

# Supplement to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States



U.S. DEPARTMENT OF  
**ENERGY**



**On the cover:**

Typical Solar Fields for Various Technology Types (clockwise from upper left):

Solar Parabolic Trough (Source: NREL/SR-550-32282),

Solar Power Tower (Credit: Sandia National Laboratories. Source: NREL),

Photovoltaic (Credit: Arizona Public Service. Source: NREL), and

Dish Engine (Credit: R. Montoya. Source: Sandia National Laboratories).

Background photo: Parabolic trough facility from an elevated viewpoint

(Credit: Argonne National Laboratory)



United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
Washington, D.C. 20240  
<http://www.blm.gov>



October 2011

In Reply Refer To:  
1610 (300)

Dear Reader:

Attached for your review and comment is the Supplement to the Draft Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States (Supplement). This document was prepared by the Bureau of Land Management (BLM) and the Department of Energy (DOE) as co-lead agencies. The BLM and DOE prepared this document in consultation with cooperating agencies and in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; the Council on Environmental Quality, DOE, and Department of the Interior regulations implementing NEPA (40 CFR Parts 1500-1508, 10 CFR Part 1021, 43 CFR Part 46); and the Federal Land Policy and Management Act of 1976, as amended.

On December 17, 2010, the lead agencies published a Draft PEIS for Solar Energy Development in Six Southwestern States. Public comments were accepted through May 2, 2011, and more than 80,500 comments were received. The lead agencies have thoroughly analyzed the comments and made numerous adjustments to the PEIS in response to this input. The Supplement focuses on modified and new components of the lead agencies' proposed solar programs and incorporates by reference relevant portions of the Draft PEIS.

Development of this Supplement allows the public an opportunity to evaluate the modified and new elements of the proposed programs and provide input to assist the BLM and DOE decision-making processes. Based on input received on the Draft PEIS and this Supplement, the lead agencies will prepare a Final PEIS and Record(s) of Decision. All comments received on both documents will be responded to in the Final PEIS.

Through the Supplement, the BLM has modified its preferred alternative to emphasize its commitment to the concept of Solar Energy Zones (SEZ). Efforts have been made to ensure that SEZs are not located in high conflict areas, a protocol for establishing new SEZs has been provided, and incentives for projects within SEZs have been outlined. In addition, the BLM has revisited ongoing state-based planning efforts to assure that such efforts could result in the identification of new zones.

While the BLM's preferred alternative emphasizes the use and creation of SEZs for utility-scale solar energy development, the BLM has also proposed a process that will accommodate responsible development outside of SEZs.

As described in the Draft PEIS, under DOE's proposed action (action alternative), DOE would develop and adopt programmatic environmental guidance that would be used by DOE to further integrate environmental considerations into its analysis and selection of proposed solar projects. DOE has since used the information about environmental impacts provided in the Draft PEIS and other information to develop draft programmatic guidance. DOE has included the draft programmatic guidance in the Supplement for public comment.

Your timely comments on the Supplement will help formulate the Final PEIS. Comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the *Federal Register*. The BLM and DOE can best utilize your comments and resource information submissions if received within the review period. Comments received after the end of the review period will be considered to the extent practicable. We request that your comments be as specific as possible. Comments are more helpful if they reference a section or page number of the Supplement and include suggested changes, additional information sources, or alternative methodologies.

Comments may be submitted electronically using the online comment form available at the project Web site: <http://solareis.anl.gov>. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments through the project Web site. Comments may also be submitted by mail to Solar Energy Draft PEIS, Argonne National Laboratory, 9700 S. Cass Avenue—EVS/240, Argonne, Illinois 60439.

Before including your address, phone number, email address, or other personal, identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal, identifying information from public review, we cannot guarantee that we will be able to do so.

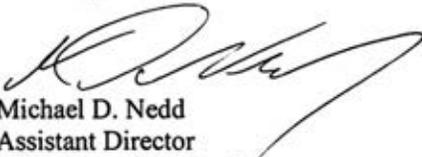
In addition to written comments, public meetings to take public comments will be announced through local media and Web sites. Public meetings are currently planned for the following locations:

El Centro, California  
Palm Desert, California  
Phoenix, Arizona  
Las Vegas, Nevada

Copies of the Supplement have been sent to affected Federal, state, and local government agencies and applicable tribal governments. Requests for additional information on the Supplement, including requests for copies of the document, should be directed to Shannon Stewart, BLM Washington Office, by email at [shannon\\_stewart@blm.gov](mailto:shannon_stewart@blm.gov), or by telephone at 202-912-7219; or Jane Summerson, DOE Solar PEIS Document Manager, by email at [Jane.summerson@ee.doe.gov](mailto:Jane.summerson@ee.doe.gov), or by telephone at 202-287-6188. You may also visit the Solar Energy Development PEIS Web site at <http://solareis.anl.gov>.

