

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, or by telephone at 202-912-7219; or Jane Summerson, DOE Solar PEIS Document Manager, by email at 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

DES 11-49 • DOE/EIS-0403D-S

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



U.S. DEPARTMENT OF
ENERGY



CONTENTS

1
2
3
4 NOTATION ix
5
6 ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS xiii
7
8 1 INTRODUCTION 1-1
9
10 1.1 Overview 1-1
11 1.2 Summary of Comments 1-2
12 1.3 BLM’s Purpose and Need 1-3
13 1.4 BLM Decisions To Be Made 1-5
14 1.5 Scope of the Analysis 1-6
15 1.5.1 Program Analysis versus SEZ-Specific Analysis 1-6
16 1.6 Status of Reasonably Foreseeable Development Scenario 1-7
17 1.7 Definition and Processing Approach for New, Pending, and Approved
18 Solar Applications 1-9
19 1.7.1 New Applications 1-9
20 1.7.2 Pending Applications 1-10
21 1.7.3 Approved Applications 1-12
22 1.8 Ongoing Rulemaking 1-14
23 1.8.1 Segregation Rule 1-14
24 1.8.2 Competitive Process 1-14
25
26 2 BLM ALTERNATIVES 2-1
27
28 2.1 No Action Alternative 2-1
29 2.2 Modified BLM Action Alternatives 2-1
30 2.2.1 Program Components Common to All Action Alternatives 2-1
31 2.2.1.1 Right-of-Way Authorization Policies 2-1
32 2.2.1.2 Adaptive Management and Monitoring 2-13
33 2.2.1.3 Design Features 2-14
34 2.2.2 Modified Solar Energy Development Program Alternative
35 (BLM Preferred Alternative) 2-14
36 2.2.2.1 Proposed Right-of-Way Exclusion Areas 2-15
37 2.2.2.2 Proposed Solar Energy Zones 2-15
38 2.2.2.2.1 Authorization Process for Projects in SEZs 2-19
39 2.2.2.2.2 Environmental Review for Projects in SEZs 2-19
40 2.2.2.2.3 Incentives for Projects in SEZs 2-23
41 2.2.2.2.4 Proposed Withdrawal for SEZs 2-26
42 2.2.2.2.5 Proposed Identification Protocol for New SEZs 2-28
43 2.2.2.2.6 Ongoing Efforts to Analyze New SEZs 2-30
44 2.2.2.3 Proposed Variance Areas for Utility-Scale Solar Energy
45 Development 2-33
46 2.2.2.3.1 Variance Process 2-33

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

		2.2.2.3.2 Variance Process Determination.....	2-40
		2.2.2.4 Land Use Plans To Be Amended.....	2-40
	2.2.3	Modified SEZ Program Alternative.....	2-41
		2.2.3.1 Proposed Right-of-Way Exclusion Areas.....	2-41
		2.2.3.2 Proposed Solar Energy Zones.....	2-41
		2.2.3.2.1 Solar Energy Zone Policies.....	2-41
		2.2.3.3 Land Use Plans To Be Amended.....	2-42
	2.3	Analysis of BLM’s Modified Action Alternatives	2-42
	2.3.1	Impacts of the Modified Solar Energy Development Program Alternative.....	2-62
		2.3.1.1 Facilitate Near-Term Solar Energy Development (Pace of Development)	2-63
		2.3.1.2 Minimize Environmental Impacts	2-64
		2.3.1.3 Minimize Social and Economic Impacts	2-68
		2.3.1.4 Provide Flexibility to Solar Industry	2-69
		2.3.1.5 Optimize Existing Transmission Infrastructure and Corridors	2-69
		2.3.1.6 Standardize and Streamline the Authorization Process	2-70
		2.3.1.7 Meet Projected Demand for Solar Energy Development	2-70
	2.3.2	Impacts of the Modified SEZ Program Alternative.....	2-70
		2.3.2.1 Facilitate Near-Term Solar Energy Development (Pace of Development)	2-72
		2.3.2.2 Minimize Environmental Impacts	2-72
		2.3.2.3 Minimize Social and Economic Impacts	2-74
		2.3.2.4 Provide Flexibility to Solar Industry	2-74
		2.3.2.5 Optimize Existing Transmission Infrastructure and Corridors.....	2-74
		2.3.2.6 Standardize and Streamline the Authorization Process	2-75
		2.3.2.7 Meet Projected Demand for Solar Energy Development	2-75
	2.3.3	Impacts of the No Action Alternative.....	2-76
	2.3.4	Comparison of Alternatives and Selection of Preferred Alternative	2-76
	2.3.5	Cumulative Impacts	2-80
	2.3.6	Other NEPA Considerations.....	2-81
	2.4	Status of Consultation under Other Laws and Regulations	2-81
	2.4.1	Endangered Species Consultation.....	2-81
	2.4.2	National Historic Preservation Act.....	2-81
	2.4.3	Tribal Consultation	2-82
	3	DOE ALTERNATIVES	3-1
	3.1	No Action Alternative.....	3-1
	3.2	Action Alternative—DOE’s Programmatic Environmental Guidance.....	3-1
	3.2.1	General Mitigation Measures.....	3-1

FIGURES (Cont.)

1

2

3

4 2.3-2 BLM-Administered Lands in California Available for Application for Solar

5 Energy ROW Authorizations under the Modified BLM Alternatives

6 Considered in this Supplement 2-45

7

8 2.3-3 BLM-Administered Lands in Colorado Available for Application for Solar

9 Energy ROW Authorizations under the Modified BLM Alternatives

10 Considered in this Supplement 2-46

11

12 2.3-4 BLM-Administered Lands in Nevada Available for Application for Solar

13 Energy ROW Authorizations under the Modified BLM Alternatives

14 Considered in this Supplement 2-47

15

16 2.3-5 BLM-Administered Lands in New Mexico Available for Application for

17 Solar Energy ROW Authorizations under the Modified BLM Alternatives

18 Considered in this Supplement 2-48

19

20 2.3-6 BLM-Administered Lands in Utah Available for Application for Solar

21 Energy ROW Authorizations under the Modified BLM Alternatives

22 Considered in this Supplement 2-49

23

24

TABLES

25

26

27

28 1.6-1 Projected Megawatts of Solar Power Development by 2030 and

29 Corresponding Developed Acreage Estimates for Reasonably Foreseeable

30 Development Scenario 1-8

31

32 1.7-1 Processing Approach for New and Pending Applications 1-9

33

34 1.7-2 Approved Solar Projects on BLM-Administered Lands as of August 15, 2011 1-13

35

36 2.2-1 Revised Areas for Exclusion under the BLM’s Modified Solar Energy

37 Development Program Alternative 2-16

38

39 2.3-1 Summary of Potentially Developable BLM-Administered Land under the

40 No Action Alternative, the Modified Solar Energy Development Program

41 Alternative, and the Modified SEZ Program Alternative 2-43

42

43 2.3-2 Summary-Level Assessment of Potential Environmental Impacts by Alternative..... 2-51

44

45 2.3-3 Percentage of Available Lands Developed under BLM Modified Action

46 Alternatives Based on Estimated Acres Developed under the RFDS..... 2-71

TABLES (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12

2.3-4	Comparison of the No Action Alternative and the Modified Action Alternatives with Respect to the BLM's Solar Energy Program Objectives	2-77
5-1	Agency Management Team	5-1
5-2	Preparers of the Supplement to the Draft Solar PEIS at Argonne National Laboratory	5-2

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank.

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 _{2.5}	particulate matter with an aerodynamic diameter of 2.5 µm or less
21	PM ₁₀	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

30
31

32 **UNITS OF MEASURE**

33
34
35
36
37
38
39
40
41
42

ft	foot (feet)	m ²	square meter(s)
ft ²	square foot (feet)	mi	mile(s)
		mi ²	square mile(s)
km	kilometer(s)	mm	millimeter(s)
km ²	square kilometer(s)	MW	megawatt(s)
kV	kilovolt(s)	MWh	megawatt-hour(s)
kWh	kilowatt-hour(s)	MVA	megavolt-ampere(s)
m	meter(s)	µm	micrometer(s)

ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

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

Multiply	By	To Obtain
<i>English/Metric Equivalents</i>		
acres	0.004047	square kilometers (km ²)
acre-feet (ac-ft)	1,234	cubic meters (m ³)
cubic feet (ft ³)	0.02832	cubic meters (m ³)
cubic yards (yd ³)	0.7646	cubic meters (m ³)
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 ³)
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 ²)	0.09290	square meters (m ²)
square yards (yd ²)	0.8361	square meters (m ²)
square miles (mi ²)	2.590	square kilometers (km ²)
yards (yd)	0.9144	meters (m)
<i>Metric/English Equivalents</i>		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m ³)	0.00081	acre-feet (ac-ft)
cubic meters (m ³)	35.31	cubic feet (ft ³)
cubic meters (m ³)	1.308	cubic yards (yd ³)
cubic meters (m ³)	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 ²)	247.1	acres
square kilometers (km ²)	0.3861	square miles (mi ²)
square meters (m ²)	10.76	square feet (ft ²)
square meters (m ²)	1.196	square yards (yd ²)

1
2
3
4
5

6

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank.

1 INTRODUCTION

1.1 OVERVIEW

On December 17, 2010, the U.S. Department of the Interior Bureau of Land Management (BLM) and U.S. Department of Energy (DOE) working jointly as lead agencies published a *Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (Solar PEIS [BLM and DOE 2010]). Public comments were accepted through May 2, 2011. More than 80,500 comments were received. The public, as well as many cooperating agencies and key stakeholders, offered suggestions on how the BLM and DOE could increase the utility of the document, strengthen elements of the proposed Solar Energy Program, and increase certainty regarding solar energy development on BLM-administered lands.

The lead agencies have made adjustments to the Solar PEIS to better meet the BLM and DOE's solar energy program objectives. The lead agencies have prepared this targeted Supplement to the Draft Solar PEIS (Supplement) that includes modified and new components of the BLM's proposed Solar Energy Program, DOE's proposed programmatic environmental guidance, and references to relevant portions of the Draft Solar PEIS. The Supplement also updates the environmental effects analysis associated with the BLM's modified action alternatives. Because of its programmatic nature, the Supplement analyzes environmental effects over a broad geographic and time horizon, focusing on major impacts in a qualitative manner (see Section 1.5).

The BLM and DOE have prepared this document in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; the Council on Environmental Quality; the DOE and the U.S. Department of the Interior (DOI) regulations implementing NEPA; and the Federal Land Policy and Management Act (FLPMA) of 1976, as amended.

Through this Supplement, the BLM has modified its preferred alternative to emphasize its commitment to the concept of solar energy zones (SEZs). Efforts have been made to ensure that SEZs are not located in high conflict areas; a protocol for identifying 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 ensure that such efforts could result in the identification of new SEZs. While the BLM's preferred alternative emphasizes the use and creation of SEZs for utility-scale solar energy development, it also includes a proposed process that will accommodate responsible development outside of SEZs.

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

1 Release of this Supplement allows the public an opportunity to evaluate the modified and
2 new components of the proposed program and provide input that will assist the BLM and DOE
3 in their decision-making process. On the basis of input received on the Draft Solar PEIS and this
4 Supplement, the lead agencies will prepare a Final Solar PEIS and Record(s) of Decision (ROD).
5
6

7 **1.2 SUMMARY OF COMMENTS**

8

9 There were several types of commentors on the Draft Solar PEIS representing a wide
10 range of concerns: individual members of the public; federal, state, and local governmental
11 agencies; Tribes; solar companies and solar industry organizations; environmental organizations;
12 utilities; ranchers; water districts; and many other types of organizations.
13

14 The following paragraphs present the most prevalent concerns conveyed in the comments
15 on the Draft Solar PEIS. In instances where this Supplement addresses these concerns, cross
16 references to the associated sections of this Supplement are provided.
17

18 The largest number of comments on the Draft Solar PEIS came from members of
19 environmental organizations (e.g., Defenders of Wildlife, National Resources Defense
20 Council, Sierra Club, The Wilderness Society, and the Wildlife Federation Action Club).
21 These environmental organizations and many individual commentors stated opposition to
22 BLM's preferred solar energy development program alternative (referred to as the "program
23 alternative") and favored a modified solar energy zone program alternative ("SEZ alternative"),
24 under which several of the proposed SEZs would be dropped and the boundaries of others would
25 be revised. Cooperating agencies, as well as state and local governments, also recommended
26 deleting some proposed SEZs, reducing the size of some SEZs, restricting the type of
27 development within some SEZs, and removing some of the lands from the program alternative.
28 See Sections 2.2 and 2.3 of this Supplement for a discussion of the BLM's proposed modified
29 action alternatives and its preferred alternative, and Appendices B and C for discussions of
30 proposed changes to individual SEZs.
31

32 A broad range of commentors (industry, agencies, and environmental organizations)
33 noted the need for an explicit process for identifying new SEZs to meet the projected future level
34 of solar development. The BLM was urged to develop such a process as a part of the Final Solar
35 PEIS. See Section 2.2.2.2.5 and Appendix D of this Supplement for discussion of a proposed
36 new SEZ identification protocol. Some states have already initiated efforts to identify new SEZs,
37 including the Restoration Design Energy Project (RDEP) in Arizona and the Desert Renewable
38 Energy Conservation Plan (DRECP) in California. See Section 2.2.2.2.6 of this Supplement for
39 discussion of ongoing state-level efforts to identify new SEZs.
40

41 In characterizing their concerns with the program alternative, some environmental
42 organizations and agencies identified categories of land that they believe should have been
43 excluded from application for development, for example, citizen-nominated wilderness, lands
44 identified in proposed protective legislation, core habitat, wildlife migration corridors, and areas
45 around National Parks. See Section 2.2.2.1 of this Supplement for information on proposed
46 changes to exclusion areas.

1
2 Many written comments and individual speakers at the public meetings stated a
3 preference for distributed generation and community-based energy solutions over utility-scale
4 projects on public lands that would require long-distance transmission, adversely affect local
5 communities and quality of life, and potentially result in higher future electricity costs for
6 consumers. Concerns were expressed regarding conversion of public lands to a single, industrial-
7 type use that would preclude other uses by the public. These concerns are not further addressed
8 through this Supplement, but the Draft Solar PEIS did address these issues in Section 2.5.1 and
9 Sections 2.5.4 through 2.5.8.

10
11 The primary concern expressed by the solar industry related to the BLM’s commitment to
12 continued processing of existing applications. See Section 1.7 of this Supplement for information
13 on how the BLM will process new and pending applications. Comments from the solar industry
14 also did not support the SEZ alternative. They stated that while the proposed SEZs theoretically
15 contain sufficient acreage to accommodate projected levels of development, the identified SEZs
16 might not be located in the right places for meeting market demand or maximizing transmission
17 opportunities. Identification of a variance process to address proposals for development on lands
18 outside of SEZs was requested. Industry comments also expressed concern that the proposed
19 mitigation requirements for SEZs were too onerous. See Section 2.2.2.2.3 of this Supplement
20 for information on incentives being proposed to make development in SEZs more attractive to
21 industry, including transmission-related activities, and Section 2.2.2.3 for discussion of the
22 proposed variance process for applications outside of SEZs.

23
24 Not all comments received are being addressed through this Supplement; for example,
25 comments were received proposing specific changes to the adaptive management strategy and
26 design features proposed in the Draft Solar PEIS. These comments will be addressed in the Final
27 Solar PEIS, and any appropriate corresponding changes will be made to that document.

28 29 30 **1.3 BLM’S PURPOSE AND NEED**

31
32 As described in the Draft Solar PEIS, the BLM has identified a need to respond in a more
33 efficient and effective manner to the high interest in siting utility-scale solar energy development
34 on public lands and to ensure consistent application of measures to mitigate the adverse impacts
35 of such development. The BLM is therefore considering replacing certain elements of its existing
36 solar energy policies with a comprehensive Solar Energy Program that would allow the
37 permitting of future solar energy development projects to proceed in a more efficient and
38 standardized manner. While the proposed Solar Energy Program will further the BLM’s ability
39 to meet the mandates of Executive Order (E.O.) 13212 (“Actions to Expedite Energy-Related
40 Projects,” *Federal Register*, Volume 66, page 28357, May 22, 2001) and the Energy Policy Act
41 of 2005, it also has been designed to meet the requirements of Secretarial Order 3285A1
42 (Secretary of the Interior 2010) related to identifying and prioritizing specific locations best
43 suited for utility-scale solar energy development on public lands.

44
45 In order to delineate areas best suited for utility-scale solar energy development, through
46 the Draft Solar PEIS the BLM identified and analyzed proposed SEZs to determine their

1 suitability for solar energy development. Based on further data collection, consultation with land
2 and resource managers, and comment analysis, the BLM has eliminated some proposed SEZs
3 from further analysis and refined the boundaries of other SEZs. These changes are reflected in
4 this Supplement and will be carried forward into the Final Solar PEIS. See Section 2.2.2.2 for
5 additional information about proposed changes to SEZs.
6

7 The objectives of BLM's proposed Solar Energy Program remain unchanged and include
8 the following:
9

- 10 • Facilitating near-term utility-scale solar energy development on public lands;
- 11
- 12 • Minimizing potential negative environmental, social, and economic impacts;
- 13
- 14 • Providing flexibility to consider a variety of solar energy projects (location,
15 facility size, technology, and so forth);
- 16
- 17 • Optimizing existing transmission infrastructure and corridors; and
- 18
- 19 • Standardizing and streamlining the authorization process for utility-scale solar
20 energy development on BLM-administered lands.
21

22 The elements of the BLM's proposed Solar Energy Program have been expanded from
23 the Draft Solar PEIS and include the following:
24

- 25 1. Continued processing of pending applications for utility-scale solar energy
26 development;
- 27
- 28 2. Identification of lands to be excluded from utility-scale solar energy
29 development in the six-state study area;
- 30
- 31 3. Identification of priority areas (i.e., SEZs) that are well suited for utility-scale
32 production of solar energy in accordance with the requirements of Secretarial
33 Order 3285A1 and the associated authorization procedures for applications in
34 these areas;
- 35
- 36 4. Establishment of a process to identify new SEZs;
- 37
- 38 5. Establishment of a process that allows for responsible utility-scale solar
39 energy development outside of SEZs (i.e., variance process);
- 40
- 41 6. Establishment of mitigation requirements for solar energy development on
42 public lands to ensure the most environmentally responsible development and
43 delivery of solar energy; and
- 44
- 45 7. Amendment of BLM land use plans in the six-state study area to adopt those
46 elements of the new Solar Energy Program that pertain to planning.

1 **1.4 BLM DECISIONS TO BE MADE**
2

3 On the basis of the analyses presented in the Solar PEIS, the BLM anticipates making the
4 following land use planning decisions that will establish the foundation for a comprehensive
5 Solar Energy Program. Changes in these land use planning decisions in the future will require the
6 BLM to complete land use plan amendments and associated NEPA analyses.
7

- 8 1. Land use plan amendments that identify exclusion areas for utility-scale solar
9 energy development in the six-state study area;
10
11 2. Land use plan amendments that identify areas potentially available for utility-
12 scale solar energy development outside of SEZs in the six-state study area
13 (i.e., variance areas¹);
14
15 3. Land use plan amendments that identify priority areas for solar energy
16 development that are well suited for utility-scale production of solar energy
17 (i.e., SEZs); and
18
19 4. Land use plan amendments that establish design features (i.e., mitigation
20 requirements) for solar energy development on public lands to ensure the most
21 environmentally responsible development and delivery of solar energy (some
22 may be SEZ-specific, as necessary).
23

24 In addition to the planning-level decisions outlined above, the BLM’s Solar Energy
25 Program will include a number of policy components such as the variance process to address
26 right-of-way (ROW) applications for utility-scale solar energy development outside of SEZs and
27 the incentives for projects proposed in SEZs. These components will be part of the ROD for the
28 Solar PEIS; the BLM will issue subsequent Instruction Memoranda to formally establish such
29 policies. The BLM retains the ability to change policies associated with its Solar Energy
30 Program through existing policy-making tools.
31

32 On the basis of the analysis in the Final Solar PEIS, the Secretary of the Interior may also
33 decide to withdraw the public lands encompassed by SEZs from potentially conflicting uses
34 through the issuance of a Public Land Order. The required withdrawal studies and analyses are
35 being completed as part of the Solar PEIS (see Section 2.2.2.2.4 of this Supplement for an
36 update). The Secretary of the Interior’s final decision on the withdrawal of these lands will be
37 made on the basis of the Final Solar PEIS; however, the Secretary’s ROD for any withdrawal
38 decision will likely be made separate from the BLM’s ROD for the land use planning decisions
39 analyzed by the Solar PEIS.
40
41
42

¹ A variance area is an area to be avoided that may be available for a solar energy right-of-way (ROW) with special stipulations or considerations; see the *Land Use Planning Handbook* (BLM 2005).

1 While the Solar PEIS provides analysis of the impacts of constructing, operating, and
2 decommissioning the infrastructure needed to support utility-scale solar energy development,
3 such as roads, transmission lines, and natural gas or water pipelines, the decisions to be made
4 will be applicable only to the siting of utility-scale solar energy generation facilities (Draft Solar
5 PEIS, Section 2.2.2.2). Management decisions for supporting infrastructure would continue to be
6 made in accordance with existing land use plan decisions and current applicable policy. Siting of
7 supporting infrastructure would be analyzed in project-specific environmental reviews.
8
9

10 **1.5 SCOPE OF THE ANALYSIS**

11

12 The scope of this Supplement remains unchanged from the Draft Solar PEIS—it includes
13 analyses of the use of multiple solar energy technologies at utility scale over the next 20 years on
14 lands within six southwestern states: Arizona, California, Colorado, Nevada, New Mexico, and
15 Utah.
16

17 The scope of this Supplement is limited to utility-scale solar development, in part,
18 because the Energy Policy Act of 2005 and Secretarial Order 3285A1 (Secretary of the Interior
19 2010) require that the BLM take steps to facilitate development at that scale. For the purposes of
20 the Solar PEIS and associated decision making, utility-scale solar development is defined as any
21 project capable of generating 20 megawatts (MW) or more. As a result, the BLM’s new Solar
22 Energy Program would apply only to projects of this scale; decisions on projects that are less
23 than 20 MW would continue to be made in accordance with existing land use plan decisions,
24 current applicable policy, and individual site-specific NEPA analyses.
25

26 Several technologies for the utility-scale capture of solar energy are currently in use and
27 are being refined. Viable utility-scale solar technologies considered likely to be deployed over
28 the next 20 years and analyzed as part of the Solar PEIS include parabolic trough, power tower,
29 dish engine systems, and photovoltaic (PV) systems.
30
31

32 **1.5.1 Program Analysis versus SEZ-Specific Analysis**

33

34 NEPA dictates that federal agencies take a “hard look” at the environmental
35 consequences of a proposed action. The requisite environmental analysis performed by an
36 agency must be commensurate with the action in question. In the case of the Solar PEIS, it is
37 important to make a distinction between the Solar Energy Program elements to be decided upon
38 based on the Solar PEIS, and the additional data collection and analysis being completed for
39 SEZs to inform future project decisions in those priority areas.
40

41 As outlined in Section 1.4 above, the BLM expects to make withdrawal- and planning-
42 level decisions through the Solar PEIS, such as land use designations and design features. The
43 program elements adopted via planning-level decisions will provide the basis for future project-
44 specific utility-scale solar energy development decisions. The Solar PEIS appropriately evaluates
45 the potential direct, indirect, and cumulative environmental, social, and economic effects of
46 establishing broad Solar Energy Program elements and strategies across the six-state study area.

1 Because the proposed program involves environmental effects over a broad geographic and time
2 horizon, the depth and detail of the impact analysis are fairly general, focusing on major impacts
3 in a qualitative manner.
4

5 In addition to the programmatic analysis described above, the Solar PEIS also provides
6 in-depth data collection and environmental analysis for proposed SEZs. The primary purpose of
7 this more rigorous analysis is to provide documentation from which the BLM can tier future
8 project authorizations, thereby limiting the required scope and effort of project-specific NEPA
9 analyses. The BLM will complete a site-specific environmental review of all solar energy
10 ROW applications in accordance with NEPA prior to issuing a ROW authorization. All future
11 projects proposed in SEZs will tier to the analysis in the Solar PEIS. The extent of this tiering,
12 however, will vary from project to project, as will the necessary level of NEPA documentation
13 (see Section 2.2.2.2.2 on the SEZ authorization process).
14
15

16 **1.6 STATUS OF REASONABLY FORESEEABLE DEVELOPMENT SCENARIO**

17

18 The reasonably foreseeable development scenario (RFDS) developed for the Draft Solar
19 PEIS to help define the potential magnitude of solar energy development that could occur within
20 the six-state study area over the next 20 years is still considered to be valid to support analyses in
21 this Supplement and the Final Solar PEIS.
22

23 As discussed in the Draft Solar PEIS (Section 2.4), the RFDS was calculated on the basis
24 of the requirements for electricity generation from renewable energy resources established in the
25 Renewable Portfolio Standards (RPSs) in each of the six states. To establish an upper bound, it
26 was assumed that 50% of the RPS-based requirement for renewable energy production would be
27 provided from solar energy and that 75% of the solar development would occur on BLM-
28 administered lands within the specific state.
29

30 Table 1.6-1 presents the RFDS for each state in terms of projected MWs and estimated
31 acres of land required to support that level of development. As shown, the estimated amount of
32 solar energy generation on BLM-administered lands in the study area over the 20-year study
33 period is about 24,000 MW, with a corresponding dedicated use of about 214,000 acres
34 (866 km²) of BLM-administered lands.
35

36 A number of comments on the Draft Solar PEIS pointed out that the RFDS calculations
37 do not account for the import and export of solar-generated electricity between states and, as a
38 result, the calculations could underestimate potential development in a given state. Specifically,
39 it was pointed out that renewable energy generated in Arizona, Nevada, and even Utah might be
40 exported to California as utilities try to meet the RPS established in that state. In such cases, the
41 total level of development in these states would be greater than that projected by the RFDS.
42 While these are valid considerations, the conditions assumed in the RFDS (i.e., that 50% of the
43 renewable energy development would be from solar and that 75% of it would occur on BLM-
44 administered lands) provide an upper bound on the potential solar development both within a
45 state and on BLM-administered lands that might accommodate additional development for
46 exported electricity.
47

1
2
3
4

TABLE 1.6-1 Projected Megawatts of Solar Power Development by 2030 and Corresponding Developed Acreage Estimates for Reasonably Foreseeable Development Scenario^a

State	Landholding	Estimated MWs under RFDS	Estimated Acres under RFDS ^b
Arizona	BLM	2,424	21,816
	Non-BLM	808	7,272
California	BLM	15,421	138,789
	Non-BLM	5,140	46,260
Colorado	BLM	2,194	19,746
	Non-BLM	731	6,579
Nevada	BLM	1,701	15,309
	Non-BLM	567	5,103
New Mexico	BLM	833	7,497
	Non-BLM	278	2,502
Utah	BLM	1,219	10,971
	Non-BLM	406	3,654
Total	BLM	23,791	214,119
	Non-BLM	7,930	71,370

^a See Appendix E of the Draft Solar PEIS for details on the methodologies used to calculate the RFDS.

^b Acreage calculated assuming land use of 9 acres/MW. To convert acres to km², multiply by 0.004047.

5
6
7
8
9
10
11
12
13
14
15
16
17
18

Table 2.3-1 in this Supplement compares the amount of land needed to support the RFDS projects to the amount of land that would be made available for solar development in each state under the BLM’s modified action alternatives. Because the SEZs proposed under the modified alternatives may not make enough land available to meet the RFDS requirements in some states (e.g., Arizona, California, and Colorado), the BLM has initiated efforts to identify new SEZs through ongoing state-based efforts (see Section 2.2.2.2.6 of this Supplement for more information). The BLM also anticipates that it will identify additional SEZs in other states in the near future using the protocol for identifying new SEZs presented in Appendix D of this Supplement. There is also the opportunity to develop projects outside of SEZs in variance areas in accordance with the variance process described in this Supplement (see Section 2.2.2.3.1).

1 **1.7 DEFINITION AND PROCESSING APPROACH FOR NEW, PENDING, AND**
 2 **APPROVED SOLAR APPLICATIONS**

3
 4 Many individuals and organizations commenting on the Draft Solar PEIS wanted to know
 5 more about how the BLM intends to deal with solar applications filed before the Solar PEIS
 6 ROD. This section responds to those concerns by describing how the BLM will process
 7 individual applications. The BLM intends to continue to process all pending applications that
 8 meet due diligence and siting requirements under BLM’s current policies. All new applications
 9 will be subject to the ROD for the Solar PEIS. The approach that the BLM will use for
 10 processing new and pending applications is summarized in Table 1.7-1.
 11

12
 13 **1.7.1 New Applications**

14
 15 The BLM will define “new” applications as those applications filed within proposed
 16 SEZs² after June 30, 2009, and any application filed after the publication of this Supplement to
 17 the Draft Solar PEIS. The BLM will continue to accept applications both inside and outside of
 18 proposed SEZs after publication of this Supplement. All new applications will be subject to the
 19 decisions in the ROD and associated land use plan amendments, including a competitive process
 20 for projects in SEZs (see Section 2.2.2.2.1) and the variance process for projects proposed in
 21 variance areas (see Section 2.2.2.3).
 22
 23

24 **TABLE 1.7-1 Processing Approach for New and Pending Applications**

Application Location	Filing Date	Type	Processing Approach
Inside proposed SEZs	Before June 30, 2009	Pending	Continued processing under existing policies
	After June 30, 2009	New	Subject to Solar PEIS ROD including competitive process
Outside proposed SEZs	Before publication of Supplement	Pending	Continued processing under existing policies
	After publication of Supplement	New	Subject to Solar PEIS ROD including variance process

25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532
 533
 534
 535
 536
 537
 538
 539
 540
 541
 542
 543
 544
 545
 546
 547
 548
 549
 550
 551
 552
 553
 554
 555
 556
 557
 558
 559
 560
 561
 562
 563
 564
 565
 566
 567
 568
 569
 570
 571
 572
 573
 574
 575
 576
 577
 578
 579
 580
 581
 582
 583
 584
 585
 586
 587
 588
 589
 590
 591
 592
 593
 594
 595
 596
 597
 598
 599
 600
 601
 602
 603
 604
 605
 606
 607
 608
 609
 610
 611
 612
 613
 614
 615
 616
 617
 618
 619
 620
 621
 622
 623
 624
 625
 626
 627
 628
 629
 630
 631
 632
 633
 634
 635
 636
 637
 638
 639
 640
 641
 642
 643
 644
 645
 646
 647
 648
 649
 650
 651
 652
 653
 654
 655
 656
 657
 658
 659
 660
 661
 662
 663
 664
 665
 666
 667
 668
 669
 670
 671
 672
 673
 674
 675
 676
 677
 678
 679
 680
 681
 682
 683
 684
 685
 686
 687
 688
 689
 690
 691
 692
 693
 694
 695
 696
 697
 698
 699
 700
 701
 702
 703
 704
 705
 706
 707
 708
 709
 710
 711
 712
 713
 714
 715
 716
 717
 718
 719
 720
 721
 722
 723
 724
 725
 726
 727
 728
 729
 730
 731
 732
 733
 734
 735
 736
 737
 738
 739
 740
 741
 742
 743
 744
 745
 746
 747
 748
 749
 750
 751
 752
 753
 754
 755
 756
 757
 758
 759
 760
 761
 762
 763
 764
 765
 766
 767
 768
 769
 770
 771
 772
 773
 774
 775
 776
 777
 778
 779
 780
 781
 782
 783
 784
 785
 786
 787
 788
 789
 790
 791
 792
 793
 794
 795
 796
 797
 798
 799
 800
 801
 802
 803
 804
 805
 806
 807
 808
 809
 810
 811
 812
 813
 814
 815
 816
 817
 818
 819
 820
 821
 822
 823
 824
 825
 826
 827
 828
 829
 830
 831
 832
 833
 834
 835
 836
 837
 838
 839
 840
 841
 842
 843
 844
 845
 846
 847
 848
 849
 850
 851
 852
 853
 854
 855
 856
 857
 858
 859
 860
 861
 862
 863
 864
 865
 866
 867
 868
 869
 870
 871
 872
 873
 874
 875
 876
 877
 878
 879
 880
 881
 882
 883
 884
 885
 886
 887
 888
 889
 890
 891
 892
 893
 894
 895
 896
 897
 898
 899
 900
 901
 902
 903
 904
 905
 906
 907
 908
 909
 910
 911
 912
 913
 914
 915
 916
 917
 918
 919
 920
 921
 922
 923
 924
 925
 926
 927
 928
 929
 930
 931
 932
 933
 934
 935
 936
 937
 938
 939
 940
 941
 942
 943
 944
 945
 946
 947
 948
 949
 950
 951
 952
 953
 954
 955
 956
 957
 958
 959
 960
 961
 962
 963
 964
 965
 966
 967
 968
 969
 970
 971
 972
 973
 974
 975
 976
 977
 978
 979
 980
 981
 982
 983
 984
 985
 986
 987
 988
 989
 990
 991
 992
 993
 994
 995
 996
 997
 998
 999
 1000

1 1.7.2 Pending Applications

2
3 The BLM will define “pending” applications as all applications on file with the BLM
4 before publication of this Supplement, including applications for lands within proposed SEZs
5 filed before June 30, 2009.
6

7 In an effort to facilitate environmentally responsible solar energy development, the BLM
8 will continue to process appropriately sited projects that have been put forward by qualified,
9 diligent applicants. The BLM will process pending solar applications consistent with its existing
10 regulations and policies (e.g., IM 2011-060 [BLM 2011a] and IM 2011-061 [BLM 2011b]), and
11 with current interagency coordination practices with DOI agencies, such as the U.S. Fish and
12 Wildlife Service (USFWS) and National Park Service (NPS). These applications will be treated
13 as project-specific undertakings under Section 106 of the National Historical Preservation Act
14 (NHPA) and the BLM’s National Programmatic Agreement (PA).
15

16 The BLM has determined that, in appropriate circumstances, it can rely on the broad
17 discretion it has under FLPMA to deny ROW applications prior to completing the NEPA process
18 if such applications do not meet due diligence requirements and/or environmental criteria. Such
19 decisions must be made with regard for the public interest and be supported by reasoned analysis
20 and an adequate administrative record. Decisions to deny pending applications must be assessed
21 on a case-by-case basis. BLM’s denial of an application constitutes a “final agency action” and is
22 therefore subject to administrative appeal to the Interior Board of Land Appeals (IBLA).
23

24 The BLM may decide to deny pending solar applications before completion of the Solar
25 PEIS ROD if the BLM has a supportable, rational basis. The following guidelines will be used to
26 inform the BLM’s processing of pending applications:
27

- 28 • Pending applications on the DOI’s “high priority” list shall continue to be
29 given priority processing as long as the applicant continues to meet the due
30 diligence provisions in IM 2011-060 (BLM 2011a).
31
- 32 • Pending applications that meet the criteria for “High Potential for Conflict”
33 described in IM 2011-061 (BLM 2011b) are likely candidates for denial. High
34 Potential for Conflict describes more complex projects that will require a
35 greater level of consultation, analysis, and mitigation to resolve issues or that
36 may not be feasible to authorize, including:
 - 37 – Lands near or adjacent to lands designated by Congress, the President, or
38 the Secretary for the protection of sensitive viewsheds, resources, and
39 values (e.g., units of the National Park System, Fish and Wildlife Service
40 Refuge System, specially designated units of the National Forest System,
41 and the BLM National Landscape Conservation System³), which may be
42 adversely affected by development;

³ National Historic and Scenic Trails are part of the BLM National Landscape Conservation System but, due to their linear nature, were described in IM 2011-061 as areas of “Medium Potential for Conflict.”

- 1 – Lands adjacent to Wild, Scenic, and Recreational Rivers and river
2 segments determined eligible or suitable for Wild or Scenic River status,
3 if project development may have significant adverse effects on sensitive
4 viewsheds, resources, and values;
5 – Designated critical habitat for federally threatened and endangered species
6 if project development is likely to result in the destruction or adverse
7 modification of that critical habitat;
8 – Lands currently designated as Visual Resource Management (VRM)
9 Class I or Class II in BLM land use plans;
10 – ROW exclusion areas identified in BLM land use plans; and
11 – Lands currently designated as no surface occupancy in BLM land use
12 plans.
13
14 • Pending applications on lands proposed as exclusion areas for utility-scale
15 solar energy development in the Final Solar PEIS are likely candidates for
16 denial. Upon issuance of the Solar PEIS ROD, the BLM may deny pending
17 applications to the extent such applications overlap with exclusion areas
18 identified in the ROD for the protection of ecological, cultural, visual, or other
19 specified resource values.
20
21 • Pending applications shall be processed in accordance with the due diligence
22 provisions in IM 2011-060:
23 – Applications shall be denied if the applicant cannot demonstrate financial
24 and technical capability, for example,
25 ▪ International or domestic experience with solar projects on federal or
26 nonfederal lands;
27 ▪ Sufficient capitalization to carry out development;
28 ▪ Conditional commitments of DOE loan guarantees;
29 ▪ Confirmed Power Purchase Agreements (PPAs);
30 ▪ Engineering, procurement and construction contracts; and
31 ▪ Supply contracts with credible third-party vendors for the manufacture
32 and/or supply of key components for solar project facilities.
33 – Applications shall be denied if the applicant cannot meet Plan of
34 Development (POD) due diligence requirements:
35 ▪ The POD must be of sufficient detail to provide the basic information
36 necessary to begin the environmental analysis and review process; and
37 ▪ Time lines established in IM 2011-060 will apply.
38
39 • Pending applications that meet due diligence requirements and have medium
40 or low resource conflicts will be evaluated by the BLM in coordination with
41 other DOI agencies. These evaluations will assist the BLM in identifying
42 issues and developing appropriate strategies to resolve such issues
43 (e.g., alternatives, mitigation, and so forth) and will occur before the BLM
44 initiates the NEPA process.
45

1 The BLM, in coordination with other DOI agencies, will continue to identify priority
2 projects. The BLM will apply the due diligence and screening criteria requirements of
3 IM 2011-060 and IM 2011-061 to determine priority projects. Designation as a “priority project”
4 means that the BLM and applicable partner agencies have agreed to prioritize processing and
5 review of the application. Priority projects are subject to all regulatory and statutory
6 requirements, including full NEPA review.
7

8 The efforts described above are expected to result in additional approvals and denials
9 over the next several months.
10

11 As of August 15, 2011, there were 79 pending first-in-line solar applications: 31 in
12 Arizona, 20 in California, 25 in Nevada, and 3 in New Mexico. A detailed list is included in
13 Appendix A of this Supplement.
14

15 **1.7.3 Approved Applications**

16
17
18 The ROD for the Solar PEIS will recognize all previously approved solar projects. As of
19 August 15, 2011, the BLM had approved 10 utility-scale solar projects on public land and the
20 associated linear ROWs to enable the development of 2 projects on private land. Each approval
21 was based on a site-specific EIS and announced through a *Federal Register* Notice and press
22 release accompanied by a project fact sheet and map. These documents are available at
23 http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/priority_projects.html. A summary
24 of the approved public land applications is provided in Table 1.7-2. Three of the approved public
25 land projects in California will require additional case processing and environmental review to
26 consider post-authorization requests to change technology.
27

28 Seven of the approved public land projects are located in the California Desert District
29 planning boundary of the California Desert Conservation Area (CDCA) Plan, the applicable
30 Resource Management Plan (RMP) for these project sites and the surrounding areas. The CDCA
31 Plan requires that all sites associated with power generation or transmission not already
32 identified in that Plan be considered through the BLM’s land use plan amendment process. As a
33 result, prior to approval of these seven projects, the BLM had to specifically amend the CDCA
34 Plan to allow each solar project. The approved amendments revise the plan to allow for utility-
35 scale solar energy development on the specified tracts of land. The BLM intends to again amend
36 the CDCA Plan in the ROD for the Solar PEIS to designate SEZs as additional areas appropriate
37 for solar energy generation and related transmission. This will help streamline future project
38 approvals in SEZs in the CDCA planning area. Projects within the CDCA planning area that are
39 subject to the variance process (see Section 2.2.2.3) would still require a plan amendment until
40 further amended by a subsequent planning process (e.g., the DRECP; see Section 2.2.2.2.6).
41
42
43

1 **TABLE 1.7-2 Approved Solar Projects on BLM-Administered Lands as of August 15, 2011**

Serial Number	Customer Name (Project Name)	Application Filed	Total BLM Acres ^a	MW	Technology	BLM Field Office
CACA 048649	FIRST SOLAR (Desert Sunlight)	November 7, 2006	4,100	550	PV	Palm Springs– South Coast
CACA 047740	TESSERA SOLAR (Imperial Valley Solar) ^b	January 6, 2005	6,459	709	Dish engine	El Centro
CACA 048668	BRIGHT SOURCE (Ivanpah SEGS) ^c	November 17, 2006	3,501	370	Concentrating solar power (CSP)/tower	Needles
CACA 048811	SOLAR MILLENNIUM/ CHEVRON (Blythe) ^d	February 15, 2007	7,025	1,000	CSP/trough	Palm Springs– South Coast
CACA 048880	NextEra BOULEVARD ASSOCIATES LLC (Genesis)	January 31, 2007	1,950	250	CSP/trough	Palm Springs– South Coast
CACA 049537	TESSERA SOLAR (Calico Solar) ^e	March 14, 2007	4,604	664	Dish engine	Barstow
CACA 049561	CHEVRON ENERGY SOLUTIONS CO (Lucerne Valley)	December 7, 2007	422	45	PV	Barstow
NVN 084359	SOLAR MILLENNIUM (Amargosa Farm Road)	November 11, 2007	4,350	484	CSP/trough	Pahrump
NVN 085077	FIRST SOLAR (Silver State North)	March 21, 2008	618	50	PV	Las Vegas
NVN 086292	SOLAR RESERVE (Crescent Dunes)	November 5, 2008	2,250	110	CSP/tower	Tonopah
Total	10 projects		35,279	4,232		

^a To convert acres to km², multiply by 0.004047.

^b Acquired by AES Solar; proposed technology change to PV.

^c Includes CACA 049502, 049503, and 049504.

^d Proposed technology change for first phase to PV.

^e Acquired by K Road Solar; proposed technology change to partial PV.

