



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

# Utility-Scale Solar Energy

## Draft Programmatic Environmental Impact Statement

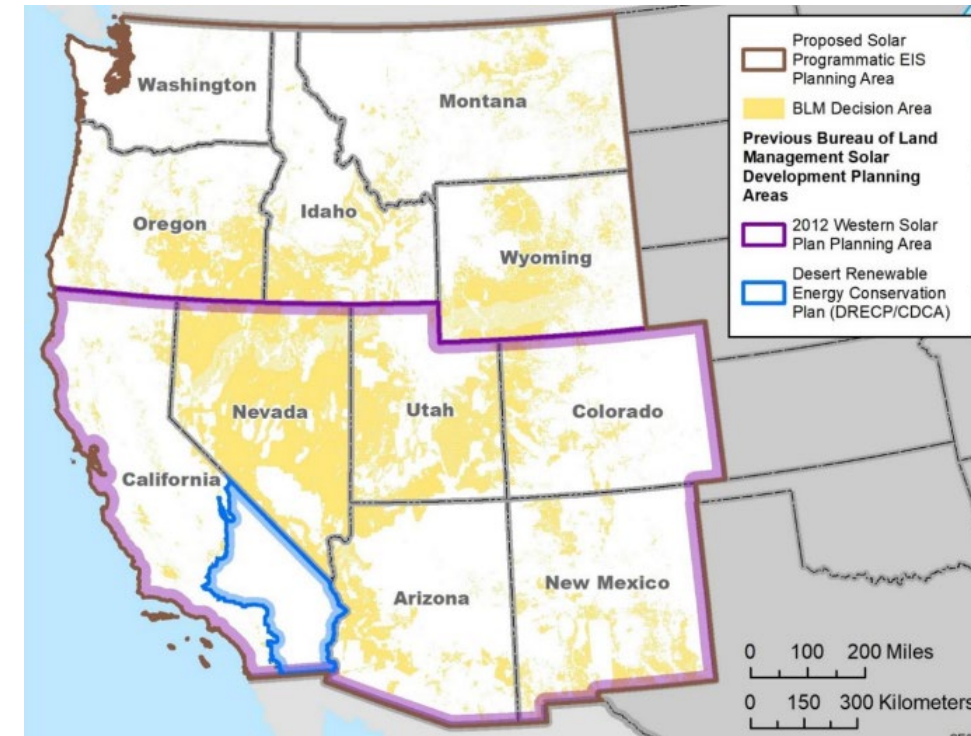


Gemini Solar Project; Nevada



# Introduction

- BLM's multiple-use mission includes supporting America's energy needs
  - 9,400 megawatts of solar energy permitted
  - Solar development interest increasing and expanding
  - Updated plan needed for better solar array siting
- The updated Western Solar Plan:
  - Covers more states
  - Keep sensitive areas off-limits
  - Improves environmental development requirements
  - Requires further project-specific reviews
  - Eliminates the current variance process



Solar Programmatic EIS  
(Western Solar Plan) Planning Area





# Why is BLM Updating Solar Planning?

- To Guide solar proposals to better locations:
  - Identify solar application areas with fewer resource conflicts
  - Exclude areas with known sensitive resources
- To Address changes since 2012:
  - Growing interest and competitive cost for renewable energy
  - Advancements in photovoltaic (PV) and battery technology
  - Increased development interest in northern states
  - National goals to increase renewable energy generation



