plan: A type of implementation plan. An activity plan typically describes multiple projects and applies best management practices to meet land use plan objectives. Examples include Recreation Area Management Plans, Transportation Plans, Fire Management Plans, and Habitat Management Plans.

Adverse environmental impacts: Impacts that are determined to be harmful to the environment. *See also* Effects.

Affected environment: For an environmental impact statement, a description of the existing environment covering information necessary to assess or understand the impacts. It must contain enough detail to support the impact analyses and must highlight environmentally sensitive resources (for example, floodplains, wetlands, threatened and endangered species, and archaeological resources).

Agrivoltaic systems: The co-location of ground-mounted solar energy development and one or more of the following agricultural activities: crop cultivation, animal husbandry or livestock grazing, or habitat enhancement to improve ecosystem services. Agrivoltaics have the potential to support or improve at least four types of ecosystem services: (1) energy and economic benefits; (2) agricultural provisioning services: food production and animal husbandry; (3) biodiversity conservation; and (4) regulating ecosystem services such as carbon sequestration and water and soil conservation.

Air quality standards: The legally prescribed level of an air pollutant in the ambient (or outside) air that should not be exceeded during a specific time period to protect public health and the environment. Established by federal (U.S. Environmental Protection Agency) and many State governments.

Albedo (effects): The fraction of outgoing solar radiation reflected by a surface or object to the incoming solar radiation, expressed as either in a ratio (dimensionless number) or a percentage. Fresh snow-covered surfaces have a high albedo; the albedo of soils ranges from high to low; vegetation-covered surfaces and oceans have a low albedo. The Earth's albedo varies mainly through varying cloudiness, snow, ice, leaf area, and land-cover changes.

All-American Roads: A National Scenic Byway is a road recognized by the U.S. Department of Transportation for its archaeological, cultural, historic, natural, recreational, or scenic qualities. The most scenic of the roads are called All-American Roads. The designation means they have features that do not exist elsewhere in the United States and are scenic enough to be tourist destinations unto themselves.

Allotment: An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Alluvial: Formed by the action of running water; of or related to river and stream deposits.

Alluvium: Deposits of clay, silt, sand, gravel, or other particulate materials that have been deposited by a stream or other body of running water in a streambed, on a flood plain, on a delta, or at the base of a mountain.

Alternating current (AC): An electric current that reverses its direction at regularly recurring intervals.

Alternative: A mix of management prescriptions applied to specific land areas to achieve a set of goals and objectives. Each alternative represents a different way of achieving a set of similar management objectives. Sometimes the term “action alternative” is used when it is desirable to recognize that there is a “no action” alternative under which the proposed activity would not take place.

Ambient Air: Any unconfined portion of the atmosphere: open air, surrounding air.

Anadromous fish: A fish or fish species that spends portions of its life cycle in both fresh and salt waters, entering fresh water from the sea to spawn.

Animal unit: A unit of measure for rangeland livestock equivalent to one mature cow or five sheep or five goats, all over 6 months of age. An animal unit is based on average daily forage consumption of 26 pounds of dry matter per day.

Animal Unit Month (AUM): A standardized unit of measurement of the amount of forage required by an animal unit for one month. Also, the measurement of the privilege of grazing one animal for one month.

Appropriate Management Level (AML): The maximum number of animals (wild horses or burros) sustainable on a year-long basis.

Appropriation Doctrine: The system of water law primarily used in the western United States under which 1) the right to water is acquired by diverting water and applying it to a beneficial use; and 2) an existing right to water use is superior to a right developed later in time.

Appropriations: The process of allocating water right allotments and beneficial uses within a water management district.

Aquifer: A water-bearing rock that readily transmits water to a well or spring.

Archaeological sites: The physical remains of human activities, including artifacts, structures, and special-use sites. All prehistoric and some historic archaeological sites in the United States are associated with ancestral Native American populations. These sites often include a buried (subsurface) component.

Area sources (emissions): Any source of air pollution that is released over a relatively small area but which cannot be classified as a point source. Such sources may include vehicles and other small engines (for example, portable generators), small businesses (for example, dry cleaners) and household activities (for example, lawn mowing), or biogenic sources such as a forest that releases hydrocarbons.

Areas of Critical Environmental Concern (ACECs): Areas managed by the Bureau of Land Management and defined by the Federal Land Policy and Management Act of 1976 as having significant historical, cultural, and scenic values, habitat for fish and wildlife, and other public land resources, as identified through the Bureau of Land Management's land-use planning process.

Arrays: *See* Photovoltaic (PV) array.

Arterial roads: Arterial roads have diverse manifestations. They include rural and urban roads and roads with two to 10 lanes, and they may carry between 2000 and 55 000 vehicles per day. The field of transportation has generally defined arterials near the top of the hierarchy of streets because they mediate traffic flows between local streets and larger freeways.

Artesian groundwater: Groundwater that is under pressure when tapped by a well and is able to rise above the level at which it is first encountered. It may or may not flow out at ground level. The pressure in such an aquifer commonly is called artesian pressure, and the formation containing artesian water is an artesian aquifer or confined aquifer.

Artificial light at night (ALAN): Light that occurs at night that is generated by non-natural sources, i.e., light from anthropogenic sources.

Artificial sky brightness: The measured increase in night sky brightness relative to natural background sky brightness caused by light from anthropogenic light sources.

Atmospheric absorption: Attenuation of sound during its passage through air, during which its sound energy is gradually converted into heat by a number of molecular processes in the air. The attenuation depends strongly on frequency (with increasing attenuation towards higher frequencies) and relative humidity, less strongly on temperature, and slightly on the ambient pressure.

Attainment: A geographical area considered to have air quality as good as or better than the National or State Ambient Air Quality Standards for a given pollutant. An area may be in attainment for one pollutant and in nonattainment for others. *See also* In attainment.

Attenuation: The reduction in level of sound with increasing distance between source and receiver.

Available Areas: Broad areas of public lands allocated as available for solar applications. Inclusive of both "open" and "avoidance" areas. Note: available areas may or may not be suitable for solar energy development subject to project-specific application review and analysis.

Avoidance Area: Areas of public lands supporting sensitive resources where solar energy project applications would be allowed only if the applicant can demonstrate to the satisfaction of the BLM Authorized Officer that they would not disrupt the important functions these areas serve.

Back country byway: A component of the national scenic byway system which focuses primarily on corridors along back country roads which have high scenic, historic, archaeological, or other public interest values. They range from roads that can accommodate normal touring cars to single-track trails managed to accommodate dirt bike, mountain bike, snowmobile, or ATV use**.**

Battery: Two or more electrochemical cells enclosed in a container and electrically interconnected in an appropriate series or parallel arrangement to provide the required operating voltage and current levels. Under common usage, the term *battery* also applies to a single cell if it constitutes the entire electrochemical storage system.

Battery capacity: The maximum total electrical charge, expressed in ampere-hours, that a battery can deliver to a load under a specific set of conditions.

Battery energy storage (BES) system: A battery system that can be charged by electricity generated from renewable energy (like solar and wind) and released when the power is needed.

Beneficial use of water: A use of water resulting in appreciable gain or benefit to the user, consistent with state law, which varies from one state to another. Most states recognize the following uses as beneficial: domestic, municipal, and industrial uses; irrigation; mining; hydroelectric power; navigation; recreation; stock raising; public parks; and wildlife and game preserves.

Benthic: Living in or occurring at the bottom of a body of water.

Best Management Practice (BMP): A practice or combination of practices that are determined to provide the most effective, environmentally sound, and economically feasible means of managing an activity and mitigating its impacts.

Big game: Those species of large mammals normally managed as a sport-hunting resource.

Big game migratory corridors: Linear spaces that connect various areas of big game species' habitat. Big game species with high-use migratory corridor data available include bighorn sheep, elk, mule deer, pronghorn; these high-use corridors are proposed as designated exclusion areas in this Programmatic EIS. Big game species with non-high-use migratory corridor data available include bighorn sheep, elk, mule deer, pronghorn, and white-tailed deer; these corridors are proposed as designated avoidance areas in this Programmatic EIS. See also Wildlife corridor.

Biological soil crusts: Commonly found in semiarid and arid environments, biological soil crusts are formed by living organisms and their by-products, creating a crust of soil particles bound together by organic materials. Crusts are predominantly composed of cyanobacteria (formerly called blue-green algae), green and brown algae, mosses, lichens, and bryophytes, which live within or on top of the uppermost millimeters of soil. Biological soil crusts are also known as cryptogamic, microbiotic, cryptobiotic, and microphytic crusts.