2

1 **1.8 ONGOING RULEMAKING**

2
3
4 **1.8.1 Segregation Rule**

5
6 On April 26, 2011, the BLM published an Interim Temporary Final Rulemaking (ITFR)
7 and a Proposed Rule containing the same language as in the *Federal Register*. The rule is found
8 in added Sections 2091.3-1(e) and 2804.25(e) in Title 43 of the *Code of Federal Regulations*
9 (43 CFR 2091.3-1(e) and 2804.25(e)), which comprise regulations for segregations in general
10 and ROW protection through segregations, respectively. The new segregation rule is intended to
11 promote the orderly administration of public lands. The ITFR allows an authorized officer to
12 close (segregate) public lands from operation of the public land laws. This includes the mining
13 law, but not the mineral leasing or materials sale acts, for a period of up to two years. This
14 segregation may not be extended under the ITFR. By protection of such lands, a solar or wind
15 energy ROW applicant has assurances that the application will not be subject to adverse
16 activities caused by either the filing of mining claims or impacts from other proposed land uses.
17 The BLM is currently analyzing comments received as part of the final rulemaking process.
18

19
20 **1.8.2 Competitive Process**

21
22 As part of this Supplement, the BLM is confirming its intentions to offer lands in SEZs
23 through a competitive process. Comments received on the Draft Solar PEIS expressed concern
24 over how the BLM would implement a new competitive process, and commentors specifically
25 requested that the BLM develop regulations to define a competitive process that would provide
26 opportunity for public comment and input. In response, the BLM has decided to undertake
27 rulemaking to establish a competitive process for offering public lands for solar as well as wind
28 energy development. When established, the rule would supersede some of the authorization
29 policies identified in this Supplement (see Section 2.2.1.1).
30

31 Rulemaking will involve publication of an Advanced Notice of Proposed Rulemaking,
32 a Proposed Rule, and a Final Rule and could take up to two years to complete. The BLM is
33 planning to publish an Advanced Notice of Proposed Rulemaking in October 2011 to accompany
34 the release of this Supplement; the BLM intends to have a Proposed Rule available for public
35 comment prior to the release of the Solar PEIS ROD (targeting late spring 2012).
36

37 Section 501 of FLPMA authorizes the Secretary of the Interior, with respect to public
38 lands, to grant, issue, or renew ROWs over, upon, under, or through such lands for systems
39 for the generation, transmission, and distribution of electric energy (*United States Code*,
40 Title 43, Section 1761(4) [43 USC 1761(4)]). This authority includes the issuance of ROW
41 lease authorizations for solar energy generation systems. The existing ROW regulations
42 (43 CFR 2804.23(c)) currently provide authority for identifying public lands under competitive
43 bidding procedures, but limit the competitive process to responding to ROW applications. The
44 BLM may use competitive procedures under existing regulations to screen or select applications
45 for lands outside SEZs, where appropriate. The purpose of a competitive process under existing
46 regulations is to determine which application would be processed. Through rulemaking, the

1 BLM could provide broader authority and a different competitive process for making lands
2 available for solar energy development within SEZs.

3
4 The proposed rule could include the following provisions for a competitive process for
5 lands within SEZs:

- 6
7 • **Call for nominations.** A call for nominations could be published in the
8 *Federal Register* to solicit expressions of interest for parcels of land within
9 individual SEZs. A nomination of a specific parcel would require payment of
10 a nomination fee to be determined by the regulations. (Section 504 of FLPMA
11 provides authority to the BLM to establish reasonable filing fees.)
12
- 13 • **Review of nominations.** The BLM would review the nominations to
14 determine parcels of land to offer in individual SEZs. The BLM would
15 complete the work necessary to prepare the selected parcels for the
16 competitive offer.
17
- 18 • **Notice of competitive offer.** A Notice would be published at least 30 days
19 prior to the competitive offer. The Notice would include a legal description of
20 the lands involved, the process for conducting the competitive offer, a
21 minimum bid requirement, and the due diligence requirements for the
22 successful bidder to submit a POD for the lands involved in the competitive
23 offer.
24
- 25 • **Bonus bid competitive process or other competitive procedures.** A variety
26 of competitive bid procedures could be defined by the new regulations. These
27 other competitive procedures could include sealed bids, oral auctions or
28 continuous bidding, two-stage bidding, or multiple factor bidding methods.
29 Bonus bids would be handled as Treasury receipts. The accepted bonus bid
30 would be nonrefundable.
31
- 32 • **Issuance of competitive ROW lease authorization.** A ROW lease
33 authorization (lease) could be issued to the successful bidder. The lease would
34 be a 30-year, fixed-term lease with a fixed rental fee. The holder of the lease
35 would be required to submit a POD and cost-recovery fees within the time
36 frames specified in the lease.
37
- 38 • **Administration of competitive ROW leases.** The leaseholder would submit
39 a POD for authorization prior to the start of any construction. A NEPA review
40 would be required prior to approval of the POD. The BLM would include a
41 requirement in each competitive solar ROW lease that the holder begin
42 construction within the time frames approved in the POD and comply with
43 terms and conditions requiring the holder to maintain all facilities in
44 accordance with the design standards in the approved POD. The BLM would
45 require that a minimum performance bond be provided for all competitive
46 solar ROW leases to ensure compliance with the provisions of the regulations
47 and the terms and conditions of the lease.

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

2 BLM ALTERNATIVES

The alternatives being analyzed through this Supplement include the no action alternative, which would continue the BLM’s existing policies, and two action alternatives, each of which would have the BLM establish a comprehensive Solar Energy Program to facilitate utility-scale solar energy development on BLM lands. On the basis of further data collection, consultation with cooperating agencies and resource managers, and analysis of comments submitted on the Draft Solar PEIS, modifications have been made to the BLM’s action alternatives. Those changes are described and analyzed as part of this Supplement.

The BLM may choose to adopt one of the alternatives or a combination of alternatives from this Supplement; selected alternatives may also vary by geographic region. The BLM’s final decisions regarding its Solar Energy Program will be informed by public comment and ongoing consultations.

2.1 NO ACTION ALTERNATIVE

The no action alternative remains unchanged from the Draft Solar PEIS (see Section 2.2.1 of the Draft). The no action alternative continues the issuance of ROW authorizations for utility-scale solar energy development on BLM-administered lands by implementing the requirements of the BLM’s existing solar energy policies on a project-by-project basis. Lands available for solar energy development would include those areas currently allowable under existing applicable laws and statutes (approximately 98 million acres [396,600 km²] in the six-state study area) and in conformance with the approved land use plan(s).

2.2 MODIFIED BLM ACTION ALTERNATIVES

2.2.1 Program Components Common to All Action Alternatives

Under the BLM’s proposed Solar Energy Program, both action alternatives would include comprehensive ROW authorization policies, requirements for adaptive management and monitoring, and implementation of specific design features that would mitigate known adverse effects of solar energy development. These elements of the proposed program are described in detail in the following subsections.

2.2.1.1 Right-of-Way Authorization Policies

This section includes a comprehensive update to Section A.2.1.2.4 in Appendix A of the Draft Solar PEIS. Changes in BLM’s proposed ROW authorization policies have been made to reflect comments received on the Draft Solar PEIS as well as to ensure consistency with BLM

1 Instruction Memoranda in existence or released after the publication of the Draft Solar PEIS.
2 Note the BLM has decided to undertake rulemaking to establish a competitive process for
3 offering public lands for solar as well as wind energy development. When established, the rule
4 may supersede some of the authorization policies identified in this Supplement (see Section 1.8.2
5 of this Supplement for more information). The revised comprehensive list of authorization
6 policies is as follows:

- 7
8 • **ROW Authorizations.** Applications for utility-scale solar energy facilities will
9 be authorized ROWs under Title V of FLPMA and 43 CFR Part 2800.
10 Applications submitted to the BLM for utility-scale solar energy development
11 will use Form SF-299, Application for Transportation and Utility Systems and
12 Facilities on Federal Land (available at [https://www.blm.gov/FormsCentral/
13 show-form.do?nodeId=1011](https://www.blm.gov/FormsCentral/show-form.do?nodeId=1011)), consistent with the requirements of
14 43 CFR Part 2804.

15
16 The Secretary of the Interior, with respect to public lands, is authorized to
17 grant, issue, or renew ROWs over, upon, under, or through such lands for
18 systems for generation, transmission, and distribution of electric energy
19 (43 USC 1761(a)(4)). The term “ROW” as defined by FLPMA includes an
20 easement, lease, permit, or license to occupy, use, or traverse public lands
21 (43 USC 1702(f)). The BLM has prepared a template ROW lease/grant that
22 would be used to authorize utility-scale solar energy development projects
23 (see http://www.blm.gov/wo/st/en/prog/energy/solar_energy.html).
24 Authorizations will include the solar collectors, tower, turbine generator,
25 fossil-fired generator for hybrid systems, thermal storage, access roads,
26 electrical and transmission facilities, and other testing and support facilities.

- 27
28 • **Competing Applications.** If the BLM determines that competition exists,
29 BLM has the regulatory authority to use competitive bid procedures (43 CFR
30 2804.23). Multiple applications for the same lands can provide an indication
31 of the need to consider a competitive process. The purpose of a competitive
32 process under existing regulations is to determine which application would be
33 processed.
- 34
35 • **Term of ROW.** In accordance with Title V of FLPMA and the BLM’s ROW
36 regulations, the term or length of a solar energy ROW authorization is limited
37 to a reasonable term (43 USC 1764(b); 43 CFR 2805.11(b)). The BLM will
38 issue all solar energy ROW authorizations for a term not to exceed 30 years;
39 shorter terms may be justified in some cases. Thirty years provides a
40 reasonable period consistent with the expected needs of a solar energy facility;
41 it also provides for operation periods that are consistent with typical PPAs.
42 The BLM will also include in each solar energy ROW authorization a specific
43 provision allowing for renewal, consistent with the regulations at 43 CFR
44 2807.22.

- 1 • **Renewal of ROW.** An application for renewal must be submitted at least
2 120 days prior to the expiration of the existing authorization. The BLM
3 authorized officer will review the application for renewal to ensure the holder
4 is complying with the terms, conditions, and stipulations of the existing
5 authorization instrument and applicable laws and regulations. If renewed, the
6 ROW authorization shall be subject to the regulations existing at the time of
7 renewal and any other terms and conditions that the authorized officer deems
8 necessary to protect the public interest.
9
- 10 • **Cost-Recovery Payments.** Applicants must submit a complete and acceptable
11 application and provide a cost-recovery payment before the BLM will initiate
12 processing of a ROW application for utility-scale solar energy development. It
13 is anticipated that most ROW applications for solar energy development will
14 be Category 6, full cost-recovery applications.
15
- 16 • **Valid Existing Rights.** All solar energy ROW authorizations will be issued
17 subject to valid existing rights.
18
- 19 • **Rental Fees.** In accordance with the requirements of Section 504(g) of
20 FLPMA and the provisions of 43 CFR Part 2806, the BLM will require
21 payment of annual rent for use of the public lands for utility-scale solar energy
22 development on the basis of a rental schedule. FLPMA does not provide
23 existing or current authorities for the collection of royalties. The BLM will
24 calculate rents on all solar energy ROW authorizations consistent with the
25 provisions of 43 CFR Part 2806. Some holders or facilities may be exempt
26 from rent pursuant to the Rural Electrification Act of 1936 (REA), as
27 amended (43 CFR 2806.14(d)). Electric facilities that are financed or are
28 eligible for REA financing, qualify for a rent exemption under the provisions
29 of the Act.
30

31 The holder of a solar energy ROW authorization must pay an annual rent in
32 conformance with the regulations (43 CFR 2806.10(a)). Consistent with
33 43 CFR 2806.50, the BLM has developed a schedule to calculate rental fees
34 for solar energy ROW authorizations. This rental schedule includes a base rent
35 for the acreage of public land included within the solar energy ROW
36 authorization and an additional MW capacity fee based on the total authorized
37 MW capacity for the approved solar energy project on the public land
38 administrated by the BLM. The details of BLM's rental policy can be found in
39 Instruction Memorandum No. 2010-141, issued June 10, 2010 (BLM 2010)
40 (see Appendix A.1 in the Draft Solar PEIS).

41
42 The BLM may adjust the rental whenever necessary, to reflect changes in fair
43 market value as determined by the application of sound business management
44 principles, and so far as practicable and feasible, in accordance with
45 comparable commercial practices. The rental provisions of the authorization

1 may also be modified consistent with the provisions of any regulatory changes
2 or pursuant to the provisions of new or revised statutory authorities.
3

- 4 • ***Due Diligence—Applicant Qualifications.*** The ROW regulations
5 (43 CFR 2804.12(a)(5)) require all solar energy applications to include
6 information on the financial and technical capability of the applicant to
7 construct, operate, maintain and decommission the project. In addition, the
8 BLM will include provisions requiring diligent development in each solar
9 energy ROW authorization. The regulations (43 CFR 2804.26(a)(5)) provide
10 authority to the BLM to deny any application where the applicant cannot
11 demonstrate the technical or financial capability to construct the project or
12 operate the facilities within the ROW.
13

14 The ROW regulations set forth the qualifications that an individual, business
15 or government entity must possess in order to hold a ROW authorization,
16 including the requirement that the potential grantee be technically and
17 financially able to construct, operate, maintain, and terminate the use of
18 the public lands covered by the authorization (43 CFR 2803.10(b) and
19 2804.12(a)(5)). In carrying out its obligation to limit ROW authorizations to
20 qualified individuals or entities and to prevent such individuals or entities
21 from holding ROW authorizations merely for purposes of speculating,
22 controlling, or hindering development on the public lands, the BLM will focus
23 on ensuring that the applicant meets the qualification requirements in the
24 regulations.
25

26 In ensuring that an applicant meets the regulatory requirement to demonstrate
27 its technical and financial capability to construct, operate, maintain, and
28 terminate the proposed solar energy facility (43 CFR 2803.10(b) and
29 43 CFR 2804.12(a)(5)), the BLM will consider a variety of factors, including
30 the following. (1) Applicant qualifications can be demonstrated by
31 international or domestic experience with solar or wind energy projects on
32 either federal or nonfederal lands. (2) The applicant should provide
33 information on the availability of sufficient capitalization to carry out
34 development, including the preliminary study phase of the project and the
35 environmental review and clearance process. (3) Applicants in bankruptcy or
36 with other financial difficulties would generally present financial risk and
37 should be required to provide additional information regarding financial
38 capability. Failure to provide such additional information can be the basis for
39 the BLM authorized officer to deny the application pursuant to the regulations
40 (43 CFR 2804.26(a)(5)). Further evidence of financial and technical capability
41 can include conditional commitments of DOE loan guarantees; confirmed
42 PPAs; engineering, procurement and construction (EPC) contracts; and supply
43 contracts with credible third-party vendors for the manufacture and/or supply
44 of key components for the solar energy project facilities.
45

1 During the assessment of technical and financial capability, the BLM
2 authorized officer should also inform applicants that such requirements are
3 continuous during the application process, and the BLM may periodically
4 seek confirmation of these requirements. The BLM authorized officer should
5 additionally inform applicants that such technical and financial capability will
6 become a condition of any ROW authorization, and failure to sustain technical
7 and financial capability for the development of an approved project could be
8 grounds for termination of the authorization.
9

- 10 • ***Due Diligence—Plan of Development (POD)***. The BLM requires that a POD
11 be submitted for all solar energy development ROW applications, consistent
12 with the provisions of 43 CFR 2804.25(b). The BLM will not accept a POD
13 that is simply a conceptual plan. The POD must be of sufficient detail to
14 provide the basic information necessary to begin the environmental analysis
15 and review process for a proposed solar or wind energy project on the public
16 lands. It is critically important that due diligence be demonstrated by the
17 applicant in the timely submittal of an acceptable POD to ensure that the BLM
18 processes those applications that are most likely to result in appropriate
19 renewable energy development on the public lands.
20

21 The BLM authorized officer initiates the due diligence process by requesting,
22 in writing, submittal of a complete POD to the BLM for review. The applicant
23 will be requested to provide the POD within 90 days. If the applicant does not
24 respond within 90 days, or if the applicant has responded and the information
25 is not sufficient, the BLM authorized officer will send a second written
26 request with a 60-day response. A final 30-day show cause letter will be
27 provided to the applicant prior to issuing any decision to deny the application
28 for failure to respond pursuant to the regulations (43 CFR 2804.26(a)(6)).
29

30 The BLM may also deny an application if the applicant does not provide in
31 a timely manner additional information requested by the BLM authorized
32 officer to process an application (43 CFR 2804.26(a)(6)) or the processing
33 fees required by 43 CFR 2804.14.
34

- 35 • ***Notification to Livestock Grazing Operators***. Upon acceptance of a POD
36 that is likely to adversely affect a current livestock grazing operation, the
37 BLM authorized officer will send a certified letter to the permittee/lessee
38 to serve as the 2-year notification of the BLM's potential decision to
39 cancel the permit/lease, in whole or in part, and devote the public lands
40 to a public purpose that may preclude livestock grazing, as required by
41 43 CFR 4110.4-2(b). The intent of the 2-year notification is to provide the
42 grazing permittee/lessee time to make any necessary financial, business, or
43 management adjustments should the permit/lease be cancelled (in whole or in
44 part). The letter will also inform the permittee/lessee of his/her ability to
45 unconditionally waive the 2-year prior notification.
46

1 Upon issuance of a ROW authorization that precludes livestock grazing, the
2 BLM authorized officer will issue a separate proposed grazing decision to
3 the grazing permittee/lessee that includes a copy of the ROW authorization.
4 The proposed grazing decision will (1) state that the effective date of the
5 permit/lease cancellation, and issuance of any new permit/lease for any
6 remaining permitted use, will be 2 years from the permittee's/lessee's receipt
7 of the certified letter sent by the BLM authorized officer to the permittee/
8 lessee as described in the preceding paragraph; (2) address compensation for
9 range improvements (43 CFR 4110.4-2); and (3) address grazing management
10 changes for the new permit/lease, as well as interim grazing adjustments as
11 appropriate. The BLM will send the proposed grazing decision to the affected
12 ROW applicant, grazing permittees/lessees, and any agent and lienholder of
13 record who are affected by the proposed action, terms and conditions, or
14 modifications relating to applications, permits, and agreements by certified
15 mail or personal delivery. Copies of proposed decisions shall also be sent to
16 the interested public (see 43 CFR 4160.1). The proposed grazing decision will
17 become final unless protested.
18

- 19 • **Performance and Reclamation Bond.** Title V of FLPMA and the ROW
20 regulations authorize the BLM to require a ROW holder to provide a bond
21 to secure the obligations imposed by the ROW authorization (43 USC 1764(i)
22 and 43 CFR 2805.12(g)). The BLM will require a Performance and
23 Reclamation bond for all solar energy projects to ensure compliance with the
24 terms and conditions of the ROW authorization.
25

26 Acceptable bond instruments include cash, cashier's or certified check,
27 certificate or book entry deposits, negotiable U.S. Treasury securities equal in
28 value to the bond amount, surety bonds from the approved list of sureties
29 (U.S. Treasury Circular 570) payable to the BLM, irrevocable letters of credit
30 payable to the BLM issued by financial institutions that have the authority to
31 issue letters of credit and whose operations are regulated and examined by a
32 federal agency, or a policy of insurance that provides the BLM with
33 acceptable rights as a beneficiary and is issued by an insurance carrier that has
34 the authority to issue insurance policies in the applicable jurisdiction and
35 whose insurance operations are regulated and examined by a federal or state
36 agency. The BLM will not accept a corporate guarantee as an acceptable form
37 of bond. If a state regulatory authority requires a bond to cover some portion
38 of environmental liabilities, such as hazardous material damages or releases,
39 reclamation, or other requirements for the project, the BLM must be listed as
40 an additionally named insured on the bond instrument. This inclusion would
41 suffice to cover the BLM's exposure should a holder default in any
42 environmental liability listed in the respective state bond. Each bond
43 instrument will be reviewed by the appropriate Regional or Field Solicitor's
44 Office for the DOI prior to its acceptance by the BLM.
45

1 The BLM authorized officer will review all bonds on an annual basis to
2 ensure adequacy of the bond amount. The bond will also be reviewed at
3 the time of any ROW assignment, amendment, or renewal. The BLM
4 authorized officer may increase or decrease the bond amount at any time
5 during the term of the ROW authorization, consistent with the regulations
6 (43 CFR 2805.12(g)).
7

8 The BLM authorized officer will identify the total amount of the Performance
9 and Reclamation bond in the decision that supports the issuance of the ROW
10 authorization. The BLM will require the holder to post the portion of the bond
11 associated with the activities to be approved by the Notice to Proceed
12 (Form 2800-15; available at [https://www.blm.gov/FormsCentral/show-](https://www.blm.gov/FormsCentral/show-form.do?nodeId=1666)
13 [form.do?nodeId=1666](https://www.blm.gov/FormsCentral/show-form.do?nodeId=1666)) prior to the issuance of that Notice. For example, if the
14 Notice to Proceed is limited to an initial phase of development, the bond
15 amount required to be posted before issuance of the Notice to Proceed will be
16 limited to that phase. The bond amount required to be posted would increase
17 with the issuance of a Notice to Proceed for future phases of the project.
18

19 The Performance and Reclamation bond will consist of three components for
20 purposes of determining its amount. The first component will address
21 environmental liabilities, including hazardous materials liabilities, such as
22 risks associated with hazardous waste and hazardous substances. This
23 component may also account for herbicide use, petroleum-based fluids, and
24 dust control or soil stabilization materials. If a holder uses herbicides
25 extensively, this component of the bond amount may be significant. The
26 second component will address the decommissioning, removal, and proper
27 disposal, as appropriate, of improvements and facilities. All solar projects
28 involve the construction of substantial surface facilities and the bond amount
29 for this component could be substantial. The third component will address
30 reclamation, revegetation, restoration, and soil stabilization. This component
31 will be determined based on the amount of vegetation retained on-site and the
32 potential for flood events and downstream sedimentation from the site that
33 may result in off-site impacts, including Clean Water Act violations or other
34 violations of law. The holder of the ROW authorization can potentially reduce
35 the bond amount for this component by limiting the amount of vegetation
36 removal as part of the project design and limiting the amount of grading
37 required for project construction.
38

39 The BLM may also require bond coverage for all expenses tied to cultural
40 resources identification, protection, and mitigation. This may include, but is
41 not limited to, costs associated with ethnographic studies, inventory, testing,
42 geomorphological studies, data recovery, compensatory mitigation programs,
43 curation, monitoring, treatment of damaged sites, and submission of reports.
44 Bonding for cultural resource identification, protection, and mitigation is
45 necessary in the event that a ROW holder disturbs a site where such resources
46 are present but discontinues development before taking the necessary steps to

1 complete all analysis, documentation, and proper curation of site contents, and
2 to stabilize or reclaim the cultural and historic properties so that they are
3 returned to a secure condition.

4
5 Ultimately, the Performance and Reclamation bond will be a single instrument
6 to cover all potential liabilities. The entire bond amount could be used to
7 address a single risk event such as hazardous materials release or groundwater
8 contamination regardless of the fact that in calculating the total bond amount
9 other risks were also considered. If the bond is used to address a particular
10 risk, the holder would then be required to increase the bond amount to
11 compensate for this use. This approach to establishing a bond is preferable to
12 one allowing holders to maintain separate bonds for each contingency. If
13 separate bonds are held, an underestimation of one type of liability may leave
14 the BLM responsible for making up the difference, as the funds associated
15 with one bond may not be applicable for the purposes of another. Requiring a
16 single, larger bond will ensure that the holders are bonded with a surety that
17 has the capacity to underwrite the entire amount associated with the
18 authorization.

19
20 The regulations authorize the BLM to require that applicants submit a
21 Decommissioning and Site Reclamation Plan (DSRP) that defines the
22 reclamation, revegetation, restoration, and soil stabilization requirements for
23 the project area as a component of their POD (43 CFR 2804.25(b)). The
24 DSRP shall require expeditious reclamation of construction areas and the
25 revegetation of disturbed areas to reduce invasive weed infestation and
26 erosion and must be approved by the BLM authorized officer prior to the
27 authorization of the ROW. The approved DSRP will be used as the basis for
28 determining the standard for reclamation, revegetation, restoration, and soil
29 stabilization of the project area and, ultimately, in determining the full bond
30 amount.

31
32 The BLM has issued policy guidance for determining bonding requirements
33 for 43 Part CFR 3809 mining operations on the public lands (IM 2009-153
34 [BLM 2009]) that provides detailed information about the process for
35 determining the appropriate financial guarantees for intensive land uses on the
36 public lands. This guidance can also be used to assist in calculating the bond
37 amount for utility-scale solar energy development projects on public lands.
38 The guidance requires that mining operators submit a Reclamation Cost
39 Estimate (RCE) to the BLM authorized officer for review to assist in
40 determining the bond amount. Although the ROW regulations do not
41 specifically require that a holder of a ROW submit a RCE to the BLM, the
42 BLM can require a ROW applicant to submit a POD in accordance with
43 43 CFR 2804.25(b). Because a RCE is key to determining the bond amount, a
44 figure that is set forth in any decision authorizing a solar energy project on the
45 public lands, BLM policy will be to require all solar energy ROW applicants
46 to submit a RCE as part of the DSRP and the overall POD for a solar energy

1 project. Attachment 1 to IM 2009-153 provides Guidelines for Reviewing
2 RCEs and can be used as a guideline to assist in reviewing RCEs submitted
3 for solar energy projects.
4

5 To assist in the consistent review of RCEs for solar energy projects and the
6 establishment of bonding amounts for individual projects, the BLM will form
7 an internal Solar Energy Bond Review Team to provide support to the BLM
8 state and field offices. The Solar Energy Bond Review Team will consist of
9 one representative each from California, Nevada, and Arizona and a BLM
10 Washington Office ROW Project Manager. This Solar Energy Bond Review
11 Team will assist the BLM state and field offices in the review of RCEs for
12 solar energy projects and provide recommendations to the BLM authorized
13 officer on the Performance and Reclamation bond for a solar energy project.
14

- 15 • **Notice to Proceed.** All solar energy ROW authorizations will include a
16 provision that specifies that ground-disturbing activities cannot begin until the
17 BLM authorized officer issues a Notice to Proceed. Each Notice to Proceed
18 will authorize construction or use and occupancy only as therein expressly
19 stated and only for the particular location or use and occupancy therein
20 described (i.e., a construction phase or site location). The holder will not
21 initiate any construction or other surface-disturbing activities on the ROW
22 without such prior written authorization of the BLM authorized officer. The
23 issuance of a BLM Notice to Proceed by the authorized officer could be
24 delayed pending completion of a requirement(s) imposed by another federal
25 and/or state entity (e.g., permit issuance, mitigation compliance, or biological
26 opinion issuance).
27
- 28 • **Administrative Appeal.** All final decisions issued by the authorized officer in
29 connection to the authorization of solar energy projects can be appealed under
30 43 CFR Part 4 and 43 CFR 2801.10. ROW authorizations are issued as full
31 force and effect decisions (43 CFR 2801.10(b)) and will remain effective
32 during any appeal period.
33
- 34 • **Air Navigation Hazards.** Upon issuance of a ROW authorization that includes
35 meteorological or power towers or other tall structures that could pose a
36 hazard to air navigation, the BLM will ensure that the locations of such
37 facilities are noted on aerial navigation hazard maps for low-level flight
38 operations that may be undertaken by the BLM and other federal or state
39 agencies for fire operations, wild horse and burro censuses and gathers,
40 wildlife inventories, facility maintenance, or other activities.
41
- 42 • **Cadastral Survey Policies.** Prior to approval of any solar energy ROW
43 application that (1) is within 0.25 mi (0.4 km) of a boundary as described in
44 BLM Instruction Memorandum No. 2011-122 (BLM 2011d), (2) does not
45 conform to the Public Land Survey System, (3) can be located only by
46 protraction diagram, or (4) may potentially affect a body of water, the

1 responsible field office will coordinate with the respective State Office
2 Chief Cadastral Surveyor as required by BLM Instruction Memorandum
3 No. 2011-122 to ensure adequate Cadastral Survey review of Boundary
4 Evidence. The applicant shall be liable to the BLM for the reasonable cost of
5 such review under the ROW application cost-recovery agreement with the
6 BLM.

7
8 All authorizations for solar energy development on BLM-administered lands
9 will contain the following stipulation:

10
11 Evidence of the Public Land Survey System (PLSS) and related
12 federal property boundaries will be identified and protected prior
13 to commencement of any ground-disturbing activity. This will be
14 accomplished by contacting BLM Cadastral Survey to coordinate data
15 research, evidence examination and evaluation, and locating, referencing
16 or protecting monuments of the PLSS and related land boundary markers
17 from destruction. In the event of obliteration or disturbance of the federal
18 boundary evidence the responsible party shall immediately report the
19 incident, in writing, to the authorizing official. BLM Cadastral Survey will
20 determine how the marker is to be restored. In rehabilitating or replacing
21 the evidence the responsible party will be instructed to use the services of
22 a Certified Federal Surveyor (CFedS), procurement shall be per
23 qualification based selection, or reimburse the BLM for costs. All
24 surveying activities will conform to the Manual of Surveying Instructions
25 (Manual) and appropriate State laws and regulations. Local surveys will
26 be reviewed by Cadastral Survey before being finalized or filed in the
27 appropriate State or county office. The responsible party shall pay for all
28 survey, investigation, penalties, and administrative costs.

- 29
30 • ***Diligent Development.*** The ROW regulations specify that a ROW
31 authorization conveys to the holder only the rights that the authorization
32 expressly contains (43 CFR 2805.14) and that the holder must comply with all
33 terms and conditions included in the authorization (43 CFR 2805.12). In order
34 to facilitate efficient development of solar energy on the public lands, the
35 BLM will include a requirement in each ROW authorization that the holder
36 begin construction of the initial phase of development within 12 months after
37 issuance of the Notice to Proceed, but no later than 24 months after the
38 effective date of the ROW authorization. Each authorization will also specify
39 that construction must be completed within the time frames in the approved
40 POD, but no later than 24 months after start of construction unless the project
41 has been approved for phased development as described below. A Notice to
42 Proceed will be issued for each phase of development.

43
44 The BLM will not authorize more than three development phases for any
45 solar energy ROW authorization. If an approved POD provides for phased
46 development, the ROW authorization will include provisions specifying that

1 construction of each phase (following the first) must begin within 3 years
2 of the start of construction of the previous phase.
3

4 The BLM authorized officer may suspend or terminate the authorization when
5 the holder fails to comply with the diligent development terms and conditions
6 of the authorization (43 CFR 2807.17). The regulations provide that before
7 suspending or terminating the authorization, the BLM will send the holder a
8 written notice that gives the holder a reasonable opportunity to correct any
9 noncompliance or to start or resume use of the ROW (43 CFR 2807.18). This
10 notice may be satisfied by the BLM sending a Notice of Failure to Ensure
11 Diligent Development.
12

13 To address a failure to comply with an authorization's diligent development
14 provisions, the holder must show good cause for any delays in construction,
15 provide the anticipated date of completion of construction and evidence of
16 progress toward the start or resumption of construction, and submit a written
17 request for extension of the time lines in the approved POD. Good cause may
18 be shown, for example, by delays in equipment delivery, legal challenges, and
19 acts of God. This procedure will apply whether a project has multiple
20 development phases or a single phase.
21

22 If, following receipt of a Notice of Failure to Ensure Diligent Development,
23 the holder has satisfactorily complied with each of the requirements of the
24 procedure described above, the authorized officer may grant the holder's
25 request for an extension of the time lines in the approved POD. If, following
26 receipt of such Notice, the holder does not satisfactorily comply with each of
27 the requirements of this procedure, the authorized officer may elect to suspend
28 or terminate the ROW authorization pursuant to 43 CFR 2807.17 where such
29 action is justified.
30

31 Each ROW authorization for solar energy development will include terms and
32 conditions requiring the holder to maintain all on-site electrical generation
33 equipment and facilities in accordance with the design standards in the
34 approved POD. In addition, the authorization will specify that any idle,
35 improperly functioning, or abandoned equipment or facilities that have been
36 inoperative for any continuous period of 3 months must be repaired, placed
37 into service, or removed from the site within 30 days from receipt of a written
38 Notice of Failure to Ensure Diligent Development, unless the holder is
39 provided an extension of time by the BLM authorized officer. Upon receipt of
40 such Notice from the BLM authorized officer, the holder must repair, place
41 into service, or remove the equipment or facilities described in the Notice in a
42 timely manner. Alternatively, the holder must show good cause for any delays
43 in repairs, use, or removal; estimate when corrective action will be completed;
44 provide evidence of diligent operation of the equipment and/or facilities; and
45 submit a written request for an extension of the 30-day deadline. If the holder
46 satisfies neither approach, the BLM authorized officer may elect to suspend or

1 terminate the authorization in accordance with 43 CFR 2807.17–2807.19
2 where such action is justified. In addition, the BLM may use the posted
3 Performance and Reclamation bond to cover the costs for removal of any
4 idle or abandoned equipment and/or facilities.
5

6 All solar energy ROW authorizations must include the diligent development
7 provisions as described above in the terms and conditions of the authorization,
8 consistent with the requirements of 43 USC 1765(b) and the ROW regulations
9 at 43 CFR 2801.2.
10

- 11 • **Operating Standards.** The authorization holder shall perform all operations
12 in a good and workmanlike manner, consistent with the approved POD, so
13 as to ensure protection of the environment and the health and safety of the
14 public. To ensure compliance with the terms and conditions of the ROW
15 authorization and to ensure that operations are conducted consistent with those
16 terms and conditions, the BLM authorized officer will conduct inspections of
17 such operations and can issue notices of violations. The authorized officer
18 may also order an immediate temporary suspension of operations, orally or in
19 writing, in accordance with 43 CFR 2807.16 to protect public health or safety
20 or the environment.
21
- 22 • **Access to Records.** The BLM may require the holder of a solar energy
23 development ROW authorization to provide any pertinent environmental,
24 technical, and financial records, reports, and other information, including
25 PPAs and Interconnection Agreements, related to project construction,
26 operation, maintenance, and decommissioning, including the production and
27 sale of electricity generated from the approved facilities on public land
28 (43 CFR 2805.12(p); 43 USC 1765(b); 43 USC 1764(g); 43 USC 1761(b)).
29 The BLM may use this information for the purpose of monitoring the
30 authorization and for periodic evaluation and adjustment of rental fees or
31 other financial obligations under the authorization.
32

33 Upon the request of the BLM authorized officer, the appropriate records,
34 reports, or information shall be made available for inspection and duplication
35 by such officer. Any information marked confidential or proprietary will be
36 kept confidential to the extent allowed by law. Failure to cooperate with such
37 request, provide data, or grant access to information or records, may, at the
38 discretion of the BLM authorized officer, result in suspension or termination
39 of the ROW authorization. All solar energy ROW authorizations must include
40 such disclosure provisions in the terms and conditions of the authorization in
41 accordance with the regulations (43 CFR 2807.17).
42

- 43 • **Changes to Terms and Conditions.** The BLM authorized officer may change
44 the terms and conditions of the authorization as a result of changes in
45 legislation, regulations, or as otherwise necessary to protect public health or
46 safety or the environment in accordance with 43 CFR 2801.15(e).

- 1 • **Upgrades or Changes to Facility Design or Operation.** Operators of solar
2 power facilities on BLM-administered lands shall coordinate with the BLM
3 and other appropriate federal, state, and local agencies regarding any planned
4 upgrades or changes to the solar facility design or operation. Proposed
5 changes of this nature may require additional environmental analysis and/or
6 revision of the POD.
7
- 8 • **10-Year Review.** The solar ROW authorization, shall, at a minimum, be
9 reviewed by the BLM authorized officer at the end of the 10th year and at
10 regular intervals thereafter not to exceed 10 years.
11
- 12 • **Transfers or Assignments Require BLM Approval.** The ROW authorization
13 may be assigned (i.e., transfer of interest) consistent with the provisions of the
14 regulations (43 CFR 2807.21(b)). However, all assignments shall be approved
15 by the BLM authorized officer, and the qualifications of all assignees must
16 comply with 43 CFR 2803.10 and the due diligence requirements of the
17 regulations (43 CFR 2807.21(c)(1) and 43 CFR 2807.21(d)). The assignment
18 shall not interfere with the BLM's enforcement of the terms and conditions of
19 the authorization or management of the associated public lands. Transfers
20 other than assignments must be approved by the BLM and may result in
21 requirements for submittal of a new application or a Notice of Termination.
22

23 24 **2.2.1.2 Adaptive Management and Monitoring**

25
26 As described in the Draft Solar PEIS (Appendix A, Section A.2.1.1 of that document),
27 the BLM (recognizing that data regarding the actual impacts of solar energy development on
28 various resources are still limited) will develop and incorporate into its Solar Energy Program
29 an adaptive management and monitoring plan to ensure that data and lessons learned about the
30 impacts of solar energy projects will be collected, reviewed, and, as appropriate, incorporated
31 into the BLM's Solar Energy Program in the future. Changes to the BLM's Solar Energy
32 Program resulting from adaptive management and monitoring (e.g., modifications to exclusion
33 areas) will be subject to appropriate land use planning, environmental review, and/or policy
34 development.
35

36 Development of an adaptive management and monitoring plan will be coordinated with
37 potentially affected natural resource management agencies. The plan will identify how the
38 impacts of BLM's Solar Energy Program will be evaluated, types of monitoring that would
39 be responsive to the data needs for program evaluation, and science-based thresholds for
40 modification to policy or individual project management based upon monitoring results; and
41 describe the process by which changes will be incorporated into the Solar Energy Program,
42 including revisions to policies and design features. Sources of information to be considered in
43 the context of adaptive management include data from specific project evaluations (for which
44 monitoring would be required) as well as from regional long-term monitoring programs.
45

1 The BLM, in collaboration with the Agricultural Research Service and the
2 U.S. Geological Survey, has developed a national monitoring strategy which provides the
3 foundation for an adaptive management and monitoring plan for the BLM’s Solar Energy
4 Program. The strategy incorporates common indicators; standardized monitoring protocols; a
5 Before-After Control-Impact sample design using paired ecological sites; remote sensed data to
6 map abundance, extent, and disturbance; and a data management plan that addresses data quality,
7 editing and replication, seamless data sets, and data availability. A plan to implement this
8 monitoring strategy and the data analysis tools necessary for threshold analysis will be presented
9 in the Final Solar PEIS. Individual projects will be required to incorporate the monitoring plan,
10 developer assurances to implement the plan, adaptive management thresholds, and additional
11 project-specific monitoring requirements to be identified on an individual project basis.
12
13

14 **2.2.1.3 Design Features**

15
16 In Appendix A, Section A.2.2 of the Draft Solar PEIS, the BLM proposed design features
17 that would be required for all utility-scale solar energy applications submitted to the BLM for
18 consideration. Design features are mitigation requirements that have been incorporated into the
19 proposed action or alternatives to avoid or reduce adverse impacts. The proposed programmatic
20 design features of the BLM’s Solar Energy Program would apply to all utility-scale solar energy
21 ROWs on BLM-administered lands under both modified action alternatives.
22

23 The BLM is evaluating all comments received on the Draft Solar PEIS regarding the
24 proposed programmatic design features. A final proposed list of programmatic design features
25 will be presented in the Final Solar PEIS.
26

27 28 **2.2.2 Modified Solar Energy Development Program Alternative (BLM Preferred** 29 **Alternative)**

30
31 In an effort to better meet the objectives established for BLM’s Solar Energy Program,
32 as well as address comments and concerns raised by the public, stakeholders, and cooperating
33 agencies through the review of the Draft Solar PEIS, the BLM has modified its solar energy
34 development program alternative. Under the modified solar energy development program
35 alternative (referred to as the “modified program alternative”), the BLM proposes categories of
36 lands to be excluded from utility-scale solar energy development and identifies specific locations
37 well suited for utility-scale production of solar energy (i.e., SEZs) where the BLM would
38 prioritize development. The modified program alternative emphasizes and incentivizes
39 development within SEZs and proposes a collaborative process to identify additional SEZs. In
40 order to accommodate the flexibility described in the BLM’s program objectives, the modified
41 program alternative allows for utility-scale solar development in variance areas outside of SEZs
42 in accordance with the proposed variance process. The modified program alternative also
43 establishes authorization policies and procedures for utility-scale solar energy development on
44 BLM-administered lands.
45
46

1 **2.2.2.1 Proposed Right-of-Way Exclusion Areas**
2

3 Under the modified program alternative, the BLM proposes to exclude specific categories
4 of land that are known or believed to be unsuitable for utility-scale solar development. Right-of
5 way exclusion areas are defined as areas which are not available for location of ROWs under any
6 conditions (BLM Land Use Planning Handbook, H-1601-1 [BLM 2005]). On the basis of input
7 received on the Draft Solar PEIS, the list of proposed exclusions has been modified, and state
8 specific exclusions have been incorporated as appropriate (see Table 2.2-1). The BLM continues
9 to work with cooperating agencies to refine the proposed exclusions for specific resources such
10 as sage-grouse and desert tortoise. The BLM also expects that comments received on this
11 Supplement will lead to further adjustments in the list of exclusions. A final proposal for
12 exclusions will be presented in the Final Solar PEIS.
13

14 **2.2.2.2 Proposed Solar Energy Zones**
15

16 An SEZ is defined by the BLM as an area within which the BLM will prioritize and
17 facilitate utility-scale production of solar energy and associated transmission infrastructure
18 development. SEZs should be relatively large areas that provide highly suitable locations for
19 utility-scale solar development: locations where solar development is economically and
20 technically feasible, where there is good potential for connecting new electricity-generating
21 plants to the transmission distribution system, and where there is generally low resource conflict.
22
23

24 ROWs for utility-scale solar energy development in SEZs would be given priority over
25 all other ROWs. The BLM may decide to authorize ROWs for other uses that are found to be
26 compatible with utility-scale solar energy development such as shared access roads and
27 transmission lines. The identification of an area as an SEZ will not affect previously authorized
28 ROWs, whether or not construction has been initiated on those ROWs. The BLM will consider
29 the processing of pending ROW applications in identified SEZs on a case-by-case basis.
30

31 In a continued effort to find the areas best suited for utility-scale production of solar
32 energy (per Secretarial Order 3285A1 [Secretary of the Interior 2010]), the BLM has modified
33 the list of SEZs being carried forward for consideration in the Solar PEIS. Some of the SEZs
34 analyzed in the Draft Solar PEIS were found to have substantial resource conflicts that make
35 them inappropriate locations to prioritize utility-scale solar energy development. The BLM has
36 decided to drop some SEZs entirely from further consideration based on the comments received
37 on the Draft Solar PEIS and additional data collection that has taken place since the Draft Solar
38 PEIS. The BLM has also decided to adjust the boundaries of some SEZs that will be carried
39 forward in the Solar PEIS.
40

41 Specifically, the BLM has decided to drop the following proposed SEZs: Bullard Wash in
42 Arizona, Iron Mountain and Pisgah in California, Delamar Valley and East Mormon Mountain in
43 Nevada, and Mason Draw and Red Sands in New Mexico. In addition, the areas of the following
44 SEZs have been substantially reduced: Riverside East in California; De Tilla Gulch, Fourmile
45 East, and Los Mogotes East in Colorado; Amargosa Valley, Dry Lake, and Dry Lake Valley
46 North in Nevada; and Afton in New Mexico. The overall result of these changes has been to

1 **TABLE 2.2-1 Revised Areas for Exclusion under the BLM’s Modified Solar Energy Development**
 2 **Program Alternative^a**

1. Lands with slopes greater than 5%.
 2. Lands with solar insolation levels less than 6.5 kWh/m²/day.
 3. All Areas of Critical Environmental Concern (ACECs), including Desert Wildlife Management Areas (DWMAs) in the California Desert District.
 4. All critical habitat areas (designated and proposed) for listed species under the Endangered Species Act of 1973 (as amended).
 5. All areas where the applicable land use plan designates no surface occupancy (NSO).
 6. All areas where there is an applicable land use plan decision to protect lands with wilderness characteristics.
 7. Developed recreational facilities, special-use permit recreation sites (e.g., ski resorts and camps), and all Special Recreation Management Areas (SRMAs), **except for those in the State of Nevada and a portion of the Yuma East SRMA in Arizona.**^b
 8. All areas where solar energy development proposals are not demonstrated to be consistent with the land use management prescriptions for or where the BLM has made a commitment to take certain actions with respect to sensitive species habitat, including but not limited to sage grouse core areas, nesting habitat, and winter habitat; Mohave ground squirrel habitat; flat-tailed horned lizard habitat; and fringe-toed lizard habitat. **Greater sage-grouse habitat as identified by the BLM is excluded in California, Nevada, and Utah, and Gunnison’s sage-grouse habitat is excluded in Utah.**^c
 9. All ROW exclusion areas identified in applicable plans other than those specific to utility-scale solar energy development.
 10. All ROW avoidance areas identified in applicable plans other than those specific to utility-scale solar energy development.
 11. All areas where the land use plan designates seasonal restrictions.
 12. All Desert Tortoise translocation sites identified in applicable land use plans.
 13. Big Game Migratory Corridors identified in applicable land use plans.
 14. Big Game Winter Ranges identified in applicable land use plans.
 15. Research Natural Areas.
 16. Lands categorized as Visual Resource Management (VRM) Class I or II (and, in Utah, Class III^d).
 17. National Recreation Trails and National Back Country Byways
 18. National Historic and Scenic Trails, including a corridor of 0.25 mi (0.4 km) from the centerline of the trail, except where a corridor of a different width has been established.
-

TABLE 2.2-1 (Cont.)