Gemini Solar Project; Nevada





# Key Elements in Updated Western Solar Plan

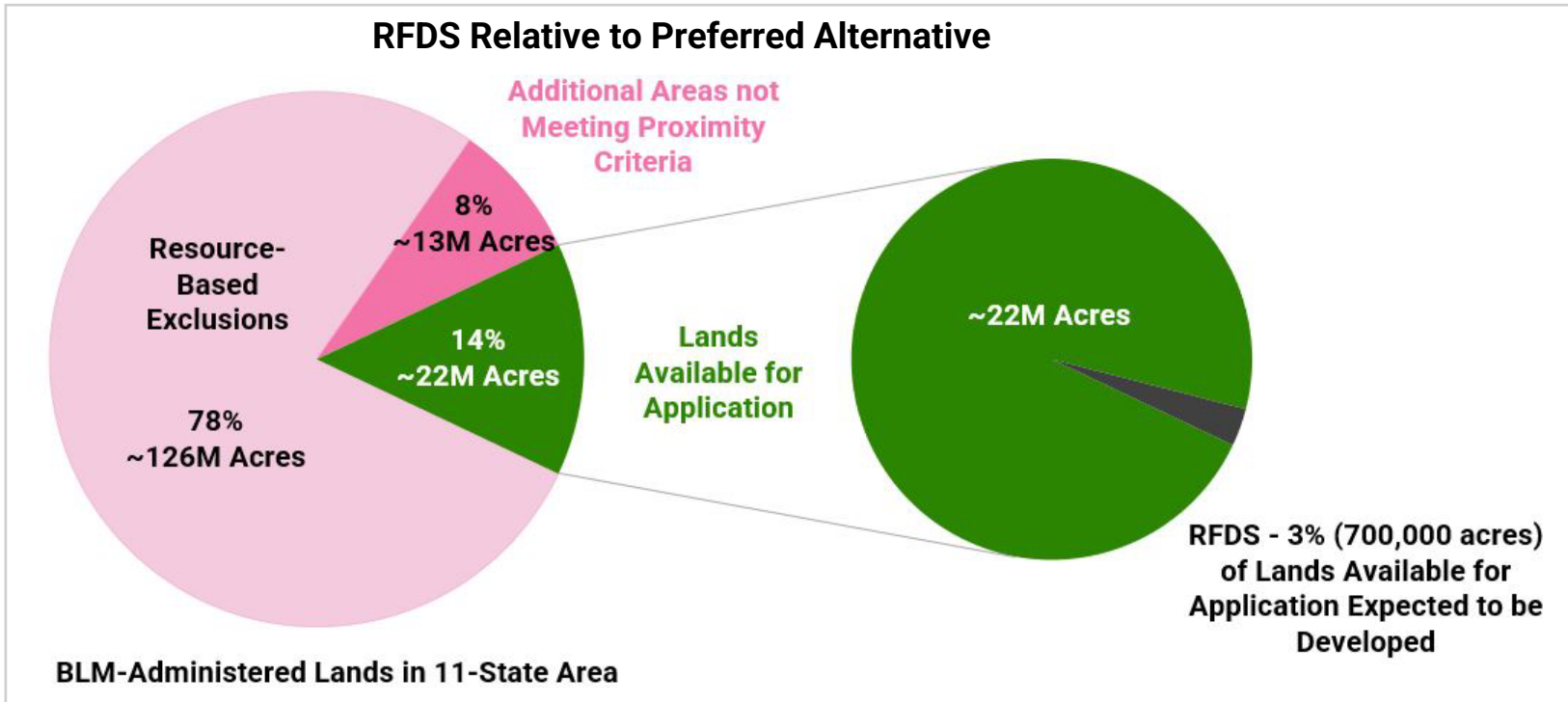
2012 Western Solar Plan - <i>No Action Alternative</i>	2023/2024 Draft Programmatic EIS - <i>Action Alternatives</i>
6-state planning area (Arizona, California, Colorado, Nevada, New Mexico, Utah)	11-state planning area (Previous 6-states + Idaho, Montana, Oregon, Washington, and Wyoming)
Created discrete “Solar Energy Zones” and conditionally allowed development on other lands through a variance process	Identifies broad areas open to applications which will be subject to site-specific screening and further analysis
Applies to solar projects 20 megawatts or larger	Applies to solar projects 5 megawatts or larger
Allows development in areas with 5% slope or less	Alternative 1 removes the slope limitation; Alternatives 2-5 allows development in areas with 10% slope or less
Limits development in areas with solar intensity less than 6.5 kWh/m <sup>2</sup> /day	Removes limit for development based on solar intensity
Identified exclusion criteria to make certain areas off-limits	Adds to and strengthens 2012 exclusion criteria
Created programmatic design features to mitigate impacts for all solar projects	Updates and adds to programmatic design features





# Reasonably Foreseeable Development Scenario

- Identifies area needed to meet renewable energy goals through 2045
- Same scenario regardless of alternative
- Based on “Solar Futures Study” (Department of Energy, 2021)
- **Anticipates about 700,000 acres of BLM-administered lands**



State	RFDS, Estimated BLM Area Developed by 2045 (acres)
Arizona	198,210
California	109,972
Colorado	45,207
Idaho	89,574
Montana	5,387
Nevada	48,119
New Mexico	11,123
Oregon	51,387
Utah	39,793
Washington	71,781
Wyoming	27,277
<b>Total</b>	<b>697,830</b>