BLM-administered land: Land administered by the Bureau of Land Management; see also Public Land

Blowout: A wind-eroded section of a sand dune caused by a disturbance or removal of the vegetation.

Bureau of Land Management: An agency of the U.S. Department of the Interior that is responsible for managing public lands, also referred to as BLM-administered lands.

Cadastral survey: A survey that creates, marks, defines, retraces, or re-establishes the boundaries and subdivisions of the public land of the United States.

Cadmium (Cd): A chemical element used in making certain types of solar cells and batteries.

Cadmium telluride (CdTe): A polycrystalline thin-film photovoltaic material.

California Desert Conservation Area (CDCA):
the CDCA is a 25-million-acre expanse of land in Southern California designated by Congress in 1976 through the FLPMA. About 10 million acres of the CDCA are administered by BLM under its CDCA Plan. The geologically diverse California Desert Conservation Area includes sand dunes, canyons, dry lakes, 90 mountain ranges, and 65 wilderness areas. In 1994 California Desert Protection Act further increased protection by setting aside as wilderness 3.5 million of its acres, turning the Death Valley and Joshua Tree national monuments into national parks and establishing the 1.6-million-acre Mojave National Preserve.

Canadian Forest Fire Weather Index (CFWI;FWI): A numeric rating of fire intensity based on six components that account for the effects of fuel moisture and weather conditions on fire behavior. These numbers communicate fire danger levels in real-time and historical events.

Cell (solar): *See* Photovoltaic (PV) cell.

Class I Area: As defined in the Clean Air Act to receive the most stringent degree of air quality protection, the following areas that were in existence as of August 7, 1977: national parks with more than 6,000 acres, national wilderness areas, national memorial parks with more than 5,000 acres, and international parks.

Clean Water Act (CWA): Requires National Pollutant Discharge Elimination System (NPDES) permits for discharges of effluents to surface waters, permits for storm water discharges related to industrial activity, and notification of oil discharges to navigable waters of the United States.

Clearing and grubbing: Cleaning a site to prepare it for construction. Involves removing debris, structures, shrubbery, trees, obstructions, and objectionable and unsuitable materials. It may also involve handling and disposing of non-hazardous and hazardous waste.

***Code of Federal Regulations* (CFR):** A compilation of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the United States. It is divided into 50 titles that represent broad areas subject to federal regulation. Each volume of the CFR is updated once every calendar year.

Collector roads: Collector roads are the second most common type of road and are used as a connection between local roads and arterial roads. They provide a balance between access and mobility. They allow high access to properties and have a low to moderate capacity and a generally low speed limit. They are below arterial roads in terms of speed and capacity, but higher in terms of access, as they can allow access to residential properties.

Compact: An agreement between states apportioning the water of a river basin to each of the signatory states.

Compensation: A type of mitigation in which the impacts to a species or habitat are offset by protecting, restoring, or creating suitable habitat elsewhere.

Compensatory mitigation: Compensating for the remaining impacts after all appropriate and practicable avoidance and minimization measures have been applied, by replacing or providing substitute resources or environments through the restoration, establishment, enhancement, or preservation of resources and their values, services and functions

Concentrating solar power (CSP) technologies: Any of a family of solar energy technologies that reflect and concentrate the sun's energy to produce heat that is subsequently used to produce steam to power a steam turbine-generator (STG), or drive a reciprocating engine, to produce electricity. There are three different types of CSP systems: parabolic trough systems, power tower systems, and solar dish engine systems. Parabolic trough and power tower systems convert sunlight to heat to produce steam, while the solar dish engine system converts sunlight to heat to drive a reciprocating engine. These CSP systems were evaluated in the 2012 Western Solar Plan but their use is no longer prevalent, so they are not evaluated in this Programmatic EIS.

Connecting and side trails: The National Trails System Act of 1968, as amended, established a category of trails known as connecting and side trails. They provide public access to and between components of the National Trails System.

Consumptive use: (1) Any use of water that permanently removes water from the natural stream system. (2) Water that has been evaporated, transpired, incorporated into products, plant tissue, or animal tissue and is not available for immediate reuse. (3) Water used for residential, commercial, institutional, industrial, agricultural, power generation, and recreational purposes and is not available for immediate reuse. Naturally occurring vegetation and wildlife also consumptively use water. Water consumed is not available for other uses within the system from which it is originally taken.

Cooperating Agency: Any federal agency (or state, Tribal, or local agency with agreement of the lead agency) other than a lead agency that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action that may significantly affect the quality of the human environment.

Corridor: A strip of land through which one or more existing or potential facilities may be located.

Corridor-transmission: *See* Transmission corridor.

Corridor-wildlife: *See* Wildlife corridor.

Council on Environmental Quality (CEQ): Established by National Environmental Policy Act (NEPA), CEQ regulations (40 CFR Parts 1500-1508) describe the process for implementing NEPA, including preparation of environmental assessments and environmental impact statements, and the timing and extent of public participation.

Critical habitat: The specific area(s) within a geographical area occupied by a species at the time it is listed as endangered or threatened that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation. Critical habitat is not

designated for species where such a designation would likely increase the threat of collection, vandalism, or incidental habitat degradation by curiosity seekers.

Crucial/Severe winter range: The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover or that portion of the year-long range that is crucial to survival because it is where big game find food or cover during the most inclement and difficult winter weather. See also Winter range.

Cultural resources: Archaeological sites, structures, or features; traditional use areas; and Native American sacred sites or special use areas that provide evidence of the prehistory and history of a community.

Cumulative impacts: The impacts assessed in an environmental impact statement that could potentially result from incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal), private industry, or individual undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cut-and-fill: The earthmoving process of excavating part of an area and using the excavated material for fill in adjacent low-lying areas or to create embankments, slopes, and other features.

Cutting/Mowing: The use of rotary mowers or straight-edged cutter bar mowers to cut herbaceous and woody vegetation above the ground surface. Mowing is utilized to conserve and manage vegetative resources within a large project area.

Day-night average sound level: Twenty-four-hour average sound level, obtained after the addition of a 10-dB penalty for environmental noise occurring from 10 p.m. to 7 a.m. to account for the increased annoyance of most people from nighttime noise. This 10-dB penalty means that one nighttime noise event is equivalent to 10 daytime noise events of the same level.

Debris flow: A mixture of water-and rock debris or soil that flows downslope under the force of gravity (also called *lahar* or *mudflow).*

Decibel (dB): A standard unit for measuring the intensity of sound, from which the loudness is determined. In general, a sound doubles in loudness with every increase of 10 dB in the intensity of the sound.

Decibel, A-weighted (dBA): A measurement of sound approximating the sensitivity of the human ear, i.e., A-weighting gives less weighting to lower and higher frequencies and more weighting to frequencies between 1,000 and 5,000 Hz where human hearing is most sensitive and used to characterize the intensity or loudness of a sound.

Decision area: Lands for which the BLM will make land use and management decisions for a particular planning effort.

Decommissioning: All activities necessary to take out of service and dispose of a facility after its useful life.

Depletion: Net loss of water through consumption, export, and other uses to a given area, river system, or basin.

Desert pavement: A type of surface armor that forms on the ground in hot desert environments, consisting of a thin layer of closely packed, coarse rock fragments and typically occurring on surfaces with very little relief; the exposed surface is often characterized by a dark and shiny coating of minerals and organic carbon.

Desert Renewable Energy Conservation Plan (DRECP): A land use plan that identifies areas in the desert appropriate for the utility-scale development of wind, solar, and geothermal projects. It was developed by the California Energy Commission, the California Department of Fish and Wildlife, the U.S. Bureau of Land Management, and the U.S. Fish and Wildlife Service to protect the area and streamline the permitting process. It also specifies requirements for protecting desert wildlife, recreation, cultural and other desert resources.

Design features: Measures or procedures incorporated into the proposed action or alternatives that could avoid, minimize, or compensate for adverse impacts. Potential mitigation measures selected as required are then considered to be design features.

Designated leasing areas (DLAs): Preferred locations for solar energy development.

Direct current (DC): A steady current that flows in one direction only. The current from batteries is an example of direct current.

Direct effects: Effects on the environment that occur at the same time and place as the initial cause or action.

Direct impacts: Impacts occurring at the place of origin and at the time of the proposed activity. An effect that results solely from the construction or operation of a proposed action without intermediate steps or processes. Examples include habitat destruction, soil disturbance, and water use. *See also* Impact.

Dish engine: A concentrating solar power (CSP) technology that produces electricity, typically in the range of 3 to 25 kilowatts, by using a parabolic array of mirrors to reflect sunlight to heat a working gas (typically hydrogen) in a closed container, causing it to expand and drive a reciprocating engine connected to an electric generator. The dish engine is unique among CSP systems because it uses mechanical energy rather than steam to produce electricity. Dish engine facilities were evaluated in the 2012 Western Solar Plan but their use is not prevalent, so they are not evaluated in this Programmatic EIS.