19. National Historic and Natural Landmarks.
 20. Within the boundary of properties listed in the *National Register of Historic Places* and additional lands outside the designated boundaries to the extent necessary to protect values where the setting and integrity is critical to their designation or eligibility.
 21. Areas with important cultural and archaeological resources, such as traditional cultural properties and Native American sacred sites, as identified through consultation and recognized by the BLM.
 22. Wild, Scenic, and Recreational Rivers, including a corridor of 0.25 mi (0.4 km) from the ordinary high-water mark on both sides of the river, except where a corridor of a different width has been established.
 23. Segments of rivers determined to be eligible or suitable for Wild or Scenic River status, including a corridor of 0.25 mi (0.4 km) from the ordinary high-water mark on either side of the river.
 24. Old Growth Forest.
 25. Lands within a solar energy development application found to be inappropriate for solar energy development through an environmental review process that occurred prior to finalization of the Draft Solar PEIS.^e
 26. **Lands previously proposed for inclusion in SEZs that were determined to be inappropriate for development through the NEPA process (i.e., the previously-proposed Iron Mountain SEZ area; parts of the Pisgah and Riverside East SEZs in California; parts of the De Tilla Gulch, Fourmile East, and Los Mogotes East SEZs in Colorado; and parts of the Amargosa Valley SEZ in Nevada).**
 27. **Lands within the proposed Mojave Trails National Monument in California.^f**
 28. **BLM-administered lands in California proposed for transfer to the National Park Service with the concurrence of the BLM.^g**
 29. **Individual additional areas identified by BLM State or field offices as requiring exclusion due to ecological or cultural concerns.**
-

^a Exclusion changes from those presented in the Draft Solar PEIS are shown in bold.

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

Footnotes continued on next page.

TABLE 2.2-1 (Cont.)

- ^c In April 2010, the USFWS published its listing for the greater sage-grouse as "Warranted but Precluded." Inadequacy of regulatory mechanisms was identified as a major threat in the USFWS finding on the petition to list the greater sage-grouse. The USFWS has identified the principal regulatory mechanism for the BLM as conservation measures in RMPs. On the basis of the identified threats to the greater sage-grouse and the USFWS's time line for making a listing decision on this species, the BLM has initiated action to incorporate explicit objectives and adequate conservation measures into RMPs (including PEISs and project EISs) within the next 3 years in order to conserve greater sage-grouse and avoid a potential listing under the Endangered Species Act. To meet the objectives of BLM's sage-grouse conservation policy, the Solar PEIS has excluded specifically identified sage-grouse habitat (currently occupied, brooding, and winter habitat) located on BLM public lands in Nevada and Utah.
- ^d In Utah, VRM Class III lands have also been removed due to the high sensitivity and location proximity to Zion, Bryce, Capital Reef, Arches, and Canyonlands National Parks, and to significant Cultural Resource Special Management Areas (in southeast Utah).
- ^e For example, lands considered non-developable in the environmental review for the Ivanpah Solar Electric Generating System, Imperial Valley Solar Project, Calico Solar Project, Genesis Ford Dry Lake Solar Project, Blythe Solar Project, and Desert Sunlight Solar Project.
- ^f As described in Senate Bill 138, California Desert Protection Act of 2011, introduced in the 112th Congress.
- ^g Three specific geographic areas described as (1) the narrow strip of BLM-administered lands between Fort Irwin and Death Valley National Park, (2) an area of public lands on the northeastern side of the Mojave National Preserve adjacent to the California and Nevada border, and (3) an area along the northern boundary of Joshua Tree National Park.

1
2
3
4
5
6
7
8
9

reduce the total acreage potentially available for development in proposed SEZs from about 677,000 acres (2,740 km²) to about 285,000 acres (1,153 km²). Appendix B of this Supplement contains the BLM's rationale for dropping SEZs from further consideration. Appendix C contains the rationale for adjusting the boundaries of other SEZs and describes additional non-development areas within some of the SEZs. These appendices also include descriptions of the comments received for individual SEZs.

10 The Draft Solar PEIS described data available for the proposed SEZs and provided
11 environmental analysis based on those data. The primary purpose of the SEZ-specific analyses
12 provided in the Draft Solar PEIS was to provide documentation from which the BLM can tier
13 future project authorizations, thereby limiting the required scope and effort of project-specific
14 NEPA analyses. As requested by commentors on the Draft Solar PEIS, the BLM is committed to
15 collecting additional SEZ-specific resource data and conducting additional analysis in order to
16 more effectively facilitate future development in SEZs. The BLM has developed action plans for
17 each of the SEZs that it has decided to carry forward in the Solar PEIS. These action plans are
18 presented in Appendix C of this Supplement. Action plans describe data gaps for individual
19 SEZs and propose data sources and methods for the collection of additional data. The BLM
20 encourages input from the public regarding these action plans and appropriate data sources and
21 methods. The BLM will prioritize the collection of additional data and analysis in those SEZs
22 that are most likely to be developed in the near-future. Note that additional data and analysis will
23 help facilitate development in SEZs but is not required to identify an area as an SEZ as part of
24 the BLM's Solar Energy Program.

1 The BLM proposed SEZ-specific design features as part of the Draft Solar PEIS, in
2 addition to the general Solar Energy Program design features applicable for all projects
3 (see Appendix A, Section A.2.2 of the Draft Solar PEIS). SEZ-specific design features are
4 mitigation measures that would be required of applications in SEZs to avoid or reduce potential
5 adverse impacts. The BLM will continue to refine the list of SEZ-specific design features based
6 on comments received on the Draft Solar PEIS, ongoing coordination with cooperating agencies,
7 additional data collection described in SEZ action plans, and comments received on this
8 Supplement. A final proposal for SEZ-specific design features will be presented in the Final
9 Solar PEIS.

10
11 The processes and policies applicable to SEZs presented in the following sections replace
12 components of Appendix A in the Draft Solar PEIS and incorporate applicable elements of BLM
13 Instruction Memoranda in existence or released after the publication of the Draft Solar PEIS.

14 15 16 **2.2.2.2.1 Authorization Process for Projects in SEZs**

17
18 As part of this Supplement, the BLM is confirming its intentions to offer lands in SEZs
19 through a competitive process. The BLM has decided to undertake rulemaking to establish a
20 competitive process for offering public lands for solar and wind development, as described
21 previously in Section 1.8.2.

22
23 The Advanced Notice of Proposed Rulemaking is expected to be published in
24 October 2011 to accompany the release of the Supplement; the BLM intends to have a Proposed
25 Rule available for public comment prior to the release of the Solar PEIS ROD (targeting late
26 spring 2012). All applications for solar energy ROWs received after June 30, 2009, for lands
27 inside the SEZs would be subject to the decisions in the Solar PEIS ROD. The BLM may process
28 applications in SEZs prior to completion of the rulemaking process under its existing policies
29 and authorities. In those cases where multiple applications have been filed on the same SEZ
30 lands, the BLM will apply competitive procedures per 43 CFR 2804.23.

31 32 33 **2.2.2.2.2 Environmental Review for Projects in SEZs**

34
35 Utility-scale solar energy development projects proposed in SEZs will be required to
36 comply with NEPA and other applicable laws, including, but not limited to the Endangered
37 Species Act (ESA) and the NHPA, and applicable regulations and policies. The BLM has taken
38 a number of important steps through the Solar PEIS to facilitate future development in SEZs
39 in a streamlined and standardized manner. For projects proposed in SEZs, the BLM expects to
40 comply with applicable laws, regulations, and policies in the manner described below. Projects
41 proposed in SEZs identified and analyzed through state or local land use planning efforts (see
42 Section 2.2.2.2.6 of this Supplement) would receive the same treatment as SEZs identified
43 through the Solar PEIS.

44
45 The Secretary, Deputy Secretary, or Assistant Secretary will approve all decisions to
46 authorize ROWs for utility-scale solar energy development in SEZs; the BLM authorized officer

1 will issue ROWs consistent with the Secretary's, Deputy Secretary's, or Assistant Secretary's
2 decision. Projects in SEZs will therefore not be subject to administrative appeals to the IBLA.
3
4

5 *Land Use Plan Conformance*

6

7 Through the ROD for the Solar PEIS, the BLM will amend land use plans in the six-state
8 study area to adopt those elements of the new Solar Energy Program that pertain to planning. No
9 additional land use plan amendments are expected to be required to approve projects in identified
10 SEZs.
11
12

13 *NEPA*

14

15 The BLM must complete a site-specific environmental review of all solar energy ROW
16 applications in SEZs in accordance with NEPA prior to issuing a ROW authorization. As part of
17 the Solar PEIS, the BLM is conducting a thorough environmental review of the proposed SEZs
18 so that future reviews of applications within SEZs can tier to that NEPA analysis, thereby
19 limiting the required scope and effort of additional project-specific NEPA analyses. Tiering is
20 defined as using the coverage of general matters in broader NEPA documents in subsequent,
21 narrower NEPA documents (40 CFR 1508.28, 40 CFR 1502.20). This allows the tiered NEPA
22 document to concentrate solely on the issues not already addressed.
23

24 All future projects proposed in SEZs will tier to the analysis in the Solar PEIS. The extent
25 of this tiering, however, will vary from project to project, as will the necessary level of NEPA
26 documentation. While the SEZ analysis in the Solar PEIS analyzes the likely environmental
27 effects of utility-scale solar development and identifies required SEZ-specific design features to
28 address many resource conflicts, further evaluation will be required for future projects based on
29 the actual location, technology, POD, and so forth.
30

31 The BLM authorized officer must determine whether potential environmental impacts
32 associated with proposed projects are within the scope of analysis considered in the Solar PEIS
33 for a given SEZ. If not, the authorized officer must determine the potential significance of any
34 impacts outside the scope of the Solar PEIS and complete appropriate NEPA analysis. For
35 example, if the water impacts associated with a proposed project were not covered by the SEZ
36 analysis in the Solar PEIS and those water impacts are expected to be significant, a tiered EIS
37 would be appropriate (if the impacts did not rise to the level of significance then a tiered
38 environmental assessment [EA] would be appropriate). No matter the level of NEPA
39 documentation, tiered analyses for projects in SEZs are expected to be narrowly focused on
40 those issues not already adequately analyzed in the Solar PEIS. Field offices are instructed to
41 incorporate by reference the relevant portions of the Solar PEIS to which project-specific NEPA
42 documents will be tiered.
43

44 The level of NEPA documentation to be required for individual solar projects proposed
45 in SEZs will be determined by the BLM authorized officer. All projects in SEZs that the
46 authorized officer determines will require an EIS level of analysis must be submitted through the

1 State Director to the BLM Washington Office for the Director’s concurrence prior to the
2 issuance of a Notice of Intent (NOI). This will help ensure consistent implementation of the
3 BLM’s solar program after the Solar PEIS is completed.
4

5 An EA prepared in support of an individual action can tier to a programmatic EIS. An
6 EA can be prepared for an action with significant effects, whether direct, indirect or cumulative,
7 if the EA tiers to a broader EIS that fully analyzed those significant effects. Tiering to the
8 programmatic EIS would allow the preparation of an EA and Finding of No Significant Impact
9 (FONSI) for the individual action, so long as the remaining effects of the individual action are
10 not significant. The finding of no significant impact in these circumstances may also be called
11 a “Finding of No New Significant Impact” (43 CFR 46.140(c)). However if there are new
12 circumstances or information that would result in significant effects of an individual action not
13 considered in the programmatic EIS, tiering to the EIS cannot provide the necessary analysis to
14 support a FONSI for the individual action. In these cases, an EIS would need to be prepared that
15 tiers, to the extent practicable, to the programmatic EIS (BLM NEPA Handbook H-1790-1
16 [BLM 2008] Section 5.2.2; 43 CFR 46.140(c)).
17
18

19 ***Public Involvement***

20
21 Through the Solar PEIS, extensive public involvement specific to solar energy
22 development in SEZs has occurred. On June 30, 2009, the Agencies announced the availability
23 of maps that identified 24 tracts of BLM-administered land for in-depth study for solar
24 development. The BLM issued a *Federal Register* Notice of Availability to inform the public of
25 the availability of the maps (74 FR 31307). Through public scoping (June 30–September 14,
26 2009), the BLM solicited public comments for consideration in identifying environmental issues,
27 existing resource data, and industry interest with respect to the proposed SEZs. In addition,
28 public comments were solicited on the SEZ analysis presented in the Draft Solar PEIS from
29 December 17, 2010, to May 2, 2011, and as part of 14 public meetings held in February and
30 March 2011. The BLM and applicants will use this input to inform future development in SEZs.
31 Public involvement for projects in SEZs must meet the requirements of NEPA.
32
33

34 ***Endangered Species Act***

35
36 The BLM will complete ESA consultation on the Solar PEIS with the USFWS under
37 Sections 7(a)(1) and 7(a)(2) of the ESA. The BLM, in consultation with the USFWS, will
38 complete a conservation review under Section 7(a)(1) of the ESA of the overall solar program,
39 including the amendment of 89 land use plans and associated conservation measures. This
40 consultation on the overarching program will provide guidance for subsequent solar projects
41 by ensuring that the appropriate conservation measures for listed species are incorporated
42 into project-level actions. The BLM will also consult with the USFWS on the identification
43 of specific SEZs under Section 7(a)(2) of the ESA. A Biological Assessment will include
44 appropriate mitigation, minimization, and avoidance measures intended to address any effects
45 on listed (endangered and/or threatened) species and designated critical habitat. Further

1 Section 7(a)(2) consultation will occur as necessary at the level of individual projects and will
2 benefit from preceding program- and SEZ-level consultation.
3
4

5 ***National Historic Preservation Act***

6

7 The BLM has taken numerous actions to comply with requirements of the NHPA in
8 relation to the Solar PEIS. The BLM consulted with Indian Tribes, the State Historic
9 Preservation Offices (SHPOs) from the six states, the Advisory Council on Historic Preservation
10 (ACHP), and the National Trust for Historic Preservation (NTHP). A Solar PA among the BLM,
11 the six SHPOs, and the ACHP, expected to be executed prior to signing of the Solar PEIS ROD,
12 will define steps the BLM will follow to take into account the effects of the BLM's Solar Energy
13 Program on historic properties under Section 106 of the NHPA.
14

15 The first draft of the Solar PA was sent to all Tribes for their input in February 2011. A
16 revised draft Solar PA will again be sent to all Tribes requesting their comments in the fall of
17 2011. Tribes will be invited to sign the agreement as Concurring Parties and will play an active
18 role in its execution.
19

20 A tiered approach to the identification and consideration of effects on historic properties
21 is being followed. Existing site record and surveyed space geographic information system (GIS)
22 data bases were utilized to identify potential areas of conflict and define SEZ boundaries. The
23 BLM plans to award a Class II sample survey contract in the fall of 2011 to provide a minimum
24 SEZ survey coverage of 5% within Arizona, California, and Nevada. Results are expected to be
25 available before the ROD is signed and will guide future development toward areas with the
26 fewest conflicts with historic resources.
27

28 For future project-specific solar applications, the BLM will meet with project proponents
29 and define what levels of additional survey will be required prior to submission of the completed
30 application package. The terms and conditions of the ROW authorization will require that the
31 project POD include documentation of a completed BLM-approved cultural resources mitigation
32 program before ground disturbance and construction begins.
33
34

35 ***Tribal Consultation***

36

37 As part of the Solar PEIS process, the BLM has consulted and engaged with Tribes
38 through various means in order to meet the agency's affirmative responsibilities under the
39 NHPA, NEPA, E.O. 13007 ("Indian Sacred Sites," *Federal Register*, Volume 61, page 26771,
40 May 24, 1996), the American Indian Religious Freedom Information Act, and other statutes.
41 Beginning in 2008 and continuing through the Final PEIS, the BLM has written to Tribes,
42 provided complete documentation, maps, and current information, and requested government-to-
43 government consultation. Tribes were invited to and participated in public meetings regarding
44 the Draft Solar PEIS. Tribal comments regarding the Draft Solar PEIS affected decisions to drop
45 certain SEZs and to reduce and reconfigure the boundaries of those carried forward.
46

1 The BLM contracted with SWCA Environmental Consultants to produce an ethnographic
2 overview of six Tribes within the Great Basin region with cultural and historic ties to SEZs in
3 Nevada and Utah. Detailed interviews with Tribal members and an ethnographic overview have
4 identified traditional cultural properties, significant ethnobotanical resources, visual resource
5 concerns, and Tribal perspectives on direct and indirect effects of solar development on Tribal
6 interests. These ethnographic overviews are available through the Solar PEIS project Web site
7 (solareis.anl.gov). Summaries of the findings available at the time of publication of this
8 Supplement are included in SEZ-specific action plans (Appendix C of this Supplement).
9

10 Now that the draft results from the ethnographic overviews have become available, the
11 BLM will contact all other Tribes with cultural and/or historical ties to the SEZs and lands
12 available for development to explore if they share similar concerns or issues to those revealed in
13 the study. Field offices in California and Nevada will consult with those Tribes who provided
14 written comments on the Draft Solar PEIS to explain how their concerns will be taken into
15 account and how Tribal consultation will continue under project-specific applications. A written
16 explanation for how the BLM utilized Tribal input in determining Final Solar PEIS decisions
17 will be mailed to all Tribes with the signing of the ROD.
18

19 The BLM will invite Tribes to participate in site-specific proposals within SEZs. On the
20 basis of information and discussions arising from such meetings, the BLM will determine
21 whether there is a need for new ethnographic research to provide sufficient information to
22 adequately consider the effects of solar development on issues and resources of concern to
23 Tribes. BLM field office cultural staff, including specialists assigned to Renewable Energy
24 Coordination Offices where present, in consultation with their Deputy Preservation Officer, shall
25 recommend to responsible BLM line officers whether new ethnographic data are required for a
26 given solar application. Should new ethnographic research, studies, or interviews be judged
27 necessary, the BLM cultural staff, in consultation with Tribal officials, will recommend to BLM
28 line officers the appropriate scope of the study, provisions for safeguarding data confidentiality,
29 and programs of mitigation.
30

31 32 **2.2.2.2.3 Incentives for Projects in SEZs**

33
34 In addition to the work already underway in SEZs (as described above), the BLM is
35 proposing to undertake a variety of additional activities that will help steer future utility-scale
36 solar energy development to the SEZs.
37

38 39 ***Facilitate Faster and Easier Permitting in SEZs***

- 40
41 • The BLM will adhere internally to strict schedules for the completion of
42 environmental reviews for applications in SEZs, with a target for completion
43 of 12 to 18 months. Achieving a 12- to 18-month processing time line will
44 require timely information from applicants.
45

- 1 • The DOI will undertake interagency coordination to expedite service and
2 provide priority processing to projects in SEZs, provide a single point of
3 contact for all DOI agencies responsible for coordinating environmental
4 reviews and consultations, ensure timely performance of agencies, and
5 facilitate stakeholder reviews.
6
- 7 • The BLM will maintain its Renewable Energy Coordination Offices in
8 California, Nevada, and Arizona, and will maintain Renewable Energy
9 Coordination Teams in Colorado, New Mexico, and Utah as long as needed
10 to assist with efficient permitting of projects in SEZs. In addition, the BLM
11 established a new National Renewable Energy Coordination Office on
12 October 1, 2011.
13
- 14 • The BLM may, through rulemaking, establish a competitive process that
15 results in the immediate issuance of a ROW lease authorization to the
16 successful bidder.
17

18 ***Improve and Facilitate Mitigation***

- 19 • Regional mitigation plans will be developed that are comprised of goals and
20 objectives applicable to individual SEZs that both simplify and improve the
21 mitigation process for future projects. Regional mitigation plans will address
22 mitigation for resources such as biological resources, ecological resources,
23 cultural resources, scenic resources, and socioeconomic factors, as
24 appropriate. Regional mitigation plans can increase permit efficiencies and
25 financial predictability for developers. Regional mitigation plans can also
26 enhance the ability of state and federal agencies to invest in larger-scale
27 conservation efforts that benefit sensitive species through higher-quality
28 habitat, improved connectivity between habitat areas, and better long-term
29 protection.
30
31

32
33 The in-depth data collection and analyses proposed for SEZs will inform
34 BLM's development of regional mitigation plans. Each regional mitigation
35 plan will consider the cumulative impacts of development within an SEZ as
36 well as ongoing conservation planning priorities (e.g., recovery plans for
37 federal or state ESA-listed species, BLM RMPs, and conservation priorities
38 developed as part of efforts such as the California Desert Renewable Energy
39 Conservation Plan). The BLM will work with appropriate federal, state, and
40 local agencies and Tribes to develop initial regional mitigation plans that will
41 be presented in the Final Solar PEIS. These initial plans will be subject to
42 continued review and adjustment by the BLM and its partners to ensure
43 conservation goals and objectives are met.
44

45 To the extent that public lands are used to mitigate for the impacts of solar
46 development whether in or out of the SEZs, the BLM will develop strategies

1 to ensure that any mitigation lands are protected to provide enduring
2 conservation benefits. As part of its site-specific environmental review for
3 future projects, the BLM will evaluate the impacts of any mitigation measures
4 it has applied.

- 5
- 6 • Developers will be allowed to mitigate biological impacts through funding
7 conservation priorities that are identified in a regional mitigation plan.
8

9

10 ***Facilitate the Permitting of Needed Transmission to SEZs***

11

- 12 • The Final Solar PEIS will include a more detailed evaluation of the
13 transmission needs and impacts for anticipated solar development within the
14 SEZs, which will not only facilitate the permitting of projects, but also will
15 facilitate transmission planning for SEZs (details on the planned additional
16 transmission analyses for SEZs to be included in the Final Solar PEIS are
17 given in Appendix C, Section C.7.1 of this Supplement).
18
- 19 • The BLM will offer incentives to developers willing to build transmission to
20 SEZs (e.g., facilitated permitting of needed transmission and prioritization of
21 key transmission projects).
22
- 23 • The BLM will commit staff from BLM’s Renewable Energy Coordination
24 Offices and Teams to engage in ongoing and comprehensive transmission
25 planning efforts to ensure the recognition of SEZs as a priority in transmission
26 development. Transmission planning efforts and BLM involvement will be
27 coordinated through the BLM’s National Renewable Energy Coordination
28 Office.
29
- 30 • The BLM will seek to establish cooperative agreements, Memoranda of
31 Understanding and/or Memoranda of Agreement with states, Tribes, and other
32 federal agencies to facilitate state permitting of needed transmission to support
33 SEZ development.
34
- 35 • The lead agencies for the Solar PEIS (BLM and DOE) will seek to have the
36 proposed SEZs reviewed as a case study by the Transmission Expansion
37 Planning Policy Committee (TEPPC) of the Western Electricity Coordinating
38 Council (WECC). The TEPPC analysis process is an existing, formal, biennial
39 process used by WECC to assess system impacts across the interconnection
40 when adding resources and/or transmission. It analyzes system congestion and
41 system performance under reliable system operating criteria. This analysis is
42 expected to provide substantial benefits for projects within proposed SEZs.
43
44
45

1 ***Encourage Solar Development on Appropriate Nonfederal Lands***
2

- 3 • The DOI will encourage development of renewable energy on appropriate
4 nonfederal lands. For projects proposed jointly on SEZ lands and adjacent
5 private, state, Tribal, or U.S. Department of Defense (DoD) withdrawn lands,
6 DOI's permitting incentives as described for SEZs would apply to the entire
7 project. Note, however, if there is a lack of environmental analysis for
8 adjoining lands, additional effort may be needed.
9

10 ***Provide Economic Incentives for Development in SEZs***
11

- 12 • The BLM anticipates lower cost recovery for projects proposed in SEZs
13 because of the BLM's extensive upfront data collection and environmental
14 review through the Solar PEIS.
15
16 • The BLM may institute lower MW capacity fees for projects proposed in SEZs,
17 which could effectively reduce the overall cost to operators.
18
19 • The BLM may adopt a longer phase-in period for rental payments for projects
20 proposed in SEZs (e.g., 10 years), which could effectively reduce the overall
21 cost to operators.
22
23 • The BLM may establish a fixed MW capacity fee rental payment for the life
24 of the authorization for projects in SEZs, which could effectively reduce the
25 overall cost to operators.
26
27 • The BLM may require a limited base acreage rental payment for projects
28 proposed in SEZs, which could effectively reduce the overall cost to
29 operators.
30
31 • The BLM may restructure bonding requirements for projects proposed in
32 SEZs (e.g., provide credit for salvage value of materials and equipment),
33 which could result in reduced costs to operators.
34
35 • The BLM may issue a 30-year fixed term lease with a fixed rental fee, which
36 could reduce uncertainty for operators.
37
38
39

40 **2.2.2.2.4 Proposed Withdrawal for SEZs**
41

42 As described in the Draft Solar PEIS (Section 1.3.5), as a possible mechanism to support
43 the establishment of priority areas, the Secretary of the Interior may decide to withdraw the
44 public lands encompassed by SEZs from potentially conflicting uses through the issuance of a
45 Public Land Order. If approved, the public lands would be withdrawn, subject to valid existing

1 rights, from settlement, sale, location, or entry under the general land laws, including the mining
2 laws, as follows:

- 3
- 4 • Lands could not be appropriated, sold, or exchanged during the term of the
5 withdrawal.
- 6
- 7 • New mining claims could not be filed on the withdrawn lands; however, valid
8 mining claims filed prior to the withdrawal would take precedence over future
9 solar energy development.
- 10
- 11 • Withdrawn lands would remain open to mineral leasing, geothermal leasing,
12 and mineral material laws; the BLM could elect to lease the oil, gas, coal, or
13 geothermal steam resources, or to sell common variety mineral materials such
14 as sand and gravel if the authorized officer determined there would be no
15 unacceptable impacts on future solar energy development.
- 16
- 17 • Withdrawn lands would remain open to ROW authorizations.
- 18

19 On June 30, 2009, the BLM sought and received permission from the Secretary of the
20 Interior to issue a notice of proposed withdrawal for the original 24 identified Solar Energy
21 Study Areas. This *Federal Register* notice (74 FR 31308) segregated the public lands
22 encompassed in the 24 Solar Energy Study Areas (approximately 676,000 acres [2,735.7 km²])
23 for up to 2 years from surface entry and mining, while various studies and analyses were
24 conducted to support a final decision on withdrawing the land from conflicting uses. On
25 April 21, 2011, the BLM amended the proposed withdrawal through a notice in the *Federal*
26 *Register* (76 FR 22414) to reflect acreage adjustments for slope considerations and compatibility
27 (approximately 677,384 acres [2,741 km²]). The BLM's temporary segregation expired on
28 June 29, 2011.

29

30 On June 30, 2011, the BLM applied its new ITFR to the 24 proposed SEZs to avoid
31 a lapse in the existing segregation (see Section 1.8.1 of this Supplement for additional
32 information). On the basis of the application of the ITFR, the terms of the segregation for the
33 24 proposed SEZs remain unchanged; however, it is now set to expire June 30, 2013.

34

35 The BLM held two public meetings in connection with the proposed withdrawal. The
36 first meeting was held on July 6, 2011, in Las Vegas, Nevada; the second meeting was held on
37 July 7, 2011, in Victorville, California. The public was given an opportunity to provide oral and
38 written comments at these meetings, as well as in writing via notification in the *Federal Register*.
39 Public comments have helped inform some of the decisions on the SEZs presented in this
40 Supplement.

41

42 The BLM intends to amend its withdrawal proposal to reflect the changes to the proposed
43 SEZs described in this Supplement. The amended withdrawal proposal will include only those
44 lands within SEZs that are proposed to be carried forward through the Final Solar PEIS. The
45 BLM will seek approval to change the proposed withdrawal period from 5 to 20 years. Also by
46 notice in the *Federal Register*, the temporary segregation of lands in SEZs (applied through the

1 ITFR described above) will be removed for all proposed SEZs and portions of proposed SEZs
2 that have been dropped from further consideration by the BLM.
3

4 The required withdrawal studies and analyses will be completed as part of the Final Solar
5 PEIS, including full Mineral Reports that meet the standards set forth in 43 CFR Part 2300 and
6 BLM Manual 3060 (BLM 1994). The Secretary of the Interior's final decision regarding the
7 withdrawal of these lands will be made based on the Solar PEIS. However, the Secretary's ROD
8 pertaining to the withdrawal will likely be made separate from and subsequent to the BLM's
9 ROD for the Solar PEIS.
10

11 **2.2.2.2.5 Proposed Identification Protocol for New SEZs**

12
13
14 The SEZs being carried forward in this Supplement identify approximately 285,000 acres
15 (1,153 km²) across the 6-state study area. In addition, the BLM has made a commitment to
16 continue processing pending applications. Although this is a strong start in facilitating utility-
17 scale solar energy development on public lands, the BLM intends to identify new SEZs and/or
18 expand existing SEZs on an as-needed basis. The BLM has already initiated efforts to identify
19 new SEZs in the states of California, Arizona, Nevada, and Colorado through ongoing state-
20 based efforts (see Section 2.2.2.2.6 of this Supplement for more information) and anticipates
21 identifying new or expanded SEZs in the remaining states in the near future. The BLM welcomes
22 industry, environmental organizations, government partners, Tribes, and the public to participate
23 in these efforts to identify new SEZs through petitions or participation in ongoing land use
24 planning activities (see Appendix D of this Supplement).
25

26 The BLM believes that having a workable process to identify new SEZs is an essential
27 element of its overall approach to solar energy development. The process must be open and
28 transparent, with opportunities for substantial stakeholder involvement, including solar industry
29 and transmission providers. This protocol establishes a process that would be undertaken at the
30 state or field office level as an individual land use planning effort or as part of an ongoing land
31 use plan revision. It is BLM's goal to complete the work to identify new SEZs and amend
32 applicable land use plans within 12 to 18 months of initiating such effort.
33

34 New or expanded SEZs should be identified in the context of existing solar market
35 conditions, existing and planned transmission systems, and new state or federal policies affecting
36 the level and location of utility-scale solar energy development. The BLM will assess the need
37 for new or expanded SEZs a minimum of every 5 years in each of the six states covered by the
38 Solar PEIS. The assessment of need may take place as part of on-going state-based planning
39 processes or as a separate effort.
40

41 Figure 2.2-1 outlines a step-by-step protocol for identifying new SEZs. This step-by-step
42 protocol is described in detail in Appendix D of this Supplement. To make effective use of
43 ongoing collaborative efforts, the BLM will rely on the California DRECP planning effort, the
44 Arizona RDEP, and the California West Chocolate Mountains Renewable Energy Evaluation
45 Area (REEA) effort to identify new or expanded SEZs in these planning areas in the near term
46 (see Section 2.2.2.2.6 of this Supplement).
47

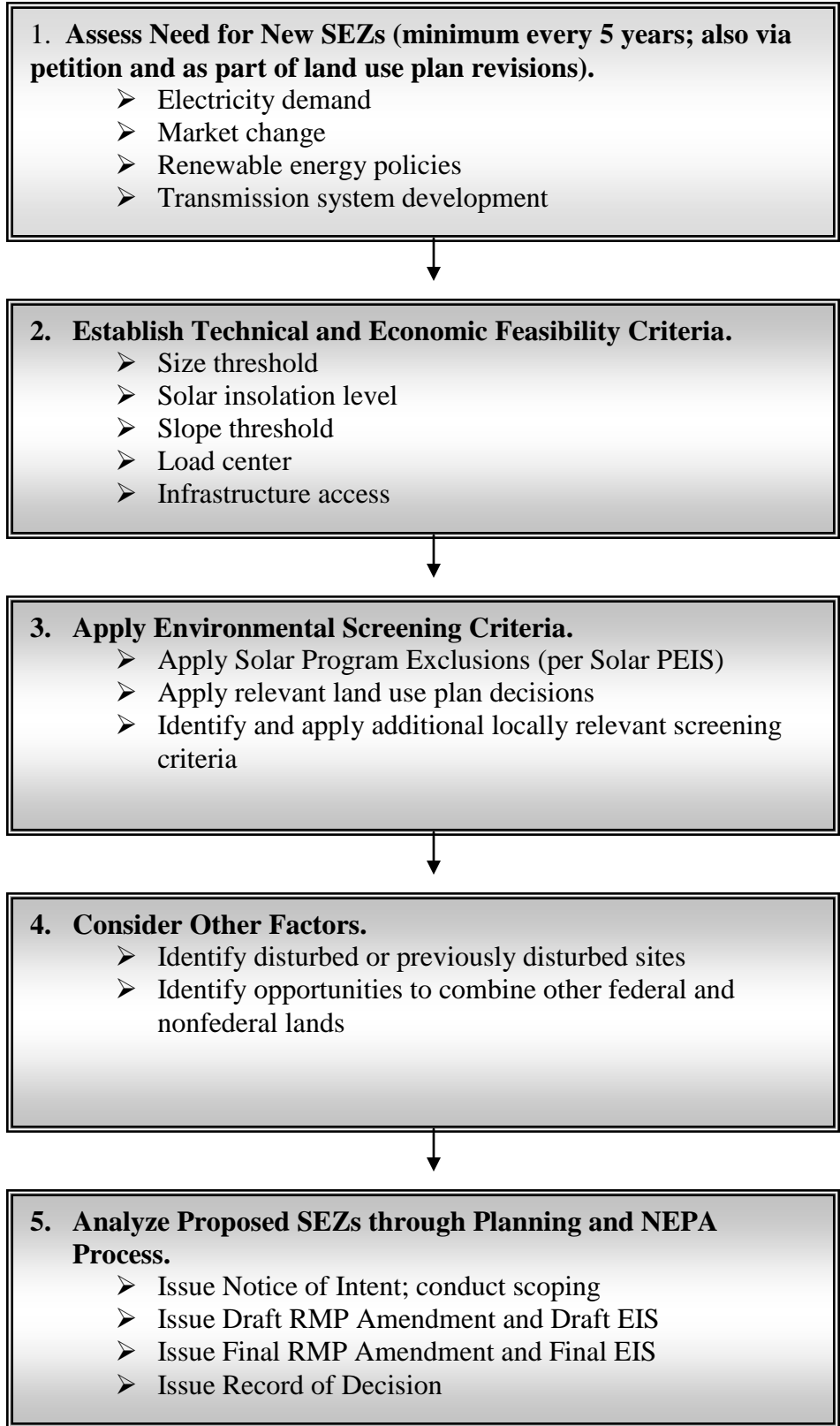


FIGURE 2.2-1 Proposed SEZ Identification Protocol (approximately 12 to 18 months to complete)

1
2
3

2.2.2.2.6 Ongoing Efforts to Analyze New SEZs

On the basis of the reduced number of SEZs being carried forward for consideration in the Final Solar PEIS, the BLM has identified an immediate need for additional SEZs in some states. For example, in Arizona, the RFDS is 2,424 MW, corresponding to approximately 22,000 acres (89 km²). Changes to proposed SEZs, however, have resulted in only about 6,500 acres (26 km²) of SEZs being carried forward in Arizona. Market demand in California indicates a similar demand for additional SEZs there. The BLM has initiated efforts to consider identifying new SEZs in these states. Such efforts are taking place outside of the Solar PEIS process but consistent with the principles outlined in the SEZ identification protocol proposed in this Supplement. The BLM believes that the future identification of new SEZs will most appropriately be managed at the BLM state and/or field office levels where there is a better understanding of need and potential resource conflicts.

Ongoing efforts that will result in the identification of new SEZs include Arizona's RDEP, California's DRECP, and California's West Chocolate Mountains REEA planning effort. In addition, the BLM will encourage local land use planning efforts to consider the need for, and identify as appropriate, new SEZs as part of ongoing land use plan revisions. Currently, plan revisions in Nevada and Colorado are pursuing this approach. Ongoing efforts to identify new SEZs and associated time lines are described below. All SEZs identified through these efforts would be analyzed through a planning and NEPA process at a level similar to the analysis in the Solar PEIS to ensure that key issues, such as wildlife, cultural resources, transmission, and cumulative impacts, are fully considered. The authorization of future projects in these SEZs would involve tiered-NEPA analyses as in the case of SEZs to be identified through the Solar PEIS. Projects proposed in SEZs that have been identified and analyzed through state or local land use planning efforts are expected to receive the same incentives as SEZs identified through the Solar PEIS.

Arizona's Restoration Energy Design Project

Arizona's RDEP was chartered in 2009 by the Secretary of the Interior to support the efforts for sustainable energy and to pilot the concept of using disturbed and low-conflict lands for renewable energy. The RDEP is both a state-level step-down to the Solar PEIS decisions and a revision of all land use plans in Arizona to integrate and update them with renewable energy land use allocations. RDEP will analyze and consider the identification of additional lands for renewable energy development (solar and wind) at any scale and in multiple jurisdictions.

The RDEP allows a look across all ownership and jurisdictional management of lands. It addresses the nexus of public lands with renewable energy potential to the generation and transmission system and provides information to policy- and decision-makers in Arizona for siting and development. RDEP will inform logical utility-scale siting (beyond just opportunities on public lands) and determine which public lands fit best.

The RDEP will provide for the integration of all renewable energy planning designations at the local and state level, based on environmental considerations (low resource conflicts), and

1 will be tailored to fit with the state- wide transmission system and existing generation facilities.
2 In addition to utility-scale opportunities, the RDEP will also offer information to assist in siting
3 of community-level distributed energy generation with diminished transmission requirements.
4

5 For utility scale-solar development specifically, the RDEP will serve as a step-down
6 analysis to the Solar PEIS. The RDEP will consider the identification of an additional SEZ,
7 consider increasing the Arizona acreage identified for renewable energy, and may help to
8 streamline the variance process for some of the variance areas potentially identified through the
9 Solar PEIS ROD. The RDEP will consider amending land use plans in Arizona to potentially
10 identify the following:

- 11
- 12 • One additional SEZ, the Agua Caliente SEZ (22,000 acres [89 km²]), that will
13 be provided the same level of inventory and analysis as the SEZs in the Solar
14 PEIS;
- 15
- 16 • Renewable Energy Development Areas (REDAs), areas within the larger
17 utility-scale solar energy variance areas that have been intensively pre-
18 screened and analyzed for suitability for development. It is anticipated that
19 applications proposed in REDAs would comply with the variance process and
20 therefore could qualify for priority processing. This will serve as an additional
21 incentive for developers.
- 22

23 The RDEP Draft EIS is expected to be published in January 2012, the Final EIS in
24 October 2012, and the ROD in December 2012.
25
26

27 *California's Desert Renewable Energy Conservation Plan*

28

29 In 2008 and 2009, BLM California (BLM-CA) and the DOI signed Memoranda of
30 Understanding with the California Governor's Office codifying the Renewable Energy Action
31 Team (REAT), initiating the Renewable Energy Policy Group (REPG), and establishing BLM-
32 CA's role in the DRECP. BLM-CA, the California Energy Commission (CEC), the California
33 Department of Fish and Game (CDFG), and the USFWS form the core of the REAT and REPG,
34 with additional participation from other state and federal agencies. The core REAT agencies are
35 leading the development of the DRECP.
36

37 The DRECP is the largest landscape-level planning effort in California, covering
38 approximately 22.5 million acres (91,054 km²) of federal and nonfederal land in the Mojave and
39 Colorado (Sonoran) Deserts of southern California. The planning area covers all or portions of
40 seven counties, including Kern, Los Angeles, San Bernardino, Inyo, Riverside, Imperial, and
41 San Diego. Approximately 10 million acres (40,469 km²) of the DRECP are administered by the
42 BLM-CA under the CDCA plan and under the Bishop, Caliente/Bakersfield, and Eastern
43 San Diego County RMPs.
44

1 The purpose of the DRECP is to advance state and federal species and ecosystem
2 conservation goals in the deserts of southern California, while also facilitating the timely
3 permitting of renewable energy projects on federal and nonfederal lands.
4

5 BLM-CA intends to use the DRECP as the foundation for possible amendments to the
6 CDCA Plan and three RMPs. The DRECP is also being designed as a Habitat Conservation Plan
7 in accordance with the ESA and a Natural Communities Conservation Plan in accordance with
8 the California Natural Communities Conservation Planning Act. Through potential land use plan
9 amendments (CDCA and three RMPs), the DRECP may be used to identify priority areas for
10 renewable energy development (potentially through the identification of additional SEZs) and
11 associated conservation on BLM lands within the DRECP planning area.
12

13 The DRECP Draft EIS is expected to be published in May 2012, the Final EIS in
14 November 2012, and the ROD in January 2013.
15

16 ***California's West Chocolate Mountains Renewable Energy Evaluation Area*** 17

18
19 The BLM is currently engaged in a planning effort within the West Chocolate Mountains
20 near the Salton Sea in Imperial County, California (referred to as the West Chocolate Mountains
21 REEA). Through this effort, the BLM is evaluating the potential environmental impacts
22 associated with renewable energy testing and development on public lands within the West
23 Chocolate Mountains REEA, including solar, wind, and geothermal. The proposed planning area
24 covers approximately 17,900 acres (72 km²) of BLM-administered public lands.
25

26 The West Chocolate Mountains planning effort is expected to result in amendments to the
27 CDCA Plan of 1980 (BLM 1999) to identify sites within the West Chocolate Mountains REEA
28 as suitable and not suitable for solar and wind energy development, and geothermal leasing and
29 development. Some SEZs for renewable energy development, including utility-scale solar
30 energy, may also be identified.
31

32 The Draft EIS for the West Chocolate Mountains REEA was published in June 2011. The
33 Final EIS is expected to be published in December 2011, with a ROD expected in April 2012.
34
35

36 ***Other Planning Efforts*** 37

38 The BLM is engaged in several RMP revisions that are looking at opportunities to
39 identify renewable energy priority areas such as new SEZs. Examples include the Las Vegas-
40 Pahrump RMP revision in Nevada, which has a draft scheduled for release in October 2012, and
41 the Grand Junction RMP revision in Colorado, which has a draft scheduled for release in
42 September 2012.
43
44
45

2.2.2.3 Proposed Variance Areas for Utility-Scale Solar Energy Development

In order to accommodate the flexibility described in the BLM’s program objectives, the modified program alternative allows for responsible utility-scale solar development outside of SEZs. The BLM proposes to identify lands outside of proposed exclusion areas and SEZs as variance areas for utility-scale solar energy development. Variance areas would be open to application but would require developers to adhere to the variance process detailed in Section 2.2.2.3.1 of this Supplement.