Thank you for your continued interest in the PEIS for Solar Energy Development in Six Southwestern States. We appreciate the information and suggestions you contribute to the NEPA and planning process.

Sincerely,



Michael D. Nedd  
Assistant Director  
Minerals and Realty Management



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# **Supplement to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States**

October 2011

Bureau of Land Management  
U.S. Department of Energy





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## NOTATION

The following is a list of acronyms, abbreviations, and units of measure used in this document. Some acronyms used only in tables may be defined only in those tables.

### GENERAL ACRONYMS AND ABBREVIATIONS

AC	alternating current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGL	above ground level
AUM	animal unit month
AZGFD	Arizona Game and Fish Department
BLM	Bureau of Land Management
BLM-CA	Bureau of Land Management, California
BOR	U.S. Bureau of Reclamation
CAReGAP	California Regional Gap Analysis Project
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDOW	Colorado Division of Wildlife
CDWR	Colorado Division of Water Resources
CEC	California Energy Commission
CFR	<i>Code of Federal Regulations</i>
CIMIS	California Irrigation Management Information System
CNPS	California Native Plant Society
CSP	concentrating solar power
CWA	Clean Water Act
DLT	dedicated-line transmission
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DRECP	Desert Renewable Energy Conservation Plan
DSRP	Decommissioning and Site Reclamation Plan
DWMA	Desert Wildlife Management Area
EA	environmental assessment
EIS	environmental impact statement
E.O.	Executive Order

1		
2	EPA	U.S. Environmental Protection Agency
3	EPRI	Electric Power Research Institute
4	ESA	Endangered Species Act of 1973
5		
6	FAA	Federal Aviation Administration
7	FEMA	Federal Emergency Management Agency
8	FERC	Federal Energy Regulatory Commission
9	FLPMA	Federal Land Policy and Management Act of 1976
10	FONSI	Finding of No Significant Impact
11	FR	<i>Federal Register</i>
12	FRCC	Florida Reliability Coordinating Council
13		
14	GHG	greenhouse gas
15		
16	HMA	Herd Management Area
17	HUC8	8-digit hydrologic unit code
18		
19	I	Interstate
20	IBLA	Interior Board of Land Appeals
21	IID	Imperial Irrigation District
22	IM	Instruction Memorandum
23	ISO	independent system operator
24	ITFR	Interim Temporary Final Rule
25		
26	KGRA	known geothermal resource area
27	KOP	key observation point
28		
29	LTVA	long-term visitor area
30		
31	MILP	mixed-integer linear programming
32	MOA	Military Operating Area
33	MTR	military training route
34		
35	NAHC	Native American Heritage Commission (California)
36	NCA	National Conservation Area
37	NDOW	Nevada Department of Wildlife
38	NEPA	National Environmental Policy Act of 1969
39	NHD	National Hydrology Dataset
40	NHPA	National Historic Preservation Act
41	NLCS	National Landscape Conservation System
42	NMDGF	New Mexico Department of Game and Fish
43	NMED	New Mexico Environment Department
44	NNHP	Nevada Natural Heritage Program
45	NP	National Park
46	NPS	National Park Service

1	NPV	net present value
2	NRCS	Natural Resources Conservation Service
3	NRDC	Natural Resources Defense Council
4	NREL	National Renewable Energy Laboratory
5	NRHP	<i>National Register of Historic Places</i>
6	NRS	<i>Nevada Revised Statutes</i>
7	NTTR	Nevada Test and Training Range
8	NWI	National Wetlands Inventory
9	NWIS	National Water Information System
10	NWR	National Wildlife Refuge
11		
12	OHV	off-highway vehicle
13		
14	PCA	Potential Conservation Area
15	PEIS	programmatic environmental impact statement
16	PFYC	potential fossil yield classification
17	PITU	Paiute Indian Tribe of Utah
18	P.L.	Public Law
19	PM	particulate matter
20	PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter of 2.5 µm or less
21	PM <sub>10</sub>	particulate matter with an aerodynamic diameter of 10 µm or less
22	PPA	Power Purchase Agreement
23	P-P-D	population-to-power density
24	POD	Plan of Development
25	PSD	prevention of significant deterioration
26	PV	photovoltaic
27		
28	REA	Rural Electrification Act of 1936
29	RCE	Reclamation Cost Estimate
30	RDEP	Restoration Design Energy Project
31	REAT	Renewable Energy Action Team
32	REDA	Renewable Energy Development Area
33	REEA	Renewable Energy Evaluation Area
34	REPG	Renewable Energy Policy Group
35	RFDS	reasonably foreseeable development scenario
36	RMP	Resource Management Plan
37	ROD	Record of Decision
38	ROW	right-of-way
39	RPS	Renewable Portfolio Standard
40	RSI	Renewable Systems Interconnection
41	RTO	regional transmission organization
42		
43	SEZ	solar energy zone
44	SHPO	State Historic Preservation Office(r)
45	SLT	shared-line transmission
46	SLVRCA	San Luis Valley Renewable Communities Alliance