Distance zone: In the BLM Visual Resource Management system, a subdivision of the landscape as viewed from an observer position. The subdivisions (zones) include foreground/middle-ground, background, and seldom seen.

Distributed generation: The installation of small-scale solar energy facilities at individual locations that are at or near the point of consumption (for example, use of solar PV panels on a business or home to generate electricity for onsite consumption). Distributed generation systems typically generate less than 10,000 kW. Other terms for distributed generation include onsite generation, dispersed generation, and distributed energy.

Disturbance (land): *See* Land disturbance.

Dopant: A small amount of a substance added to a material to alter its physical properties, such as conductivity.

Drawdown: Lowering of a reservoir's water level; process of depleting reservoir or groundwater storage.

Drive and Crush: Disturbance caused by operating vehicles and equipment directly across vegetation, resulting in crushing, and allowing surface soil, root balls and seed bank to remain in place.

Ecoregion: A geographically distinct area of land characterized by a distinctive climate, ecological features, and plant and animal communities.

Effects: Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place; or indirect, which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable, or cumulative.

Efficiency: Ratio of "power out" divided by "power in." The definitions of power out and power in are specific to a given technology and depend on whether the efficiency value describes a total system efficiency or an individual component's efficiency.

Electric and magnetic field (EMF): That which is generated when charged particles (for example, electrons) are accelerated. Charged particles in motion produce magnetic fields. Electric and magnetic fields are typically generated by alternating current in electrical conductors. Also referred to as electromagnetic fields.

Eligible historic properties: *See* Historic properties.

Emissions: Substances that are discharged into the ambient air from industrial processes, vehicles, and living organisms.

Endangered species: Any species (plant or animal) that is in danger of extinction throughout all or a significant part of its range. Requirements for declaring a species endangered are found in the Endangered Species Act of 1973 (ESA). *See also* Special Status Species.

Endangered Species Act of 1973 (ESA): Legislation that requires consultation with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service (NMFS) to determine whether endangered or threatened species or their habitats will be impacted by a proposed activity and what, if any, mitigation measures are needed to address the impacts. The purpose of the ESA is to protect and conserve the ecosystems upon which endangered and threatened species depend (Purpose). Section 7(a)(1) is considered as the proactive provision of the ESA, requiring Federal agencies to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of threatened and endangered species. Under section 7(a)(2), Federal agencies must consult with the USFWS/NMFS to ensure that proposed actions neither jeopardize the continued existence of a threatened or endangered species nor cause its critical habitat to be adversely modified or destroyed. Under section 7(a)(2), Federal agencies can include conservation measures (for example, design features, mitigation) as part of their proposed action.

Entry: An application to acquire title to public lands.

Environmental Assessment (EA): A concise public document that a federal agency prepares under the National Environmental Policy Act to provide sufficient evidence and analysis to determine whether a proposed action requires preparation of an Environmental Impact Statement (EIS) or whether a Finding of No Significant Impact can be issued. An EA must include brief discussions on the need for the proposal, the alternatives, the environmental impacts of the proposed action and alternatives, and a list of agencies and persons consulted.

Environmental Impact Statement: A document required of federal agencies by the National Environmental Policy Act for major proposals or legislation that will or could significantly affect the environment.

Environmental justice: The just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

(i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and

(ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.

Eolian: The processes of wind erosion, transport, and deposition. For example, sand dunes are landforms produced by eolian processes in arid environments.

Ephemeral stream: A stream that flows only after a storm or during snowmelt and whose channel is, at all times, above the water table; groundwater is not a source of water for the stream. Many desert streams are ephemeral.

European Forest Fire Information System (EFFIS): A modular web geographic information system that provides near real-time and historical information on forest fires and forest fire regimes in the European, Middle Eastern, and North African regions. Forest Fire severity is classified based on the Canadian Forest Fire Weather Index into one of six categories: Very low, Low, Moderate, High, Very High, or Extreme.

Exclusion Areas: Areas of public lands determined to be generally unsuitable for solar energy development and not available for solar development application. See definition of "Exclusion Criteria."

Exclusion Criteria (exclusion areas): Exclusion criteria in the Solar Programmatic EIS include resource exclusions and a 10% slope exclusion.

Executive Order: A president's or governor's declaration that has the force of law, usually based on existing statutory powers, and requires no action by the Congress or state legislature.

Expressions of Interest (EOIs): An expression of interest is an informal nomination to request certain lands be included in a competitive oil and gas lease sale.

Federal land: Land owned by the United States, without reference to how the land was acquired or which federal agency administers the land, including mineral and coal estates underlying private surface.

Federal Land Policy and Management Act of 1976 (FLPMA): Act requiring the Secretary of the Interior to issue regulations to manage public lands and the property located on those lands for the long term.

***Federal Register*:** The official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

Flat-plate PV: A type of photovoltaic solar energy technology that uses a flat plate onto which are installed solar cells. Sunlight strikes the solar cells directly without being reflected or concentrated. Flat plate systems can be either fixed (stationary) or designed to track the sun's movement over the course of the day.

Fluvial: Pertaining to a river. Fluvial sediments are deposited by rivers.

Flyway: A seasonal route followed by birds migrating to and from their breeding areas.

Fragmentation: Process by which habitats are increasingly subdivided into smaller units, resulting in their increased insularity as well as losses of total habitat area.

Fragmentation of habitat: The breaking up of a single habitat area into two or more smaller habitat patches that are separated from each other.

Fugitive dust: The dust released from any source other than a definable point source such as stack, chimney, or vent. Sources include process sources (for example, rock crushing) and open dust sources (for example, construction activities, storage piles, unpaved roads, agricultural tilling operations).

Functionality (for Big Game Migration Corridors): Maintaining connectivity between summer and winter ranges to allow for big game movement conducive to life history requirements, based on best-available science.

Fuel: Any flammable material that provides energy to a fire to keep it burning and potentially enable it to spread.

Gallium (Ga): A chemical element, metallic in nature, used in making certain kinds of solar cells and semiconductor devices.

Gathers: As part of its management strategy to protect the health of wild horses and burros, the BLM uses a combination of bait-trap and helicopter-assisted gather (round up) techniques to safely remove animals and reduce overpopulation. Gathers are also an important tool for applying fertility control vaccines to captured animals**.**

Geographic information system (GIS): A computer system for performing geographical analysis. GIS has four interactive components: an input subsystem for converting into digital form (digitizing) maps and other spatial data; a storage and retrieval subsystem; an analysis subsystem; and an output subsystem for producing maps, tables, and answers to geographic queries.

Geospatial Data: Information identified with a specific geographical location.

Glare: The sensation produced by luminances within the visual field that are sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility.

Glint: A momentary flash of light resulting from a spatially localized reflection of sunlight.

Global warming: An increase in the near-surface temperature of the Earth. Global warming has occurred in the distant past as the result of natural influences, but today the term is most often used to refer to the warming that many scientists predict will occur as a result of increased anthropogenic emissions of greenhouse gases since the Industrial Revolution. Note that global warming refers only to the Earth's rising near-surface temperature and is a subset of climate change that includes global warming and the "side effects" of warming, for example, melting glaciers, heavier rainstorms, or more frequent drought.

Government-to-Government consultation: A formal, two-way dialogue between official representatives of Tribes and federal agencies to discuss federal proposals before the federal agency makes decisions on those proposals. Consultation requires that information obtained from Tribes be given meaningful consideration, and agencies should strive for consensus with Tribes or a mutually desired outcome.

Grading: Modifying existing topography.

Grassland: Area where vegetation is dominated by grass species and where the environment is not conducive to the growth of trees and shrubs.

Grazing lease: An authorization that permits the grazing of livestock on public lands outside the grazing districts during a specified period of time (Section 15 of the Taylor Grazing Act).

Greater Sage-Grouse General Habitat Management Areas: Lands outside of priority habitat that require some special management to protect and sustain Greater Sage-Grouse populations but permit more flexible management and resource development. For General Habitat Management Areas, avoidance and minimization measures are applied flexibly, in line with local conditions and a state's science-based objectives for species management.

Greater Sage-Grouse Priority Habitat Management Areas (PHMAs): Public lands that have the highest value for sustaining sage-grouse populations where the management priority is to exclude or avoid disturbance to sage-grouse and their habitat, and to minimize impacts where the PHMA cannot be avoided.