The proposed variance areas and associated variance process would only apply to utility-scale solar development, which is defined for the purposes of the Solar PEIS as projects capable of generating 20 MW or greater of electricity. All nonutility-scale solar energy projects, including distributed generation, would follow existing management prescriptions in BLM land use plans and be subject to individual site-specific NEPA analyses.

As the BLM continues to refine the list of proposed exclusions under the modified program alternative (see Section 2.2.2.1 of this Supplement), the amount of land in variance areas will likely be reduced. A final proposal for exclusions, and therefore variance areas, will be presented in the Final Solar PEIS.

The variance process presented in the following section replaces components of Appendix A in the Draft Solar PEIS and incorporates applicable elements of BLM Instruction Memoranda in existence or released after the publication of the Draft Solar PEIS.

2.2.2.3.1 Variance Process

The variance process provides an opportunity for developers to propose applications outside of identified SEZs and complements the directed development approach in the modified program alternative. Variances may be needed in the near-term because the lands identified as SEZs might be insufficient to accommodate demand for utility-scale solar development. In addition, there might be market, technological, or site-specific factors that make a project appropriate in a non-SEZ area. The BLM will consider variance applications on a case-by-case basis based on environmental considerations; consultation with appropriate federal, state, and local agencies, and Tribes; and public outreach. All variance applications that the BLM determines to be appropriate for continued processing will subsequently be required to comply with NEPA and all other applicable laws, regulations, and policies at the applicant’s expense. Applicants applying for a variance must assume all risk associated with their application and understand that their financial commitments in connection with their applications will not be a determinative factor in BLM’s evaluation process.

Pre-application Meeting

The BLM will require prospective applicants to schedule and participate in two pre-application meetings with the BLM before filing a variance application in variance areas

1 (43 CFR 2804.10(a)). The purpose of the first pre-application meeting is to discuss the status
2 of BLM land use planning in the area, potential land use and siting constraints, potential
3 environmental issues in the area, potential alternative site locations for the project, and the
4 variance process itself, including cost-recovery requirements, application requirements,
5 consultation requirements, public involvement requirements, and associated time lines. The
6 purpose of the second pre-application meeting is to initiate and ensure early coordination with
7 federal (e.g., NPS and USFWS), state, and local government agencies and Tribes as required by
8 the regulations (43 CFR 2804.10(b)). Through pre-application discussions, the BLM and other
9 agencies will identify information that applicants would likely be required to gather to document
10 natural and/or cultural resources present in the area. Note pre-application meetings are not
11 covered by cost-recovery fees under the BLM's ROW program.
12
13

14 ***Variance Application Process***

15

16 Applicants seeking to develop projects in variance areas will be required to submit a
17 ROW application to the BLM (Form SF-299, Application for Transportation and Utility Systems
18 and Facilities on Federal Land). In the case of a variance, the POD submitted with an application
19 must be of sufficient detail (as determined by the BLM) to evaluate the suitability of the site for
20 utility-scale solar energy development. Specific information is outlined below.
21

22 Applicants applying for a variance must establish a cost-recovery account sufficient to
23 cover all costs associated with accepting, reviewing, and processing a variance application,
24 including, but not limited to conducting environmental review and related consultations;
25 conducting cultural resource inventory and related consultations; and conducting inventories for
26 special status species, lands with wilderness characteristics, or specially designated areas. Cost-
27 recovery fees are collected after a ROW application is submitted and a cost-recovery agreement
28 is established with the applicant (43 CFR 2804.14).
29
30

31 ***Variance Application/Plan of Development (POD) Factors To Be Considered***

32

33 The BLM will consider the following factors when evaluating variance applications:

- 34
- 35 • The financial and technical capability of the applicant, including but not
36 limited to:
 - 37 – International or domestic experience with solar projects on federal or
38 nonfederal lands,
 - 39 – Sufficient capitalization to carry out development
 - 40
 - 41 • The availability of an SEZ served by transmission in the same state as the
42 applicant's proposal.
 - 43
 - 44 • If applicable, documentation that the proposed project will be located in an
45 area identified as suitable for solar energy development by another related

1 process such as the California DRECP or Arizona RDEP. Such an application
2 may be given priority status and processed as though it were in an SEZ.
3

- 4 • Any special circumstances associated with an application such as an
5 expansion or repowering of an existing project or unique federal–nonfederal
6 partnership.
7
- 8 • Documentation that the proposed project will be located in an area with low
9 resource value and where minimal conflict with adjacent lands is likely
10 (e.g., previously contaminated or disturbed lands such as brownfields
11 identified by the U.S. Environmental Protection Agency's RE-Powering
12 America's Land Initiative (<http://www.epa.gov/renewableenergyland/>);
13 mechanically altered lands such as fallowed agricultural lands; idle or
14 underutilized industrial areas; lands adjacent to urbanized areas and/or load
15 centers; previously reclaimed lands; or areas repeatedly burned and invaded
16 by fire-promoting non-native grasses).
17
- 18 • *Desert Tortoise Variance Process Requirements under Consideration:*

19
20 Desert tortoise conservation areas are excluded from BLM's proposed Solar
21 Energy Program (Figure 2.2-2—note that small areas of overlap will be
22 resolved for the Final Solar PEIS). These areas include, but are not limited to,
23 all critical habitat for desert tortoise and specially designated areas such as
24 National Parks, National Recreation Areas, and National Wildlife Refuges.
25 With respect to evaluation of potential impacts on desert tortoise, the BLM is
26 seeking comments on two Options for applications received in variance areas:
27

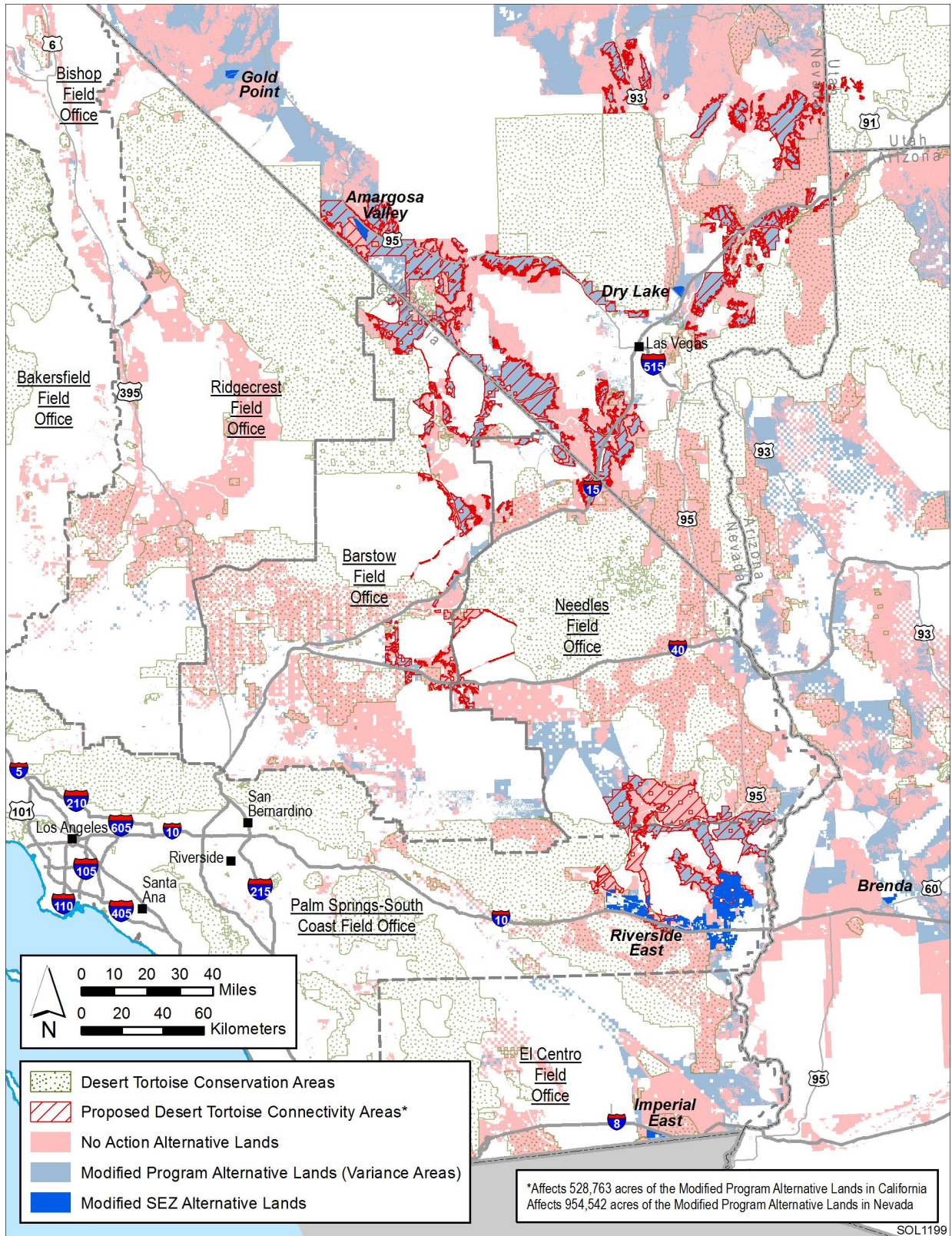
28 Option 1:

29 No special variance application requirements for desert tortoise. The BLM
30 will consider all variance applications within the range of desert tortoise on a
31 case-by-case basis in coordination with the USFWS.
32

33 Option 2:

34 For all applications in variance areas that are within the range of desert
35 tortoise but located outside of proposed connectivity areas (see light blue
36 areas in Figure 2.2-2), the applicant must provide documentation of the
37 following:

- 38 – Project area has less than or equal to 5 tortoises (>160 mm Midline
39 Carapace Length) per square mile.
- 40 – Based on the USFWS pre-project tortoise survey, the point estimate
41 for tortoises needing to be translocated would be less than or equal to
42 35 tortoise (>160 mm Midline Carapace Length).
- 43 – The project is sited in a manner that maintains at least one 3 mi (5 km)
44 wide, minimally disturbed connectivity corridor to ensure that the project
45 does not isolate or fragment tortoise habitat and populations.
46



1 For all applications in variance areas within the range of desert tortoise and within
2 proposed connectivity areas (see red hatched areas in Figure 2.2-2), siting will be
3 discouraged given anticipated high conflict. However, if a variance application is
4 submitted in this area, applicants will be subject to the translocation limitations and
5 maintenance of minimally disturbed connectivity corridors as described above. In
6 addition, applicants will work with the BLM and USFWS to survey an area 3 to
7 4 times larger than the proposed project area in an attempt to find a suitable project
8 location that meets all of the following criteria:

- 9 – Projects will be sited in the lowest tortoise density area surveyed and will
10 not exceed 2 tortoise per square mile.
- 11 – Projects will be sited in locations where native vegetation communities are
12 degraded or soils are compacted, such that habitat restoration potential is
13 low.
- 14 – Mitigation for projects within the tortoise connectivity areas should be
15 prioritized to improve conditions within the connectivity area, and if these
16 options do not exist, mitigation should be applied toward the nearest
17 tortoise conservation area (e.g., Desert Wildlife Management Area
18 [DWMA] or critical habitat).

- 19 • *Greater Sage-Grouse Requirements.* For all variance applications within the
20 range of the greater sage-grouse, the applicant must provide documentation of
21 the following:
 - 22 – Project is at least 3 mi (5 km) from the nearest lek.
 - 23 – Project will not remove preliminary priority habitat.
 - 24 – Project will be mitigated through land acquisition or habitat enhancement
25 1:1 for the impact on sage-grouse habitat.
- 26 • Documentation that the proposed project will minimize the need to build
27 new roads and/or transmission infrastructure (e.g., transmission with
28 existing capacity and substations is already available; or minimal
29 additional infrastructure would be needed, such as incremental transmission
30 re-conductoring or upgrades).
- 31 • Documentation that the proposed project will make highly efficient use of the
32 land considering the solar resource, the technology to be used, and the
33 proposed project layout.
- 34 • Documentation that the proposed project will meet all required design features
35 adopted in the ROD for the Solar PEIS (currently presented in Appendix A of
36 the Draft Solar PEIS).
- 37 • Documentation that the proposed project will minimize impacts on water
38 resources.
- 39 • Documentation that the proposed project will minimize impacts on water
40 resources.
- 41 • Documentation that the proposed project will minimize impacts on water
42 resources.
- 43 • Documentation that the proposed project will minimize impacts on water
44 resources.

- 1 • For applications in the DRECP planning area, documentation that the
2 proposed project will be consistent with the biological goals and objectives of
3 the plan.
4
- 5 • Documentation that the proposed project will be consistent with priority
6 conservation, restoration, and/or adaptation objectives in best available
7 landscape-scale information (e.g., landscape conservation cooperatives, rapid
8 ecological assessments, and state-level crucial habitat assessment tools).
9
- 10 • Any opportunities to combine federal and nonfederal lands for optimum
11 siting.
12

13 ***BLM Coordination Activities***

14
15
16 To assist in the evaluation of variance applications, the BLM will coordinate, as
17 necessary, with appropriate federal, state, and local government agencies; and Tribes.
18 Consideration should be given to the following:
19

- 20 • Consistency with the plans and policies of other government entities.
21
- 22 • Consultation with Tribes. Government-to-government consultation with
23 Tribal staff will provide opportunities for Tribes to identify traditional cultural
24 properties and sacred sites with applications in variance areas. Tribes will be
25 invited to attend pre-application meetings with the applicant and the BLM. On
26 the basis of information and discussions arising from the pre-application
27 meetings, the BLM will determine whether there is a need for new
28 ethnographic research to provide sufficient information to adequately consider
29 the effects of solar development on issues and resources of concern to Tribes.
30 BLM field office cultural staff, including specialists assigned to Renewable
31 Energy Coordination Offices where present, in consultation with their Deputy
32 Preservation Officer, shall recommend to responsible BLM line officers
33 whether new ethnographic data are required for a given solar application.
34 Should new ethnographic research, studies, or interviews be judged necessary,
35 the BLM cultural staff, in consultation with Tribal officials, will recommend
36 to BLM line officers the appropriate scope of the study, provisions for
37 safeguarding data confidentiality, and programs of mitigation.
38
- 39 • Consultation with the SHPO. The BLM, in consultation with the SHPO, will
40 determine what steps will be required to identify historic properties in the area
41 of effect for the variance application. Additional inventories may include
42 Class II and/or Class III surveys. Such inventories of areas of direct and
43 indirect effect must be completed prior to formal submission of a completed
44 application. On the basis of the results of the inventory, determinations of
45 eligibility of sites to the *National Register of Historic Places* (NRHP), and

- 1 determinations of effect, programs of mitigation would be approved by the
2 BLM and carried out by the applicant prior to ground disturbance.
3
- 4 • Coordination with the USFWS on any application that would result in impacts
5 on:
 - 6 – Desert tortoise connectivity areas,
 - 7 – Sage-grouse areas of concern,
 - 8 – Golden eagles, and
 - 9 – Other trust resource concerns.
 - 10
 - 11 • Coordination with state fish and wildlife agencies.
12
 - 13 • Consultation with the NPS on any application that would result in impacts on
14 the resources and values of units of the National Park System and other
15 special status areas under NPS and/or BLM administration (e.g., National
16 Historic Trails). The applicant may be required by the NPS to provide
17 documentation of potential project impacts on sensitive park resources,
18 including but not limited to, daytime and night sky views, water sources, air
19 quality, habitats and ecosystems, wilderness areas, and natural sounds.
20
 - 21 • Consultation with the NPS and U.S. Forest Service (USFS) administration/
22 management for National Scenic and Historic Trails.
23
 - 24 • Consultation with the DoD.
25
 - 26 • For applications in the DRECP planning area, coordination with California
27 REAT agencies (BLM, USFWS, CDFG, and CEC).
28
 - 29 • Coordination with state and regional transmission planning efforts
30 (e.g., Western Governors Association, California Renewable Energy
31 Transmission Initiative, Nevada Renewable Energy Transmission Access
32 Advisory Committee, New Mexico Renewable Energy Transmission
33 Authority), transmission coordination authorities (e.g., WECC), state energy
34 offices, and transmission system operators to evaluate transmission access
35 issues in the project area and to maximize coordination with ongoing efforts.
36
 - 37 • Communication with any potentially affected grazing permittee/lessee.
38
 - 39 • Communication with the owner of any federal mining claims and/or mineral
40 leases located with the boundaries of the proposed project.
41
42
43

1 ***Public Meeting***
2

3 The BLM has the discretion to require a pre-scoping public meeting that falls outside of
4 the NEPA process for variance applications to assist in the identification of potential issues
5 connected with the proposal.
6

7
8 **2.2.2.3.2 Variance Process Determination**
9

10 The BLM has determined that, in appropriate circumstances, it can rely on the broad
11 discretion it has under FLPMA to deny ROW applications without completing the NEPA
12 process. Such decisions must be made with regard for the public interest and be supported by
13 reasoned analysis and an adequate administrative record. Decisions to deny pending applications
14 must be assessed on a case-by-case basis. BLM’s denial of an application constitutes a “final
15 agency action” and is therefore subject to administrative appeals to the IBLA.
16

17 On the basis of the information provided by the applicant, and the input of federal, state,
18 and local government agencies, Tribes, and the public for a variance, the BLM will determine
19 whether it is appropriate to continue to process the submitted ROW application or to deny the
20 application. Variance evaluations will be conducted at the BLM field and state office levels.
21

22 All variance applications that are determined to be appropriate for continued processing
23 will be submitted by the State Director to the BLM Washington Office for the Director’s
24 concurrence. The Director also has the discretion to offer lands determined to be appropriate for
25 continued processing under competitive procedures. In making this determination, the Director
26 will consider variables such as public interest, market demand for solar development in the
27 region, expressions of interest from other parties, authorized use and/or ownership of adjoining
28 lands, and the purpose of the project.
29

30 All variance applications that the BLM determines to be appropriate for continued
31 processing will subsequently be required to comply with NEPA and all other applicable laws,
32 regulations and policies at the applicant’s expense, including but not limited to the ESA, the
33 NHPA, and the NPS Organic Act of 1916. Proposed projects in variance areas will require
34 consideration of alternatives and will likely result in an environmental impact statement level of
35 NEPA documentation. Compliance with applicable laws, regulations, and policies could result in
36 substantial changes to a project proposal or application denial.
37
38

39 **2.2.2.4 Land Use Plans To Be Amended**
40

41 Land use plans in the six-state study area would be amended under the modified program
42 alternative to incorporate the planning components of the proposed Solar Energy Program.
43 Appendix E, Table E-1, of this Supplement lists all of the land use plans to be amended. The
44 amendments would identify (1) lands that would be excluded from utility-scale solar energy
45 development, (2) lands to be included in SEZs, and (3) lands that would be identified as variance
46 areas for utility-scale solar energy development. The plans would also be amended to adopt the

1 proposed program and SEZ-specific design features described in the Draft Solar PEIS and
2 Supplement.

3 4 5 **2.2.3 Modified SEZ Program Alternative** 6

7 Under the modified SEZ program alternative (referred to as “modified SEZ alternative”),
8 the BLM would restrict utility-scale solar energy development applications to SEZs only, and
9 identify all other lands as exclusion areas for utility-scale solar energy development. The
10 proposed authorization policies described in the modified program alternative would apply to
11 applications in SEZs under the modified SEZ alternative.
12

13 14 **2.2.3.1 Proposed Right-of-Way Exclusion Areas** 15

16 Under the modified SEZ alternative, all areas outside of identified SEZs would be
17 identified as exclusion areas for utility-scale solar energy development. No lands would be
18 identified as variance areas for utility-scale solar energy development.
19

20 21 **2.2.3.2 Proposed Solar Energy Zones** 22

23 The proposed SEZs to be carried forward into the Final Solar PEIS under the modified
24 SEZ alternative are the same as those described under the modified program alternative
25 (see Section 2.2.2.2). The BLM is committed to collecting additional SEZ-specific resource data
26 and conducting additional analysis in order to more effectively facilitate development in SEZs.
27 The BLM has developed individual action plans for SEZs as part of this Supplement that
28 describe data gaps for individual SEZs and propose data sources and methods for the collection
29 of additional data. The action plans are presented in Appendix C of this Supplement. The BLM
30 will prioritize the collection of additional data and analysis in those SEZs that are most likely to
31 be developed in the near-future. Note that additional data and analysis will help facilitate
32 development in SEZs but is not required to identify an area as an SEZ as part of the BLM’s Solar
33 Energy Program.
34

35 36 **2.2.3.2.1 Solar Energy Zone Policies** 37

38 The policies presented under the modified program alternative are also applicable to the
39 modified SEZ alternative, including the authorization process for projects in SEZs, incentives for
40 projects in SEZs, the protocol to identify new SEZs, and the proposed withdrawal of SEZs. Also,
41 as described previously, the BLM has initiated efforts to identify new SEZs that are outside of
42 the Solar PEIS but consistent with the principles outlined in this Supplement (see Appendix D of
43 this Supplement).
44
45

1 **2.2.3.3 Land Use Plans To Be Amended**

2
3 Land use plans in the six-state study area would be amended under the modified SEZ
4 alternative to incorporate the planning components of the proposed Solar Energy Program.
5 Appendix E, Table E-1, of this Supplement lists all of the land use plans to be amended. The
6 amendments would identify (1) lands that would be excluded from utility-scale solar energy
7 development and (2) lands to be included in SEZs. Under the modified SEZ alternative, no lands
8 would be identified as variance areas for utility-scale solar energy development (i.e., all lands
9 outside of identified SEZs would be excluded from utility-scale solar development). The land use
10 plans would also be amended to adopt the proposed program and SEZ-specific design features
11 described in the Draft Solar PEIS and this Supplement.
12

13
14 **2.3 ANALYSIS OF BLM’S MODIFIED ACTION ALTERNATIVES**

15
16 This section presents an analysis of the BLM’s two modified action alternatives. No
17 change to the no action alternative is being proposed as part of this Supplement; analysis of the
18 no action alternative can be found in the Draft Solar PEIS (Section 6.3). For comparative
19 purposes, however, information on the no action alternative has been presented in summary
20 tables throughout this section.
21

22 Table 2.3-1 lists the approximate amount of land that would be available for utility-scale
23 solar ROW application in each state under the no action alternative and the modified action
24 alternatives. Figures 2.3-1 through 2.3-6 show the approximate locations of these lands and of
25 specifically excluded BLM-administered lands.
26

27 This section evaluates the modified action alternatives in terms of their effectiveness in
28 meeting the objectives outlined as part of BLM’s purpose and need for action (see Section 1.3 of
29 this Supplement). The BLM’s objectives include the following:
30

- 31 • Facilitating near-term utility-scale solar energy development on public lands;
32
33 • Minimizing potential negative environmental, social, and economic impacts;
34
35 • Providing flexibility to consider a variety of solar energy projects
36 (e.g., location, facility size, and technology);
37
38 • Optimizing existing transmission infrastructure and corridors; and
39
40 • Standardizing and streamlining the authorization process for solar energy
41 development on BLM-administered lands.
42

43 This section also evaluates the extent to which the modified action alternatives would
44 assist the BLM in meeting the projected demand for utility-scale solar energy development, as
45 estimated by the RFDS developed for the Draft Solar PEIS (see Section 1.6 of this Supplement).
46 The extent to which each alternative would assist the BLM in meeting the mandates of the

1 **TABLE 2.3-1 Summary of Potentially Developable BLM-Administered Land under the**
 2 **No Action Alternative, the Modified Solar Energy Development Program Alternative, and**
 3 **the Modified SEZ Program Alternative^a**

State	Total State Acreage ^b	BLM-Administered Lands Constituting No Action Alternative (acres) ^c	BLM-Administered Lands Constituting Modified Program Alternative (acres) ^{c,d}	BLM-Administered Lands Constituting Modified SEZ Alternative (acres)
Arizona	72,700,000	9,181,178 (9,218,009)	3,397,007 (4,485,944)	6,465 (13,735)
California	100,200,000	10,815,285 (11,067,366)	1,354,559 (1,766,543)	153,627 (339,090)
Colorado	66,500,000	7,282,258 (7,282,061)	111,059 (148,072)	16,308 (21,050)
Nevada	70,300,000	40,760,443 (40,794,055)	9,207,288 (9,084,050)	60,395 (171,265)
New Mexico	77,800,000	11,783,665 (12,188,361)	4,292,279 (4,068,324)	29,964 (113,052)
Utah	52,700,000	18,098,240 (18,182,368)	1,962,671 (2,028,222)	18,658 (19,192)
Total	440,200,000	97,921,069 (98,732,220)	20,324,863 (21,581,154)	285,417 (677,384)

^a Values are reported in number of acres. Acreages in parentheses are values from the Draft Solar PEIS, provided for comparison. To convert acres to km², multiply by 0.004047.

^b From Table 4.2-1 of the Draft Solar PEIS.

^c The acreage estimates were calculated on the basis of the best available geographic information system (GIS) data. Although no changes from the Draft Solar PEIS were made to the categories of lands included under the no action alternative, updated GIS data for National Landscape Conservation System (NLCS) lands resulted in a small decrease in the estimated acres (less than 1% of total). For the modified development program alternative lands, GIS data were not available for the entire set of exclusions; thus the exact acreage could not be calculated. Exclusions that could not be mapped would be identified during the ROW application process.

^d As stated in Section 2.2.2.2 of the Draft Solar PEIS, the BLM originally planned to exclude contiguous areas of less than 247 acres (1 km²) from the lands constituting the development program alternative, but then determined that it would be appropriate to include these smaller parcels. Values shown in this column for the modified program alternative include areas of less than 247 acres (1 km²). Exclusion of these smaller parcels would result in a total decrease of approximately 1.74 million acres (7,001 km²) from the modified program alternative across the six-state study area, for a total of approximately 18.6 million acres. This total area of 18.6 million acres is directly comparable to the 22 million acres identified as available under the program alternative in the Draft Solar PEIS (i.e., the area of proposed land available under the program alternative has been decreased by about 3.4 million acres after accounting for the change in treatment of areas less than 247 acres [1 km²]).

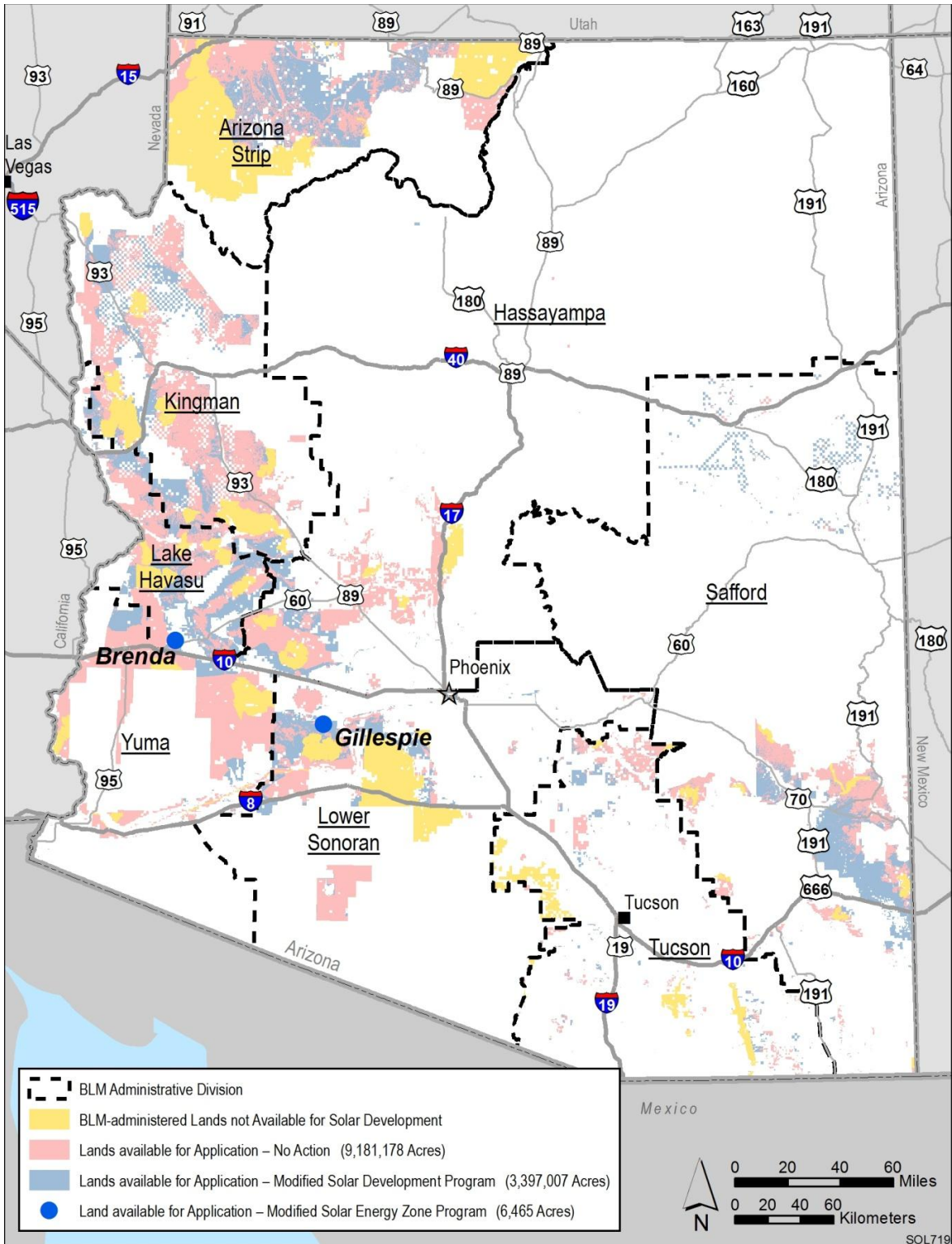
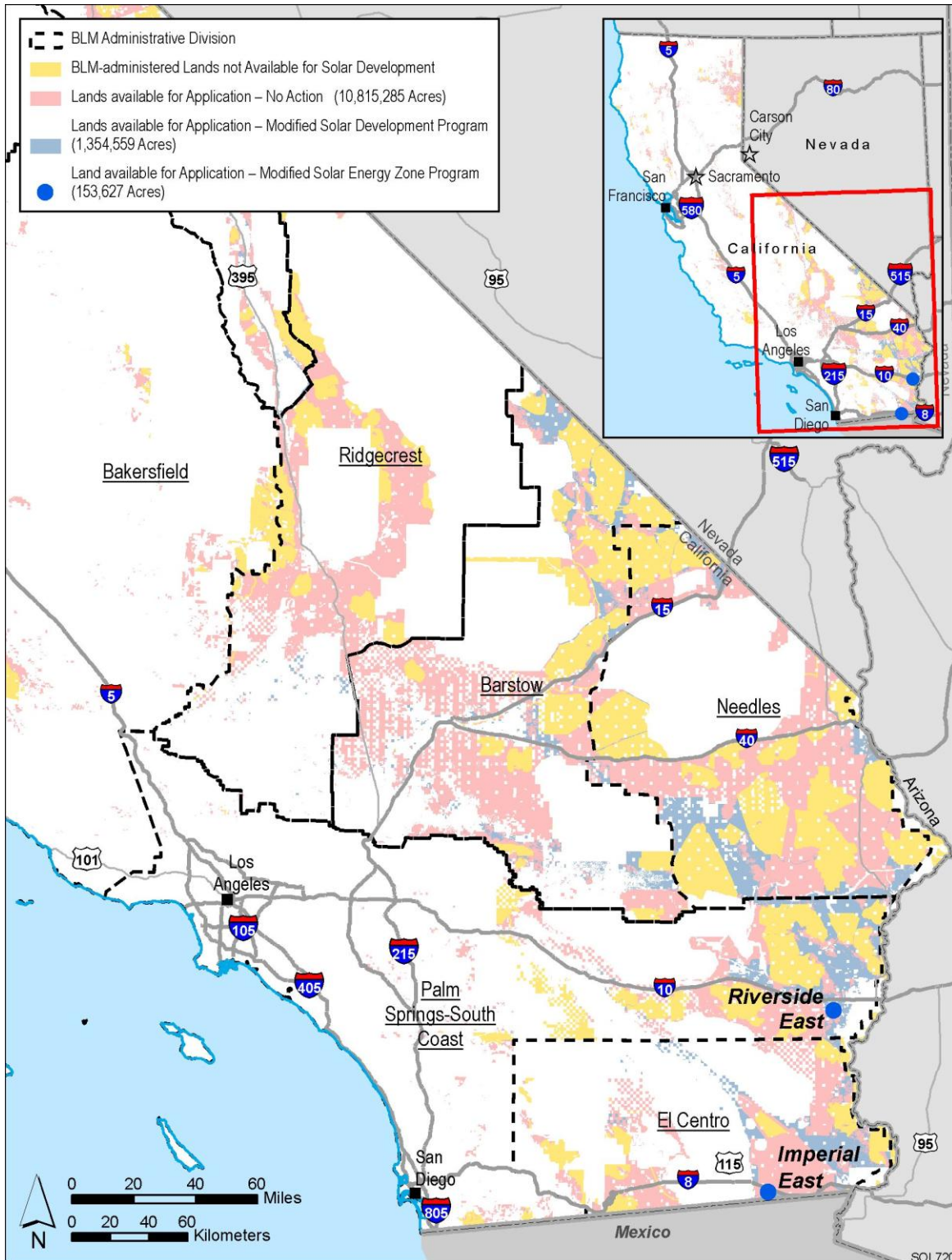


FIGURE 2.3-1 BLM-Administered Lands in Arizona Available for Application for Solar Energy ROW Authorizations under the Modified BLM Alternatives Considered in this Supplement (Note: the lands available under the no action alternative include both the pink and blue shaded areas.)



1

2 **FIGURE 2.3-2 BLM-Administered Lands in California Available for Application for Solar**
 3 **Energy ROW Authorizations under the Modified BLM Alternatives Considered in this**
 4 **Supplement (Note: the lands available under the no action alternative include both the pink**
 5 **and blue shaded areas.)**

1

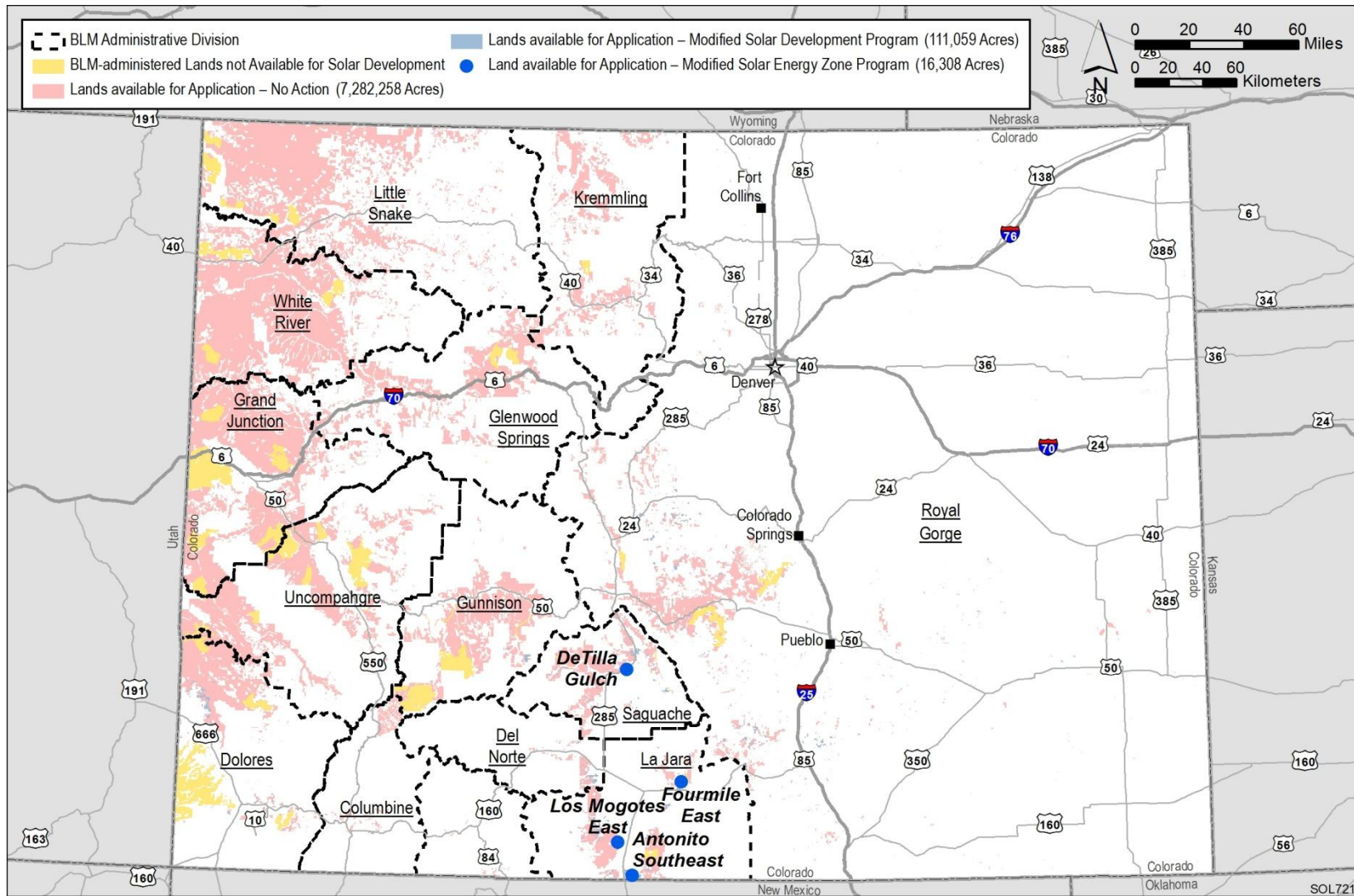


FIGURE 2.3-3 BLM-Administered Lands in Colorado Available for Application for Solar Energy ROW Authorizations under the Modified BLM Alternatives Considered in this Supplement (Note: the lands available under the no action alternative include both the pink and blue shaded areas.)