# Summary of Action Alternatives

Action Alternatives	Alternative 1 (Resource-Based Exclusions Only)	Alternative 2 (Resource-Based Exclusions and >10% Slope)	Alternative 3 (Transmission Proximity)	Alternative 4 (Previously Disturbed Lands)	Alternative 5 (Previously Disturbed Lands and Transmission Proximity)
What lands are open to application for solar energy development?	Solar application areas are all lands in 11-state planning area except for the excluded areas described below.	Solar application areas are lands in 11-state planning area except for the excluded areas described below.	Solar application areas are lands within 10 miles of existing and/or planned transmission lines >100 kV except for the excluded areas described below.	Solar application areas are previously disturbed (which have diminished resource integrity) except for the excluded areas described below.	Solar application areas are previously disturbed lands (which have diminished integrity) within 10 miles of existing and/or planned transmission lines >100 kV except for the excluded areas described below.
What lands are excluded from solar energy development?	No slope-based exclusion	<b>10% Slope Exclusion</b> applies to Alternatives 2-5 as a general resource protection measure.			
	<b>Resource-Based Exclusion Criteria</b> are applied to all Action Alternatives. For example, exclusion criteria would prohibit solar energy development in all designated and proposed critical habitat areas for species protected under the ESA or in BLM National Conservation Lands.				
What about remaining lands that are not solar application areas or excluded under resource-based exclusion criteria or the slope restriction?	Not applicable (no remaining lands)	Not applicable (no remaining lands)	No development outside of these areas. Remaining areas are excluded.		
Do design features apply to the solar application areas?	<b>Design Features are applied to all Action Alternatives.</b> Design features are project requirements incorporated into the alternatives to avoid, minimize, and/or compensate for adverse impacts. For example, an ecological design feature could require turning off all unnecessary lighting at night to limit attracting wildlife, particularly migratory birds.				

The 11-state planning area consists of Arizona, California (excluding the Desert Renewable Energy Conservation Planning area), Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.



# Alternative Land Use Allocations

Planning Area State	BLM Planning Area	No Action Alternative			Alternative 1		Alternative 2		Alternative 3			Alternative 4			Alternative 5		
		Priority Areas	Lands Available for Application (variance areas in six state area)	Exclusion Areas	Lands Available for Application	Resource-Based Exclusion Areas	Lands Available for Application	Resource-Based Exclusion Areas	Lands Available for Application	Resource-Based Exclusion Areas	Additional Areas Not Meeting Transmission Proximity Criteria	Lands Available for Application	Resource-Based Exclusion Areas	Additional Areas Not Meeting Disturbed Lands Criteria	Lands Available for Application	Resource-Based Exclusion Areas	Additional areas Not Meeting Transmission Proximity or Disturbed Lands Criteria
Arizona	12,109,337	198,948	2,861,429	9,048,960	4,886,293	7,223,044	3,285,400	8,823,937	2,292,321	8,861,753	955,263	887,183	8,823,937	2,398,218	725,628	8,861,753	2,521,955
California	4,150,345	0	117,933	4,032,412	1,145,205	3,005,140	220,088	3,930,257	157,698	3,932,003	60,664	116,417	3,930,257	103,671	89,258	3,932,003	129,084
Colorado	8,354,306	22,038	135,548	8,196,717	2,281,931	6,072,374	813,551	7,540,775	548,225	7,561,299	244,782	329,854	7,540,755	483,697	235,270	7,561,299	557,738
Idaho	11,774,992	0	7,055,043	4,719,949	2,650,929	9,124,063	1,835,601	9,939,392	1,473,202	10,005,023	296,767	942,187	9,939,392	893,414	866,830	10,005,023	903,139
Montana	8,043,025	0	4,011,886	4,031,139	1,229,774	6,813,252	715,863	7,327,163	209,796	7,328,457	504,772	513,232	7,327,163	202,631	149,389	7,328,457	565,179
Nevada	47,272,125	61,834	6,863,590	40,346,702	18,332,220	28,939,905	12,371,628	34,900,497	6,988,748	35,096,891	5,186,487	2,424,286	34,900,497	9,947,342	1,587,446	35,096,891	10,587,789
New Mexico	13,493,392	29,716	3,915,370	9,548,306	6,301,088	7,192,304	5,000,154	8,493,238	2,987,559	8,525,548	1,980,285	1,765,014	8,493,238	3,235,140	1,301,315	8,525,548	3,666,529
Oregon	15,718,197	0	10,965,383	4,752,813	2,553,861	13,164,335	1,125,451	14,592,746	714,957	14,611,765	391,475	408,071	14,592,746	717,380	308,340	14,611,765	798,093
Utah	22,767,896	17,659	1,815,742	20,934,494	9,883,743	12,884,153	6,562,857	16,205,038	3,768,382	16,273,746	2,725,767	1,938,117	16,205,038	4,624,740	1,570,779	16,273,746	4,923,370
Washington	437,237	0	412,062	25,175	355,229	82,008	125,135	312,103	106,458	312,103	18,676	94,975	312,103	30,159	81,211	312,103	43,923
Wyoming	18,047,498	0	9,139,769	8,907,717	5,417,541	12,629,957	4,124,996	13,922,502	2,980,130	13,971,708	1,095,661	1,779,148	13,922,502	2,345,848	1,444,249	13,971,708	2,631,541
<b>TOTAL</b>	<b>162,168,351</b>	<b>330,195</b>	<b>47,293,756</b>	<b>114,544,384</b>	<b>55,037,816</b>	<b>107,130,534</b>	<b>36,180,723</b>	<b>125,987,628</b>	<b>22,227,475</b>	<b>126,480,296</b>	<b>13,460,580</b>	<b>11,198,484</b>	<b>125,987,629</b>	<b>24,982,238</b>	<b>8,359,715</b>	<b>126,480,295</b>	<b>27,328,341</b>