Greenhouse gases (GHGs): Heat-trapping gases by absorbing infrared radiation in the atmosphere. Natural and human-made greenhouse gases include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

Grid: A term used to describe an electrical utility distribution network.

Groundwater recharge: Inflow of water to a groundwater reservoir from the surface. Infiltration of precipitation and its movement to the water table is one form of natural recharge. Also, the volume of water added to a groundwater reservoir by this process.

Grubbing: *See* Clearing and grubbing.

Habitat Connectivity refers to how and to what degree distinct sources of food, water, and shelter for fish, wildlife, and plant populations are distributed and inter-connected, spatially and temporally, across terrestrial and aquatic systems, thereby facilitating or impeding movement among resource patches. Connectivity includes structural connectivity (the physical arrangements of disturbance or patches) and functional connectivity (the ability for individuals to move across contours of disturbance or among patches). Without connectivity, ecosystems cannot function properly, and without well-functioning ecosystems, biodiversity is at risk.

Hazardous waste: By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity) or appears on special U.S. Environmental Protection Agency lists.

Headwater: (1) The source and upper reaches of a stream; also the upper reaches of a reservoir; (2) the water upstream from a structure or point on a stream; (3) the small streams that come together to form a river; and (4) any and all parts of a river basin other than the mainstem river and main tributaries.

Herd Area (HA): A locale in which wild horses and burros reside. Following passage of the Wild Free-Roaming Horses and Burros Act in 1971, the Bureau of Land Management was directed to identify areas where wild horses and burros were located. Herd areas are not managed for wild horses and burros.

Herd Management Area (HMA): An area that has been designated for management of wild horses or burros.

Hertz (Hz): The unit of frequency, equivalent to one cycle per second.

Historic properties: Any prehistoric or historic districts, sites, buildings, structures, or objects listed in, or eligible for listing in, the *National Register of Historic Places* maintained by the Secretary of the Interior. They include artifacts, records, and remains that are related to and located within such properties.

Historic resources: Material remains and the landscape alterations that have occurred since the arrival of Euro-Americans.

Impact: The effect, influence, alteration, or imprint caused by an action.

Impoundment (surface): A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

In attainment: In compliance with air-quality standards. Areas that are in attainment have air quality that is as good as or better than specified in the National or State Ambient Air Quality Standards for a given pollutant. An area may be in attainment for one pollutant and nonattainment for others.

Indirect impacts: Impacts that occur away from the place of origin. Effects that are related to, but removed from, a proposed action by an intermediate step or process. An example would be changes in surface-water quality resulting from soil erosion at construction sites.

Infrastructure: The basic facilities, services, and utilities needed for the functions of an industrial facility or site. Examples of infrastructure for utility-scale solar facilities are access roads, transmission lines, meteorological towers, etc.

Insolation: The solar power density incident on a surface of stated area and orientation, usually expressed as watts per square meter (W/m^2) or Btu per hour per square foot ($Btu/hr/ft^2$).

Instant study area (ISA): A type of wilderness study area that has been identified as having wilderness characteristics but has not yet been studied in detail to determine if it meets the criteria for wilderness designation.

Invasive species: Any species, including noxious and exotic species, that is an aggressive colonizer and can out-compete indigenous species.

Kilowatt: A unit of electrical power equal to 1,000 watts (W).

Land disturbance: Discrete event or process that alters soil or kills or damages vegetation. From an ecological and hierarchical perspective, disturbance is a change in the minimal structure of an ecosystem caused by a factor external to the reference structure. Examples of disturbance are habitat reduction, habitat fragmentation, and habitat alteration. See Appendix K of the Final Solar Programmatic EIS for methods used to identify disturbed lands.

Landscape intactness: A quantifiable estimate of naturalness on a gradient of anthropogenic influence over broad landscapes or ecoregions, used by BLM in their approach to natural resource management.

Land use: A characterization of land surface in terms of its potential utility for various activities.

Land use authorizations: Land use authorization means an easement, lease, permit, or license to occupy, use, or traverse public land granted for a particular purpose. Authorization is granted for a specific use of the land for a specific period of time.

Land Use Plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. *See also* Resource Management Plan.

Land withdrawal: Withdrawals are governed by regulations issued under FLPMA, contained in 43 CFR Part 2300. A withdrawal is defined as: "Withholding an area of federal land from settlement, sale, location, or entry under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land, other than property governed by the Federal Property and Administrative Services Act (40 U.S.C. 472), from one department, bureau or agency to another department, bureau or agency." *(See* 43 CFR 2300.0-5(h).)

Lands with wilderness characteristics (LWC): Areas that have been inventoried and found to meet Congress's definition of a wilderness from the Wilderness Act of 1964; but are not designated protected areas like wilderness or wilderness study areas. Management of these areas are determined by resource management plans.

Laydown area: An area that has been cleared for the temporary storage of equipment and supplies. To ensure accessibility and safe maneuverability for transport and off-loading of vehicles, laydown areas are usually covered with rock or gravel.

Local roads: A local road, also called a street, is a road in a built environment that has all kinds of properties beside it which can be accessed from the road or a parking lot connected to the road. Different types of local roads include residential streets, avenues, and alleys. They have the lowest speed limits and capacities in the hierarchy but have the highest access to property. Local roads have at-grade intersections and have similar specifications to collector roads. Local roads may be unpaved in some cases. A common feature of local roads is driveways, which connect the road to a residential property.

Locatable Minerals: Minerals or materials subject to disposal and development through the Mining Law of 1872 (as amended). Generally include metallic minerals such as gold, copper, lead, and silver and other materials that are not subject to lease or sale (e.g., oil and natural gas).

Megawatt (MW): A unit of power equal to one million watts (one watt is equivalent to one joule per second). One megawatt serves about 300 homes in the western United States based on national data.

Megawatt electrical (MWe): One million watts of electrical energy; a measure of electrical power capacity, use in this Programmatic EIS is synonymous with MW.

Memorandum of Understanding (MOU): An agreement between two or more parties outlined in a formal document. A Memorandum of Understanding is not necessarily legally binding.

Migratory Bird Treaty Act (MBTA): Legislation that implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. The MBTA made it illegal for people to "take" migratory birds, their eggs, feathers, or nests. *See also* Take.

Military Training Route (MTR): A designated corridor of airspace with defined vertical and lateral dimensions established for conducting military flight training at airspeeds in excess of 250 nautical miles per hour.

Military training route — instrument route: These routes are used for low-altitude navigation and tactical training, regardless of weather conditions. Military aircraft flying on IRs adhere to instrument flight rules (IFR).

Military training route — slow route: Slow speed low-level training routes used for military air operations conducted at or below 1,500 feet AGL at airspeed of 250 knots or less.

Milligauss (mG): A unit of measure for magnetic fields.

Mineral Leasing Act of 1920 (MLA): Legislation that authorizes the issuance of rights-of-way grants for oil and gas gathering and distribution pipelines and related facilities not already authorized through a lease, and oil and natural gas transmission pipelines and related facilities.

Mirror: A reflecting surface of various physical shapes (parabolic, nearly flat, or flat) used to reflect or concentrate the sun's energy to specific locations within solar energy facilities.

Mitigation: A method or process by which impacts from actions can be made less injurious to the environment through appropriate protective measures.

Mitigation measures: Methods or actions that will reduce adverse impacts from solar facility development. Mitigation measures can include best management practices, stipulations in BLM ROW agreements, siting criteria, and technology controls.

Module: *See* Photovoltaic (PV) module.

Multiple use: A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including (but not limited to) recreation, range, timber, minerals, watershed, wildlife, and fish, along with natural scenic, scientific, and historical values. As defined by Section 103(c) of the FLPMA, multiple use means management so that "public lands and their various resource values […] are utilized in the combination that will best meet the present and future needs of the American people."

Microphyll woodland: Desert plant communities that are defined in large part by trees with tiny leaves, such as palo verde and desert ironwood and is important habitat for migrating birds.

NAGPRA remains: Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony found on federal lands or residing in museums receiving federal funding.

Nameplate rating: The maximum power-generating capacity of a generator or power-generating facility.

National Ambient Air Quality Standards (NAAQS): Air quality standards established pursuant to Section 109 of the Clean Air Act, as amended for six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2). The primary NAAQS are intended to protect the public health with an adequate margin of safety; and the secondary NAAQS are intended to protect the public welfare from any known or anticipated adverse effects of a pollutant.

National Conservation Area (NCA): Public lands managed by the BLM that are set aside for the benefit and enjoyment of present and future generations. Like national parks, NCAs are designated by Congress and feature scientific, cultural, historical and recreational features.