4

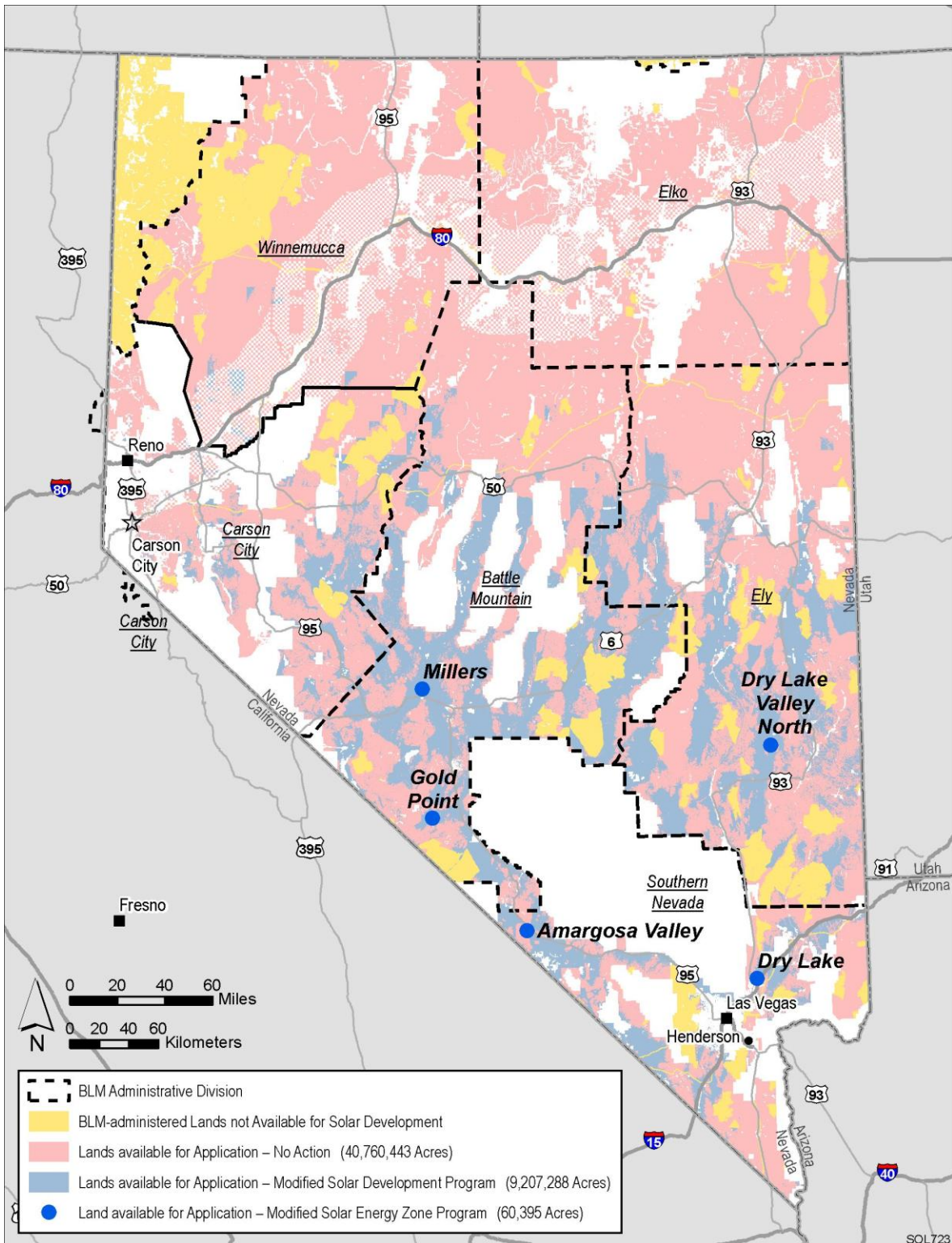
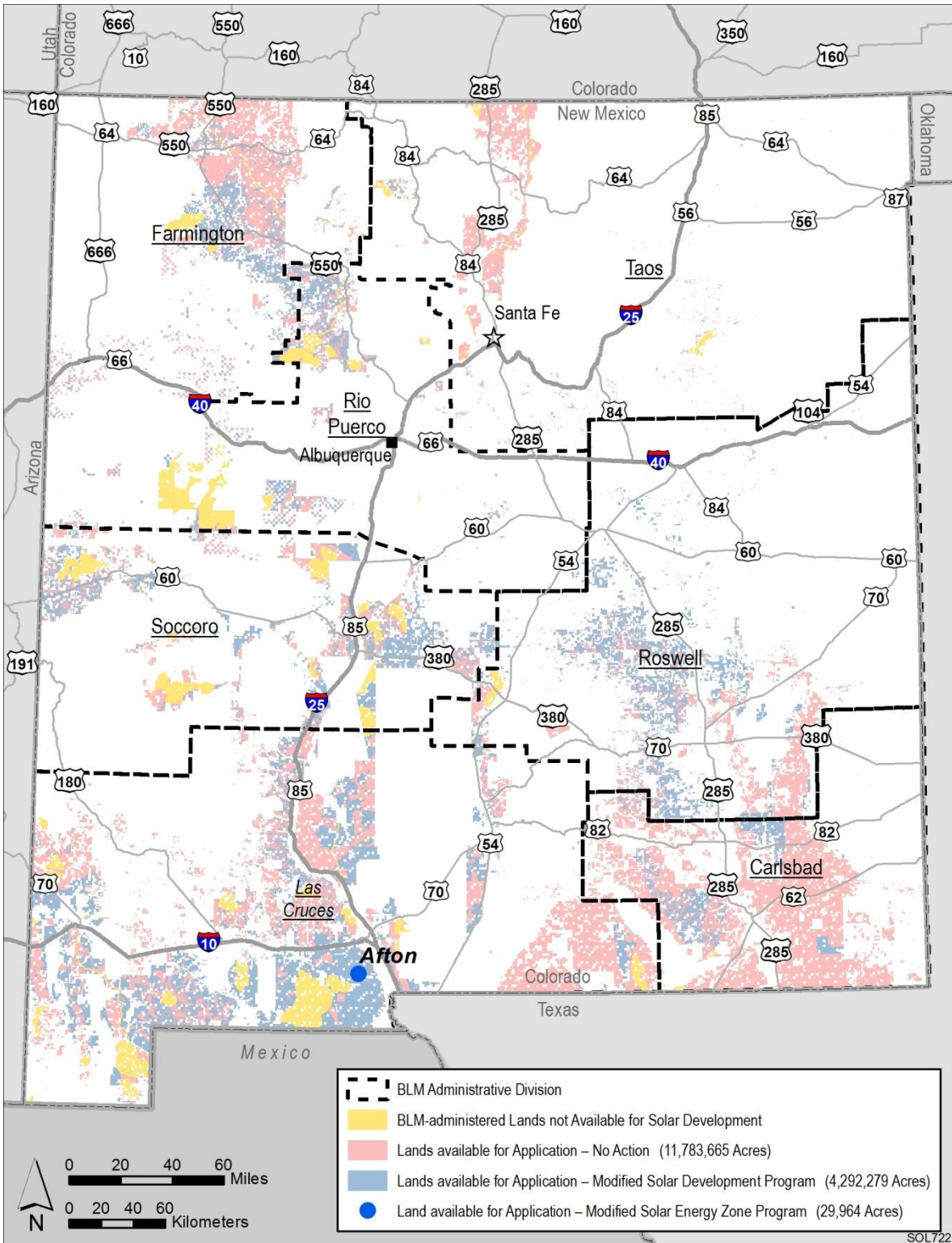
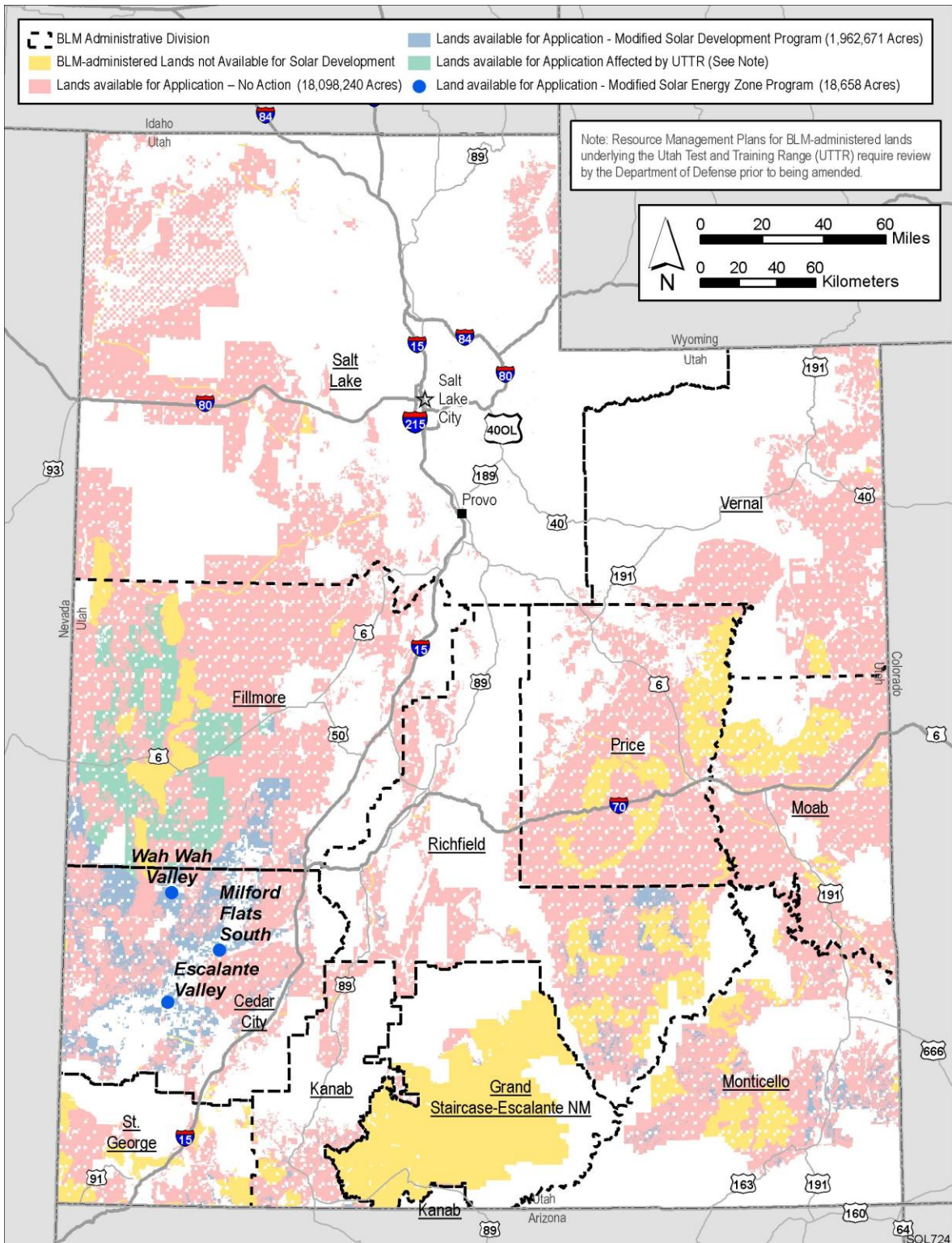


FIGURE 2.3-4 BLM-Administered Lands in Nevada Available for Application for Solar Energy ROW Authorizations under the Modified BLM Alternatives Considered in this Supplement (Note: the lands available under the no action alternative include both the pink and blue shaded areas.)



1
2
3
4
5
6

FIGURE 2.3-5 BLM-Administered Lands in New Mexico Available for Application for Solar Energy ROW Authorizations under the Modified BLM Alternatives Considered in this Supplement (Note: the lands available under the no action alternative include both the pink and blue shaded areas.)



1
2
3
4
5

FIGURE 2.3-6 BLM-Administered Lands in Utah Available for Application for Solar Energy ROW Authorizations under the Modified BLM Alternatives Considered in this Supplement (Note: the lands available under the no action alternative include both the pink and blue shaded areas.)

1 Energy Policy Act of 2005 (Public Law [P.L.] 109-58) and Secretarial Order 3285A1 (Secretary
2 of the Interior 2010) (see Section 1.1 of the Draft Solar PEIS), including, but not limited to, the
3 mandate to identify and prioritize specific locations best-suited for utility-scale solar energy
4 development on public lands, is also assessed.
5

6 In this section, summary-level information on the potential direct and indirect impacts on
7 resources and resource uses from solar energy development is provided in the context of how
8 such impacts would vary as a function of the modified action alternatives. Table 2.3-2 provides
9 a summary of the environmental impacts of the modified alternatives. Commensurate with the
10 planning-level decisions to be made (Section 1.5 of this Supplement), the impact summaries are
11 primarily qualitative; however, to the extent practicable, some impacts have been quantified.
12 While the impacts of solar development itself are largely similar across the modified action
13 alternatives, differences between the alternatives are found in the location, pace, and
14 concentration of this development.
15

16 The BLM has also revised Appendix J from the Draft Solar PEIS¹ “Special Status
17 Species Associated with BLM’s Alternatives in the Six-State Study Area.” This document,
18 which provides a comparison of species affected by alternative, can be obtained through the
19 Solar PEIS project Web site (solareis.anl.gov).
20

21 This section incorporates by reference the Draft Solar PEIS assessment of the cumulative
22 impacts of developing utility-scale solar energy on BLM-administered lands in the six-state
23 study area over the next 20 years. The scope of the cumulative impact analysis in the Draft Solar
24 PEIS was based on solar energy development at the level projected in the RFDS. As discussed in
25 Section 1.6 of this Supplement, the RFDS remains a valid estimate of potential solar
26 development over the next 20 years in the six-state study area. See Section 2.3.5 below for
27 additional information on cumulative effects.
28

29 Discussion of the BLM’s selection of a preferred alternative can be found in Section 2.3.4
30 of this Supplement. The discussion of other NEPA considerations (i.e., unavoidable adverse
31 impacts, short-term uses of the environment and long-term productivity, irreversible and
32 irretrievable commitment of resources, and mitigation of adverse effects) that was presented in
33 the Draft Solar PEIS (Section 6.6) remains applicable to the modified action alternatives and is
34 incorporated by reference from the Draft Solar PEIS.
35
36

¹ As described in the Reader’s Guide for the Draft Solar PEIS, the need for an expanded species analysis by
alternative was identified too late in preparation of the Draft Solar PEIS to be accommodated in the Draft version
of the document. The BLM committed to updating Appendix J and making it available between the Draft and
Final Solar PEIS. That work was completed and has subsequently been revised based on the changes proposed to
the action alternatives through this Supplement. The revised document and additional details can be found at the
Solar PEIS project Web site (solareis.anl.gov).

TABLE 2.3-2 Summary-Level Assessment of Potential Environmental Impacts by Alternative^a

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Lands and Realty	<p>Utility-scale solar energy development would preclude other land uses within the project footprint and could alter the character of largely rural areas. Development of supporting infrastructure (e.g., new transmission lines, roads) would also locally affect land use. These impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features (e.g., stakeholder coordination/consultation, consolidation of infrastructure) could effectively avoid or minimize many of these impacts.</p>	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.	Same impacts as modified program alternative, except impacts could be potentially more dispersed.
Specially Designated Lands and Lands with Wilderness Characteristics	<p>Specially designated lands and lands with wilderness characteristics could be significantly affected through direct and indirect impacts (e.g., visual impacts, reduced access, noise impacts, fugitive dust) during both the construction and operations phases. Similar impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features.</p> <p>All National Landscape Conservation System (NLCS) lands would be excluded. Also excluded would be Areas of Critical Environmental Concern (ACECs), Special Recreation Management Areas (SRMAs) except in Nevada and portions of the Yuma East SRMA in Arizona; Desert Wildlife Management Areas (DWMAs); National Recreation Trails and National Backcountry Byways; National Historic and Scenic Trails, Wild, Scenic, and Recreational Rivers, and segments of rivers determined to be eligible or suitable for Wild and Scenic River status, and lands within the proposed Mojave Trails National Monument.^b</p> <p>All areas where there is an applicable land use plan decision to protect lands with wilderness characteristics would be excluded</p>	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts but affect a smaller number of areas.	<p>Same impacts as modified program alternative, except that only NLCS lands currently off-limits to solar energy development would be excluded.</p> <p>Impacts could be potentially more dispersed and greater on specially designated lands and lands with wilderness characteristics excluded under the modified action alternatives.</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Rangeland Resources	<p>Some livestock grazing allotments may be affected by solar energy development right-of-way (ROW) authorizations through reductions in acreage and/or loss of animal unit months (AUMs).</p> <p>Wild horses and burros also could be affected with animals displaced from the development area; the number of wild horse and burro herd management areas (HMAs) overlapping with or in the vicinity of lands available for ROW application would be less than under the no action alternative.</p> <p>These impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller geographic area within a known set of grazing allotments and HMAs.</p>	<p>Same impacts as modified program alternative, except impacts could be potentially more dispersed and there is less certainty about which grazing allotments and HMAs potentially could be affected.</p>
Recreation	<p>Recreational uses would be precluded within lands used for solar energy development. Recreational experiences could be adversely affected in areas proximate to solar energy projects and related transmission. These impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features.</p> <p>All SRMAs are excluded from solar energy development (except in Nevada and portions of the Yuma East SRMA in Arizona). Also excluded are developed recreational facilities and special-use permit recreation sites.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts but affect fewer recreational resources.</p>	<p>Same impacts as modified program alternative, except SRMAs, recreational facilities, and special-use permit recreation sites not excluded.</p> <p>Impacts could be potentially more dispersed and greater on those recreational areas excluded under the action alternatives.</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Military and Civilian Aviation	Military and civilian aviation impacts would be identified and adequately mitigated prior to the Bureau of Land Management’s (BLM’s) issuance of a ROW authorization.	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.	Same impacts as modified program alternative, except impacts could be potentially more dispersed.
Geologic Setting and Soil Resources	Development of large blocks of land for solar energy facilities and related infrastructure would result in impacts on geologic and soil resources in terms of soil compaction and erosion, although these impacts could be effectively mitigated. Impacts on biological soil crusts would be long term and possibly irreversible. These impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features.	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.	Same impacts as modified program alternative, except impacts could be potentially more dispersed.
Mineral Resources	Mineral development within the project footprint for utility-scale solar energy development would generally be an incompatible use; however, some resources underlying the project area might be developable (e.g., directional drilling for oil and gas or geothermal resources, underground mining). These impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features. Lands within solar energy zones (SEZs) could be withdrawn from location and entry under the mining laws.	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.	Same impacts as modified program alternative, except impacts could be potentially more dispersed. No SEZs would be identified or withdrawn.

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Water Resources	<p>Solar thermal energy technologies with wet-cooling systems require large volumes of water, with potentially significant environmental impacts; however, such projects would be limited primarily to locations with ample groundwater supplies where water rights and the approval of water authorities could be obtained. Solar thermal projects with dry-cooling systems require less than one-tenth of the amount of water required for wet-cooling systems.</p> <p>All solar energy facilities require smaller volumes of water for mirror or panel washing and potable water uses, which would result in relatively minor impacts on water supplies.</p> <p>Other potential impacts, including modification of surface and groundwater flow systems, water contamination resulting from chemical leaks or spills, and water quality degradation by runoff or excessive withdrawals, can be effectively mitigated.</p> <p>Design features (e.g., minimizing water use, avoiding floodplains and ephemeral stream channels, measures for drainage and erosion control) could reduce many of these impacts.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts but affect fewer water resources.</p>	<p>Same impacts as modified program alternative, except impacts could be potentially more dispersed.</p>
Vegetation	<p>Development likely to require total removal of vegetation at most facilities, which could result in significant direct impacts in terms of increased risk of invasive species introduction, changes in species composition and distribution, habitat loss (e.g., dune or riparian areas), and damage to biological soil crusts. Indirect impacts also likely in terms of dust deposition, altered drainage patterns, runoff, and sedimentation. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts but affect a smaller number of areas.</p>	<p>Same impacts as modified program alternative, except there would be no explicit exclusions to avoid known sensitive vegetation resources.</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Vegetation (Cont.)	<p>Design features (e.g., invasive species control programs, fugitive dust control, minimizing size of disturbed areas) could significantly reduce impacts.</p> <p>Exclusions would avoid impacts in specific areas, including ACECs, Research Natural Areas, and Old Growth Forest.</p> <p>Less than 14% each of the Central Basin and Range and Chihuahuan Deserts Ecoregions, 11% of the Sonoran Basin and Range Ecoregion, and 5% of the Madrean Archipelago Ecoregion are located within the lands that would be available for application. Other ecoregions coincide with these lands at levels below 5%.</p> <p>The land cover types for the following example species overlap with variance areas available for ROW application by the percentage shown:</p> <p style="padding-left: 40px;">Joshua tree – less than 7%</p> <p style="padding-left: 40px;">Saguaro – less than 10%</p>	<p>Of the five ecoregions that coincide with SEZs, 1% or less of each ecoregion would be available for ROW application.</p> <p>Less than 1% of the land cover type for Joshua tree and saguaro species is located within the SEZs.</p>	<p>Impacts could be potentially more dispersed and greater on those vegetation resources excluded under the modified action alternatives.</p> <p>Lands available for ROW application span 22 ecoregions. More than 50% of 2 ecoregions (Central Basin and Range, Northern Basin and Range) would be available for application.</p> <p>The land cover types for the following example species overlap with the lands that would be available for ROW application by the percentage shown:</p> <p style="padding-left: 40px;">Joshua tree – about 32%</p> <p style="padding-left: 40px;">Saguaro – about 26%</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Wildlife and Aquatic Biota	<p>Numerous wildlife species would be adversely affected by loss of habitat, disturbance, loss of food and prey species, loss of breeding areas, effects on movement and migration, introduction of new species, habitat fragmentation, and changes in water availability. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features (e.g., limiting land disturbance, conducting pre-disturbance surveys, controlling surface water runoff) could reduce many of these impacts.</p> <p>Exclusions would avoid such impacts in specific areas, including exclusion of ACECs, big game migratory corridors and winter ranges, Research Natural Areas, and lands with seasonal restrictions.</p> <p>The following example species' habitats overlap with variance areas for ROW application by the percentage shown:</p> <ul style="list-style-type: none"> Western rattlesnake – less than 6% Golden eagle – less than 5% Black-tailed jackrabbit – less than 6% Pronghorn – less than 5% Mule deer – less than 6% Mountain lion – less than 5% 	<p>Same impacts as modified program alternative, except the potential area of impact would be limited to a smaller, known geographic area.</p> <p>Less than 1% of the habitats for western rattlesnake, golden eagle, black-tailed jackrabbit, pronghorn, mule deer, and mountain lion are located within the SEZs.</p>	<p>Same impacts modified program alternative, except there would be no explicit exclusions to avoid known sensitive wildlife resources.</p> <p>Impacts could be potentially more dispersed and greater on those wildlife resources excluded under the modified action alternatives.</p> <p>The following species' habitats overlap with the lands that would be available for ROW application by the percentage shown:</p> <ul style="list-style-type: none"> Western rattlesnake – about 27% Golden eagle – about 23% Black-tailed jackrabbit – about 24% Pronghorn – about 22% Mule deer – about 22% Mountain lion – about 21%

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Special Status Species	<p>Special status species and critical habitats would be protected in accordance with Endangered Species Act (ESA) requirements either through avoidance, translocation (plants), or acquisition and protection of compensatory habitat. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Critical habitat designated or proposed by the U.S. Fish and Wildlife Service (USFWS) would be excluded. All ACECs designated for habitat would be excluded along with identified Desert Tortoise translocation sites and other areas where the BLM has made a commitment to protect sensitive species (including Mohave ground squirrel and flat-tailed horned lizard habitat in California, greater sage-grouse habitat in California, Nevada, and Utah, and Gunnison’s sage-grouse habitat in Utah).</p> <p>Variance areas for ROW application include areas of potentially suitable habitat for special status species (see revision to Appendix J of the Draft Solar PEIS at solareis.anl.gov). For example, the following species’ habitats overlap by the percentage shown:</p> <p>Plants:</p> <ul style="list-style-type: none"> Nevada dune beardtongue – less than 61% White-margined beardtongue – less than 8% Munz’s cholla – less than 16% <p>Animals:</p> <ul style="list-style-type: none"> Desert tortoise – less than 12% Western burrowing owl – less than 8% Greater sage-grouse – less than 8% 	<p>Special status species and critical habitats would be protected as under modified program alternative.</p> <p>Lands available for ROW application within SEZs include areas of potentially suitable habitat for special status species (see Appendix J; available at the Solar PEIS project Web site [solareis.anl.gov]). For example, about 1% or less of the habitat for two plant species (Nevada dune beard tongue, white-margined beard tongue) and nine animal species (desert tortoise, western burrowing owl, greater sage-grouse, Gunnison prairie dog, Gunnison sage-grouse, northern aplomado falcon, and southwestern willow flycatcher, Townsend’s big-eared bat, and Utah prairie dog) is located within the SEZs; less than 4% of the</p>	<p>Special status species and critical habitats would be protected as under modified program alternative.</p> <p>In some cases, habitat identified by state fish and game agencies would be excluded, as identified through applicable land use plan decisions. Critical habitat, ACECs designated for habitat value, and other areas where the BLM has made a commitment to protect sensitive species would not be excluded.</p> <p>Lands available for ROW application include areas of potentially suitable habitat for special status species (see Appendix J). For example, the following species’ habitats overlap by the percentage shown:</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Special Status Species (Cont.)	Gunnison prairie dog – less than 3% Gunnison sage-grouse – less than 1% Northern aplomado falcon – less than 11% Southwestern willow flycatcher – less than 1% Townsend’s big-eared bat – less than 7% Utah prairie dog – less than 12%	plant Munz’s cholla habitats is located with the SEZs.	Plants: Nevada dune beardtongue – 66% White-margined beardtongue – 34% Munz’s cholla – 45% Animals: Desert tortoise – 29% Western burrowing owl – 27% Greater sage-grouse – 54% Gunnison prairie dog – 15% Gunnison sage-grouse – 24% Northern aplomado falcon – 26% Southwestern willow flycatcher -- 7% Townsend’s big-eared bat – 23% Utah prairie dog – 36%



TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Air Quality and Climate	<p>Air quality would be adversely affected locally and temporarily during construction by fugitive dust and vehicle emissions, although impacts would be relatively minor and could be mitigated (e.g., dust control measures, emissions control devices, and vehicle maintenance). Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process and required design features.</p> <p>Operations would result in few air quality impacts.</p> <p>Relatively minor carbon dioxide (CO₂) emissions would be generated by the use of heavy equipment, vehicles, and backup generators. Overall, CO₂ emissions would be reduced if solar energy production offsets fossil fuel energy production.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts, particularly during construction, but affect a smaller number of areas.</p>	<p>Same impacts as modified program alternative, except impacts could be potentially more dispersed and of smaller magnitude locally.</p> <p>Carbon dioxide emission reductions would occur more slowly if the pace of development is slower.</p>
Visual Resources	<p>Solar energy projects and associated infrastructure introduce strong contrasts in forms, line, colors, and textures of the existing landscape which may be perceived as negative visual impacts. Suitable development sites typically located in basin flats surrounded by elevated lands where sensitive viewing locations exist. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features could reduce impacts but some large impacts cannot be avoided.</p>	<p>Same impacts as modified program alternative, except the impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts, particularly during construction, but affect a smaller number of areas.</p>	<p>Same impacts as modified program alternative, except that only NLCS lands would be excluded.</p> <p>Impacts could be potentially more dispersed and greater on those areas excluded under the modified action alternatives.</p>

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Visual Resources (Cont.)	<p>All NLCS lands and ACECs are excluded. All SRMAs are excluded (except in Nevada and portions of the Yuma East SRMA in Arizona). Developed recreational facilities, special-use permit recreation sites, National Recreation Trails, and National Backcountry Byways are excluded.</p> <p>Less than 902 potentially sensitive visual resource areas (not including ACECs) are located in or within 25 mi (40 km) of the lands available for ROW viewsheds.</p>	SEZs are visible from less than 149 potentially sensitive visual resource areas (not including ACECs) within 25 mi.	About 1,510 potentially sensitive visual resource areas (not including ACECs) are located in or within 25 mi of the lands available for ROW application and could be affected by solar development within their viewsheds.
Acoustic Environment	<p>Construction-related noise could adversely affect nearby residents and/or wildlife, and would be greatest for concentrating solar power projects requiring power block construction. Operations-related noise impacts would generally be less significant than construction related noise impacts but could still be significant for some receptors located near power block or dish engine facilities. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features (e.g., siting, engineering controls) would significantly reduce impacts in some circumstances.</p>	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts, particularly during construction, but affect a smaller number of areas.	Same impacts as modified program alternative, except impacts could be potentially more dispersed.
Paleontological Resources	<p>Paleontological resources subject to loss during construction, but impacts also possible during operations. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features would significantly reduce impacts.</p>	Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.	Same impacts as modified program alternative, except impacts could be potentially more dispersed.

TABLE 2.3-2 (Cont.)

Resource	Modified Program Alternative (approximately 285,000 acres in priority areas) (approximately 20 million acres subject to variance process)	Modified SEZ Alternative (approximately 285,000 acres in priority areas)	No Action Alternative (approximately 98 million acres available for application)
Cultural Resources and Native American Concerns	<p>Cultural resources subject to loss during construction, but impacts also possible during operations. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features (e.g., minimizing land disturbance, consultation and records searches, and training and education programs) would significantly reduce some impacts.</p> <p>ACECs designated for cultural or historic resource values, National Historic and Scenic Trails, National Historic and Natural Landmarks, properties designated or eligible for the <i>National Register of Historic Places</i>, and areas with important cultural and archaeological resources would be excluded.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area.</p> <p>Same exclusions as modified program alternative</p>	<p>Same impacts as modified program alternative, except there would be no explicit exclusions to avoid known sensitive cultural resources.</p> <p>Impacts could be potentially more dispersed and greater on those cultural resources excluded under the modified action alternatives.</p>
Transportation	<p>Local road systems and traffic flow could be adversely affected during construction. Impacts during operations would be minor. Impacts potentially could be dispersed across the 20 million acres of variance areas; however, impacts would be minimized due to the required variance process.</p> <p>Design features (e.g., road improvements, ride-sharing programs, staggered work schedules, and traffic control measures) would significantly reduce impacts.</p>	<p>Same impacts as modified program alternative, except impacts would be concentrated into a smaller, known geographic area. This could increase the magnitude of potential impacts, particularly during construction, but affect a smaller number of areas.</p>	<p>Same impacts as modified program alternative, except impacts could be potentially more dispersed.</p>

^a The precise habitat overlap values (percentage) for the modified program alternative and modified SEZ alternative lands with specific habitats will be presented in the Final Solar PEIS. The lands composing the no action alternative have not changed significantly since release of the Draft Solar PEIS; thus the habitat overlap values (percentage) presented remain valid. To convert acres to km², multiply by 0.004047; to convert mi to km, multiply by 1.609.

^b The acreage estimates were calculated on the basis of the best available geographic information system (GIS) data. GIS data were not available for the entire set of exclusions, and therefore, the acreages cannot be quantified at this time.

2.3.1 Impacts of the Modified Solar Energy Development Program Alternative

As discussed, all BLM-administered lands are not appropriate for solar energy development. Under the modified solar energy development program alternative (referred to as “modified program alternative”), certain categories of land that are known or believed to be unsuitable for utility-scale solar development would be excluded from development to guide solar energy developers to areas where there are fewer resource conflicts and potential controversy. Changes in proposed exclusions are presented in this Supplement. These changes reflect new information and comments received on the Draft Solar PEIS. The changes in exclusions are presented in Table 2.2-1 of this Supplement. On the basis of these exclusions, approximately 78 million acres (315,655 km²) of BLM-administered lands that would otherwise be eligible for utility-scale solar energy development would be excluded from such development under this alternative. A subset of the remaining modified program alternative lands, approximately 285,000 acres (1,153 km²), would be identified as SEZs where the agency would prioritize solar energy and associated transmission infrastructure development.²

Under the modified program alternative, all remaining BLM-administered lands outside of exclusion areas and SEZs would be identified as variance areas for utility-scale solar energy development. Variance areas would be open to application but would require developers to adhere to the variance process detailed in this Supplement (see Section 2.2.2.3.1).

The modified program alternative would also establish comprehensive program administration and authorization policies and design features to be applied to utility-scale solar energy projects that are issued ROWs on BLM-administered lands in the six-state study area. The proposed program administration and authorization policies have been updated as part of this Supplement. Proposed design features are presented in Section A.2 of Appendix A of the Draft Solar PEIS and will be modified, as necessary, in the Final Solar PEIS. As part of this alternative, the BLM would also establish SEZ-specific design features to address SEZ-specific resource conflicts. These SEZ-specific design features are based on the in-depth analyses of SEZs being conducted as part of the Solar PEIS. The elements of the BLM’s new program under this alternative would be implemented through the amendment of the land use plans within the six-state study area and other applicable policy making tools.³

² As discussed in Section 2.2.2.2, in the future, the BLM will conduct periodic assessment of need related to SEZs and may decide to expand SEZs, add SEZs, or remove or reduce SEZs. Changes to SEZs would have to go through a land use planning process, which would be subject to the appropriate environmental analysis.

³ Under this alternative, most of the land use plans in the six-state study area would be amended. Section 2815(d) of the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65) placed a moratorium on planning efforts on BLM-administered lands “adjacent to, or near the Utah Test and Training Range (UTTR) and Dugway Proving Grounds or beneath Military Operating Areas, Restricted Areas, and airspace that make up the UTTR” (NDAA § 2815(a), 113 Stat. 512, 852 [1999]). This area encompasses a portion of the lands within the boundaries of the Box Elder, Pony Express, House Range, Warm Springs, and Pinyon land use plans. Within these areas, decisions related to whether lands would be available for ROW application, and adoption of the policies and design features of the PEIS, cannot be implemented via land use plan amendments at this time. Solar energy development ROW applications would be deferred until such time when plan amendments or new land use plan(s) address solar energy development. No SEZs are located within the UTTR affected areas.

1 Under the modified program alternative, individual ROW applications would continue to
2 be evaluated on a project-by-project basis; however, the BLM proposes that these evaluations
3 would tier to the programmatic analyses presented in the Solar PEIS and the decisions
4 implemented in the resultant ROD and land use plan amendments to the extent appropriate. Site-
5 and project-specific data would be assessed in the individual project reviews, and impacts not
6 adequately mitigated by the program's administration and authorization policies and design
7 features would be addressed through the implementation of additional mitigation requirements
8 incorporated into the project POD and ROW authorization stipulations. Analysis of an
9 application may result in a decision to deny the application.

10
11 As an element of the proposed program, the BLM would implement an adaptive
12 management and monitoring plan for solar energy development developed in coordination with
13 potentially affected natural resource management agencies, to ensure that new data and lessons
14 learned about the impacts of solar energy projects would be reviewed and, as appropriate,
15 incorporated into the program through revised policies and design features (see Section 2.2.1.2 of
16 this Supplement). Changes to the BLM's Solar Energy Program will be subject to appropriate
17 environmental analysis and land use planning.

18
19 The following subsections discuss the effectiveness of the modified program alternative
20 in meeting the BLM's established program objectives and describe the potential environmental
21 impacts of the alternative.

22 23 24 **2.3.1.1 Facilitate Near-Term Solar Energy Development (Pace of Development)**

25
26 Under the modified program alternative, the BLM would establish a set of programmatic
27 administration and authorization policies and design features that would facilitate development
28 by establishing a clear, consistent, and unambiguous process and set of conditions for utility-
29 scale solar energy development on BLM-administered lands. A number of program elements
30 would contribute to these efficiencies, as follows:

- 31
- 32 • By excluding lands with known sensitive resources, resource uses, and special
33 designations, the agency would accept ROW applications for utility-scale
34 solar energy development only where such development may be expected to
35 encounter fewer potential resource conflicts. Time and effort would be
36 directed to those projects that have a greater chance of success. Review of
37 projects proposed within any of the proposed SEZs would be further
38 streamlined, because these areas have undergone intensive site-specific
39 analyses as part of the Solar PEIS and mitigation has been proposed for
40 identified resource conflicts.
 - 41
 - 42 • The identification of variance areas for utility-scale solar energy development
43 and the associated variance process detailed in this Supplement is expected to
44 help applicants formulate projects outside of SEZs that have a greater chance
45 for success. Evaluation of projects through the proposed variance process will
46 require upfront effort on the part of the BLM and applicants. BLM staff will

1 be required to coordinate with federal, state, Tribal, and local stakeholders and
2 evaluate site-specific resource conflicts as part of the variance application
3 analysis process.

- 4
5 • To the extent that decisions about future solar energy projects could be tiered
6 to the analyses in the Solar PEIS or decisions in the resultant ROD, project
7 review and approval time lines would be shortened. The proposed program
8 administration and authorization policies and design features are
9 comprehensive and address the majority of operational and design
10 requirements for most projects. The universe of issues that would be evaluated
11 in detail at the project level would be reduced to site-specific and species-
12 specific issues and concerns. For some of the SEZs, it is expected that with the
13 additional data collection proposed in this Supplement and the implementation
14 of required design features, development could proceed with limited
15 additional environmental analysis.⁴
- 16
17 • Amending the land use plans within the six-state study area to implement the
18 new program would facilitate individual project approvals and would ensure
19 that multiple individual plan amendments would not be required.

20
21 It is anticipated that these program elements would collectively reduce the amount of
22 time and resources required to obtain ROW authorizations and would speed up the pace of
23 utility-scale solar energy development in the six-state study area without compromising the level
24 of protection for natural and cultural resources. Shortened development time lines, particularly
25 for projects proposed within SEZs, would reduce the cost to the government, developers, and
26 stakeholders. These outcomes would likely increase the agency's ability to meet the mandates of
27 the Energy Policy Act of 2005 and Secretarial Order 3285A1 (Secretary of the Interior 2010).

28 29 30 **2.3.1.2 Minimize Environmental Impacts**

31
32 Utility-scale solar energy facilities are industrial facilities that require large tracts of land
33 and can cause substantial impacts on a variety of natural and cultural resources. Proper
34 consultation, siting and design, and application of mitigation measures can avoid, minimize, or
35 mitigate many of these impacts. The proposed program administration and authorization policies
36 updated as part of this Supplement and the required design features under the modified program
37 alternative would ensure that potential environmental impacts are addressed thoroughly and
38 consistently for all utility-scale solar energy projects on BLM-administered lands. Specific
39 program elements have been developed to address the many aspects of managing environmental
40 impacts, as follows:

- 41
42 • The proposed program administration and authorization policies establish
43 requirements for coordination and/or consultation with other federal and state

⁴ For all proposed SEZs, government-to-government consultation and interagency consultation are still ongoing and could result in the identification of additional concerns.

1 agencies and for government-to-government consultation, and establish
2 requirements for public involvement. Collectively, these policies ensure that
3 all projects are thoroughly reviewed; input is collected from all potentially
4 affected federal, state, Tribal, and local stakeholders; and any project
5 proposals that are anticipated to result in unacceptable adverse impacts are
6 eliminated early in the application process.

- 7
- 8 • The proposed ROW exclusions would avoid impacts of utility-scale solar
9 energy development on known sensitive resources, resource uses, and
10 specially designated areas. Projects on variance areas would be thoroughly
11 reviewed through the proposed variance process to ensure that only the most
12 appropriate applications are processed. BLM staff will be required to
13 coordinate with federal, state, Tribal, and local stakeholders and evaluate site-
14 specific resource conflicts as part of the variance application analysis process.
15 Analysis of an application may result in a decision to deny the application.
16
- 17 • By restricting utility-scale development to lands with slopes less than or
18 equal to 5%, the BLM would effectively limit development to those BLM-
19 administered lands currently assumed to be the best suited with respect to
20 technology limitations. By restricting development to lands with solar
21 insolation levels greater than or equal to 6.5 kWh/m²/day, the BLM would
22 be making available those lands where utility-scale development is assumed
23 to be most economically viable. These proposed restrictions will facilitate the
24 efficient use of BLM-administered lands and enhance the BLM's ability to
25 fulfill the multiple-use mandate of FLPMA by reserving for other uses lands
26 that are not well suited for solar energy development.
27
- 28 • The proposed design features, developed on the basis of extensive impact
29 analyses conducted in the Solar PEIS, address the full array of potential
30 impacts associated with each phase of development (i.e., site evaluation,
31 construction, operation, and decommissioning). For many project locations,
32 the majority of potential impacts would be addressed by these requirements.
33 Individual project environmental reviews would be required to address any
34 additional site-specific and species-specific issues and concerns.
35
- 36 • The proposed variance process would provide flexibility to industry to request
37 utility-scale solar development projects outside of SEZs in areas determined to
38 be economically and technically viable. However, the variance process has
39 been designed to ensure that only those applications that can demonstrate that
40 environmental impacts are minimized will be processed by the BLM.
41
- 42 • By allowing appropriate development in variance areas, the BLM would
43 provide opportunities to site solar energy projects on lands that have been
44 previously disturbed.
45

- 1 • The prioritization of development in SEZs could limit some environmental
2 impacts. These areas were selected as lands well suited for utility-scale solar
3 development (i.e., lands with fewer potential resource conflicts). Although
4 some potentially significant resource and resource use conflicts have been
5 discovered for some SEZs, SEZ-specific design features have been identified
6 to address those potential impacts. The concentration of development in the
7 SEZs could also allow for the consolidation of related infrastructure
8 (e.g., roads, transmission lines) and less total land disturbance.
9
- 10 • Forthcoming adaptive management and monitoring strategies would ensure
11 that new data and lessons learned about the impacts of solar energy
12 development are incorporated into future programmatic and project-specific
13 requirements. At the project level, developers would be required to develop
14 monitoring programs in coordination with the BLM to evaluate the
15 environmental conditions at the site through all phases of development, to
16 establish metrics against which monitoring observations could be measured, to
17 identify potential mitigation measures, and to establish protocols for
18 incorporating monitoring observations and new mitigation measures into
19 standard operating procedures.
20
- 21 • Implementing a comprehensive program would allow the BLM to better
22 assess potential cumulative impacts of solar energy development across the
23 six-state study area over time.
24
- 25 • A program that would facilitate solar energy development on BLM-
26 administered lands (as compared to private lands) would ensure that the
27 development would be subjected to rigorous environmental review, including
28 a thorough public involvement process.
29

30 Table 2.3-2 includes a summary of the environmental impacts associated with solar
31 energy development under this alternative and the ways in which the impacts would be mitigated
32 by the programmatic exclusions, policies, and design features. As reflected in that table, for
33 several resource and impact areas, implementation of the proposed design features is expected to
34 ensure that impacts would be negligible or minor. For certain resource areas (e.g., hazardous
35 materials and waste, health and safety), there are few, if any, unique site- or project-specific
36 issues that would not be fully addressed by the programmatic requirements. For other resource
37 areas (e.g., lands and realty, rangeland resources, military and civilian aviation, geologic setting
38 and soils, mineral resources, air quality, acoustic environment, paleontological resources, and
39 transportation), the programmatic requirements are comprehensive and broad enough to address
40 most issues even though there could be some site- and project-specific variables. For example,
41 although paleontological resources vary in occurrence and density by site, impacts on these
42 resources can be mitigated and the design feature requiring a paleontological resources
43 management plan would ensure that potential impacts are identified and addressed. Similarly,
44 although traffic patterns and local road use vary by location, the design features requiring
45 development of a transportation plan and traffic management plan would ensure that local issues
46 are identified and addressed.

1 For other resource and impact areas, the full effectiveness of the proposed design features
2 intended to reduce potential impacts can be assessed only through the additional project-specific
3 analyses that would be required under the proposed program. These areas include specially
4 designated areas and lands with wilderness characteristics, recreation, water resources,
5 vegetation, wildlife and aquatic biota, special status species, visual resources, cultural resources,
6 Native American concerns, and environmental justice. For example, the magnitude of potential
7 impacts of a given project on water resources would depend on project-specific parameters and
8 site-specific conditions. The water requirements would depend on the size of the project and the
9 technology used (e.g., concentrating solar power versus PV, wet cooling versus dry cooling
10 systems). The nature of the impacts would depend on the amount of locally and regionally
11 available water resources; the source of water supply; and other water uses, including
12 requirements to support sensitive species and/or their critical habitats. These types of impacts
13 cannot be assessed fully until project and site specific information is known.
14

15 BLM's intent in identifying SEZs has been to find areas well suited to utility-scale solar
16 energy production, with few impediments to solar facility construction and operation, where the
17 BLM would prioritize solar energy and associated transmission infrastructure development. In
18 identifying the SEZs evaluated in the Draft Solar PEIS, the BLM targeted areas with low slope,
19 near existing transmission or designated corridors and near existing roads, and with a minimum
20 area of 2,500 acres (10 km²). The BLM also excluded from the SEZs National Landscape
21 Conservation System (NLCS) lands and other sensitive classes of lands (e.g., critical and
22 sensitive habitat, Areas of Critical Environmental Concern (ACECs), no surface occupancy
23 areas, wilderness characteristic areas, ROW exclusion and avoidance areas from applicable land
24 use plans, National Historic and Scenic Trails, areas of Tribal concern, and the like).⁵
25

26 Through the in-depth SEZ analyses completed as part of the Draft Solar PEIS and
27 additional evaluation performed for this Supplement, the BLM has discovered some potentially
28 significant impacts on various resources and resource uses that could result from solar energy
29 development in the SEZs as proposed in the Draft Solar PEIS. This information was used to
30 eliminate some of the SEZs, reduce the area of some other SEZs, and identify non-development
31 areas within some SEZs under the modified program alternative described in this Supplement
32 (see Section 2.2.2.2 and Appendix C of this Supplement). In addition, the implementation of
33 programmatic policies and design features required as part of the modified program alternative
34 would help to minimize environmental impacts in the SEZs. The BLM has also proposed SEZ-
35 specific design features that would further avoid and/or minimize potential impacts in these
36 areas. These additional requirements could result in more reductions in the amount of
37 developable land within some SEZs that would be identified during project-specific
38 investigations.
39

40 Utility-scale solar energy development could result in reduced emissions of greenhouse
41 gases (GHGs) and combustion-related pollutants, if the development offsets electricity

⁵ Although these classes of lands should have been excluded from the proposed SEZs, some may not have been because of incomplete information on the locations of these areas and incomplete GIS data. Additional applicable non-developable areas of SEZs may be identified during project-specific investigations when additional data have been collected.

1 generation by fossil fuel power plants. As discussed in Section 2.3.1.1, the pace of solar energy
2 development is expected to be faster under this alternative, compared to the current pace, and
3 therefore the potential beneficial impacts of reduced GHG emissions may be realized at a faster
4 rate.

5
6 As a result of these considerations, the BLM anticipates that by implementing the
7 proposed program administration and authorization policies and design features, the agency
8 would maximize its ability to effectively identify and avoid, mitigate, or minimize potential
9 adverse environmental impacts.

10 11 12 **2.3.1.3 Minimize Social and Economic Impacts**

13
14 Utility-scale solar energy development under this alternative is expected to result
15 primarily in economic benefits in terms of both jobs and income created. These benefits would
16 occur as both direct impacts, resulting from the wages and salaries, procurement of goods and
17 services, and collection of state sales and income taxes, and indirect impacts, resulting from new
18 jobs, income, expenditures, and tax revenues subsequently created as the direct impacts circulate
19 through the economy. These benefits occur during both the construction and operations phases,
20 with the construction phase benefits being temporary and the operations phase benefits being
21 more long term. The specific benefits vary by technology, because some technologies generate
22 more jobs than other technologies. For example, a 100-MW parabolic trough facility would
23 create 350 new direct construction jobs and 43 new direct operations jobs, whereas a PV facility
24 of comparable generation capacity would create 30 new direct construction jobs and very few
25 direct operations jobs (see Tables 5.17.2-1 through 5.17.2-4 in the Draft Solar PEIS for detailed
26 information about the economic impacts of construction and operation of solar energy facilities
27 by technology type).⁶ The benefits in terms of indirect jobs and total income also vary by state,
28 because the extent of in-state spending and economic multiplier effects vary by state.

29
30 Because utility-scale solar energy development would be accompanied by transmission
31 system development and new access road construction in many locations, potential economic
32 benefits also result from the direct and indirect jobs associated with this infrastructure
33 construction. These impacts are discussed in Section 5.17.1.2 of the Draft Solar PEIS.