# BLM's Preferred Alternative – Alternative 3, Close to Transmission

- Guides applications to lands with lower resource conflicts that are also closer to existing and potential transmission
- Seeks to avoid and minimize land disturbance, reduce habitat fragmentation, resource degradation, and environmental and cultural resource impacts
- Provides broad land area to support siting for 20-year development scenario
- Supports national renewable energy goals







# Resource Areas Addressed in the Solar Programmatic EIS

- Acoustic Environment
- Air Quality
- Climate Change
- Cultural Resources
- Ecological Resources
  - Vegetation
  - Aquatic Biota
  - Wildlife
  - Special Status Species
- Environmental Justice
- Geology and Soil Resources
- Hazardous Materials and Waste
- Health and Safety
- Lands and Realty
- Military and Civilian Aviation
- Minerals
- Paleontological Resources
- Rangeland Resources
  - Livestock Grazing
  - Wild Horses and Burros
- Recreation
- Socioeconomics
- Specially Designated Areas and Lands with Wilderness Characteristics
- Transportation
- Tribal Interests
- Visual Resources
- Water Resources
- Wildland Fire



Figure from Solar Programmatic EIS Visual Resources Analysis





# Design Features

- Design features are project requirements that have been incorporated into the alternatives to avoid, minimize, or compensate for adverse impacts.
- The proposed design features in the Draft Solar Programmatic EIS would update the design features established through the Western Solar Plan that are currently in effect
- Design features are presented in Appendix B of the Draft Solar Programmatic EIS, and address all of the resource areas evaluated. They include requirements for specific plans to address resource-specific impacts.

<b>Bird and Bat Conservation Strategy (includes Nesting Bird Management Plan)</b>
<b>Decommissioning and Site Reclamation Plan</b>
<b>Dust Abatement Plan</b>
<b>Hazardous Materials and Waste Management Plan</b>
<b>Health and Safety Plan</b>
<b>Lighting Plan</b>
<b>Spill Prevention and Emergency Response Plan</b>
<b>Stormwater Pollution Prevention Plan</b>
<b>Threatened and endangered species protection plan</b>
<b>Transportation Plan</b>
<b>Traffic Management Plan</b>
<b>Vegetation/Weed Management Plan</b>
<b>Worker Education and Awareness Plan (WEAP)</b>

Individual Plans Required for Projects through Updated Design Features





# Exclusion Criteria

- Exclusion criteria identify various lands that would be excluded from solar energy application under each of the action alternatives
  - BLM has identified 21 different exclusions in the Draft Programmatic EIS
  - Areas excluded will change over time as land use plans are revised or amended
  - Maps for the action alternatives reflect exclusion criteria to the extent that GIS data is available
  - Some resource exclusions remain unmapped due to information sensitivity or lack of GIS data
- 2012 Western Solar Plan exclusion criteria were reviewed and updated due to:
  - BLM experience in permitting and monitoring
  - Public and cooperating agency input