National Conservation Lands (NCL): Lands managed by BLM and designated by Congress to conserve, protect, enhance, and manage the public lands for the benefit and enjoyment of present and future generations. They include National Monuments, National Conservation Areas, Wilderness Areas, Wilderness Study Areas, Wild and

Scenic Rivers, National Scenic and Historic Trails, and Conservation Lands of the California Desert.

National Environmental Policy Act of 1969 (NEPA): Legislation that requires federal agencies to prepare a detailed statement on the environmental impacts of their proposed major actions that may potentially affect the productive harmony and longevity of the human-nature environment.

National Historic Preservation Act (NHPA): A federal law providing that property resources with significant national historic value be placed on the *National Register of Historic Places*. It does not require permits; rather, it mandates consultation with the proper agencies whenever it is determined that a proposed action might impact an historic property.

National Historic Trails: Paths designated by Congress under the National Trails System Act of 1968 that follow, as closely as possible, on federal land, the original trails or routes of travel that have national historical significance.

National monuments: A national monument is a protected area that can be created from any land owned or controlled by the federal government by proclamation of the president of the United States or an act of Congress. National monuments protect a wide variety of natural and historic resources, including sites of geologic, marine, archaeological, and cultural importance.

National Pollutant Discharge Elimination System (NPDES): A federal permitting system controlling the discharge of effluents to surface waters and regulated through the Clean Water Act, as amended.

National recreation trail: National recreation trails are existing land-based and water-based trails that provide close to home recreation opportunities on federal, state and local lands. National recreation trail designation promotes some of our country's highest-caliber trails with the intention of providing recreation access to rural and urban communities, economic development through tourism, and healthy recreation opportunities. National recreation trails are recognized by the federal government, with the consent of any federal, state, Tribal, local, nonprofit, or private entity having jurisdiction over these lands.

National Register of Historic Places (NRHP): A comprehensive list of districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The NRHP is administered by the National Park Service, which is part of the Department of the Interior.

National Scenic Byway: *See* All-American Roads National Scenic Byways Program: The National Scenic Byways Program is a voluntary, community-based program administered through the Federal Highway Administration (FHWA) to recognize, protect, and promote America’s most outstanding roads. The program is not focused solely on the promotion of roads; it helps communities balance economic development and resource conservation.

National scenic trail: National scenic trails are remarkable routes within the National Trails System that showcase the breathtaking natural beauty of our country. These trails are primarily non-motorized continuous paths that extend for 100 mi or more**.** They traverse diverse terrains, connect communities, and lead to significant landmarks and public lands.

National Trail Feasibility Study: National scenic and national historic trails undergo a thorough process to become fully established. The feasibility study evaluates a trail's suitability, desirability, and practicality to be a national scenic or historic trail.

National Trails System: Includes NHTs, NSTs, National Recreation Trails, and Connecting and Side Trails and is designated to allow outdoor recreation opportunities; protect nationally significant scenic, historic, natural, or cultural qualities of areas; and represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms that are characteristic of a region.

Native American: Of, or relating to, a Tribe, people, or culture that is indigenous to the United States. (*See* Native American Graves Protection and Repatriation Act).

Native American Graves Protection and Repatriation Act (NAGPRA): Law that established the priority for ownership or control of Native American cultural items excavated or discovered on federal or Tribal land after 1990 and the procedures for repatriation of items in federal possession. The act allows for the intentional removal or excavation of Native American cultural items from federal or Tribal lands only with a permit or upon consultation with the appropriate tribe.

Native species: Flora, fauna or other organisms that are indigenous to a given region or ecosystem if its presence in that region is the result of only local natural evolution over history of time.

Natural background sky brightness: The measured sky brightness in the absence of light from anthropogenic light sources.

Natural darkness: Darkness of the visual environment in the absence of artificial light.

Naturalness: The degree to which an area generally appears to have been affected primarily by the forces of nature with the imprint of people's work substantially unnoticeable.

Night sky: The visual appearance of celestial objects and the space between them as seen between sunset and sunset.

Nonattainment area: A geographical area where ambient air concentrations exceed the National or State Ambient Air Quality Standards for a given pollutant. An area may be in nonattainment for one pollutant and in attainment for others.

Notice of Intent: A public notice that an agency will prepare and consider an environmental impact statement.

Noxious weed: In legal terms, any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property.

Oil and gas leasing (on BLM land): BLM-issued permits of oil and gas rights to explore for and produce oil and gas resources from federal lands or mineral rights owned by the federal government. Federal oil and gas leases may be obtained and held by any adult citizen of the United States.

Overdraft: The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin; resulting in a depletion of the groundwater levels in the basin.

Paleontological resources: Fossilized remains, imprints, and traces of plants and animals preserved in rocks and sediments since some past geologic time.

Parabolic trough: A type of CSP solar energy technology that uses parabolic-shaped mirrors to concentrate sunlight on a receiver filled with a heat transfer fluid that subsequently transfers the heat it absorbs to water to produce steam to drive a steam turbine-generator (STG) to produce electricity. Parabolic trough systems typically mount the mirrors on a support that can track the sun's movement across the sky over the course of the day, ensuring maximum solar energy capture.

Particulate matter: The solid or liquid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions. The size of the particulates is measured in micrometers (µm). One micrometer is 1 millionth of a meter or 0.00004 inch. Particle size is important because the EPA has set standards for $PM_{2.5}$ and PM_{10} particulates. The smaller the particles, the deeper they penetrate into the lung.

Permittee: An individual who holds either a BLM grazing permit or grazing lease that authorizes grazing use of the public lands issued under authority of Section 3 or 15 of the Taylor Grazing Act of June 28, 1934, as amended (TGA). Although an individual holding an authorization under Section 3 of the TGA is technically a permittee, an individual holding an authorization under Section 15 of the TGA holds a lease and is a lessee. For the purpose of this ROD, both permittees and lessees are referred to as permittees.

Photovoltaic (PV) array: An interconnected system of PV modules that functions as a single electricity-producing unit. The modules are assembled as a discrete structure, with common support or mounting. In smaller capacity systems, an array can consist of a single module.

Photovoltaic (PV) cell: The smallest semiconductor element within a PV module that converts incident sunlight into electrical energy (direct current voltage and current). Also called a solar cell.

Photovoltaic (PV) facility: A solar energy facility that uses photovoltaic cells to produce electricity and that includes all components, such as the PV system, power conditioning equipment, monitoring and control capabilities, and other features required for safe connection of the facility to the bulk electricity transmission grid, as well as buildings, access roads, perimeter fence, and other equipment needed for operation and maintenance of the facility.

Photovoltaic (PV) module: An assembly of solar cells (flat-plate type) or receiver(s), optics (concentrator type), and ancillary parts, such as interconnects and terminals, enclosed in a weatherproof container, intended to generate DC power under unconcentrated sunlight. (Note: A CPV module is a concentrator type PV module.) The structural (load carrying) member of a module can either be the top layer (superstrate) or the back layer (substrate).

Photovoltaic (PV) panel: A collection of modules, either flat-plate or concentrator type, mechanically fastened, electrically interconnected, and designed to provide a field-installable unit. (Note: Not all PV systems will use panelized units during installation. Sometimes the modules are individually attached to a support structure.)

Photovoltaic (PV) power plant: *See* Photovoltaic (PV) facility.

Photovoltaic (PV) receiver: An assembly of one or more PV cells that accepts concentrated sunlight and incorporates means for thermal and electric energy removal.

Photovoltaic (PV) system: *See* Photovoltaic (PV) facility.

Photovoltaic (PV) technology: A solar energy technology that creates electrical power by directly converting the photons in sunlight to electricity.

Photovoltaics (PV): Technologies using semiconducting materials that convert sunlight directly into electricity.

Phreatophytic species: Plants that are supplied with surface water and often have their roots constantly in touch with moisture.

Physiographic province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin.

Physiography: The physical geography of an area or the description of its physical features.

Planning area: The geographic area within which the BLM will make decisions during a planning effort. For this Programmatic EIS the planning area includes the following 11 states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. BLM will make decisions only on lands that are under BLM jurisdiction.

Plan of Development (POD): An applicant submitted plan required prior to initiation of the NEPA analysis. Refer to the most current solar POD template at www.blm.gov.

Plant community: An interacting group of vegetative species in a common location.

Playa: Flat areas that contain seasonal or year-to-year shallow lakes that often evaporate, leaving minerals behind. Playas form in arid basins where rivers merge, but do not drain.

$PM_{2.5}$: Particulate matter with an aerodynamic diameter of 2.5 µm (0.0001 inch) or less, which is the subset of PM_{10}. Particles less than this diameter can lodge deeply in the lungs and some may even get into the bloodstream, which pose the greatest risk to health. $PM_{2.5}$ is one of the six criteria pollutants specified under Title I of the Clean Air Act.