34
35 The BLM would incur agency-related costs associated with developing, implementing,
36 and managing solar energy development on BLM-administered lands. However, under the
37 BLM's ROW program, which is a cost-recovery program, a substantial portion of the costs for
38 processing ROW applications, including environmental review requirements, would be paid for
39 by developers. In addition, the federal government will collect income from ROW rental
40 payments, which include an acreage component and capacity fee component. As discussed in
41 Section 2.2.2.2.1 in this Supplement, the BLM has confirmed that it will offer lands within SEZs
42 through a competitive process. This would result in increased revenue to the federal government.
43 A competitive process, however, could increase costs for developers of solar facilities.

⁶ The estimate provided in the text here for number of PV construction jobs is based on an extrapolation of data in Table 5.17.2-4 of the Draft Solar PEIS.

1 As discussed in Section 5.17.1.1 of the Draft Solar PEIS, there would be some adverse
2 economic impacts on displaced public land users associated with solar development (e.g., loss
3 of grazing allotments). There may also be adverse social impacts resulting from changes in
4 recreation, property values, and environmental amenities (e.g., environmental quality, rural
5 community values, or cultural values). There could also be beneficial social impacts associated
6 with solar development resulting from economic growth and a positive reception to the presence
7 of a renewable energy industry. At the programmatic level, it is difficult to quantify these
8 impacts.

10 **2.3.1.4 Provide Flexibility to Solar Industry**

11
12
13 As compared to the modified SEZ alternative, the modified program alternative provides
14 a great degree of flexibility to developers in identifying appropriate locations for utility-scale
15 development (i.e., economically attractive locations with minimal environmental or cultural
16 resource conflicts), by identifying lands outside of exclusion areas and SEZs as variance areas
17 with an associated variance process.

18
19 Concerns exist that by excluding lands with slopes greater than 5% and with solar
20 insolation levels below 6.5 kWh/m²/day, the BLM could be removing lands that some
21 developers may find both technically and economically feasible to pursue in the future. The
22 BLM's proposed SEZ identification protocol takes this concern into account and would allow
23 future SEZs to be located in these excluded areas if factors have changed such that these areas
24 become technologically and economically viable for utility-scale solar energy development, and
25 provided that the areas are otherwise well suited for development (see Appendix D,
26 Sections D.2.2 and D.2.3).

27 28 29 **2.3.1.5 Optimize Existing Transmission Infrastructure and Corridors**

30
31 The proposed variance process will allow developers to identify and propose projects
32 that utilize existing transmission infrastructure and designated transmission corridors. Further,
33 the BLM's proposed SEZ identification protocol (see Appendix D, Section D.2.5, of this
34 Supplement) will consider proximity to existing infrastructure such as transmission lines and
35 corridors. The BLM will catalog the existing and proposed transmission lines in relation to the
36 power generation from a proposed SEZ location. The BLM will also consult with state and
37 regional transmission planning and coordination authorities, state energy offices, and
38 transmission system operators to evaluate available capacity on the existing and proposed lines
39 and whether transmission access issues might create barriers to development in a specific area.

40
41 Although it is likely that most new utility-scale solar energy development will require
42 new transmission capacity, projects that can be located near existing transmission lines would
43 likely result in fewer environmental impacts associated with connecting to and upgrading the
44 existing lines. Similarly, solar projects that utilize existing corridors would result in reduced
45 environmental impacts, assuming the corridor designation process factored potential

1 environmental and other siting concerns into the corridor alignment. The use of existing
2 transmission infrastructure and corridors could also reduce cost, time, and controversy.
3
4

5 **2.3.1.6 Standardize and Streamline the Authorization Process**

6
7 The modified program alternative would standardize requirements and reduce uncertainty
8 for project applications. It would streamline project review and approval processes, and ensure
9 consistency in the way utility-scale ROW applications are managed. Individual ROW
10 applications would continue to be evaluated on a project-by-project basis; however, the BLM
11 proposes that these evaluations would tier to the programmatic analyses presented in the Solar
12 PEIS and the decisions implemented in the resultant ROD and land use plan amendments to the
13 extent appropriate.
14
15

16 **2.3.1.7 Meet Projected Demand for Solar Energy Development**

17
18 On the basis of the RFDS for solar energy development (which is assumed to be the same
19 for each alternative), the estimated amount of solar energy generation on BLM-administered
20 lands in the study area over the 20-year study period (through approximately 2030) is about
21 24,000 MW, with a corresponding dedicated use of about 214,000 acres (866 km²) of BLM-
22 administered lands. The comparison of the area projected to be needed for solar development
23 under the RFDS with the revised lands available for application under the two BLM action
24 alternatives is presented in Table 2.3-3. Under the modified program alternative, the land area
25 needed to meet the estimated RFDS for solar development (about 214,000 acres [866 km²])
26 would be only about 1% of the land area available for application (about 20 million acres
27 [82,964 km²] of variance lands) and about 75% of the land area available for development within
28 SEZs (285,000 acres [1,153 km²]). Thus, the modified program alternative meets the projected
29 demand for solar energy development.
30
31

32 **2.3.2 Impacts of the Modified SEZ Program Alternative**

33
34 Under the modified SEZ program alternative (referred to as “modified SEZ alternative”),
35 the BLM would adopt the same set of standard program administration and authorization policies
36 and design features for utility-scale solar energy development as proposed under the modified
37 program alternative, but would authorize such solar energy development only in SEZs. Unlike
38 the modified program alternative, lands outside of SEZs would be excluded from utility-scale
39 solar energy ROW applications. Under this alternative, about 285,000 acres (1,153 km²) of
40 BLM-administered lands would be available for ROW applications. As part of this Supplement,
41 the BLM has proposed a protocol to identify new SEZs (see Appendix D). Per the proposed
42 protocol, new SEZs would be relatively large areas that provide highly suitable locations for
43 utility-scale solar development: locations where solar development is economically and
44 technically feasible, where there is good potential for connecting new electricity-generating
45 plants to the transmission distribution system, and where there is generally low resource conflict.
46 The identification of new SEZs would have to go through a land use planning process and would
47 be subject to the appropriate environmental analysis.

1
2

TABLE 2.3-3 Percentage of Available Lands Developed under BLM Modified Action Alternatives Based on Estimated Acres Developed under the RFDS^a

State	Estimated Acres ^b Developed under RFDS ^c	Modified Program Alternative		Modified SEZ Alternative	
		Total Proposed Acres Available ^d	Percentage Developed under RFDS	Total Proposed Acres Available ^e	Percentage Developed under RFDS
Arizona	21,816	3,397,007 (4,485,944)	0.6 (0.5)	6,465 (13,735)	100 ^f (100)
California	138,789	1,354,559 (1,766,543)	10.0 (7.9)	153,627 (339,090)	90.3 (40.9)
Colorado	19,746	111,059 (148,072)	17.8 (13.3)	16,308 (21,050)	100 ^f (93.8)
Nevada	15,309	9,207,288 (9,084,050)	0.2 (0.2)	60,395 (171,265)	25.4 (8.9)
New Mexico	7,497	4,292,279 (4,068,324)	0.2 (0.2)	29,964 (113,052)	25.0 (6.6)
Utah	10,971	1,962,671 (2,028,222)	0.6 (0.6)	18,658 (19,192)	58.8 (57.2)
Total	214,128	20,324,863 (21,581,154)	1.1 (1.0)	285,417 (677,384)	75.0 (31.6)

^a Values in parentheses are values from the Draft Solar PEIS, provided for comparison.
^b To convert acres to km², multiply by 0.004047.
^c See Table 2.4-1 of the Draft Solar PEIS for the basis for these estimates.
^d See Section 2.2.2.2 of the Draft Solar PEIS for the basis for these estimates.
^e See Section 2.2.2.3 of the Draft Solar PEIS for the basis for these estimates. For the purpose of the RFDS estimates of development, the entire acreage is used in the calculation of percentage developed; however, some portion will not be developable because of various restrictions.
^f The estimated number of acres developed based on the RFDS projection exceeds the acreage proposed to be available in Arizona and Colorado under the modified SEZ alternative; thus it is assumed that 100% of the SEZs would be developed over the 20-year time line assessed in the Solar PEIS.

3
4
5

1 Under the modified SEZ alternative, the management of solar energy development on
2 BLM-administered lands would be the same as described for the modified program alternative.
3 The BLM would establish comprehensive program administration and authorization policies and
4 design features as part of this alternative. The elements of the BLM's new program under this
5 alternative would be implemented through amendment of the land use plans within the six-state
6 study area and other applicable policy-making tools.
7

8 The following subsections discuss the effectiveness of the modified SEZ alternative in
9 meeting the BLM's established program objectives and describe the potential environmental
10 impacts of the alternative.
11

12 **2.3.2.1 Facilitate Near-Term Solar Energy Development (Pace of Development)**

13 The impacts on the pace of development under the modified SEZ alternative would be
14 much the same as those described for the modified program alternative in Section 2.3.1.1;
15 although it is possible that the modified SEZ alternative could speed up the pace of development
16 even further. Elements of the authorization process and incentives for projects in SEZs described
17 in this Supplement (Section 2.2.2.2) would reduce the amount of time and resources required to
18 obtain ROW authorizations, which would translate into reduced costs to government, developers,
19 and stakeholders. As with the modified program alternative, these outcomes would likely
20 increase the agency's ability to meet the mandates of the Energy Policy Act of 2005 and
21 Secretarial Order 3285A1 (Secretary of the Interior 2010).
22
23
24
25

26 **2.3.2.2 Minimize Environmental Impacts**

27 Similar to the modified program alternative, environmental impacts under the modified
28 SEZ alternative would be minimized in the following ways:
29

- 30 • Government-to-government consultation and public input would ensure
31 thorough review of the proposed locations of development within SEZs.
32
- 33 • Because the developable land area for utility-scale solar energy development
34 would be restricted to SEZs, known sensitive resources would be avoided for
35 the most part, SEZ-specific design features would protect any sensitive
36 resources identified in SEZs, and uncertainty of the distribution of impacts,
37 including possible fragmentation of habitat, would be reduced.
38
- 39 • The proposed program design features and SEZ-specific design features
40 would address the full array of potential impacts associated with each phase of
41 development.
42
- 43 • The concentration of development in the SEZs could allow for the
44 consolidation of related infrastructure (e.g., roads, transmission lines) and less
45 total land disturbance.
46

- 1 • The requirement to implement adaptive management and monitoring
2 strategies would ensure that mitigation measures would be implemented if
3 unforeseen impacts were identified during project planning, construction, or
4 operations.
5
- 6 • Because of the proximity of solar development projects that could occur under
7 the SEZ program alternative, cumulative impacts for some resources
8 (e.g., water, visual, and socioeconomics) in localized areas around the SEZs
9 could be high; however the certainty of this location may allow these impacts
10 to be more easily addressed. An analysis of the potential cumulative impacts
11 for each SEZ was included in Chapters 8 through 13 of the Draft Solar PEIS
12 and will be updated as necessary for the Final Solar PEIS.
13

14 By making only about 285,000 acres (1,153 km²) of land available for ROW application,
15 the BLM would limit opportunities to site solar energy projects on lands that have been
16 previously disturbed. However, the BLM's proposed protocol to identify new SEZs emphasizes
17 the use of disturbed or previously disturbed areas, including partnerships with nonfederal
18 landowners or administrators (see Appendix D of this Supplement).
19

20 Table 2.3-2 summarizes the environmental impacts that might be associated with
21 solar energy development under the modified SEZ alternative and the extent to which the
22 impacts would be mitigated by the programmatic exclusions, policies, and design features.
23 As reflected in that table, it is not possible to fully assess the impacts on some resources
24 (e.g., specially designated areas and lands with wilderness characteristics, recreation, military
25 aviation, water resources, vegetation, wildlife and aquatic biota, special status species, visual
26 resources, cultural resources, Native American concerns, and environmental justice), because
27 they are dependent on specific project details not defined at the programmatic level. However,
28 this type of analysis would be conducted thoroughly through additional project-specific analyses
29 that would be required under the proposed program.
30

31 Through the SEZ-specific analyses completed as part of the Draft Solar PEIS and
32 additional evaluation performed for this Supplement, the BLM has discovered some potentially
33 significant impacts on various resources and resource uses that could result from solar energy
34 development in the SEZs as proposed in the Draft Solar PEIS. The modifications to the SEZs
35 under the modified SEZ alternative proposed in this Supplement (i.e., dropping SEZs from
36 further consideration, reducing the area of other SEZs, and identifying non-development areas
37 within SEZs), along with implementation of program administration and authorization policies
38 and design features as part of this alternative, would minimize environmental impacts of
39 development in the SEZs. The BLM has also proposed SEZ-specific design features that would
40 further avoid and/or minimize potential impacts in these areas. These additional requirements
41 could result in more reductions in the amount of developable land within some SEZs that would
42 be identified during project-specific investigations.
43

44 The BLM anticipates that by implementing the proposed policies and design features
45 identified in the Solar PEIS, the agency would maximize its ability to effectively identify and
46 avoid, mitigate, or minimize potential adverse environmental impacts.

1 **2.3.2.3 Minimize Social and Economic Impacts**
2

3 The potential socioeconomic impacts of the modified SEZ alternative would be similar to
4 those described for the modified program alternative; however, both the economic benefits and
5 the potential adverse economic and social impacts would be concentrated solely in the vicinity of
6 the SEZs.
7

8 The BLM’s efforts to oversee utility-scale solar energy development in the six-state study
9 area would be streamlined under the SEZ program alternative by virtue of the smaller geographic
10 area and the opportunities for tiering to the SEZ-specific analyses provided in the Solar PEIS. In
11 addition to receiving ROW rental payments, the BLM has confirmed that it will offer lands
12 within SEZs through a competitive process (see Section 2.2.2.2.1 of this Supplement). This
13 would result in increased revenue to the federal government. A competitive process, however,
14 could increase costs for developers of solar facilities.
15

16 **2.3.2.4 Provide Flexibility to Solar Industry**
17

18 By making fewer BLM-administered lands available for utility-scale solar energy
19 development as compared to the modified program alternative, the modified SEZ alternative
20 could reduce the flexibility of both the agency and developers in terms of identifying appropriate
21 locations for utility-scale development. There are likely to be economically attractive sites for
22 solar energy development outside of the SEZs that can meet the environmental protection
23 measures outlined in the Solar PEIS. It is important to note, however, that the BLM is committed
24 to evaluating the need for new or expanded zones in each of the six states at least every 5 years
25 as described in the proposed SEZ identification protocol (see Appendix D of this Supplement).
26 The BLM will also allow petitions for new SEZs to consider solar energy development in
27 specific areas of interest to industry. The BLM could also decide to amend individual land use
28 plans to accommodate individual solar energy development projects if warranted.
29
30

31 **2.3.2.5 Optimize Existing Transmission Infrastructure and Corridors**
32

33 All of the SEZs are located near existing transmission lines and/or corridors, and
34 development in the SEZs would optimize the use of these transmission facilities. In addition, the
35 BLM is proposing to undertake a variety of activities that will help steer future utility-scale solar
36 energy development to the SEZs (see Section 2.2.2.2.3). These include more detailed evaluation
37 of the transmission needs and impacts for anticipated solar development within SEZs and
38 commitments to engage in ongoing and comprehensive transmission planning efforts to ensure
39 the recognition of SEZs as a priority in transmission development. The BLM will also offer
40 incentives to developers willing to build transmission to SEZs.
41
42

43 There may be potentially suitable development areas for utility-scale solar outside the
44 SEZs that are proximate to existing transmission infrastructure, and these lands would not be
45 available for development under this alternative. The BLM’s proposed SEZ identification
46 protocol, however, takes into account proximity to existing transmission infrastructure

1 (see Appendix D, Section D.2.5). Further, the BLM will also allow petitions for new SEZs to
2 consider solar energy development in specific areas of interest to industry such as in proximity
3 to new foundational transmission lines.
4

5 6 **2.3.2.6 Standardize and Streamline the Authorization Process**

7
8 The modified SEZ program alternative would standardize requirements and reduce
9 uncertainty for project applicants. It would streamline project review and approval processes
10 and ensure consistency in the way utility-scale ROW applications are managed. Because the
11 modified SEZ alternative would limit utility-scale development to those areas most intensively
12 studied in the Solar PEIS, it is likely that BLM staff efforts to review and approve ROW
13 applications would be most efficient under this alternative (due to providing the opportunity for
14 extensive tiering to the analyses presented in the Solar PEIS and the decisions implemented in
15 the resultant ROD and land use plan amendments).
16

17 18 **2.3.2.7 Meet Projected Demand for Solar Energy Development**

19
20 Assuming that all the lands identified as developable within the SEZs are eventually
21 developed, the amount of land available for development under the modified SEZ alternative is
22 about 285,000 acres [1,153 km²]. Across all six states, the lands available within the SEZs
23 would exceed the amount of land required to support the RFDS projected development of
24 24,000 MW (corresponding to about 214,000 acres [866 km²]) by about 71,000 acres (287 km²).
25 However, as shown in Table 2.3-3, in two states (Arizona and Colorado), the amount of land that
26 would be available for ROW application would not be enough to support the total state-specific
27 development projected in the RFDS. Specifically, in Arizona, the RFDS development would
28 require 21,816 acres (88.3 km²), which exceeds the 6,465 acres (26 km²) that would be available
29 under the modified SEZ alternative. In Colorado, 19,746 acres (80 km²) would be developed
30 under the RFDS, which exceeds the 16,308 acres (66 km²) that would be available under the
31 modified SEZ alternative. In addition, in California, 138,789 acres (562 km²) would be
32 developed under the RFDS, which constitutes 90% of the 153,627 acres (622 km²) acres that
33 would be available.
34

35 Constraints on development within some SEZ areas are known to exist; these constraints
36 are summarized in Table 6.1-3 in the Draft Solar PEIS and discussed in greater detail in each of
37 the SEZ-specific analyses presented in Chapters 8 through 13 of the Draft Solar PEIS (this
38 information will be updated as necessary in the Final Solar PEIS). The SEZ-specific analyses
39 identified distinct areas within many of the SEZs that either should not be developed or should
40 have development restrictions (e.g., areas with ephemeral stream channels or floodplains, areas
41 with military flight restrictions for facilities with tall structures, areas with potential visual
42 resource conflicts, and areas close to residences for noisy technologies). The modifications to
43 SEZs identified in this Supplement address many of the constraints on development that were
44 identified in the Draft Solar PEIS. However, it is recognized that some SEZ areas will likely
45 require additional exclusions or restrictions, the extent of which may not be known until site- and
46 project-specific environmental analyses can be completed. Given these factors, it is possible that,

1 even in states other than Arizona and Colorado, the amount of lands that would be available
2 under the modified SEZ alternative might not be enough to support full development.

3
4 Because this alternative may not make an adequate amount of lands available to support
5 the RFDS projections, at least in some states, it is possible that the total amount of utility-scale
6 solar energy developed on BLM-administered lands over the 20-year study period could be
7 constrained unless the BLM identified additional SEZs.
8
9

10 **2.3.3 Impacts of the No Action Alternative**

11
12 No change to the no action alternative is being proposed as part of this Supplement.
13 Analysis of the no action alternative can be found in the Draft Solar PEIS Chapter 6, Section 6.3.
14 For comparison, information on the no action alternative is presented in Tables 2.3-1 and 2.3-2
15 of this Supplement. Although no changes from the Draft Solar PEIS were made to the categories
16 of lands included under the no action alternative, updated GIS data for NLCS lands resulted in a
17 decrease in the estimated acres (see Table 2.3-1).
18
19

20 **2.3.4 Comparison of Alternatives and Selection of Preferred Alternative**

21
22 This section provides a comparison of the modified alternatives evaluated in this
23 Supplement on the basis of the evaluations presented in Sections 2.3.1 through 2.3.3. The
24 comparison is included to support the BLM's decision regarding which alternative presents the
25 best management approach to utility-scale solar energy development on BLM-administered lands
26 based on the stated objectives. Table 2.3-4 provides a summary-level comparison of the
27 management alternatives with respect to the objectives established for the action and the extent
28 to which each alternative would assist the BLM in meeting the projected demands for solar
29 energy development as estimated by the RFDS.
30

31 The BLM has selected the modified program alternative as the preferred alternative for
32 the purposes of this Supplement. On the basis of the comparisons presented in Table 2.3-4, it
33 appears that the modified program alternative would best meet the BLM's objectives for
34 managing utility-scale solar energy development on BLM-administered lands. It would likely
35 result in the highest pace of development at the lowest cost to the government, developers, and
36 stakeholders. Simultaneously, it would provide a comprehensive approach for ensuring that
37 potential adverse impacts would be minimized to the greatest extent possible. The expected
38 increased pace of development would accelerate the rate at which the economic benefits would
39 be realized at the local, state, and regional levels. This alternative would make an adequate
40 amount of suitable lands available to support the level of development projected in the RFDS
41 and would provide a great deal of flexibility in siting both solar energy facilities and associated
42 transmission infrastructure. In addition, the modified program alternative would be very effective
43 at facilitating development on BLM-administered lands in accordance with the mandates of the
44 Energy Policy Act of 2005 and Secretarial Order 3285A1 (Secretary of the Interior 2010).
45
46

1 **TABLE 2.3-4 Comparison of the No Action Alternative and the Modified Action Alternatives with Respect to the BLM’s Solar Energy**
 2 **Program Objectives**

Objective	Modified Program Alternative	Modified SEZ Alternative	No Action Alternative
Facilitate near-term utility-scale development on public land	Increased pace of development	Increased pace of development likely due to detailed analyses of SEZs	No discernible effect on pace of development
	Development in the prioritized SEZs likely to occur at an even faster pace	Reduced costs to the government, developers, and stakeholders	Development could shift toward nonfederal lands, making it more difficult for the BLM to achieve its mandates ^a
	Reduced costs to the government, developers, and stakeholders	Effective in assisting the BLM in meeting its mandates ^a	
	Effective in assisting the BLM in meeting its mandates ^a		
Minimize potential environmental impacts	Comprehensive program to identify and avoid, mitigate, or minimize potential adverse impacts	Comprehensive program to identify and avoid, mitigate, or minimize potential adverse impacts	Environmental impacts evaluated project-by-project with potential for inconsistencies in the type and degree of required mitigation
	Protection of resources, resource uses, and special designations through combination of exclusions, variance areas and associated variance process, and mitigation	Development limited to the SEZs, protecting more resources, resource uses, and special designations	If development shifts to nonfederal lands, it would be subject to less federal environmental oversight and public involvement
	Prioritization of development in SEZs, which were identified as lands well-suited for solar energy development where potential resource conflicts have been identified and appropriate mitigation has been suggested	Limits possibilities for focusing development to previously disturbed lands outside SEZs; will be given consideration in the identification of new SEZs, however	Potentially would allow a greater degree of development on previously disturbed lands
	Potentially would allow a greater degree of development on previously disturbed lands		

TABLE 2.3-4 (Cont.)

Objective	Modified Program Alternative	Modified SEZ Alternative	No Action Alternative
Minimize potential social and economic impacts	Economic benefits in terms of (1) direct and indirect jobs and income created and (2) ROW rental payments to the federal government	Economic benefits in terms of (1) direct and indirect jobs and income created and (2) ROW rental payments to the federal government	Potential economic benefits essentially the same as under the action alternatives, although realized at a slower rate if pace of development is slower
	Prioritization of development in the SEZs, could concentrate benefits in a smaller number of local economies	With development limited to the SEZs, benefits would be concentrated in a smaller number of local economies	Less potential for these benefits to be concentrated in specific areas
	Potential adverse and beneficial social impacts	Potential adverse and beneficial social impacts	
Provide flexibility to solar industry	A great degree of flexibility in identifying appropriate locations for utility-scale development	Limited flexibility in identifying appropriate locations for utility-scale development	Maximum degree of flexibility in identifying appropriate locations for utility-scale development
			Limited guidance to developers on which lands and projects would ultimately be approvable
Optimize existing transmission infrastructure and corridors	Greater opportunities for developers to identify and propose projects that utilize existing transmission infrastructure and/or designated corridors	Opportunities for developers to identify and propose projects that utilize existing transmission infrastructure and/or designated corridors limited to SEZs	Maximum opportunities for developers to identify and propose projects that utilize existing transmission infrastructure and/or designated corridors
		Proximity to existing transmission infrastructure and corridors will be given consideration in the identification of new SEZs	
		Opportunities to consolidate infrastructure required for new solar facilities	

TABLE 2.3-4 (Cont.)

Objective	Modified Program Alternative	Modified SEZ Alternative	No Action Alternative
Standardize and streamline authorization process	Streamlining of project review and approval processes; more consistent management of ROW applications With prioritization of development in the SEZs, additional streamlining of opportunities over development on other available lands	Streamlining of project review and approval processes; more consistent management of ROW applications	No discernible effect in terms of standardizing and streamlining the authorization process
Meet projected demand for solar energy development as estimated by the RFDS	About 20 million acres ^b available for ROW application, which is more than adequate to support the RFDS projected level of development	About 285,000 acres available for ROW application, which may not be enough land to support the RFDS projected level of development in some states BLM identification of additional SEZs in the future would make additional land available but would require additional environmental review and land use plan amendments	About 98 million acres available for ROW application, which is more than adequate to support the RFDS projected level of development

^a These mandates are established by the Energy Policy Act of 2005 (P.L. 109-58) and Secretarial Order 3285A1 (Secretary of the Interior 2010) (see Section 1.1 of Draft Solar PEIS).

^b To convert acres to km², multiply by 0.004047.

2.3.5 Cumulative Impacts

This section incorporates by reference the assessment of cumulative impacts of developing utility-scale solar energy on BLM-administered lands in the six-state study area over the next 20 years from the Draft Solar PEIS (Section 6.5 of the Draft Solar PEIS). The scope of the cumulative impact analysis in the Draft Solar PEIS was based on solar energy development at the level projected in the RFDS. As discussed in Section 1.6 of this Supplement, the RFDS remains a valid estimate of potential solar development over the next 20 years in the six-state study area.

It is assumed that overall solar development in the six-state study area would be approximately 24,000 MW on BLM-administered lands. This level of development would require a corresponding dedicated use of about 214,000 acres (866 km²) of BLM-administered lands. As discussed in the Draft Solar PEIS (Section 6.5), the RFDS is considered generally applicable to solar development occurring under all of the alternatives evaluated and represents an appropriate upper bound for the cumulative effects analysis.

Because of the uncertain nature of future projects in terms of size, number, location, and the types of technology that would be employed, the cumulative effects are discussed qualitatively or semi-quantitatively, with ranges given as appropriate. Detailed cumulative impact analyses are provided for individual SEZs in Chapters 8 through 13 of the Draft Solar PEIS and will be updated for the Final Solar PEIS. More detailed analyses of cumulative impacts would be performed in the environmental reviews for specific projects in relation to all other existing and proposed projects in the relevant geographic area.

Modifications to the BLM's action alternatives as presented in this Supplement are expected to result in fewer direct and indirect impacts as compared to the action alternatives analyzed in the Draft Solar PEIS. The BLM has removed from further consideration SEZs that had substantive resource conflicts. The BLM has also established more robust exclusion areas for utility-scale solar energy development and is proposing to identify all remaining lands as variance areas where only the most appropriate development will be allowed to proceed. While the qualitative discussion of cumulative effects in the Draft Solar PEIS remains applicable, readers should note that overall, the BLM expects direct and indirect impacts, and therefore cumulative impacts, to be less in magnitude than contemplated in the Draft Solar PEIS.

By restricting and/or prioritizing development in the SEZs under the two modified action alternatives, cumulative impacts may be more concentrated and/or severe within individual SEZs than described in the Draft Solar PEIS. On the other hand, the concentration of development in the SEZs may also allow for the consolidation of related infrastructure (e.g., roads, transmission lines) and less total land disturbance.

An overview of ongoing and reasonably foreseeable future activities in the six-state study area is presented in Section 6.5.1 of the Draft Solar PEIS, including energy production and distribution, and other activities such as recreation, mineral production, military operations, grazing and rangeland management, fire management, forestry, transportation, and industrial development. General trends in population growth, energy demand, water availability, and

1 climate change are discussed in Section 6.5.1.2.2 of the Draft Solar PEIS. The BLM will revisit
2 and update information on ongoing and reasonably foreseeable activities and general trends in
3 resources as appropriate in the Final Solar PEIS.
4
5

6 **2.3.6 Other NEPA Considerations**

7

8 The discussion of other NEPA considerations, including unavoidable adverse impacts,
9 short-term uses of the environment and long-term productivity, irreversible and irretrievable
10 commitment of resources, and mitigation of adverse effects are incorporated by reference from
11 the Draft Solar PEIS (Section 6.6). The analysis in these sections remains applicable to the
12 modified action alternatives as presented in this Supplement.
13
14

15 **2.4 STATUS OF CONSULTATION UNDER OTHER LAWS AND REGULATIONS**

16
17

18 **2.4.1 Endangered Species Consultation**

19

20 As stated in Section 2.2.2.2.2, the BLM will complete ESA consultation on the Solar
21 PEIS with the USFWS under Sections 7(a)(1) and 7(a)(2) of the ESA. The BLM, in consultation
22 with the USFWS, will complete a conservation review under Section 7(a)(1) of the ESA of the
23 overall solar program, including the amendment of 89 land use plans and associated conservation
24 measures. This consultation on the overarching program will provide guidance for subsequent
25 solar projects by ensuring that the appropriate conservation measures for listed species are
26 incorporated into project-level actions. The BLM will also consult with the USFWS on the
27 identification of specific SEZs under Section 7(a)(2) of the ESA; a Biological Assessment will
28 include appropriate mitigation, minimization, and avoidance measures intended to address any
29 effects on listed (endangered and/or threatened) species and designated critical habitat. Further
30 Section 7(a)(2) consultation will occur as necessary at the level of individual projects and will
31 benefit from preceding program- and SEZ-level consultation.
32
33

34 **2.4.2 National Historic Preservation Act**

35

36 As discussed in Section 2.2.2.2.2, the BLM's proposed Solar Energy Program represents
37 an interstate undertaking that could have direct and adverse effects upon National Historic
38 landmarks or National Register-eligible properties of national significance. For these reasons
39 and because development of the program is controversial, the BLM requested review and
40 involvement of the ACHP to resolve potential adverse effects of solar energy development under
41 terms of the BLM's national PA. The BLM prepared a draft Solar PA describing actions it will
42 follow to take into account the effects of solar energy development on historic properties under
43 Section 106 of the NHPA.
44

45 The agency sent this draft Solar PA to the SHPOs in the six states affected, the ACHP,
46 interested parties such as the National Trust for Historic Preservation, and to Indian Tribes in all

1 six states in early 2011. The draft Solar PA has been revised based on feedback given to the
2 BLM and will be sent to all parties again for comment in the fall of 2011. Negotiations will
3 continue, and the BLM expects to have an executed Solar PA prior to release of the Final
4 Solar PEIS.

5
6 The agreement will specify procedures the BLM will take to continue consultation with
7 Tribes regarding historic preservation issues. Steps for the identification of historic properties,
8 evaluations of significance, determinations of effect, and treatment will be articulated. Other
9 actions the agency will follow to achieve transparency and accounting, including training and
10 reporting, are included.

11 12 13 **2.4.3 Tribal Consultation**

14
15 Processes under way will build upon government-to-government consultation undertaken
16 between the BLM and Indian Tribes regarding the Draft Solar PEIS. The BLM expects these
17 actions will continue through completion of the Solar PEIS, signing of the ROD, and beyond, as
18 the agency considers project-specific solar applications to be reviewed under the policies
19 established by the national solar program.

20
21 First, results from an ethnographic study focused on Nevada and Utah are now available.
22 The study included interviews with Tribal members and provides insight into Indian activities in
23 the landscapes in and around proposed SEZs. Information shared regarding traditional uses of
24 plants and animals, trails, and sacred sites will enable the BLM to minimize impacts on those
25 areas of highest concern from future solar development. The BLM will contact other Tribes not
26 included in the ethnographic study prior to preparation of the Final Solar PEIS so that they may
27 have the opportunity to share similar knowledge or concerns regarding sacred sites, historic
28 properties, or traditional uses in lands to which they have cultural ties.

29
30 Second, as part of the process for distributing this Supplement, the BLM will contact all
31 Tribes with historical or cultural ties to areas that could be affected by solar development in the
32 revised set of SEZs or in lands available for a variance. The agency will again ask Tribes for
33 further government-to-government consultation and feedback regarding the revisions proposed
34 in the document. For those Tribes that provided detailed comments on the Draft Solar PEIS, the
35 BLM will offer to meet face-to-face to discuss concerns expressed and agency strategies to
36 address those issues.

37
38 Third, based on all Tribal feedback received, the BLM will write to all Tribes to inform
39 them how their input was taken into account in reaching final decisions documented in the Final
40 Solar PEIS. The agency will explain how government-to-government consultation will continue
41 when new solar applications are received.
42

3 DOE ALTERNATIVES

The DOE alternatives being analyzed through this Supplement include the no action alternative and an action alternative (DOE's proposed action) under which DOE would develop and adopt programmatic environmental guidance for use in solar projects. In the Draft Solar PEIS, DOE presented its plans to develop such guidance; this Supplement presents the proposed guidance (described and analyzed in Sections 3.2 and 3.3). Examples of DOE-supported solar projects are briefly described in Section 1.4 of the Draft Solar PEIS.

3.1 NO ACTION ALTERNATIVE

Under the no action alternative, DOE would continue its existing case-by-case process for addressing environmental concerns for solar projects supported by DOE in any location (i.e., not restricted to BLM-administered lands). It would not develop programmatic environmental guidance with recommended environmental best management practices and mitigation measures that could be applied to all DOE-supported solar projects. The no action alternative remains unchanged from the Draft Solar PEIS (as described in Section 2.3.1 of the Draft).

3.2 ACTION ALTERNATIVE—DOE'S PROPOSED PROGRAMMATIC ENVIRONMENTAL GUIDANCE

As described in the Draft Solar PEIS, under the proposed action (action alternative), DOE would develop and adopt programmatic environmental guidance, which would be used by DOE to further integrate environmental considerations into its analysis and selection of proposed solar projects. DOE has used the information about environmental impacts provided in the Draft Solar PEIS and other information to develop the proposed programmatic guidance below.

3.2.1 General Mitigation Measures

- Consider siting facilities in pre-determined solar development zones (e.g., an SEZ designated by the BLM) in order to assist in the sharing of technologies, resources, and data to ensure a more detailed understanding of environmental resources, to facilitate consistency with land use planning and zoning designations, and to make use of existing infrastructure (e.g., access to transmission equipment and lines).
- Include, in early correspondence between the applicant and appropriate permitting or interested government agencies, preliminary project designs, planned use of new technologies, plans of development, and related information in sufficient detail to allow adequate evaluation of potential impacts.

- 1 • Develop a thorough understanding of all applicable federal, state, and local
2 environmental regulatory requirements, processes, consultations, and
3 interactions.
- 4
- 5 • Make early contact with local officials, regulators, and inspectors to explore
6 all applicable regulations and address concerns unique to solar power
7 generation projects.
- 8
- 9 • Conduct early project development discussions with potential energy users to
10 identify how energy production can be transmitted to load centers and
11 increase the ability to finance projects.
- 12
- 13 • Be aware of possible pre- and post-construction environmental monitoring
14 through agency and public interactions.
- 15

17 **3.2.2 Institutional and Public Outreach**

- 18
- 19 • Emphasize early identification of, and communication and coordination with,
20 stakeholders including, but not limited to, federal, state, and local agencies;
21 special interest groups; Native American Tribes and organizations; elected
22 officials; and concerned citizens.
- 23
- 24 • Consider holding periodic public update meetings and/or hosting a Web site
25 with project and contact information.
- 26
- 27 • Consider providing renewable energy public relations and scientific program
28 speaker support and input to community educational programs, other interest
29 groups, and the media.
- 30

32 **3.2.3 Land Use**

- 33
- 34 • Maximize the use of previously disturbed lands.
- 35
- 36 • Avoid land requiring deforestation/de-shrubbing and/or significant slope
37 leveling or grading.
- 38
- 39 • Avoid siting projects on prime or unique farmland.
- 40
- 41 • Avoid impacts on special use lands such as NPS lands, Wilderness Areas,
42 National Wildlife Refuge System lands, ACECs, Wildlife Management Areas,
43 traditional cultural properties and other culturally sensitive sites, critical
44 habitat for special status species, and military operations areas and other
45 regulated military lands.
- 46

- 1 • Consult with local agencies regarding potential impacts of developing within,
2 adjacent, or close to state or local special use areas such as parks.
- 3
- 4 • Use technologies and facility layouts and designs that will minimize land
5 disturbance at a site.
- 6
- 7 • Avoid or minimize the use of lands that would adversely affect high-use
8 recreational areas such as hiking, camping, and off-road vehicle use locales.
- 9
- 10 • Consider potential direct and indirect impacts on private lands from project
11 siting.
- 12
- 13 • Ensure lands considered are appropriately zoned for project development
14 (e.g., industrial or energy development uses).
- 15
- 16 • Solar development in close proximity to airports will likely trigger the need
17 for consultation with the Federal Aviation Administration (FAA).
- 18
- 19

20 **3.2.4 Water Resources and Erosion Control**

- 21
- 22 • Consider technologies that minimize water use.
- 23
- 24 • Consider the sustainable use of water resources through appropriate
25 technology selection, conservation practices, and the protection of the quality
26 of the existing natural water bodies (including streams, wetlands, ephemeral
27 washes, and floodplains, as well as groundwater aquifers).
- 28
- 29 • Consider the use of rain, gray, and/or other recycled water for facility
30 operations, including plant cooling, steam generation, irrigation, maintenance,
31 and dust suppression.
- 32
- 33 • Avoid locations that would involve impacts on surface water bodies,
34 ephemeral washes, playas, and natural drainage areas (including groundwater
35 recharge areas).
- 36
- 37 • To the extent practicable, minimize the use of and impacts on surface and
38 groundwater resources (including sole source aquifers) during construction
39 and operations.
- 40
- 41 • Avoid groundwater resource project requirements that would result in over-
42 appropriation or over-drafting of any groundwater basin.
- 43
- 44 • Identify source capacity, prior water rights, and adequacy of capacity to serve
45 project requirements and dependent biological resources in the area.
- 46

- 1 • Avoid or minimize the use of land within an identified 100-year floodplain or
2 identify engineering controls to mitigate potential impacts.
- 3
- 4 • Avoid locating facilities on steep slopes, in alluvial fans, and in other areas
5 prone to landslides or flash floods, or within gullies or washes.
- 6
- 7 • Compare preliminary site grading, drainage, erosion, and sediment control
8 plans with applicable local jurisdiction requirements.
- 9
- 10 • Consult federal, state, and local “water-wise” guidelines, as applicable, for
11 project development in the arid southwest.
- 12
- 13

14 **3.2.5 Biological Resources**

- 15
- 16 • Review federal and state databases and technical reports for regulatory
17 requirements for protection of special status animal and plant species and
18 habitats.
- 19
- 20 • Begin early consultation processes with the USFWS and state environmental
21 agencies for identification of potential issues, and ensure ongoing
22 communication in the course of project development.
- 23
- 24 • Locate project facilities and ancillary components so that environmentally
25 sensitive areas (e.g., riparian habitats, streams, wetlands, critical wildlife
26 habitats, and other protected areas) are avoided.
- 27
- 28 • Consider glint, glare, reflection, and linear characteristics of project
29 components on bird and terrestrial animal movements in the project area.
- 30
- 31 • Develop biological survey protocols and plans in consultation with regulatory
32 agencies to ensure that specific regional and other requirements are met.
- 33
- 34 • Consider potential impacts on indigenous and special status plant species
35 while addressing controls for non-native/invasive species and noxious weeds.
- 36
- 37 • Consider reclamation and conservation initiatives for disturbed lands after
38 construction.
- 39
- 40 • Consider developing habitat restoration and management plans and
41 compensatory mitigation and monitoring plans.
- 42
- 43

44 **3.2.6 Air Quality**

- 45
- 46 • Identify applicable federal, state, and local air quality management agencies
47 and follow requirements and application procedures.

- 1 • Identify all emission sources associated with the proposed technology and/or
2 use information from existing facilities with similar characteristics.
- 3
- 4 • Consider dust abatement procedures that will minimize particulate matter
5 emissions while reducing the use of extensive amounts of water.
- 6
- 7

8 **3.2.7 Cultural Resources and Native American Interactions**

9

- 10 • Consult cultural resource experts who meet the Secretary of the Interior’s
11 Professional Qualification Standards (as defined in 36 CFR Part 61).
- 12
- 13 • Identify all Tribes and Tribal organizations with cultural and religious ties to
14 the land and resources in the proposed project vicinity and begin a dialogue of
15 information sharing (formal government-to-government consultations may be
16 requested between federal agencies and federally recognized Tribal
17 governments if the federal government or federal funds are involved in a
18 project that affects a Tribe).
- 19
- 20 • Avoid locations that are in close proximity to sensitive cultural and historic
21 resources.
- 22
- 23 • Begin early interactions with the SHPO and/or Tribal Historic Preservation
24 Officer to identify cultural resources and potential issues associated with a
25 proposed site.
- 26
- 27 • In addition to qualified cultural resource experts, consider employment of a
28 qualified Native American monitor to help identify issues and to work in the
29 field during construction activities should unanticipated cultural resources be
30 encountered.
- 31
- 32

33 **3.2.8 Visual Resources and Aesthetics**

34

- 35 • Consider potential impacts on visual resources in the project planning and
36 siting phase, for example, when siting structures, consider landscape
37 characteristics, lighting and glare from facility components, minimizing
38 structure profiles, views from key observation points and nearby recreation
39 lands, and integration of project components with natural land contours and
40 colors.
- 41
- 42 • Consider potential visual impacts on the nature and character of nearby
43 culturally sensitive and historic structures.
- 44

- Consider visual effects of project components on local infrastructure facilities such as schools, hospitals, and housing developments in urban and rural communities.

3.2.9 Socioeconomics

- Site facilities to maximize local, regional, and state-wide economic benefits.
- Site projects to minimize adverse effects on area housing markets and local infrastructure (e.g., schools and other public services) and to ensure adequate housing vacancy rates and local infrastructure support for workers and their families.
- Site facilities to maximize effective integration with existing electrical transmission corridors, including Western Area Power Administration and other power marketing organization transmission resources and population centers that will use the power.
- Give maximum priority to buying American-made solar technologies and components to the extent practicable.
- Employ “local to global” practices in hiring and procurement of goods and services, giving priority to using local labor forces and businesses during construction and operation prior to considering regional, national, and international resources.

3.2.10 Environmental Justice

- Avoid locating facilities where disproportionately high and adverse impacts would be incurred by a minority population or a population whose income is below the poverty level, unless requested by the minority or low-income population.
- Where applicable, work with potentially affected low-income and minority communities to develop appropriate mitigation measures to reduce environmental, human health, social, and economic impacts from the project on identified populations.

3.2.11 Safety and Health

- Consider state and local fire protection ordinances and fire hazard severity zones when siting a project.