1	SNWA	Southern Nevada Water Authority
2	SRMA	Special Recreation Management Area
3	SUA	special use airspace
4	SVL	sensitive viewing location
5	SVRA	sensitive visual resource area
6	SWReGAP	Southwest Regional Gap Analysis Project
7		
8	TDS	total dissolved solids
9	TEPPC	Transmission Expansion Planning Policy Committee
10		
11	UDWR	Utah Division of Wildlife Resources
12	USC	<i>United States Code</i>
13	USACE	U.S. Army Corps of Engineers
14	USDA	U.S. Department of Agriculture
15	USFS	U.S. Forest Service
16	USFWS	U.S. Fish and Wildlife Service
17	USGS	U.S. Geological Survey
18	UTTR	Utah Test and Training Range
19		
20	VRI	Visual Resource Inventory
21	VRM	Visual Resource Management
22		
23	WA	Wilderness Area
24	WECC	Western Electricity Coordinating Council
25	WHMA	Wildlife Habitat Management Area
26	WIU	Wilderness Inventory Unit
27	WRCC	Western Regional Climate Center
28	WSA	Wilderness Study Area
29	WWP	Western Watersheds Project

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32 **UNITS OF MEASURE**

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34	ft	foot (feet)	m <sup>2</sup>	square meter(s)
35	ft <sup>2</sup>	square foot (feet)	mi	mile(s)
36			mi <sup>2</sup>	square mile(s)
37	km	kilometer(s)	mm	millimeter(s)
38	km <sup>2</sup>	square kilometer(s)	MW	megawatt(s)
39	kV	kilovolt(s)	MWh	megawatt-hour(s)
40	kWh	kilowatt-hour(s)	MVA	megavolt-ampere(s)
41				
42	m	meter(s)	µm	micrometer(s)

1 **ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS**  
 2  
 3

4 The following table lists the appropriate equivalents for English and metric units.  
 5

Multiply	By	To Obtain
<b><i>English/Metric Equivalents</i></b>		
acres	0.004047	square kilometers (km <sup>2</sup> )
acre-feet (ac-ft)	1,234	cubic meters (m <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	0.02832	cubic meters (m <sup>3</sup> )
cubic yards (yd <sup>3</sup> )	0.7646	cubic meters (m <sup>3</sup> )
degrees Fahrenheit (°F) -32	0.5555	degrees Celsius (°C)
feet (ft)	0.3048	meters (m)
gallons (gal)	3.785	liters (L)
gallons (gal)	0.003785	cubic meters (m <sup>3</sup> )
inches (in.)	2.540	centimeters (cm)
miles (mi)	1.609	kilometers (km)
miles per hour (mph)	1.609	kilometers per hour (kph)
pounds (lb)	0.4536	kilograms (kg)
short tons (tons)	907.2	kilograms (kg)
short tons (tons)	0.9072	metric tons (t)
square feet (ft <sup>2</sup> )	0.09290	square meters (m <sup>2</sup> )
square yards (yd <sup>2</sup> )	0.8361	square meters (m <sup>2</sup> )
square miles (mi <sup>2</sup> )	2.590	square kilometers (km <sup>2</sup> )
yards (yd)	0.9144	meters (m)
<b><i>Metric/English Equivalents</i></b>		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m <sup>3</sup> )	0.00081	acre-feet (ac-ft)
cubic meters (m <sup>3</sup> )	35.31	cubic feet (ft <sup>3</sup> )
cubic meters (m <sup>3</sup> )	1.308	cubic yards (yd <sup>3</sup> )
cubic meters (m <sup>3</sup> )	264.2	gallons (gal)
degrees Celsius (°C) +17.78	1.8	degrees Fahrenheit (°F)
hectares (ha)	2.471	acres
kilograms (kg)	2.205	pounds (lb)
kilograms (kg)	0.001102	short tons (tons)
kilometers (km)	0.6214	miles (mi)
kilometers per hour (kph)	0.6214	miles per hour (mph)
liters (L)	0.2642	gallons (gal)
meters (m)	3.281	feet (ft)
meters (m)	1.094	yards (yd)
metric tons (t)	1.102	short tons (tons)
square kilometers (km <sup>2</sup> )	247.1	acres
square kilometers (km <sup>2</sup> )	0.3861	square miles (mi <sup>2</sup> )
square meters (m <sup>2</sup> )	10.76	square feet (ft <sup>2</sup> )
square meters (m <sup>2</sup> )	1.196	square yards (yd <sup>2</sup> )

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