PM_{10}: Particulate matter with an aerodynamic diameter of 10 micrometers (0.0004 inch) or less. Particles less than this diameter can be inhaled and accumulate in the upper respiratory system. PM_{10} is one of the six criteria pollutants specified under Title I of the Clean Air Act.

Pollinator habitat: An area with a variety of soil classes, vegetation types, and flowering plants that support the foraging, reproduction, nesting, or overwintering of pollinating animals, including insects.

Potential Fossil Yield Classification (PFYC): Initially developed by the U.S. Forest Service and the Region 2 Paleo Initiative in May 1996, the PFYC system provides baseline guidance for assessing the relative occurrence of important paleontological resources and the need for mitigation. Specifically, it is used to classify geologic units, at the formation or member level, according to the probability that they could yield paleontological resources of concern to land managers.

Power conditioning system (PCS): In solar energy facilities, the collection of electrical equipment that converts direct current (DC) from a photovoltaic array to alternating current (AC) or that conditions AC current produced at CSP facilities to match the voltage and phase conditions of the bulk electricity grid to which the solar energy facility is connected; power conditioning systems also include system monitoring devices and isolation switches that can isolate the solar energy facility from the bulk electricity grid during off-normal conditions that could jeopardize or damage either the facility or the grid.

Power purchase agreement (PPA): a long-term contract between an electricity generator and a customer, usually a utility, government, or company.

Power tower: A type of CSP technology composed of many large, sun-tracking mirrors (heliostats) that focus sunlight on a receiver at the top of a centrally located tower. The sunlight heats a heat transfer fluid in the receiver, which then is used to generate steam (or directly heats water to produce steam) that powers a steam turbine-generator (STG)

to produce electricity. Power Tower facilities were evaluated in the 2012 Western Solar Plan but their use is not prevalent, so they are not evaluated in this Programmatic EIS.

Prehistoric: The time period before the appearance of written records. In the New World this generally refers to indigenous, precontact societies.

Presidential Proclamation (Proclamation): A presidential proclamation or endorsement is a national stamp of approval for cultural events, national monuments, public works projects, charity drives, interest groups, special weeks and days. Such proclamations promote national concern of worthy organizations and causes by showing the president attaches importance to the object of the proclamation. After the President signs a Proclamation, the White House sends it to the Office of the Federal Register.

Priority Habitat: refers to habitat conditions, areas, or types that have been identified in Resource Management Plans or special studies as having special significance for focused management or conservation actions.

Priority Species: Fish, wildlife, and special status species that have been identified in land use plans or special studies as having special significance for management. These may include endangered, threatened, or sensitive species, and species of high economic or recreational value. Priority species may also be populations of animals or plants that are recognized as significant for one or more of the following factors: density, diversity, size, public interest, remnant character, or age.

Programmatic Environmental Impact Statement (EIS): An evaluation of the effects of broad proposals or planning-level decisions that may include any or all of the following: a wide range of individual projects; implementation over a long timeframe; and or implementation across a large geographic area.

Project Developer: refers to the entity seeking approval for a proposed project from the BLM and implementing the project with a BLM authorization including during any and all phases of the project. This entity may change numerous times over the course of multiple project phases or remain the same. A project developer may also be known as an applicant, grantee, project operator, ROW holder, permittee, etc. depending on the phase of the project and local naming conventions.

Proposed Action: A proposal for the BLM to authorize, recommend, or implement an action that addresses a purpose and need.

Public land: Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

Public Land Order (PLO): An order affecting, modifying, or canceling a withdrawal or reservation that has been issued by the Secretary of the Interior pursuant to powers of the President delegated to the Secretary by Executive Order 9146 of April 24, 1942, or 9337 of April 24, 1943.

Purpose and Need: Describes the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action. The CEQ regulations direct that an EIS "...shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."

Rangeland: Land on which the native vegetation, climax, or natural potential consists predominately of grasses, grasslike plants, forbs, or shrubs. Rangeland includes lands that are revegetated naturally or artificially to provide a plant cover that is managed similar to native vegetation. Rangelands may consist of natural grasslands, savannas, shrub lands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows.

Receiver: A component of a solar energy facility that receives solar energy and converts it to useful energy forms, typically heat.

Receptor: A location where environmental resources such as air concentration or noise level are evaluated (for example, property boundaries, residences, schools, hospitals, libraries).

Recharge: The addition of water to an aquifer by natural infiltration (for example, rainfall that seeps into the ground) or by artificial injection through wells.

Reclamation: The process of restoring surface environment to acceptable pre-existing conditions.

Record of Decision (ROD): A document separate from but associated with an EIS that publicly and officially discloses the responsible agency's decision.

Reflector: A component of a solar energy facility that reflects incident sunlight to a desired location or component within the facility, allowing it to be converted to other useful forms of energy, typically heat.

Research natural area (RNA): A RNA is a type of ACEC designated to preserve examples of significant ecosystems for research.

Reserved Water Right: A special water right accompanying federal lands (military reservations, national parks, forests, or monuments) or Indian reservations. Federal reserved water rights have a priority date originating with the creation of the federal land or reservation and may be used in the future in the amount necessary to fulfill the purpose of the federal land or reservation.

Resource Conservation and Recovery Act (RCRA): An amendment to the Solid Waste Disposal Act, RCRA (42 U.S.C. 6901 et seq.), which authorizes the development of federal regulations for the definition, storage, treatment, and disposal of solid wastes and hazardous wastes, as well as the process by which states may obtain primacy for implementation of the federal program.

Resource Management Plan (RMP): A land use plan that establishes land use allocations, multiple use guidelines, and management objectives for a given planning

area. The RMP planning system has been used by the Bureau of Land Management since about 1980. In the context of this Solar Programmatic EIS, RMP is inclusive of other planning documents including Management Framework Plans where they currently exist and may potentially be subject to a proposed RMP amendment.

Right-of-way (ROW): The legal right to cross the lands of another. Also used to indicate the strip of land for a road, railroad, or power line. In BLM, a permit or an easement that authorizes the use of public lands for certain specified purposes- also, , the lands covered by such an easement or permit. The authorization to use a particular parcel of public land for specific facilities for a definite time period. Authorizes the use of a ROW over, upon, under, or through public lands for construction, operation, maintenance, and termination of a project.

Riparian: Relating to, living in, or located on the bank of a river, lake, or tidewater.

Roadless area: Roadless areas, or Inventoried Roadless Areas, are generally those undeveloped portions of BLM and National Forests that are 5,000 acres or larger that are not designated as Wilderness, but that meet to minimum criteria for consideration under the Wilderness Act.

Sacred site: Any specific location on federal land that is identified (by an Indian Tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion) as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion.

Sanitary waste: Nonhazardous, nonradioactive liquid and solid waste generated by normal housekeeping activities.

Sanitary wastewater: Wastewater (includes toilet, sink, shower, and kitchen flows) generated by normal housekeeping activities.

Scenic quality: A measure of the intrinsic beauty of landform, water form, or vegetation in the landscape, as well as any visible human additions or alterations to the landscape.

Scenic rivers or river segments: River or river segments that are free of impoundments, with shorelines or watersheds still largely undeveloped but accessible in places by roads.

Scenic value: The importance of a landscape based on human perception of the intrinsic beauty of landform, water form, and vegetation in the landscape, as well as any visible human additions or alterations to the landscape.

Scoping: The process of inviting public comment on what should be considered prior to preparation of an EIS. Scoping assists the preparers of an EIS in defining the proposed action, identifying alternatives, and developing preliminary issues to be addressed in an EIS.

Sedimentation: The removal, transport, and deposition of sediment particles by wind or water.

Seeps: Wet areas, normally not flowing, arising from an underground water source. Any place where liquid has oozed from the ground to the surface.

Seismicity: Refers to the geographic and historical distribution of earthquakes.

Semiconductor: Any material that has a limited capacity for conducting an electric current. Certain semiconductors, including silicon, gallium arsenide, copper indium diselenide, and cadmium telluride, are uniquely suited to the photovoltaic conversion process.

Sensitive species: A plant or animal species identified as sensitive by the BLM. BLM sensitive species are identified at the state-level and are generally those species that are native, occur on BLM lands, and require special management consideration to avoid potential future listing under the ESA.

The list of BLM sensitive species varies from state to state, and the same species can be considered sensitive in one state but not in another. Also, a species that is adversely affected by disturbance or altered environmental conditions, such as sedimentation. *See also* Special status species.

Silicon: A semi-metallic chemical element that makes an excellent semiconductor material for photovoltaic devices. It crystallizes in a face-centered cubic lattice similar to a diamond. It is commonly found in sand and quartz (as oxide).