- 1 • Where appropriate, consider facility setback distances and buffers to separate
2 nearby populations and structures from a proposed facility to minimize
3 impacts from sun reflection (glare), low-frequency sound, electromagnetic
4 fields, noise, air pollution, and other facility-related hazards, wastes,
5 emissions, and discharges.
6
- 7 • Coordinate with the FAA and local aviation or military facility managers to
8 address safety concerns and potential impacts on airports or flight paths in
9 close proximity to solar facilities.
10
- 11 • Consider potential impacts from electromagnetic interference (e.g., impacts on
12 radar, microwave, television, and radio transmissions) in facility design and
13 comply with Federal Communications Commission regulations.
14

15 **3.3 ANALYSIS OF DOE’S ACTION ALTERNATIVE**

16 This section presents an analysis of DOE’s action alternative, under which DOE would
17 develop and adopt programmatic environmental guidance for use in the consideration of future
18 solar projects.
19

20 DOE developed the proposed guidance presented in Section 3.2 above to facilitate the
21 advancement of solar energy development. DOE will consider this guidance, including
22 recommended environmental practices and mitigation measures, in its investment and
23 deployment strategies and decision-making process. This guidance would provide DOE with a
24 tool for making more informed, environmentally sound decisions on DOE-supported solar
25 projects.
26

27 **3.3.1 Impacts of DOE’s Proposed Action**

28 The proposed guidance presented in Section 3.2 is intended to better enable DOE to
29 comprehensively determine where to make technology and resource investments to minimize
30 the environmental impacts of solar technologies for DOE-supported solar projects.
31

32 DOE could also consider the proposed guidance in establishing environmental mitigation
33 recommendations to be considered by project proponents. The recommendations contained in the
34 guidance, which are based upon the analysis of impacts of solar energy development and
35 potentially applicable mitigation measures presented in Chapter 5 of the Draft Solar PEIS, would
36 help DOE ensure that adverse environmental impacts of DOE-supported solar projects would be
37 avoided, minimized, or mitigated.
38

39 Collectively, streamlined environmental reviews, quicker project approval processes,
40 and reduced opposition to solar energy development would likely increase the pace of DOE-
41 sponsored development and reduce the costs to industry, regulatory agencies, and stakeholders.
42 These outcomes would support the mandates of Executive Orders 13212 and 13514 (“Federal
43
44
45
46

1 Leadership in Environmental, Energy, and Academic Performance,” *Federal Register*,
2 Volume 74, page 52117, Oct. 5, 2009) and Section 603 of the Energy Independence and Security
3 Act of 2007.

4
5 Increasing the pace of solar energy development would, in turn, translate into other
6 benefits. Utility-scale solar energy development would result in reduced emissions of GHGs
7 and combustion-related pollutants, if the development offsets electricity generation by fossil
8 fuel power plants (see Section 5.11.4 of the Draft Solar PEIS). If the pace of solar energy
9 development is faster as a result of DOE’s proposed action, the potential beneficial impacts of
10 reduced GHG emissions would be realized at a faster rate.

11
12 Utility-scale solar energy development would result in local and regional economic
13 benefits in terms of both jobs and income created (see Section 5.17.2 of the Draft Solar PEIS).
14 The associated transmission system development and related road construction would also
15 produce new jobs and income. These benefits would occur as both direct impacts, resulting from
16 wages and salaries, procurement of goods and services, and collection of state sales and income
17 taxes, and indirect impacts, resulting from new jobs, income, expenditures, and tax revenues
18 subsequently created as the direct impacts circulate through the economy. Increasing the pace of
19 solar energy development would cause these economic benefits to be realized at a faster pace as
20 well.

21
22 As discussed in Section 5.17.1.1 of the Draft Solar PEIS, there may be some adverse
23 socioeconomic impacts resulting from changes in recreation, property values, and environmental
24 amenities (e.g., environmental quality, rural community values, or cultural values), and
25 disruption potentially associated with solar development. There could also be beneficial
26 socioeconomic impacts in these areas resulting from economic growth and a positive reception to
27 the presence of a renewable energy industry. Increasing the pace of solar energy development
28 would also speed up the pace of these types of socioeconomic changes. At the programmatic
29 level, it is difficult to quantify these impacts.

30
31 In summary, the proposed programmatic guidance that DOE has developed under its
32 proposed action will likely minimize the potential adverse environmental impacts of solar energy
33 development for DOE-supported projects. As a result of adopting this guidance in various DOE
34 solar-related programs, the pace of solar energy development could increase.

35 36 37 **3.3.2 Impacts of the No Action Alternative**

38
39 No change to the no action alternative is being proposed as part of the Supplement. As
40 stated in the Draft Solar PEIS, under the no action alternative DOE would continue its case-by-
41 case process for addressing environmental concerns for DOE-supported solar projects. It would
42 not adopt programmatic environmental guidance to apply to DOE-supported solar projects. As
43 a result, DOE would not undertake any specific efforts to programmatically promote the
44 reduction of environmental impacts of solar energy development or streamline environmental
45 reviews for DOE-supported projects. Such achievements, and the potential benefits in terms of
46 increased pace of solar energy development and decreased associated costs, might occur under

1 the no action alternative, but they would not be explicitly promoted by DOE (by adoption of
2 programmatic environmental guidance with recommended environmental practices and
3 mitigation measures).
4
5

6 **3.3.3 Cumulative Impacts**

7

8 This section incorporates by reference the assessment of cumulative impacts of DOE's
9 action alternative (proposed action) from the Draft Solar PEIS (Section 7.3 of the Draft PEIS).
10 The scope of the cumulative impact analysis in the Draft Solar PEIS was based on solar energy
11 development at the level projected in the RFDS (from tens of thousands of acres in some states
12 to potentially hundreds of thousands of acres in other states). As discussed in Section 1.6 of this
13 Supplement, the RFDS remains a valid estimate of potential solar development over the next
14 20 years in the six-state study area.
15

16 As stated in the Draft Solar PEIS, in all likelihood only a small percentage of utility-scale
17 solar energy development projected in the RFDS would be directly attributable to DOE's
18 proposed action, in light of the anticipated limited availability of federal funds to support such
19 projects in the six-state study area. As a result, the BLM cumulative impact analysis is
20 considered to provide the upper bound description of potential cumulative environmental
21 impacts. Therefore, a separate cumulative impacts analysis for the DOE proposed action was not
22 prepared.
23
24

25 **3.3.4 Other NEPA Considerations**

26

27 The discussion of other NEPA considerations, including unavoidable adverse impacts,
28 short-term uses of the environment and long-term productivity, irreversible and irretrievable
29 commitment of resources, and mitigation of adverse effects, are incorporated by reference from
30 the Draft Solar PEIS (Section 7.4). The analysis in these sections remains applicable to the action
31 alternative as presented in this Supplement.
32
33

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

4 REFERENCES

1
2
3
4 BLM (Bureau of Land Management), 1994, *BLM Manual 3060, Mineral Reports—Preparation*
5 *and Review*, Rel. 3-284, April 7, U.S. Department of the Interior, Bureau of Land Management,
6 Washington, D.C.

7
8 BLM, 1999, *The California Desert Conservation Area Plan 1980, as Amended*, California Desert
9 District Office, Riverside, Calif., Aug. 17.

10
11 BLM, 2005, *Land Use Planning Handbook*, H-1601-1, U.S. Department of the Interior, Bureau
12 of Land Management, Washington, D.C., March.

13
14 BLM, 2008, *BLM National Environmental Policy Act Handbook*, H-1790-1, National
15 Environmental Policy Act Program, Office of the Assistant Director, Renewable Resources and
16 Planning (WO-200), Washington, D.C., Jan. Available at [http://www.blm.gov/pgdata/etc/
17 medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.24487.File.
18 dat/h1790-1-2008-1.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.24487.File.dat/h1790-1-2008-1.pdf).

19
20 BLM, 2009, *Instruction Memorandum 2009-153, Financial Guarantees for Notices and Plans of*
21 *Operations*, U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.,
22 June 19.

23
24 BLM, 2010, *Instruction Memorandum 2010-141, Solar Energy Interim Rental Policy*,
25 U.S. Department of the Interior, Bureau of Land Management, Washington, D.C., June 10.

26
27 BLM, 2011a, *Instruction Memorandum 2011-060, Solar and Wind Energy Applications—Due*
28 *Diligence*, U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.,
29 Feb. 7.

30
31 BLM, 2011b, *Instruction Memorandum 2011-061, Solar and Wind Energy Applications—*
32 *Pre-Application and Screening*, U.S. Department of the Interior, Bureau of Land Management,
33 Washington, D.C., Feb. 7.

34
35 BLM 2011c, *2011 Renewable Energy Priority Projects*. Available at [http://www.blm.gov/wo/st/
36 en/prog/energy/renewable_energy/priority_projects.html](http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/priority_projects.html).

37
38 BLM, 2011d, *Instruction Memorandum 2011-122, Plan to Ensure Adequate Cadastral Survey*
39 *Review of Boundary Evidence Prior to the Approval of Significant Land and Resource*
40 *Transactions and Commercial Projects*, U.S. Department of the Interior, Bureau of Land
41 Management, Washington, D.C., May 24.

42
43 BLM and DOE (BLM and U.S. Department of Energy), 2010, *Draft Programmatic*
44 *Environmental Impact Statement for Solar Energy Development in Six Southwestern States*,
45 DES 10-59, DOE/EIS-0403, Dec.

1 Secretary of the Interior, 2010, *Renewable Energy Development by the Department of the*
2 *Interior, Amendment No. 1 to Secretarial Order 3285*, Feb. 22. Available at [http://elips.doi.gov/](http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3285A1)
3 [app_so/act_getfiles.cfm?order_number=3285A1](http://elips.doi.gov/app_so/act_getfiles.cfm?order_number=3285A1).
4

1
2
3
4
5
6
7
8
9
10

5 LIST OF PREPARERS

Table 5-1 lists the U.S. Department of the Interior Bureau of Land Management and U.S. Department of Energy management team members for this Supplement to the Draft Solar Programmatic Environmental Impact Statement (Solar PEIS). Table 5-2 lists the names, education, and expertise of the preparers of this Supplement at Argonne National Laboratory.

TABLE 5-1 Agency Management Team

Name	Office/Title
<i>Bureau of Land Management</i>	
Ray Brady	Minerals and Realty Management Directorate; Chief, National Renewable Energy Coordination Office
Stephen Fosberg	National Renewable Energy Coordination Office; Archaeologist
Linda Resseguie	National Renewable Energy Coordination Office; Solar Program Lead
Gregory Russell	Department of the Interior, Office of the Solicitor, Division of Land and Water Resources; Solicitor
Shannon Stewart	Renewable Resources and Planning Directorate; Senior Planning and Environmental Analyst
<i>U.S. Department of Energy</i>	
Jennifer DeCesaro	Office of Energy Efficiency and Renewable Energy, Solar Energy Technologies Program, Market Transformation; Team Lead
Dr. Jane Summerson	Office of Energy Efficiency and Renewable Energy; Solar PEIS Document Manager
Mark Wieringa	Western Area Power Administration; Environmental Protection Specialist

11

1 **TABLE 5-2 Preparers of the Supplement to the Draft Solar PEIS at Argonne National Laboratory**

Name	Education/Expertise	Contribution
Timothy Allison	M.S., Mineral and Energy Resource Economics; M.A., Geography; 21 years of experience in regional analysis and economic impact analysis.	Technical lead for socioeconomic and environmental justice
Georgia Anast	B.A., Mathematics/Biology; 17 years of experience in environmental assessment.	Comment/response manager
Kevin J. Beckman	B.S., Mathematics and Computer Science; 2 years of experience in Web programming	Public Web site development and maintenance
Bruce Biwer	Ph.D., Chemistry; 21 years of experience in environmental assessment and transportation risk analysis.	Transportation impacts
Matthew Braun	B.S., Anthropology and Psychology, 4 years of archaeological field experience.	Cultural resources analysis
Brian L. Cantwell	B.S., Forestry; 26 years of experience in cartography and GIS mapping.	Technical lead for GIS mapping
Adrienne Carr	Ph.D., Geological and Environmental Sciences; 5 years of experience in hydrological studies and impact analysis.	Water resources analysis
Youngsoo Chang	Ph.D., Chemical Engineering; 21 years of experience in air quality and noise impact analysis.	Technical lead for air quality and climate; acoustic environment
Roberta S. Davidson	M.S., Forest Biometrics; 17 years of experience in environmental assessment, environmental and logistics modeling	Socioeconomics and cumulative impacts analysis support
John Gasper	M.S., M.P.H., Environmental Health Science; 32 years of experience in environmental and energy assessment and program management.	Program Manager
Linda Graf	Desktop publishing specialist; 40 years of experience in creating, revising, formatting, and printing documents.	Document assembly and production
Mark A. Grippo	Ph.D., Biology; 5 years of experience in aquatic resource studies and impact analysis.	Ecological resources analysis; aquatic biota
Antonio C. Guerrero	Certificate in Geographic Information Analysis; 2 years experience in GIS analysis.	Technical support for GIS analysis

2

TABLE 5-2 (Cont.)

Name	Education/Expertise	Contribution
Heidi M. Hartmann	M.S., Environmental Toxicology and Epidemiology; 24 years of experience in environmental assessment, exposure and risk analysis, and environmental impact assessment.	Project Manager, programmatic analyses
Elizabeth Hocking	J.D.; 18 years of experience in regulatory and policy analysis.	Technical lead for regulatory requirement analysis
Irene Hogstrom	M.A., Geography and Environmental Studies; B.L.A., Landscape Architecture; 22 years of experience in landscape architecture	Visual resources research support
Patricia Hollopeter	B.A., Religion; M.A., Philosophy; 26 years of experience in technical editing and environmental assessment document production.	Lead editor
Ronald Kolpa	M.S., Inorganic Chemistry; B.S., Chemistry; 37 years of experience in environmental regulation, auditing, and planning.	Technical lead for hazardous materials and waste management
Leslie Kirchler	Ph.D., Urban, Technological, and Environmental Planning, Ph.D., Landscape Architecture; 8 years of experience in visual impact analysis and environmental assessment.	Visual resources impact analysis
Thomas J. Kotek	M.S., Computer Science; 36 years of experience in data management and database-driven Web applications.	Webmaster and data management for Draft Solar PEIS online comment submissions
Kirk E. LaGory	Ph.D., Zoology, M.En., Environmental Science; 34 years of experience in ecological research, 23 years in environmental assessment.	Technical lead for ecological resources analysis; threatened and endangered species
James E. May	M.S., Water Resources Management; B.A., Zoology; 33 years of experience in natural resources management; 4 years of consulting experience in land use planning and NEPA compliance.	Technical lead for lands and realty, specially designated areas and lands with wilderness character, livestock grazing, wildland fire, recreation, military and civilian aviation, and minerals assessments
Ellen Moret	M.P.P., Public Policy; B.A., Environmental Studies; 7 years of experience in environmental assessment.	Document technical content management

TABLE 5-2 (Cont.)

Name	Education/Expertise	Contribution
Michele Nelson	Graphic designer; 33 years of experience in graphical design and technical illustration.	Graphics
Ben L. O'Connor	Ph.D., Civil Engineering; 5 years of experience in hydrological studies and impact analysis.	Technical lead for water resources
Terri Patton	M.S., Geology; 23 years of experience in environmental research and assessment.	Technical lead for geological and soil resources; contributor for minerals assessments
Kurt Picel	Ph.D., Environmental Health Sciences; 32 years of experience in environmental health analysis and 18 years in environmental assessment.	Technical lead for cumulative impact analyses
Edgar Portante	M.S., Electrical and Computer Engineering, Management; 30 years of experience in electrical power systems modeling, optimization, and analysis.	Transmission constraints analysis
Pamela Richmond	M.S., Computer Information Systems; 16 years of experience in Web site development and related technology.	Public Web site development and maintenance
Lorenza Salinas	Desktop publishing specialist; 29 years of experience in creating, revising, formatting, and printing documents.	Document assembly and production
Barbara Simmons	B.A., technical writing; E.L.S. certification by the Board of Editors in the Life Sciences; Fellow of the Society for Technical Communication; 46 years of experience in technical editing and publications management.	Editor
Albert E. Smith	Ph.D., Physics; 37 years of experience in policy analysis, air and noise impact assessment, and regulatory analysis.	Air quality analysis support
Karen P. Smith	M.S., B.A., Geology; B.S., Anthropology; more than 22 years of experience in energy and environmental regulatory and policy analysis.	Program Manager, programmatic analyses
Robert Sullivan	M.L.A., Landscape Architecture; 22 years of experience in visual impact analysis and simulation; 13 years in Web site development.	Technical lead for visual resources; public Web site development

TABLE 5-2 (Cont.)

Name	Education/Expertise	Contribution
Jack C. VanKuiken	M.S., Systems Science; 36 years of experience in electrical power systems modeling, optimization, and analysis.	Technical lead for transmission constraints analysis
Robert A. Van Lonkhuyzen	B.A., Biology; 21 years of experience in ecological research and environmental assessment.	Ecological resources analysis; vegetation and plant communities
Bruce Verhaaren	Ph.D., Archaeology; 21 years of experience in archaeological analysis; 17 years in environmental assessment and records management.	Native American concerns analysis; records management
William S. Vinikour	M.S., Biology with environmental emphasis; 35 years of experience in ecological research and environmental assessment.	Ecological resources analysis; wildlife and wild horses and burros
Leroy J. Walston, Jr.	M.S., Biology; 6 years of experience in ecological research and environmental assessment.	Ecological resources analysis; special status species
Konstance L. Wescott	M.A., Anthropology; 24 years of experience in archaeological research and 20 years of experience in environmental assessment.	Technical lead for paleontology, cultural resources, and Native American concerns
Suzanne Williams	B.S., Communication Studies with concentration in English; 27 years of experience in technical communications.	Editor
Emily A. Zvolanek	B.A., Environmental Science; 3 years of experience in GIS mapping.	GIS mapping

1
2

1
2
3
4
5
6
7
8
9
10
11
12
13

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

APPENDIX A:
PENDING SOLAR APPLICATIONS AS OF AUGUST 15, 2011

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

APPENDIX A: PENDING SOLAR APPLICATIONS AS OF AUGUST 15, 2011 A-1

TABLES

A-1 Pending Solar Applications on BLM-Administered Lands as of August 15, 2011 A-2

A-2 Summary Table A-7

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1 **APPENDIX A:**

2
3 **PENDING SOLAR APPLICATIONS AS OF AUGUST 15, 2011**

4
5 This appendix presents an update to Appendix B of the Draft Solar PEIS. It presents the
6 current list of pending¹ solar applications, as of August 15, 2011. In total, the U.S. Department
7 of the Interior Bureau of Land Management (BLM) has received more than 300 applications for
8 right-of-way (ROW) authorizations for utility-scale solar facilities to be located on BLM-
9 administered lands. Some of these applications are being processed in accordance with BLM’s
10 existing policies, while other applications have been terminated. As of August 15, 2011, the
11 BLM had 79 pending applications for ROW authorizations for solar facilities. These pending
12 applications are shown in Table A-1. The applications are for parabolic trough, power tower, or
13 photovoltaic (PV) facilities. (Note that there are no longer any pending applications for dish
14 engine facilities.)

15
16 Table A-2 summarizes the locations, acreage, and estimated electric generation capacities
17 of the pending applications by state. The vast majority of the applications are located in Arizona,
18 California, and Nevada; Colorado and Utah currently have no pending applications.

19
20 The total acreage of BLM-administered lands under pending applications is
21 approximately 685,037 acres (2,772 km²), while the estimated total capacity of the facilities is
22 approximately 33,313 MW. This equates to an average land use of 20.6 acres/MW for all of the
23 pending applications combined. This land use is greater than the land use requirements assumed
24 in the Solar PEIS (i.e., 5 acres/MW for parabolic trough facilities; 9 acres/MW for all other
25 facilities), reflecting the fact that applicants often request more acreage to allow flexibility in
26 project design or to avoid lands where resource conflicts might exist within the ROW application
27 area.

¹ The term “pending” is defined in Section 1.7.2 of this Supplement.

1 **TABLE A-1 Pending Solar Applications on BLM-Administered Lands as of August 15, 2011**

Serial Number	Customer Name (Project Name and/or Geographic Area)	Application Received	MW	Total Case Acres	Planned Technology ^a	Field Offices
AZA 034184	BOULEVARD ASSOC LLC (Aguila)	June 26, 2007	500	7,335	CSP/Trough	Hassayampa
AZA 034186	BOULEVARD ASSOC LLC (Burnt Mountain/ Big Horn)	June 26, 2007	500	5,912	CSP/Trough	Hassayampa
AZA 034187	NextEra/BOULEVARD ASSOC LLC (Sonoran Solar)	June 28, 2007	500	4,000	PV	Lower Sonoran
AZA 034200	NextEra/BOULEVARD ASSOC LLC (Mountain Spring)	June 22, 2007	250	6,705	CSP/Trough	Kingman
AZA 034321	AREVA SOLAR AZ II LLC (AUSRA Palo Verde)	October 1, 2007	400	1,867	CSP/CLFR	Hassayampa
AZA 034335	BOULEVARD ASSOC LLC (Bouse)	June 8, 2007	500	24,221	CSP/Trough	Lake Havasu: Yuma
AZA 034357	FIRST SOLAR (Gila Bend)	November 6, 2007	500	6,003	PV	Lower Sonoran
AZA 034358	FIRST SOLAR (Saddle Mtn)	November 6, 2007	300	5,997	PV	Lower Sonoran
AZA 034416	PACIFIC SOLAR INVST INC (Iberdrola) (Eagletail)	December 2, 2007	1,500	26,082	CSP/Trough	Yuma
AZA 034424	PACIFIC SOLAR INVST INC (Iberdrola) (Big Horn)	December 4, 2007	300	7,240	CSP	Hassayampa
AZA 034425	PACIFIC SOLAR INVST INC (Iberdrola) (Hyder)	December 7, 2007	350	4,500	CSP/Trough	Lower Sonoran; Yuma
AZA 034426	PACIFIC SOLAR INVST INC (Iberdrola) (Ranegras)	December 2, 2007	2,000	25,860	CSP/Trough	Yuma
AZA 034427	PACIFIC SOLAR INVST INC (Iberdrola) (La Posa Solar Thermal)	September 6, 2007	2,000	38,212	CSP/Trough	Yuma
AZA 034540	HORIZON WIND ENERGY LLC (Horizon Aguila)	March 4, 2008	250	11,535	CSP/Trough	Hassayampa
AZA 034554	NEXTLIGHT RENEWABLE POWER LLC (Quartzite)	March 26, 2008	500	20,699	CSP/Trough	Yuma

TABLE A-1 (Cont.)

Serial Number	Customer Name (Project Name and/or Geographic Area)	Application Received	MW	Total Case Acres	Planned Technology ^a	Field Offices
AZA 034560	NEXTLIGHT RENEWABLE POWER LLC (Vicksburg)	March 26, 2008	500	15,040	CSP/Trough	Yuma
AZA 034566	NEXTLIGHT RENEWABLE POWER LLC (Centennial)	March 26, 2008	500	13,428	CSP/Trough	Yuma
AZA 034568	NEXTLIGHT RENEWABLE POWER LLC (Palomas)	March 26, 2008	500	20,165	CSP/Trough	Yuma
AZA 034665	SOLAR RESERVE LLC (Black Rock Hill)	May 27, 2008	600	5,600	CSP/Tower	Yuma
AZA 034666	SOLAR RESERVE LLC (Quartzsite)	May 27, 2008	100	1,500	CSP/Tower	Yuma
AZA 034668	SOLAR RESERVE LLC (Agua Caliente)	May 27, 2008	600	5,678	CSP/Tower	Yuma
AZA 034737	ARIZONA SOLAR INVST INC (Haraquahala)	July 10, 2008	250	14,047	PV	Hassayampa
AZA 034739	IDIT INC(Little Horn)	July 9, 2008	1,000	12,291	CSP/Trough	Yuma
AZA 034754	HORIZON WIND ENERGY LLC (Wenden)	March 4, 2008	250	28,760	CSP/Trough	Lake Havasu
AZA 034774	IDIT INC (Dendora Valley)	August 12, 2008	250	14,765	PV	Lower Sonoran
AZA 034797	LSR JACKRABBIT LLC (LSR Jackrabbit)	August 27, 2008	500	27,036	CSP/Tower	Hassayampa
AZA 034799	LSR PALO VERDE LLC (LSR Palo Verde)	August 27, 2008	600	5,855	CSP/Trough	Lower Sonoran
AZA 034936	WILDCAT QUARTZSITE LLC (Quartzite)	January 29, 2009	800	11,960	CSP/Tower	Yuma
AZA 034946	WILDCAT HARCUIVAR SOUTH LLC (Bright Source Energy) (Wildcat Harcuvar SO)	January 28, 2009	800	10,947	CSP/Tower	Lake Havasu
AZA 035166	IDIT INC (Arlington West)	July 27, 2009	Unknown	5,800	PV	Lower Sonoran

TABLE A-1 (Cont.)

Serial Number	Customer Name (Project Name and/or Geographic Area)	Application Received	MW	Total Case Acres	Planned Technology ^a	Field Offices
AZA 035236	SOLAR RESERVE (Safford Solar Energy Center/ San Simon)	January 4, 2010	250	22,892	PV	Safford
CACA 048669	FIRST SOLAR (Stateline/Ivanpah)	December 14, 2006	380	5,454	PV	Needles
CACA 048728	NextEra ENERGY (McCoy)	January 31, 2007	250	7,754	PV	Palm Springs-South Coast
CACA 048808	CHUCKWALLA SOLAR 1 LLC (Chuckwalla)	September 15, 2006	200	4,082	PV	Palm Springs-South Coast
CACA 048810	SOLAR MILLENNIUM/ CHEVRON (Palen)	March 14, 2007	500	5,160	CSP/Trough	Palm Springs-South Coast
CACA 048875	DPT BROADWELL LAKE LLC (Broadwell SEGS)	January 24, 2007	1,000	8,625	CSP/Tower	Barstow
CACA 049002	LEOPOLD COMPANY LLC (Ward Valley)	April 2, 2007	250	35,200	CSP/Tower	Needles
CACA 049150	SUNPEAK SOLAR LLC (Superstition Solar I)	July 17, 2007	500	5,464	PV	El Centro
CACA 049397	FIRST SOLAR (Desert Quartzite)	September 28, 2007	700	7,236	PV	Palm Springs-South Coast
CACA 049488	ENXCO INC (Mule Mountain)	November 13, 2007	200	2,049	PV	Palm Springs-South Coast
CACA 049490	ENXCO INC (McCoy)	November 13, 2007	300	20,480	CSP	Palm Springs-South Coast
CACA 049491	ENXCO INC (Desert Harvest)	November 13, 2007	100	930	CSP	Palm Springs-South Coast
CACA 049584	CAITHNESS SODA MTN, LLC (Caithness Soda Mt)	December 14, 2007	350	7,995	CPV	Barstow
CACA 049585	POWER PARTNERS SOUTHWEST (ENXCO) (Troy Lake Soleil)	December 12, 2007	200	3,834	PV	Barstow
CACA 49615	PACIFIC SOLAR INVESTMENTS INC (Iberdrola) (Ogilby Solar)	September 4, 2007	450	7,405	CSP	El Centro
CACA 049884	SOLAR RESERVE LLC (Solar Reserve/Imperial County)	April 24, 2008	250	4,000	CSP/Tower	El Centro

TABLE A-1 (Cont.)

Serial Number	Customer Name (Project Name and/or Geographic Area)	Application Received	MW	Total Case Acres	Planned Technology ^a	Field Offices
CACA 051625	SAN DIEGO GAS & ELECTRIC CO (Ocotillo Sol)	December 17, 2009	14	115	PV	El Centro
CACA 051812	ELEMENT POWER (GrEXt Valley - Atwell)	April 9, 2010	150	1,509	PV	Bakersfield
CACA 052471	RIDGELINE ENERGY (South Kern Solar)	December 23, 2010	20	160	PV	Bakersfield
CACA 052473	RIDGELINE ENERGY (Twisselman Solar)	December 23, 2010	10	80	PV	Bakersfield
CACA 052796	BRIGHTSOURCE ENERGY (Johnson Valley SEGS)	May 23, 2011	800	1,560	CSP/Tower	Barstow
NMNM 119969	ENXCO DEVELOPMENT CORP (Afton)	February 6, 2008	600	3,000	CSP/Trough	Las Cruces
NMNM 120310	IBERDROLA RENEWABLES (Lordsburg Mesa)	March 25, 2008	1,500	24,320	CSP/Trough	Las Cruces
NMNM 121092	SOLAR RESERVE LLC (Lordsburg)	August 11, 2008	100	5,296	CSP/Tower	Las Cruces
NVN 083129	COGENTRIX SOLAR SERVICES LLC (McCullough Pass)	January 18, 2007	1,000	19,840	CSP	Las Vegas
NVN 083914	BRIGHT SOURCE ENGY SOLAR PTNR (Morman Mesa)	July 25, 2007	500	10,000	CSP/Tower	Las Vegas
NVN 084052	NV POWER CO (Dry Lake Valley)	August 14, 2007	125	919	CSP/Trough	Las Vegas
NVN 084232	FIRST SOLAR (Desert Spring)	October 22, 2007	400	5,500	PV	Las Vegas
NVN 084465	PACIFIC SOLAR INVESTMENTS INC (Iberdrola) (Amargosa North)	December 7, 2007	150	7,500	PV	Las Vegas
NVN 084631	BRIGHT SOURCE ENGY SOLAR PTNR	January 28, 2008	1,200	2,000	CSP/Tower	Las Vegas
NVN 084654	NAVY FACENG CMND SW (Fallon NAS Solar)	January 25, 2008	4	37	PV	Stillwater
NVN 084704	AMARGOSA FLATS ENERGY LLC (Crystal/Johnnie)	March 12, 2008	140	7,040	CSP/CLFR	Pahrump

TABLE A-1 (Cont.)

Serial Number	Customer Name (Project Name and/or Geographic Area)	Application Received	MW	Total Case Acres	Planned Technology ^a	Field Offices
NVN 085201	EWINDFARM INC (Johnnie Pahrump)	May 14, 2008	500	10,880	PV	Pahrump
NVN 085801	FIRST SOLAR (Silver State South)	August 25, 2008	350	1,400	PV	Las Vegas
NVN 086158	POWER PARTNERS SOUTHWEST LLC (ENXCO)	September 18, 2008	250	3,885	CSP	Las Vegas
NVN 086159	POWER PARTNERS SOUTHWEST LLC (ENXCO)	September 19, 2008	250	1,751	CSP	Las Vegas
NVN 086248	AUSRA NV I LLC (Highway 160)	October 6, 2008	420	10,080	CSP/Trough	Pahrump
NVN 086249	AUSRA NV I LLC (Spector Range)	October 9, 2008	Unknown	4,480	CSP/Trough	Pahrump
NVN 086350	SOLAR RESERVE LLC (Pahroc Solar)	October 2, 2008	180	7,680	CSP/Tower	Caliente
NVN 086571	ABENGOA SOLAR INC (Lathrop Wells Solar)	December 12, 2008	500	5,336	CSP/Trough	Pahrump
NVN 088552	GA-SNC SOLAR LLC	May 13, 2010	150	825	PV	Las Vegas
NVN 089530	SILVER STATE SOLAR LLC	February 24, 2011	Unknown	5,651	PV	Las Vegas
NVN 089560	GASNA 39 LLC	December 17, 2010	50	600	PV	Las Vegas
NVN 089566	LONE VALLEY LLC	February 11, 2011	20	233	PV	Las Vegas
NVN 089655	ELEMENT POWER	September 9, 2010	100	2,560	PV	Las Vegas
NVN 089656	ELEMENT POWER	September 9, 2010	50	640	PV	Las Vegas
NVN 089657	ELEMENT POWER	September 9, 2010	100	640	PV	Las Vegas
NVN 089658	ELEMENT POWER	September 9, 2010	100	640	PV	Las Vegas
NVN 089659	ELEMENT POWER	September 9, 2010	100	1,280	PV	Las Vegas

^a CLFR = compact linear Fresnel collector; CSP = concentrating solar power; CPV = concentrating photovoltaic; PV = photovoltaic.

1

TABLE A-2 Summary Table^a

State	Pending Applications	Approximate Acreage	Estimated MW
Arizona	31	411,932	17,850
California	20	129,092	6,624
Colorado	0	0	0
New Mexico	3	32,616	2,200
Nevada	25	111,397	6,639
Utah	0	0	0
Total	79	685,037	33,313

^a Data current as of August 15, 2011.

2

3

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

APPENDIX B:
SOLAR ENERGY ZONES DROPPED FROM FURTHER CONSIDERATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

CONTENTS

APPENDIX B: SOLAR ENERGY ZONES DROPPED FROM FURTHER CONSIDERATION B-1

B.1 Arizona..... B-1

 B.1.1 Bullard Wash B-1

 B.1.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-1

 B.1.1.2 Summary of Comments Received B-4

 B.1.1.3 Rationale for Eliminating the SEZ..... B-4

B.2 California B-5

 B.2.1 Iron Mountain B-5

 B.2.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-5

 B.2.1.2 Summary of Comments Received B-8

 B.2.1.3 Rationale for Eliminating the SEZ..... B-9

 B.2.2 Pisgah..... B-9

 B.2.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-9

 B.2.2.2 Summary of Comments Received B-13

 B.2.2.3 Rationale for Eliminating the SEZ..... B-14

B.3 Nevada B-15

 B.3.1 Delamar Valley B-15

 B.3.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-15

 B.3.1.2 Summary of Comments Received B-18

 B.3.1.3 Rationale for Eliminating the SEZ..... B-20

 B.3.2 East Mormon Mountain B-21

 B.3.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-21

 B.3.2.2 Summary of Comments Received B-23

 B.3.2.3 Rationale for Eliminating the SEZ..... B-26

B.4 New Mexico..... B-27

 B.4.1 Mason Draw B-27

 B.4.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-27

 B.4.1.2 Summary of Comments Received B-29

 B.4.1.3 Rationale for Eliminating the SEZ..... B-30

 B.4.2 Red Sands..... B-30

 B.4.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement B-30

 B.4.2.2 Summary of Comments Received B-33

 B.4.2.3 Rationale for Eliminating the SEZ..... B-34

B.5 References..... B-34

FIGURES

1
2
3
4 B.1.1-1 Proposed Bullard Wash SEZ as Presented in the Draft Solar PEIS B-2
5
6 B.2.1-1 Proposed Iron Mountain SEZ as Presented in the Draft Solar PEIS B-6
7
8 B.2.2-1 Proposed Pisgah SEZ as Presented in the Draft Solar PEIS B-10
9
10 B.3.1-1 Proposed Delamar Valley SEZ as Presented in the Draft Solar PEIS B-16
11
12 B.3.2-1 Proposed East Mormon Mountain SEZ as Presented in the Draft Solar PEIS B-22
13
14 B.4.1-1 Proposed Mason Draw SEZ as Presented in the Draft Solar PEIS B-28
15
16 B.4.2-1 Proposed Red Sands SEZ as Presented in the Draft Solar PEIS B-31
17

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42

APPENDIX B:

SOLAR ENERGY ZONES DROPPED FROM FURTHER CONSIDERATION¹

B.1 ARIZONA

B.1.1 Bullard Wash

B.1.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement (PEIS)

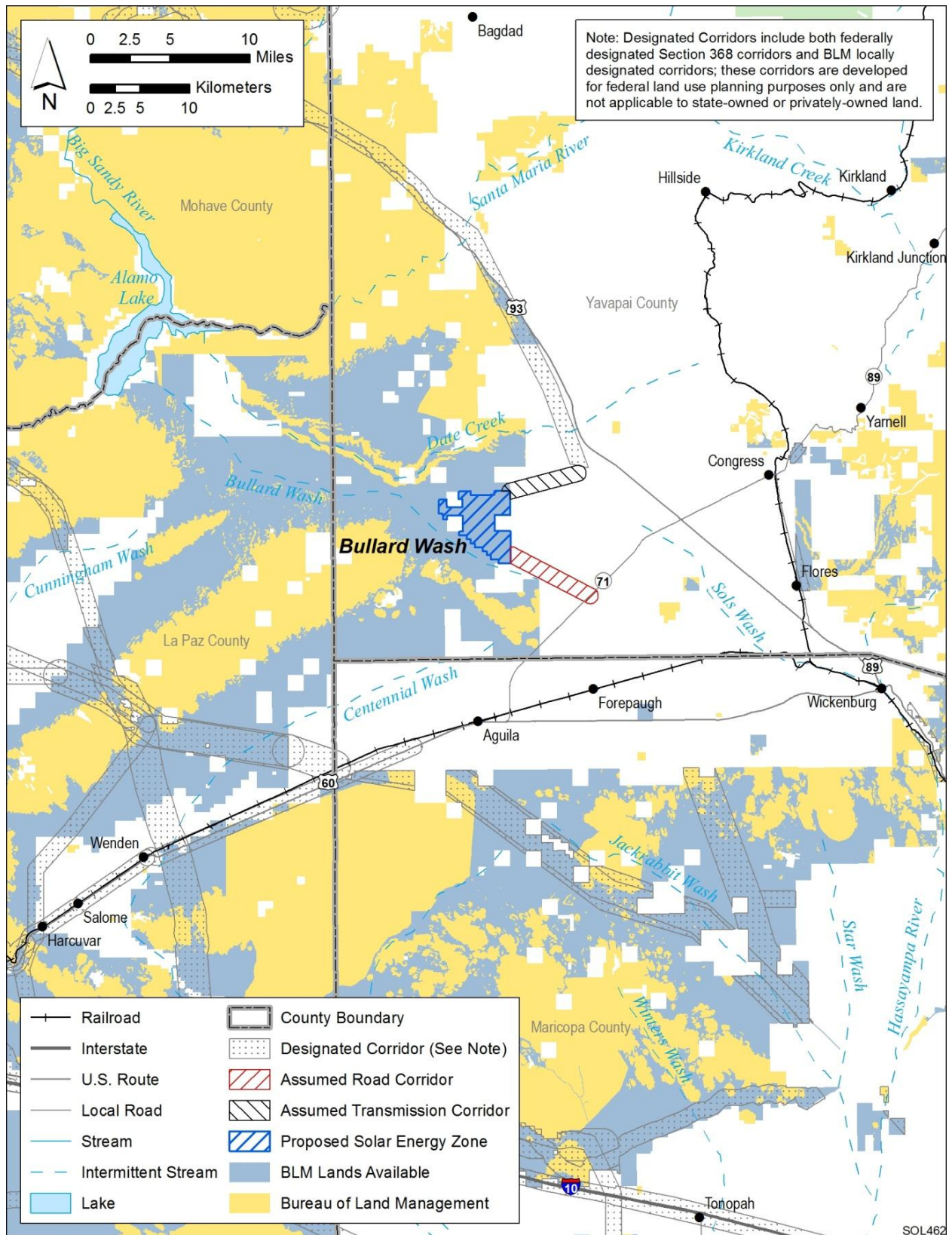
The proposed Bullard Wash solar energy zone (SEZ), as presented in the Draft Solar PEIS, had a total area of 7,239 acres (29.3 km²). It is located in Maricopa County in west-central Arizona (Figure B.1.1-1). The town of Aguila is located about 12 mi (19 km) south of the SEZ.

The Draft Solar PEIS identified a 500-kV transmission line that passes about 5 mi (8 km) northeast of the SEZ as the nearest point of connection of the SEZ to the grid. The Draft Solar PEIS also identified State Route 71, located about 5 mi (8 km) southeast of the southeastern tip of the SEZ, as the nearest major road, and assumed that a new access road would be constructed from the proposed SEZ to State Route 71 to support development.

Potential environmental and other impacts identified in the Draft Solar PEIS included the following:

- Wilderness characteristics in the Tres Alamos Wilderness Area (WA) between 3.5 and 7 mi (6 and 11 km) of the border of the SEZ and within the viewshed of the SEZ would be adversely affected.
- There would be small adverse impacts on the Pipeline Ranch and Central Arizona Ranch Company grazing allotments.
- Areas developed for solar energy production would be closed to recreational use. Inventoried off-highway vehicle routes would be closed.
- The U.S. Department of Defense expressed concern that any development in the SEZ that exceeds 250 ft (76 m) in height would interfere with military operations in three military training routes.

¹ In this appendix, acronyms are defined in each subsection to facilitate use of the subsections as individual resources.



1

2 **FIGURE B.1.1-1 Proposed Bullard Wash SEZ as Presented in the Draft Solar PEIS**

- 1 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
2 erosion by wind and runoff, sedimentation, and soil contamination) could
3 occur.
- 4
- 5 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
6 wet-cooling options would not be feasible.
- 7
- 8 • Over much of this SEZ, the dominant species present include Joshua tree and
9 saguaro cactus. Clearing of a large portion of the proposed SEZ could
10 primarily affect wetland, dry wash, dry wash woodland, mesquite bosque,
11 riparian, Joshua tree, and saguaro cactus communities, depending on the
12 amount of habitat disturbed. The establishment of noxious weeds could result
13 in habitat degradation.
- 14
- 15 • Potentially suitable habitat for 39 special status species occurs in the affected
16 area of the proposed SEZ; less than 1% of the potentially suitable habitat for
17 any of these species and any wildlife species occurs in the region that would
18 be directly affected by development.
- 19
- 20 • If aquatic biota are present, they could be affected by the direct removal of
21 surface water features within the construction footprint, a decline in habitat
22 quantity and quality due to water withdrawals and changes in drainage
23 patterns, as well as increased sediment and contaminant inputs associated with
24 ground disturbance and construction activities.
- 25
- 26 • Temporary exceedances of ambient air quality standards for particulate
27 matter at the SEZ boundaries are possible during construction. These high
28 concentrations, however, would be limited to the immediate area surrounding
29 the SEZ boundary.
- 30
- 31 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
32 could be observed by residents nearest to the SEZ. Strong visual contrasts
33 could also be observed by visitors to the Tres Alamos WA. Weak to moderate
34 visual contrasts could be observed by visitors to the Arrastra Mountain WA,
35 while moderate to strong visual contrasts could be observed by travelers on
36 Joshua Forest Scenic Road.
- 37
- 38 • The potential for impacts on significant paleontological and cultural resources
39 is unknown. No surveys have been conducted in the proposed SEZ, and no
40 sites have been recorded to date. Development within the SEZ may result in
41 visual or audible disturbance to sacred areas in the nearby mountains. The
42 SEZ itself does contain plant and animal species traditionally important to the
43 Yavapai, and development in the proposed SEZ would eliminate some
44 traditionally important plants and some habitat of traditionally important
45 animals.
- 46
- 47

1 **B.1.1.2 Summary of Comments Received**
2

3 Most of the comments received from environmental groups on the proposed Bullard
4 Wash SEZ were in favor of eliminating the area as an SEZ (The Wilderness Society et al.,²
5 Western Watersheds Project, and Tonopah Area Coalition) because of concerns about the plant
6 and wildlife community present in the SEZ, potential effects on special status species in the area,
7 and its remote location. The Wilderness Society et al. were also concerned about groundwater
8 availability and the effect of water withdrawals on groundwater-dependent species, and
9 commented that development should be considered only in areas toward the southern end of the
10 SEZ where low-density plant communities exist. The Tonopah Area Coalition expressed concern
11 that the SEZ is located in an important transition zone between the Joshua Tree forest and the
12 Sonoran Desert. The Western Watersheds Project recommended that the PEIS must consider the
13 impact of noise on native and migratory wildlife species and also expressed concern for the
14 Sonoran desert tortoise that may occur in the affected area of the SEZ.
15

16 The U.S. Department of the Interior Bureau of Land Management (BLM) staff in Arizona
17 has confirmed that the eastern portion of the proposed SEZ has dense vegetative communities
18 composed of saguaro cactus, Joshua trees, creosote brush, palo verde, and desert grasses. The
19 BLM Arizona staff also noted that the combination of the dense vegetation and active washes in
20 the SEZ contribute to a sustained community of wildlife, and that the southern boundary is
21 relatively close to a major wash that would be cut off to wildlife migrating from the northern
22 mountain range if this area were developed.
23

24
25 **B.1.1.3 Rationale for Eliminating the SEZ**
26

27 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
28 and continued review of potential impacts identified in the Draft Solar PEIS, the Bullard Wash
29 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
30 applicable land use plans. The potential impacts from solar development in the proposed Bullard
31 Wash SEZ were considered sufficient reason to eliminate the area from further consideration as
32 an SEZ.
33

34 Although the area will be dropped from consideration as an SEZ, the lands that composed
35 the proposed Bullard Wash SEZ will be retained as solar right-of-way variance areas, because
36 the BLM expects that individual projects could be sited in this area to avoid and/or minimize
37 impacts. Any solar development within this area in the future would require appropriate
38 environmental analysis.
39
40

² The Wilderness Society, Sonoran Institute, Sierra Club–Grand Canyon Chapter, Arizona Wilderness Coalition, Tucson Audubon Society, Friends of Ironwood Forest, Defenders of Wildlife, Sky Island Alliance, Grand Canyon Wildlands Council, Natural Resources Defense Council, Soda Mountains Wilderness Council, and Sierra Treks submitted joint comments on the proposed Arizona SEZs. Those comments are attributed to The Wilderness Society et al.