Exclusion No.	Exclusion Type	Description	Exclusion Status for Alternatives Analysis
1	Areas of Critical Environmental Concern (ACECs)	All ACECs identified in applicable land use plans.	Mapped
2	Threatened and Endangered Species	All designated and proposed critical habitat areas for species protected under the ESA ( <a href="https://ecos.fws.gov/ecp/report/critical-habitat">https://ecos.fws.gov/ecp/report/critical-habitat</a> ). Known occupied habitat for certain ESA-listed species, based on current available information or surveys of project areas.	Partially mapped
3	Lands with Wilderness Characteristics	All areas for which an applicable land use plan establishes protection for lands with wilderness characteristics.	Partially mapped
4	Recreation	Developed recreational facilities and all Special Recreation Management Areas (SRMAs) identified in applicable land use plans.	Mapped
5	Habitat Areas	Dixie valley toad habitat, Wyoming toad habitat, and Carson wandering skipper habitat. All areas where the BLM has agreements with USFWS and/or state agency partners and other entities to manage sensitive species habitat in a manner that would preclude solar energy development, including habitat protection and other recommendations in conservation agreements/strategies.	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.	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	All desert tortoise translocation sites identified in applicable resource management plans, project-level mitigation plans, or Biological Opinions.	Unmapped
9	Big Game	All big game migratory corridors identified in applicable land use plans to the extent the land use plan decision prohibits utility-scale solar energy development. All big game winter ranges identified in applicable land use plans to the extent the land use plan decision prohibits utility-scale solar energy development.	Unmapped
10	Natural Areas and Other Conservation Areas	Research Natural Areas and Outstanding Natural Areas identified in applicable land use plans. All Backcountry Conservation Areas identified in applicable land use plans.	Partially mapped



Exclusion No.	Exclusion Type	Description	Exclusion Status for Alternatives Analysis
11	Visual Resources	Lands classified as visual resource management (VRM) Class I or II throughout the 11-state planning area and, only in Utah (and small parts of Arizona and Colorado), some lands classified as Class III 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
14	National Conservation Lands	<p>All units of BLM National Conservation Lands:</p> <ul style="list-style-type: none"> <li>• National Monuments</li> <li>• National Conservation Areas and other areas similarly designated for conservation, including Cooperative Management and Protection Areas, Outstanding Natural Areas, Forest Reserves, and National Scenic Areas.</li> <li>• National Trails System               <ul style="list-style-type: none"> <li>○ 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,</li> <li>○ Trails undergoing a Congressionally authorized National Trail Feasibility Study will also be excluded pending the outcome of the study.</li> </ul> </li> <li>• National Wild and Scenic Rivers:               <ul style="list-style-type: none"> <li>○ 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 ¼ mile to either side of the river from the ordinary high-water mark, unless otherwise provided by law.</li> <li>○ 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.</li> <li>○ 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.</li> </ul> </li> <li>• Wilderness Areas and Wilderness Study Areas</li> </ul>	Mapped



# Resource-Based Exclusion Criteria (see Table 2.1-3 of the Draft EIS for additional detail)

Exclusion No.	Exclusion Type	Description	Exclusion Status for Alternatives Analysis
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 (TCPs) 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
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.	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



# Requirements for Further Environmental Analysis

- This Programmatic EIS
  - Builds a consistent framework to have solar proposals avoid highly-conflicted areas
  - Identifies areas with fewer known resource issues
  - **Does not** affirmatively designate particular areas as suitable for development
  - **Does not** approve any solar project
- Project-specific screening and detailed analysis will be required when applications are received
  - Involves consistency review with the applicable land use plan
  - Projects will be screened and undergo detailed environmental review
  - Areas of Special Concern, resource-related impacts, public concerns, and proximity to important resources will be considered



Sweetwater Solar Facility, Wyoming. Source: BLM

**Even in areas identified as available for application, BLM may not approve solar applications.**





# Requirements for Further Environmental Analysis, continued



BLM Restoration Landscapes

- Areas of special concern were identified based on input from the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), cooperating agencies, and BLM subject matter experts
- Appendix H presents 4 categories of Areas of Special Concern: BLM Restoration Landscapes, Oil and Gas Lease Areas, Big Game Use Areas, and NPS Areas of Special Concern
- Developers would propose avoidance and/or other mitigation measures for projects that intersect with these areas