Skyglow: Overall brightening of the night sky caused by both natural and anthropogenic light.

Social disruption: Social and psychological dislocation associated with the alteration or breakdown of social life in small rural communities that may occur as a result of rapid economic and demographic change with rapid industrial and natural resource development.

Socioeconomics: The social and economic conditions in the study area.

Soil compaction: Compression of the soil which results in reduced soil pore space (the spaces between soil particles), decreased movement of water and air into and within the soil, decreased soil water storage, and increased surface runoff and erosion.

Solar application areas: See definition for Available Areas.

Solar array: *See* Photovoltaic (PV) array.

Solar cell: *See* Photovoltaic (PV) cell.

Solar emphasis areas: Areas that are well suited for utility-scale solar energy development. They are considered to be designated leasing areas.

Solar energy: Electromagnetic energy emitted from the sun (solar radiation). The amount that reaches the Earth is equal to one billionth of total solar energy generated, or the equivalent of about 420 trillion kilowatt-hours.

Solar energy technology: Any engineered method for harnessing, storing, and using the sun's energy.

Solar Energy Zone (SEZ): Lands identified in the 2012 Western Solar Plan as suitable for utility-scale production of solar energy.

Solar insolation values: The solar radiation that reaches the earth's surface, typically represented as energy density and measured in units of watts per square meter (W/m^2) [joules/ft^2] per minute.

Solar module: *See* Photovoltaic (PV) module.

Solar panel: *See* Photovoltaic (PV) panel.

Solid waste: All unwanted, abandoned, or discarded solid or semisolid material, whether or not subject to decomposition, originating from any source.

Solitude: When the sights, sounds, and evidence of other people are rare or infrequent and where visitors can be isolated, alone, or secluded from others.

Source: Any place or object from which pollutants are released. In air pollution, sources that are fixed in space are stationary point sources and sources that move are mobile sources. Point and non point pollutant sources can affect water quality. Numerous small sources that are not qualified as point or mobile sources are area sources.

Special status species (threatened, endangered, sensitive, rare): Include (BLM Manual 6840 Rel. 6-125, or as revised): (1) species listed as threatened or endangered under the ESA; (2) species that are proposed for listing or candidates for listing under the ESA; (3) federally delisted species (within 5 years of delisting) and; (4) species that are listed by the BLM as sensitive.

Special Use Airspace (SUA): Airspace of defined dimensions identified by an area on the surface of the Earth wherein activities must be confined because of their nature or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

Specially Designated Areas: Includes a variety of areas that have received recognition or designation because they possess unique or important resource values. While these areas would not be available for development of solar energy resources, they could be located near solar development areas and could be affected by solar development. Examples of BLM-administered specially designated areas include components of the BLM National Landscape Conservation System (NLCS), areas of critical environmental concern (ACECs), special recreation management areas, and areas with wilderness values. These areas may have been designated by Congress or by the BLM. The majority of specially designated areas discussed in this ROD are located on BLM-administered public lands; however, some specially designated areas managed by the U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), National Park Service, and states also are included in the analysis when they could be affected by solar development on public lands.

Staging area: A designated area where construction equipment is temporarily stored (usually only during the construction phase).

State Ambient Air Quality Standards (SAAQS): Separate air quality standards established by the State, which can be more stringent than NAAQS or include standards other than six criteria pollutants, for example, hydrogen sulfide (H_2S) or fluorides. Federal actions that are implemented in states that have separate SAAQS are required to comply with SAAQS in the same way they are required to comply with the NAAQS.

State Historic Preservation Officer (SHPO): The state officer charged with the identification and protection of prehistoric and historic resources in accordance with the National Historic Preservation Act.

Subsidence: Sinking or settlement of the land surface, due to any of several processes. As commonly used, the term relates to the vertical downward movement of natural surfaces although small-scale horizontal components may be present. The term does not include landslides, which have large-scale horizontal displacements, or settlements of artificial fills.

Substation: A substation consists of one or more transformers and their associated switchgear. It is used to switch generators, equipment, and circuits or lines in and out of a system. It is also used to change AC voltages from one level to another.

Surface water: Water on the Earth's surface that is directly exposed to the atmosphere, as distinguished from water in the ground (groundwater).

Texture: For visual effects assessment, the visual manifestations of light and shadow created by the variations in the surface of an object or landscape.

Thermoelectric (power) water use: Water used in generating electricity with steam-driven turbine generators. Power plants that burn coal and oil are examples of thermoelectric-power facilities. Production of electrical power results in one of the largest uses of water in the United States and worldwide.

Threatened species: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Requirements for declaring a species threatened are contained in the Endangered Species Act. *See also* Special Status Species.

To the Maximum Extent Practicable: A standard applied to implementation of specified design features. Under this standard, implementation of the design feature is required unless there is no reasonable or practicable means of doing so that is consistent with the basic objectives of the solar development. The term "maximum extent practicable" as used in this ROD is applicable only to its use in the design features; it does not apply to the term as it is used in the Endangered Species Act of 1973, or any other statute, regulation, policy or land use plan.

Traditional cultural property: A property that is eligible for inclusion in the *National Register of Historic Places* based on its association with cultural practices, traditions,

beliefs, lifeways, arts, crafts, or social institutions of a living community. Traditional Cultural Properties are rooted in the community's history and are important in maintaining the continuing cultural identity of the community.

Translocation: The intentional capture, movement, and release of individuals of a species into a different area, usually to prevent harm to the individuals or to establish populations elsewhere.

Transmission corridor: An electric or pipeline transmission corridor is a route approved on public lands, in a BLM or other federal agency land use plan, as a location that may be suitable for the siting of electric or pipeline transmission systems.

Transmission grid: The transmission and distribution network used to deliver electricity. The transmission grid comprises power stations, transmission lines, and substations.

Transmission line: A set of electrical current conductors, insulators, supporting structures, and associated equipment used to move large quantities of power at high voltage, usually over long distances (for example, between a power plant and the communities that it serves).

Treaty Rights: Rights reserved to Native Americans by treaties, including hunting, fishing, gathering, and mineral rights.

Tribal lands: All lands within the exterior boundaries of an Indian reservation and all dependent Indian communities (36 CFR 800.16(x)).

Tribe: A federally recognized group of American Indians and their governing body. Tribes may be composed of more than one band.

Turbidity: A measure of the cloudiness or opaqueness of water. Typically, the higher the concentration of suspended material, the greater the turbidity.

***United States Code* (U.S.C.):** A compilation of the general and permanent federal laws of the United States. It is divided into 51 titles that represent broad areas subject to federal regulation. The U.S.C. is updated once every six years, and supplements are published on an annual basis.

U.S. Environmental Protection Agency (USEPA): An independent federal agency, established in 1970, that regulates federal environmental matters and oversees the implementation of federal environmental laws.

Utility-scale facilities: Facilities that generate large amounts of electricity delivered to many users through transmission and distribution systems.

Variance/Variance process: For the six states covered under the 2012 Western Solar Plan, utility-scale solar energy development is allowed in variance areas (areas identified as appropriate for solar energy development) outside of SEZs in accordance with the established variance process. Lands identified as components of the variance process include a number of required steps including a variance determination where

the BLM determines whether it is appropriate to continue to process, or to deny, a ROW application submitted through the variance process.

Viewshed: The total landscape seen or potentially seen from all or a logical part of a travel route, use area, or water body.

Visual impact: Any modification in land form, water bodies, or vegetation, or any introduction of structures, which negatively or positively affect the visual character or quality of a landscape through the introduction of visual contrasts in the basic elements of form, line, color, and texture.

Visual quality: *See* Scenic quality.

Visual resources: All objects (man-made and natural, moving and stationary) with features such as landforms and water bodies that are visible on a landscape.

Visual Resource Inventory (VRI): Consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four visual resource inventory classes.

Visual Resource Inventory (VRI) Classes: VRI Classes are assigned to public lands based upon the results from the Visual Resource Inventory. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities. Inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. There are four classes (I, II, III, and IV).

Visual Resource Management (VRM) Classes: Categories assigned to BLM lands, utilizing the Visual Resource Inventory Classes in the RMP process, with an objective which prescribes the amount of change allowed in the characteristic landscape. All actions proposed during the RMP process that would result in surface disturbances must consider the importance of the visual values and the impacts the project may have on these values. Management decisions in the RMP must reflect the value of visual resources. The value of the visual resource may be the driving force for some management decisions. There are four VRM classes: I, II, III and IV.

Visual Resource Management (VRM) Class Designations: Class I objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention. **Class II** objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but must not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural landscape features. **Class III** objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, and texture found in the predominant natural landscape features. **Class IV** objective is to provide for

management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

Visual Resource Management (VRM) System: BLM's system for minimizing the visual impacts of surface-disturbing activities and maintaining scenic values for the future. The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual value: *See* Scenic value.

Waste management: Procedures, physical attributes, and support services that collectively provide for the identification, containerization, storage, transport, treatment (as necessary), and disposal of wastes generated in association with an activity.

Wastewater: Water that typically contains less than 1% concentration of organic hazardous waste materials. Water originating from human sanitary water use (domestic wastewater) and from a variety of industrial processes (industrial wastewater).

Water quality: A term used to describe the chemical, physical, and biological characteristics of water, usually with respect to its suitability for a particular purpose.

Water right: A legal entitlement of an individual or entity to extract water from a water source (surface water or groundwater) and to use it for a beneficial use (for example, potable water supply, irrigation, mining, livestock).

Watershed: A region or area bounded peripherally by water parting and draining ultimately to a particular outflow point (such as those on reservoirs, bays, oceans, or other water-courses.

Watt (W): A basic unit of power; one joule of energy consumed per second. When used to describe electrical power, one watt is the product of voltage times current.

Wetlands: Areas that are soaked or flooded by surface or groundwater frequently enough or long enough to support plants, birds, animals, and aquatic life. Wetlands generally include swamps, marshes, bogs, estuaries, and other inland and coastal areas and are federally protected.

Wild and Scenic River: A river or river segment that has a free-flowing condition and possess at least one outstandingly remarkable value, such as scenic, recreational, geologic, fish, wildlife, historic, cultural, or other features.

Wild and Scenic Rivers Act: Primary river conservation law enacted in 1968. The Act was specifically intended by Congress to balance the existing policy of building dams on rivers for water supply, power, and other benefits, with a new policy of protecting the free-flowing character and outstanding values of other rivers.

Wild Free-Roaming Horses and Burros Act of 1971: Act passed by Congress in 1971 giving BLM the responsibility to protect, manage, and control wild horses.

Wild horses and burros: Unbranded and unclaimed horses or burros roaming free on public lands in the western United States and protected by the Wild Free-Roaming Horse and Burro Act of 1971. They are descendants of animals turned loose by, or escaped from, ranchers, prospectors, Indian Tribes, and the U.S. cavalry from the late 1800s through the 1930s.

Wilderness Act: The Wilderness Act of 1964 established the National Wilderness Preservation System "for the permanent good of the whole people." This law also directs federal land management agencies to manage these wilderness areas and preserve wilderness character. The National Wilderness Preservation System is a national network of more than 800 federally designated wilderness areas. These wilderness areas are managed by the NPS, BLM, USFWS, and USFS.

Wilderness / Wilderness Areas: All lands included in the National Wilderness Preservation System by public law, generally defined as undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation.

Wilderness characteristics: Wilderness characteristics include (1) Naturalness: the area generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) Outstanding Opportunities: the area has either outstanding opportunities for solitude, or outstanding opportunities for primitive and unconfined types of recreation; (3) Size: the area is at least 5,000 acres (20 km^2) of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) Values: the area may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Wilderness study area: Areas that have wilderness characteristics; that is a minimum size, naturalness, and outstanding opportunities for recreation which make them eligible for designation as wilderness. The term may be used to describe (1) WSAs identified by the wilderness review required by Section 603 of FLPMA and currently under review by Congress (including Instant Study Areas), sometimes referred to as "603 WSAs"; (2) legislative WSAs (WSAs established by Congress); and (3) WSAs identified during the land use planning process under the authority of Section 202 of FLPMA, sometimes referred to as "202 WSAs" (BLM Manual 6330 – Management of Wilderness Study Areas (Public), Section 1.1, Release 6-144, U.S. Department of the Interior, https://www.blm.gov/sites/default/files/docs/2024-11/MS%206330%20Rel.%206-144%20locked.pdf). Wilderness characteristics include roadless areas of at least 5,000 acres (2,000 ha) of public lands or of a manageable size; naturalness (i.e., generally appears to have been affected primarily by the forces of nature rather than human activity); and opportunities (i.e., provides outstanding opportunities for solitude or primitive and unconfined types of recreation. The BLM manages wilderness study areas under the National Conservation Lands so as not to impair their value as wilderness.

Winter range: The portion of the winter range to which a wildlife species is confined during periods of snow cover because it is where big game find food or cover during the most inclement and difficult winter weather. See also Crucial/Severe winter range.

Withdrawal: The removal of surface water or groundwater from the natural hydrologic system for use, including public-water supply, industry, commercial, domestic, irrigation, livestock, or thermoelectric power generation.

Appendix D: Applications under Review

This appendix presents information about solar applications on Bureau of Land Management (BLM) administered lands that are under review, as referenced in Section 3.1.3 of this record of decision (ROD).

Applying the criteria identified in Section 3.1.3 of this ROD, the following applications under review are fully exempt:

Name	Serial Number
Jove Solar	AZAZ105838954
Rough Hat Clark	NVNV105839715

Applying the criteria identified in Section 3.1.3 of the ROD, the following applications under review are partially exempt[1]:

Name	Serial Number
Desert Willow Solar	AZAZ105842018
Pinyon Solar	AZAZ105845138
Ranegras Plains Solar	AZAZ105849169
Vulcan Solar	AZAZ105852861
Bouse Solar	AZAZ105853173
Parker Solar	AZAZ105855250
Pimlico N Solar	AZAZ105857446
Pimlico S Solar	AZAZ105857447
Mariposa Solar	AZAZ105857560
Socorro Solar	AZAZ105859316
Atlas North Solar	AZAZ105859422
White Hills West Solar	AZAZ105860024
White Hills Solar	AZAZ105860025
Chuparosa Solar	AZAZ105860040
Leo Solar	AZAZ105860975
Caballero Solar	AZAZ105862519
Southwest Crossroads Solar	AZAZ105863656
Yellow Cups Solar	AZAZ106088717
Tap Solar	AZAZ106089196
Thistle Solar	AZAZ106239154
Eagle Eye Solar	AZAZ106273318
Marketplace Solar	AZAZ106276302
Calypte Solar	AZAZ106307115
Arida 3	AZAZ106346735
Big Cat	COCO106299832

[1] In consultation under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, in their Biological Opinion and concurrence letter, accounted for the status of certain applications under review as partially exempt, but focused only on the subset of applications listed here where some or all of the lands within the proposed right-of-way are allocated as exclusion areas by this ROD.

Name	Serial Number
Book Cliffs Solar Farm	COCO106307100
Vizcaya Solar	IDID105861213
Bennett Solar	IDID106088675
South Bennett Solar	IDID106088676
Greyhawk Solar	IDID106310981
Shiprock Solar	NMNM106237927
Pantheon	NVNV105844732
Dodge Flat II	NVNV105847310
Esmeralda Solar	NVNV105848463
Smoky Valley Solar	NVNV105848465
Bonanza	NVNV105848474
Purple Sage	NVNV105848479
Gold Dust Solar	NVNV105851657
Nivloc Solar	NVNV105851658
Esmeralda Energy Center	NVNV105851682
Sawtooth	NVNV105852183
Red Ridge 1	NVNV105852204
Red Ridge 2	NVNV105852205
CD Solar	NVNV105853671
SB Solar	NVNV105853792
Candelaria Solar	NVNV105854812
Artemisia Solar	NVNV105854883
Mosey	NVNV105857012
American Glory	NVNV105857031
Sage City	NVNV105857801
Rigel	NVNV105857974
Wildcat Solar	NVNV105859463
Silver Star Solar	NVNV105860088
Tarantula Canyon	NVNV105860418
Kawich	NVNV105862025
Lonely	NVNV105862498
Esmeralda North	NVNV105862623
T330MV	NVNV105862723
Cathedral	NVNV105863187
Monte Cristo	NVNV105864011
Copper Rays	NVNV105907686
Red Valley	NVNV106236039
Red Flats	NVNV106239094
Rooster's Comb	NVNV106240430
Rock Valley	NVNV106271543
Iron Mountain Solar	NVNV106271603
Lander Solar	NVNV106272469
Winston	NVNV106273181
Juliet	NVNV106273982
Titania	NVNV106273984

Name	Serial Number
Prospero	NVNV106273985
Portia	NVNV106273988
Expedition	OROR105856891
Lava Solar	OROR105857017
Explorer	OROR105858519
Finley Butte Climate Fixer	OROR106239850
Star Range	UTUT106270777
Jim Bridger Substation Solar	WYWY106273795

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