1 **B.2 CALIFORNIA**

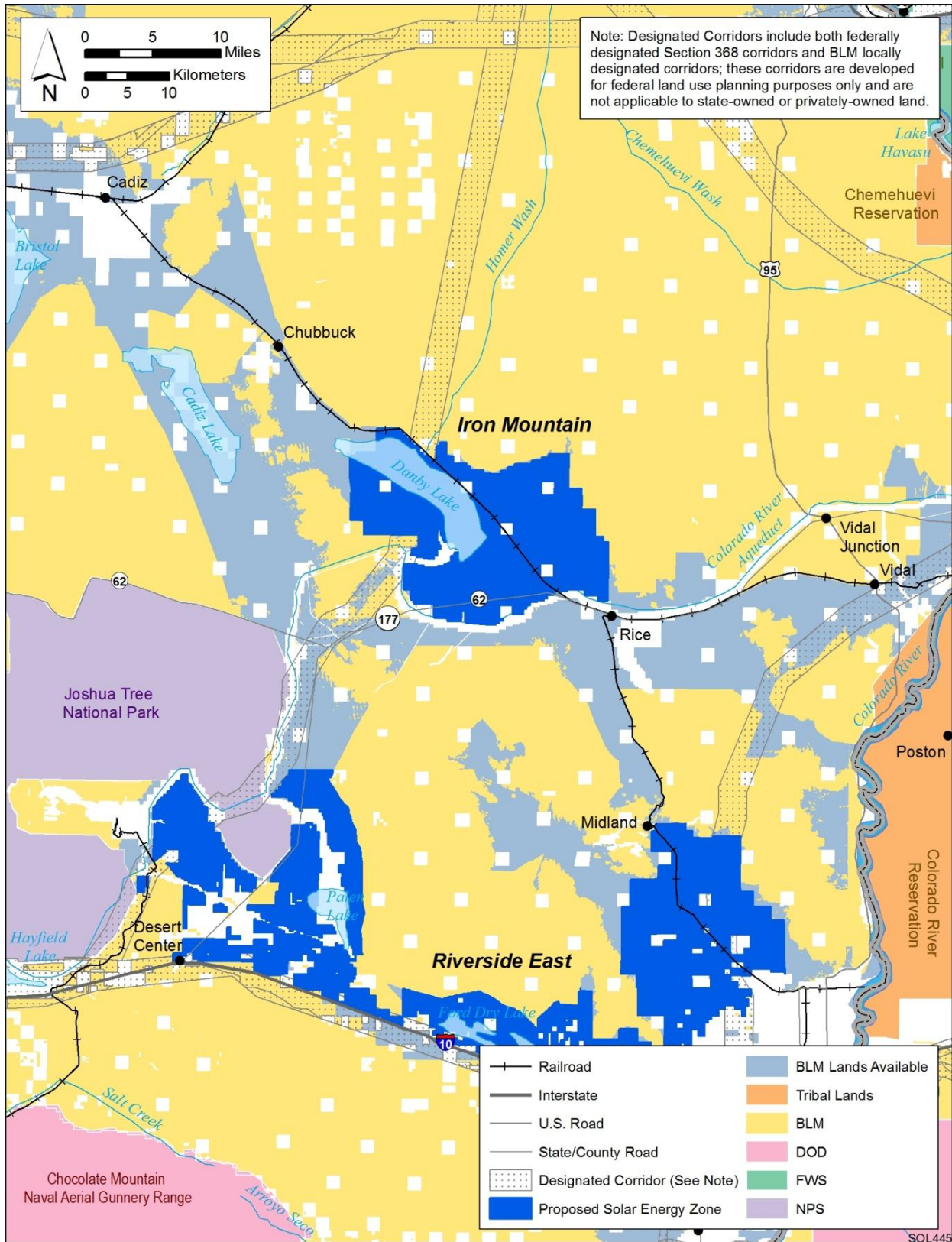
2
3
4 **B.2.1 Iron Mountain**

5
6
7 **B.2.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Iron Mountain solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 106,522 acres (431 km²). It is located in San Bernardino County in
12 southeastern California, about 20 mi (32 km) from the Arizona border (Figure B.2.1-1). The SEZ
13 is in a mostly undeveloped area, with no population centers within a 20-mi (32-km) radius.
14

15 Potential environmental and other impacts identified in the Draft Solar PEIS included the
16 following:

- 17
18 • A potential hazard associated with unexploded military ordnance from past
19 military training activities was identified.
20
- 21 • Wilderness characteristics within the Turtle Mountains, Old Woman
22 Mountains, and Palen-McCoy Wilderness Areas (WAs) would be adversely
23 affected by solar development in the SEZ. Scenic resources in the Turtle
24 Mountains Area of Critical Environmental Concern would also be adversely
25 affected. Night-time lighting of solar facility development in the SEZ could
26 adversely affect the quality of the night sky environment as viewed from
27 Joshua Tree National Park (NP).
28
- 29 • Recreational users would lose the use of any portions of the SEZ developed
30 for solar energy production. Wilderness recreational use in the Turtle
31 Mountains, Old Woman Mountains, and Palen-McCoy WAs would likely be
32 adversely affected.
33
- 34 • The development of any solar energy facilities that encroach into the airspace
35 of military training routes would create safety issues and would conflict with
36 military training activities.
37
- 38 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
39 erosion by wind and runoff, sedimentation, and soil contamination) could
40 occur. Danby Lake may not be a suitable location for construction.
41
- 42 • Designation of the SEZ would affect the Danby Lake known sodium leasing
43 area in the northwest corner of the SEZ. Designation of the SEZ could make
44 sand and gravel resources unavailable.
45



1

2 **FIGURE B.2.1-1 Proposed Iron Mountain SEZ as Presented in the Draft Solar PEIS**

- 1 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
2 wet-cooling options would not be feasible. Hydrological disturbances near
3 Danby Lake could cause localized flooding and erosion, affect groundwater
4 recharge and discharge processes, and disrupt salt-mining operations. High
5 total dissolved solids values of groundwater near the Danby Lake region could
6 produce water that is nonpotable and corrosive to infrastructure.
7
- 8 • Clearing of a large portion of the proposed SEZ could primarily affect sand
9 dune, playa, desert chenopod scrub, riparian, and dry wash communities,
10 depending on the amount of habitat disturbed. The establishment of noxious
11 weeds could result in habitat degradation.
12
- 13 • Potentially suitable habitat for 43 special status species occurs in the affected
14 area of the proposed SEZ; between 1.0% and 7.5% of the potentially suitable
15 habitat for any of these species and any wildlife species occurs in the region
16 that would be directly affected by development.
17
- 18 • If aquatic biota are present in ephemeral water features (e.g., Homer Wash),
19 they could be affected by the direct removal of surface water features within
20 the construction footprint, a decline in habitat quantity and quality due to
21 water withdrawals and changes in drainage patterns, as well as increased
22 sediment and contaminant inputs associated with ground disturbance and
23 construction activities.
24
- 25 • Temporary exceedances of ambient air quality standards for particulate matter
26 at the SEZ boundaries are possible during construction. These high
27 concentrations, however, would be limited to the immediate area surrounding
28 the SEZ boundary. Modeling indicates Class I Prevention of Significant
29 Deterioration PM₁₀ (particulate matter with an aerodynamic diameter of
30 10 µm or less) increments at the nearest federal Class I area (Joshua Tree NP)
31 could be exceeded under conservative assumptions.
32
- 33 • Strong visual contrasts could be observed by visitors to the Palen-McCoy WA
34 and travelers on State Road 62 and Cadiz Road. Moderate to strong visual
35 contrasts could be observed by visitors to the Old Woman Mountains and
36 Turtle Mountains WAs. Moderate visual contrasts could also be observed by
37 visitors to the Rice Valley WA, while weak to moderate visual contrasts could
38 be observed by visitors to the Joshua Tree NP and Joshua Tree WA.
39
- 40 • Noise levels at the nearest residences would be higher during operations than
41 the San Bernardino County and U.S. Environmental Protection Agency
42 guidance levels if concentrating solar power facilities with energy storage
43 technologies (which could extend the daily operational time by 6 hours or
44 more) were used at the SEZ.
45

- 1 • The potential for impacts on significant paleontological and cultural resources
2 is largely unknown. The area around Danby Lake within the SEZ has a high
3 potential to contain paleontological deposits and would require a
4 paleontological survey. Numerous prehistoric and Native American sites and
5 trails are potentially located within the SEZ and could be affected by solar
6 energy development. It is possible that there will be Native American
7 concerns about the Salt Song Trail, which passes just west of the proposed
8 SEZ.
9

10
11 **B.2.1.2 Summary of Comments Received**
12

13 Many comments on the proposed Iron Mountain SEZ were received; most were in favor
14 of eliminating the area as an SEZ because it contains environmentally and culturally sensitive
15 areas (California Public Utilities Commission, Center for Biological Diversity, Big Pine
16 Paiute of the Owens Valley, California Desert Coalition, Natural Resources Defense Council
17 [NRDC] et al.,³ Western Watersheds Project, National Parks Conservation Association, The
18 Nature Conservancy, California Native Plant Society (CNPS), San Manuel Band of Mission
19 Indians, Sierra Club, and Defenders of Wildlife). The Big Pine Paiute of the Owens Valley and
20 the San Manuel Band of Mission Indians were concerned about the direct impacts on significant
21 cultural resources. Many commentors opposed the Iron Mountain SEZ because of its proximity
22 to Joshua Tree NP. The NRDC et al. commented that the SEZ was inconsistent with criteria
23 developed by the conservation community for siting solar facilities in the desert. It was
24 concerned that the SEZ includes 10,007 acres (40 km²) of Citizen Proposed Wilderness, that
25 development of the SEZ would preclude opportunities to connect Joshua Tree NP with the
26 Mojave Preserve, and that the SEZ is located within a U.S. Department of the Interior Bureau
27 of Land Management (BLM)-designated multi-habitat management area. The NRDC et al.
28 mentioned that the SEZ was located in an essential habitat-connectivity linkage area for desert
29 bighorn sheep populations.
30

31 The Metropolitan Water District of Southern California was concerned about the possible
32 impacts on its facilities and recommended that the BLM also consider cumulative effects of solar
33 energy development on the water district's facilities. The Western Watersheds Project cited
34 multiple conflicts with wildlife and habitat resources and argued that the area provides desert
35 tortoise connectivity between the Northern and Eastern Colorado Desert Tortoise Recovery Units
36 and contains habitat for rare plants. The National Parks Conservation Association was opposed
37 to the SEZ because it would require significant infrastructure, would have adverse impacts on
38 night sky resources in Joshua Tree NP, and would inhibit wildlife movements among the Mojave
39 National Preserve, several wilderness areas to the south of the SEZ, and Joshua Tree NP.
40

³ The Natural Resources Defense Council, Audubon Society, California Native Plant Society, California Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those comments are attributed to NRDC et al.

1 The California Energy Commission (CEC) commented that the SEZ is not ideal for solar
2 energy development but did not recommend eliminating the SEZ. The CEC recommended that
3 the BLM make development of the Iron Mountain SEZ a low priority because of its remote
4 location and high-value Mojave desert tortoise habitat corridors. The CNPS argued against
5 designation of Iron Mountain as an SEZ because it contains ecologically important vegetation
6 communities and because numerous prehistoric and historic sites have been identified within the
7 SEZs. Like other environmental groups, the Sierra Club commented that the development of the
8 SEZ would have adverse impacts on desert tortoise and sensitive biological, cultural, and visual
9 resources. Last, the Citizens for the Chuckwalla Valley were concerned about possible
10 environmental justice impacts on people in the nearby communities of Rice, Blythe, and Desert
11 Center.

12 13 14 **B.2.1.3 Rationale for Eliminating the SEZ**

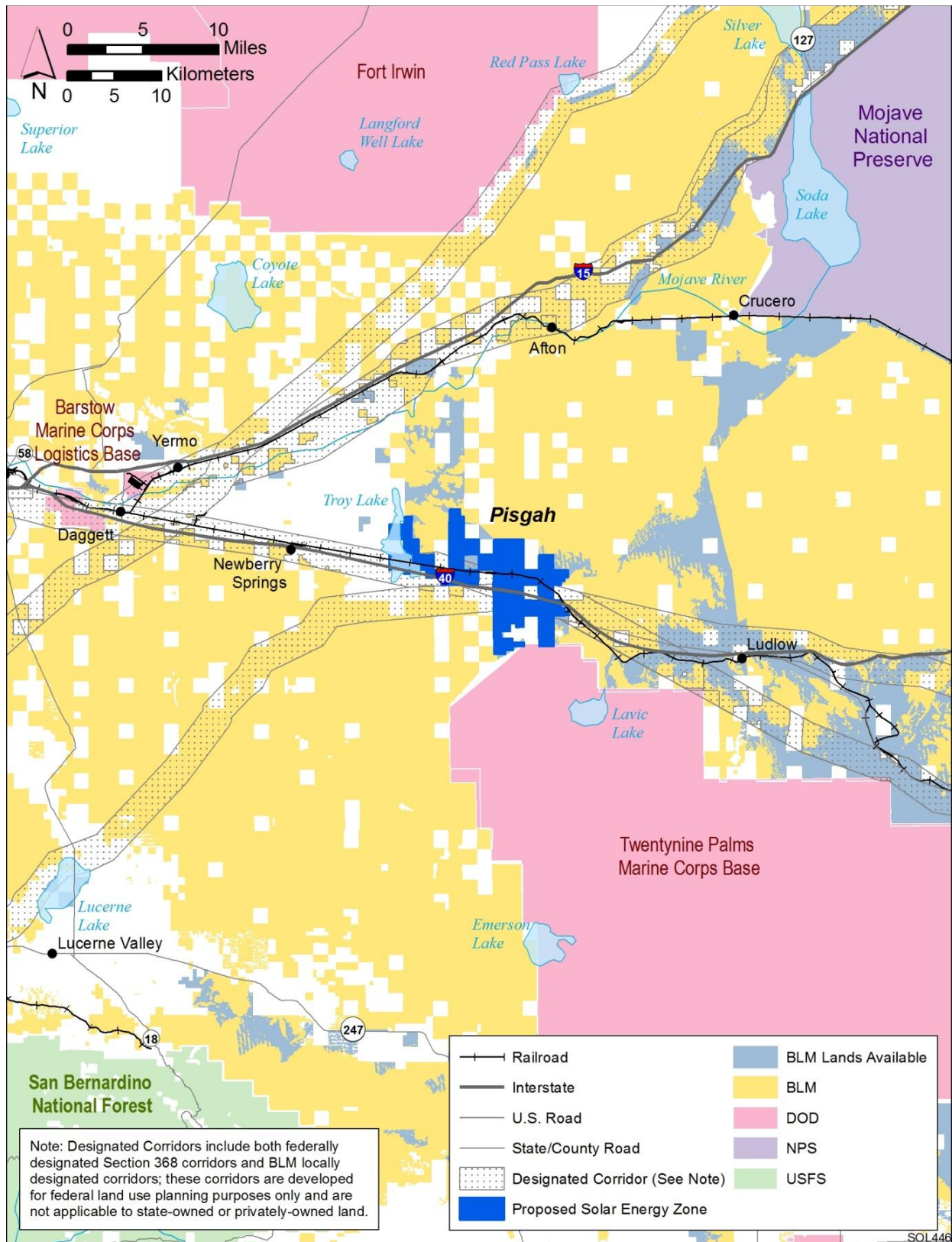
15
16 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
17 and continued review of potential impacts identified in the Draft Solar PEIS, the Iron Mountain
18 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
19 applicable land use plans. The potential impacts from solar development in the proposed Iron
20 Mountain SEZ were considered sufficient reason to eliminate the area from further consideration
21 as an SEZ.

22
23 Because of the extensive potential impacts from solar development in the proposed Iron
24 Mountain SEZ, the lands that composed the SEZ as presented in the Draft Solar PEIS will be
25 considered solar right-of-way exclusion areas; that is, applications for solar development on
26 these lands will not be accepted by the BLM.

27 28 29 **B.2.2 Pisgah**

30 31 32 **B.2.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic 33 Environmental Impact Statement (PEIS)**

34
35 The proposed Pisgah solar energy zone (SEZ), as presented in the Draft Solar PEIS, had a
36 total area of 23,950 acres (97 km²). It is located in San Bernardino County in southeastern
37 California (Figure B.2.2-1). The City of Barstow is located about 25 mi (40 km) to the west of
38 the SEZ. There are a few residences close to the northwestern and southwestern boundaries of
39 the proposed SEZ, but the nearest population center is Newberry Springs, which is located about
40 6 mi (10 km) to the west.



1

2 **FIGURE B.2.2-1 Proposed Pisgah SEZ as Presented in the Draft Solar PEIS**

1 A designated Section 368 energy corridor⁴ occupies a portion of the SEZ and could limit
2 development in the SEZ if the corridor were developed, because solar facilities cannot be
3 constructed under transmission lines or over pipelines. Further, the Draft Solar PEIS discussion
4 of impacts of solar energy development in the SEZ acknowledged that solar facility development
5 on both sides of the corridor would limit the ability to add future corridor capacity.
6

7 Potential environmental and other impacts identified in the Draft Solar PEIS included the
8 following:
9

- 10 • Wilderness characteristics in 20% of the Cady Mountain Wilderness Study
11 Area (WSA) and 27% of the Rodman Mountain Wilderness Area (WA) would
12 be adversely affected by solar development in the SEZ. The Ord-Rodman
13 Desert Wildlife Management Area and Pisgah Area of Critical Environmental
14 Concern (ACEC) abut portions of the Pisgah SEZ and would be vulnerable to
15 increased human traffic induced by the presence of the SEZ. The Rodman
16 Mountains Cultural Area would also be vulnerable to increased traffic.
17
- 18 • The presence of solar development in the SEZ likely would adversely affect
19 recreational use of the Cady Mountains WSA and Rodman Mountains WA.
20 Opportunities for primitive recreation surrounding the SEZ would be reduced.
21
- 22 • The development of any solar energy facilities that encroach into the airspace
23 of military training routes could conflict with military training activities and
24 create a safety concern.
25
- 26 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
27 erosion by wind and runoff, sedimentation, and soil contamination) could
28 occur. The Pisgah lava field may not be a suitable location for construction.
29
- 30 • Currently, 103 mining claims occur within the SEZ; most of these are in the
31 area south of Interstate-40, where there has been a mining operation for many
32 years. These mining claims represent a prior existing right that, if valid, likely
33 would preclude solar energy development as long as they are in place.
34
- 35 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
36 wet-cooling options would not be feasible.
37

⁴ Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the U.S. Department of the Interior Bureau of Land Management (BLM), U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.

- 1 • Clearing of a large portion of the proposed SEZ could primarily affect sand
2 dune, playa, desert chenopod scrub, and dry wash communities, depending on
3 the amount of habitat disturbed. The establishment of noxious weeds could
4 result in habitat degradation.
5
- 6 • Potentially suitable habitat for 54 special status species occurs in the affected
7 area of the proposed SEZ; less than 3% of the potentially suitable habitat for
8 any of these species and any wildlife species occurs in the region that would
9 be directly affected by development.
10
- 11 • If aquatic biota are present, they could be affected by the direct removal of
12 surface water features within the construction footprint, a decline in habitat
13 quantity and quality due to water withdrawals and changes in drainage
14 patterns, as well as increased sediment and contaminant inputs associated with
15 ground disturbance and construction activities.
16
- 17 • Temporary exceedances of ambient air quality standards for particulate matter
18 at the SEZ boundaries are possible during construction. These high
19 concentrations, however, would be limited to the immediate area surrounding
20 the SEZ boundary.
21
- 22 • The SEZ is located within the California Desert Conservation Area (CDCA),
23 and substantial, non-mitigable visual impacts would occur within the CDCA
24 in the SEZ and surrounding lands. Strong visual contrasts could be observed
25 by travelers on Historic Route 66 and the Burlington Northern Santa Fe
26 Amtrak passenger rail line. Moderate to strong visual contrasts could be
27 observed by visitors to the Rodman Mountains and Cady Mountains WAs.
28 Moderate visual contrasts could also be observed from the community of
29 Newberry Springs, while weak to moderate visual contrasts could be observed
30 by visitors to the Newberry Mountains WA.
31
- 32 • During construction, noise levels at the nearest residences would be higher
33 than the San Bernardino County regulation and the U.S. Environmental
34 Protection Agency (EPA) guidance levels. During operations, noise levels at
35 the nearest residences would be above San Bernardino County and EPA
36 guidance levels if concentrating solar power technologies with energy storage
37 technologies (which could extend the daily operational time by 6 hours or
38 more) were used at the SEZ. Noise levels at the nearest residence would be
39 slightly higher than the San Bernardino County regulation if the SEZ were
40 developed with dish engine facilities.
41
- 42 • The potential for impacts on significant paleontological and cultural resources
43 is relatively unknown, but could be high in some areas. Numerous prehistoric
44 and Native American sites and trails are potentially located within the SEZ
45 and could be affected by solar energy development. The SEZ includes plant
46 species and could contain game species important to Native Americans.

1 Ground-disturbing activities have the potential for adversely affecting these
2 resources, along with archaeological resources and burials important to Native
3 Americans.

- 4
5 • Both minority and low-income populations occur within a 50-mi (80-km)
6 radius of the proposed SEZ boundary; thus adverse impacts of solar
7 development could disproportionately affect minority and low-income
8 populations.
9

10 11 **B.2.2.2 Summary of Comments Received** 12

13 Many comments were received on the proposed Pisgah SEZ; most were in favor of
14 eliminating the area as an SEZ because it contains environmentally and culturally sensitive areas
15 (Center for Biological Diversity, Big Pine Paiute of the Owens Valley, California Desert
16 Coalition, Natural Resources Defense Council [NRDC] et al.,⁵ Western Watersheds Project
17 [WWP], The Nature Conservancy, California Native Plant Society [CNPS], San Manuel Band
18 of Mission Indians, Sierra Club, and Defenders of Wildlife). Pacific Gas and Electric Company
19 recommended changing the SEZ boundaries to eliminate inappropriate areas from consideration.
20 The Big Pine Paiute of the Owens Valley, the San Manuel Band of Mission Indians, and the
21 NRDC et al. were concerned about the direct impacts on significant cultural resources. The
22 NRDC et al. commented that the SEZ is incompatible with the BLM's conservation
23 responsibilities under the Endangered Species Act, Federal Land Policy and Management Act,
24 and its own wildlife resource manuals. The NRDC et al. mentioned that the SEZ is located in an
25 area of essential habitat connectivity and recommended that cumulative impacts on the value of
26 the area as a wildlife corridor be addressed.
27

28 The Metropolitan Water District of Southern California was concerned about
29 socioeconomic impacts, including any financial or ratepayer impacts from development of the
30 SEZ, and recommended that the BLM also consider cumulative effects of solar energy
31 development on the water district's facilities. WWP cited multiple conflicts with wildlife and
32 habitat resources and argued that there would be impacts on bighorn sheep movement. WWP
33 was also concerned that the area provides the only connectivity between tortoises in the Southern
34 Mojave and Central Mojave populations, and development of the SEZ would affect connectivity
35 between the West Mojave recovery unit and the eastern desert tortoise recovery units. The area is
36 also adjacent to two ACECs and a WSA. The California Public Utilities Commission and other
37 groups expressed concern for desert tortoise habitat located within and near the SEZ.
38

⁵ The NRDC, Audubon Society, California Native Plant Society, California Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those comments are attributed to NRDC et al.

1 The Wilderness Society et al.⁶ expressed concern for the golden eagle population near the
2 SEZ and indicated that development in the proposed Pisgah SEZ would constitute a “take” of
3 golden eagles, because it would disturb and destroy the foraging habitat of nearby golden eagles.
4 The CNPS argued against designation of Iron Mountain as an SEZ because it is regionally
5 significant in sustaining biological diversity and because development in the SEZ could result in
6 loss of habitat and displacement of many species, including sensitive species. Like other
7 environmental groups, the Sierra Club commented that the development of the SEZ would have
8 adverse impacts on desert tortoise and sensitive biological, cultural, and visual resources.
9 San Bernardino County recommended that only dry-cooling technologies be allowed.

12 **B.2.2.3 Rationale for Eliminating the SEZ**

14 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
15 and continued review of potential impacts identified in the Draft Solar PEIS, the Pisgah SEZ will
16 be eliminated from further consideration and will not be identified as an SEZ in applicable land
17 use plans. The potential impacts from solar development in the proposed Pisgah SEZ were
18 considered sufficient reason to eliminate the area from further consideration as an SEZ.

20 Although the area will be dropped from consideration as an SEZ, most of the lands that
21 composed the proposed Pisgah SEZ will be retained as solar right-of-way variance areas,
22 because the BLM expects that individual projects could be sited in this area to avoid and/or
23 minimize impacts. Any solar development within this area in the future would require
24 appropriate environmental analysis.

26 An exception to the above will be made for specific lands identified during the
27 environmental review process for the approved Calico Solar Project (CACA 49537), which
28 comprises more than 4,600 acres (19 km²) within the SEZ. Through the Calico environmental
29 review process, some parts of the project area were identified as areas where solar development
30 should be avoided; these areas will now be identified as solar right-of-way exclusion areas, that
31 is, areas where applications for solar development will not be accepted by the BLM.

⁶ The Wilderness Society, Natural Resources Defense Council, Defenders of Wildlife, Sonoran Institute, Wild Utah Project, New Mexico Wilderness Alliance, Tucson Audubon Society, Audubon Wyoming, Friends of Ironwood Forest, Arizona Wilderness Coalition, Southern Utah Wilderness Alliance, California Wilderness Coalition, Nevada Conservation League & Education Fund, Nevada Wilderness Project, Audubon New Mexico, Soda Mountain Wilderness Council, Center for Native Ecosystems, Western Environmental Law Center, Californians for Western Wilderness, Gila Resources Information Project, Gila Conservation Coalition, National Audubon Society, San Luis Valley Ecosystem Council and the Sierra Club submitted joint comments on the Draft Solar PEIS. Those comments are attributed to The Wilderness Society et al.

1 **B.3 NEVADA**

2
3
4 **B.3.1 Delamar Valley**

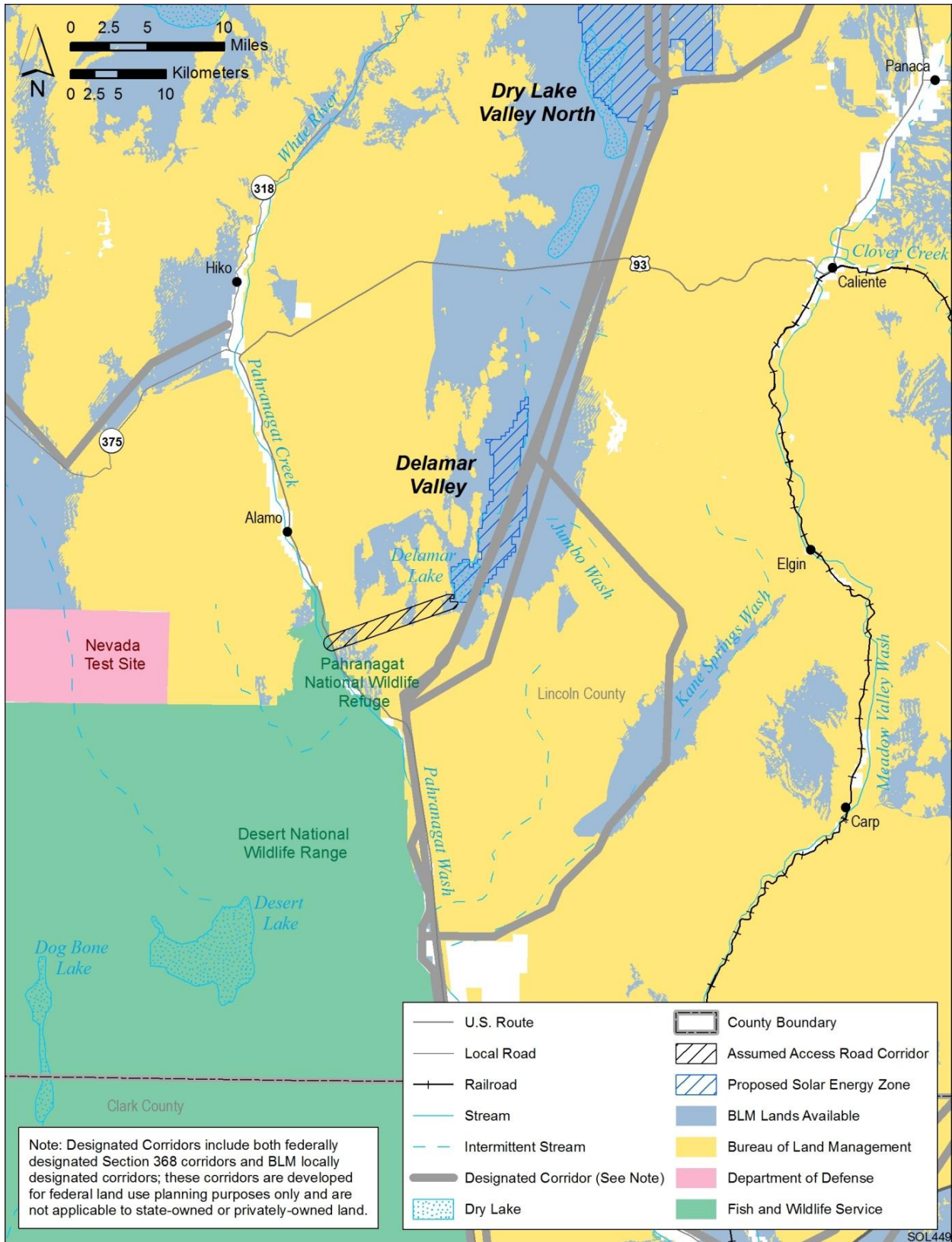
5
6
7 **B.3.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Delamar Valley solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 16,552 acres (67 km²). It is located in Lincoln County in southeastern
12 Nevada (Figure B.3.1-1). The largest nearby town is the city of Alamo, Nevada, about 11 mi
13 (18 km) west of the SEZ.
14

15 The Draft Solar PEIS identified U.S. 93, about 9 mi (14.5 km) west of the SEZ, as the
16 nearest major road and assumed that a new access road would be constructed from there to the
17 proposed SEZ to support development (see Figure B.3.1-1). The Draft Solar PEIS identified a
18 locally designated transmission corridor that occupies about 2,919 acres (12 km²), or 22%, of the
19 eastern portion of the proposed Delamar Valley SEZ, and a right-of-way (ROW) application
20 from the Southern Nevada Water Authority (SNWA) for a pipeline that would pass through the
21 middle of the proposed SEZ. Both of these ROWs could limit development in the SEZ because
22 solar facilities cannot be constructed under transmission lines or over pipelines. Further, the
23 Draft Solar PEIS discussion of impacts of solar energy development in the SEZ acknowledged
24 that solar facility development on both sides of the corridor would limit the ability to add future
25 corridor capacity.
26

27 Potential environmental and other impacts identified in the Draft Solar PEIS included the
28 following:
29

- 30 • Because of the 14-mi (23-km) length of the SEZ, east–west travel across the
31 valley could be cut off, requiring extensive detours for public land users.
32
- 33 • Visual impacts of solar energy development would have the potential to affect
34 wilderness characteristics of the Delamar Mountains and South Pahroc
35 Wilderness Areas (WAs). Night-time lighting of solar development could
36 adversely affect the quality of the night sky environment in adjacent specially
37 designated areas.
38
- 39 • If full solar development would occur in the SEZ, the federal grazing permit
40 for the Buckhorn grazing allotment would be reduced in area by about 18%
41 and about 606 animal unit months would be lost.
42
- 43 • Because the SEZ includes numerous roads and trails, construction of solar
44 energy facilities could cause a major impact on existing recreation travel.
45



1

2 **FIGURE B.3.1-1 Proposed Delamar Valley SEZ as Presented in the Draft Solar PEIS**

- 1 • The U.S. Department of Defense (DoD) expressed serious concern over
2 construction of solar energy facilities within the SEZ, and Nellis Air Force
3 Base indicated that any facilities with structures higher than 100 ft (30 m) may
4 be incompatible with low-level aircraft use of the military training range. The
5 Nevada Test and Training Range (NTTR) indicated that solar technologies
6 requiring structures higher than 50 ft (15 m) above ground level may present
7 unacceptable electromagnetic compatibility concerns for its test mission.
8
- 9 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
10 erosion by wind and runoff, sedimentation, and soil contamination) could
11 occur. Delamar Lake may not be a suitable location for construction.
12
- 13 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
14 wet-cooling options would not be feasible.
15
- 16 • Clearing of a large portion of the proposed SEZ could primarily affect
17 communities associated with Delamar Lake and other playa habitats, Jumbo
18 Wash and the unnamed intermittent stream, greasewood flats communities,
19 riparian habitats, marshes, or other intermittently flooded areas, depending on
20 the amount of habitat disturbed. Joshua tree communities within the northern
21 portion of the SEZ and within the assumed access road corridor could be
22 directly or indirectly affected. The establishment of noxious weeds could
23 result in habitat degradation. Deposition of fugitive dust could cause reduced
24 productivity or changes in plant community structure
25
- 26 • Potentially suitable habitat for 49 special status species occurs in the affected
27 area of the proposed SEZ; potential impacts on these species and any wildlife
28 species could range from small to large depending on the solar energy
29 technology deployed, the scale of development within the SEZ, and the
30 cumulative rate of groundwater withdrawals.
31
- 32 • If aquatic biota are present in Delamar Lake playa, dry washes, or a nearby
33 marsh, they could be affected by the direct removal of surface water features
34 within the construction footprint, a decline in habitat quantity and quality due
35 to water withdrawals and changes in drainage patterns, as well as increased
36 sediment and contaminant inputs associated with ground disturbance and
37 construction activities.
38
- 39 • Temporary exceedances of ambient air quality standards for particulate matter
40 at the SEZ boundaries are possible during construction. These high
41 concentrations, however, would be limited to the immediate area surrounding
42 the SEZ boundary.
43
- 44 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
45 could be observed by residents nearest to the SEZ. Strong visual contrasts
46 could also be observed by visitors to the Delamar Valley WA, North Delamar

1 Special Recreation Management Area (SRMA), and the Pahrangat SRMA.
2 Weak to strong visual contrasts could be observed by visitors to the South
3 Pahroc Range WA.
4

- 5 • Few, if any, impacts on significant paleontological resources are likely to
6 occur in 73% of the proposed SEZ, while the potential in the remaining 27%
7 of the SEZ is unknown. The SEZ has a high potential for containing
8 prehistoric sites, especially in the dry lake area at the southern end of the SEZ;
9 thus, direct impacts on significant cultural resources could occur in the
10 proposed SEZ. Indirect impacts on cultural resources outside of the SEZ are
11 possible in rock shelter and petroglyph sites immediately west of the SEZ.
12 Visual impacts on areas of traditional cultural importance could occur.
13
- 14 • Both minority and low-income populations occur within a 50-mi (80-km)
15 radius of the proposed SEZ boundary; thus adverse impacts of solar
16 development could disproportionately affect minority and low-income
17 populations.
18

19 20 **B.3.1.2 Summary of Comments Received** 21

22 Many comments received on the proposed Delamar Valley SEZ were in favor of
23 eliminating the area as an SEZ (N-4 State Grazing Board; DoD; Lincoln County, Nevada; and
24 Western Watersheds Project). Many comments expressed concern for ranching operations in the
25 area and the effect of solar development in the proposed SEZ on grazing allotments in the area.
26

27 The Wilderness Society et al.⁷ and Nevada Wilderness Project suggested removing the
28 southern end of the SEZ because the sensitive resources in the playa lake make it inappropriate
29 for solar development. The DoD was concerned that any development in the SEZ would have an
30 immediate adverse effect on current and future DoD operations on the NTTR. Lincoln County
31 opposed designation of Delamar Valley as an SEZ because of its potential adverse impacts on
32 water resources, soil resources, vegetation resources, visual resources, recreation, livestock
33 grazing, wildlife, and county socioeconomics. If, however, the SEZ were to be carried forward,
34 Lincoln County recommended that only photovoltaic technologies be considered because of the
35 lack of groundwater resources in the area.
36

37 The Nevada Wilderness Project recommended avoiding Joshua tree habitat along the
38 northern portion of the SEZ. The Western Watersheds Project and The Wilderness Society et al.
39 recommended eliminating Delamar Valley as an SEZ because of the region's limited
40 groundwater availability and because the groundwater basin is fully appropriated. The SNWA
41 expressed concern over impacts on ROWs for the Groundwater Development Project.

⁷ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club–Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 An ethnographic study for the Delamar Valley SEZ area was recently conducted and is
2 summarized in the text box below. The agencies value the information shared by the Tribes
3 during the ethnographic study and will consider their input in striving to minimize the impacts of
4 solar development. The completed ethnographic study will be available in its entirety on the
5 Solar PEIS Web site (<http://solareis.anl.gov>).

Tribal Perspectives on the Significance of Delamar Valley SEZ

The lands under consideration in the Delamar Valley SEZ region traditionally were occupied and used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. Tribes specifically involved in the field consultations that are summarized here are the Moapa Band of Paiute Indians and the Paiute Indian Tribe of Utah, who represent the cultural interests of the Southern Paiute peoples. These Numic-speaking people have gone on record in past projects and continue to stipulate here that they are the American Indian people responsible for the cultural resources (natural and man-made) in this study area because their ancestors were placed here by the Creator and have lived in these lands since time immemorial, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene, or approximately 15,000 years, they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices persisted unchanged. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, water, geological resources, and places of historic encounters that exist in these lands.

During the ethnographic field sessions, Tribal representatives identified the Delamar Valley region as being part of a large ceremonial landscape that contains many traditional-use features like hot springs, volcanic places, and important plants and animals. The Delamar Valley SEZ region extends beyond the proposed boundaries of the SEZ and includes the cultural resources in the surrounding landscape. The SEZ study area includes plant communities located within the SEZ boundary, geological features and water sources located just outside the SEZ, and trail systems that people from neighboring or distant communities used to pass through the SEZ study area to reach nearby medicinal and ceremonial areas.

Regional topography is accentuated by high snow-capped and forested mountains whose rain and snow drain into and periodically fill the playa. The combination of water, expansive mountain vistas, white mud earth, and a dark black volcanic ridge produces a landscape that, according to the Indian people, identifies this place as a source of *Puha* (power or energy) and powerful natural and spiritual resources. Places that contain the presence of volcanic activity are considered sacred and powerful. Southern Paiute people believe that volcanic events are moments when *Puha* deep inside the Earth is brought to the surface as a way for the land to renew itself and to distribute *Puha* across the landscape.

The power of the topography was also enhanced by the presence of a steep-sided knoll located in the playa just east of the volcanic ridge, which was labeled as Turtle Butte by Indian representatives. Turtle Butte was also identified as a location for vision questing. Vision-questing destinations are selectively marked, and offerings and prayers are left for placation and gratitude. Both remain to indicate the meaning of the place as it was defined at Creation.

8

Tribal Perspectives on the Significance of Delamar Valley SEZ (Cont.)

The Delamar seasonal playa lake area has been used by Indian people for thousands of years. This is evident, in part, by the large number of heavily weathered and patinated rock peckings located at three places along the eastern side of the volcanic ridge that extends into the seasonal playa lake. A variety of images are found. These include Ocean Woman's net. Ocean Woman is linked to the Creation of all humans and peckings of her net would occur only at ceremonial places. Images of powerful water babies can also be seen. Another ceremony-related pecking is the Knotted String (Stoffle et al. 2004). These occur at places where medicine men or pilgrims travel. Images of The Twins occur as well. They represent the Salt Song sisters who participated in the formation of the trail to the afterlife, which is traveled via about a thousand miles of spiritual and physical paths and places.

The current study was not intended to provide a full interpretation of all the cultural resources associated with the Delamar Valley SEZ region; however, Indian interpretations do present a possible explanation of the traditional functions of the three rock pecking places along the volcanic ridge. It is important to note at the outset that the great majority of the volcanic ridge contains no peckings at all. Thus the three pecking areas discussed here were chosen for a specific purpose, and each had a different function. At the tip of what is called Point of Rocks, the pecking panels were identified as providing directions to travelers either passing through the area or using the area as a destination. For either type of travel it was a point of prayer. The second pecking area centered on the large boulders had a few peckings and an abundance of grinding slicks. It was interpreted as a place where people stayed and prepared plant or paint materials for ceremonies. It may have been a place of prayer before people left for a destination. The third and very large pecking area has what amounts to hundreds of peckings of various sizes, styles, and locations. These peckings are delineated from side to side and from top to bottom of the ridge and only occur together. The area was for ceremonies that could have been accomplished on the ridge at this location or were for preparation of an event that could have occurred elsewhere such as the steep-sided butte in the seasonal lake.

Finally, during multiple field visits, Tribal representatives identified 19 traditional use plants and 42 traditional use animals within the SEZ study area. The presence of these plants and animals adds to the study area's cultural importance because they are associated with medicine, ceremony, and Creation.

B.3.1.3 Rationale for Eliminating the SEZ

On the basis of public comments received on the Draft Solar PEIS, review by the U.S. Department of the Interior Bureau of Land Management (BLM), and continued review of potential impacts identified in the Draft Solar PEIS, the Delamar Valley SEZ will be eliminated from further consideration and will not be identified as an SEZ in applicable land use plans. The potential impacts from solar development in the proposed Delamar Valley SEZ were considered sufficient reason to eliminate the area from further consideration as an SEZ.

Although the area will be dropped from consideration as an SEZ, the lands that composed the proposed Delamar Valley SEZ will be retained as solar ROW variance areas, because the BLM expects that individual projects could be sited in this area to avoid and/or minimize impacts. Any solar development within this area in the future would require appropriate environmental analysis.

1 **B.3.2 East Mormon Mountain**

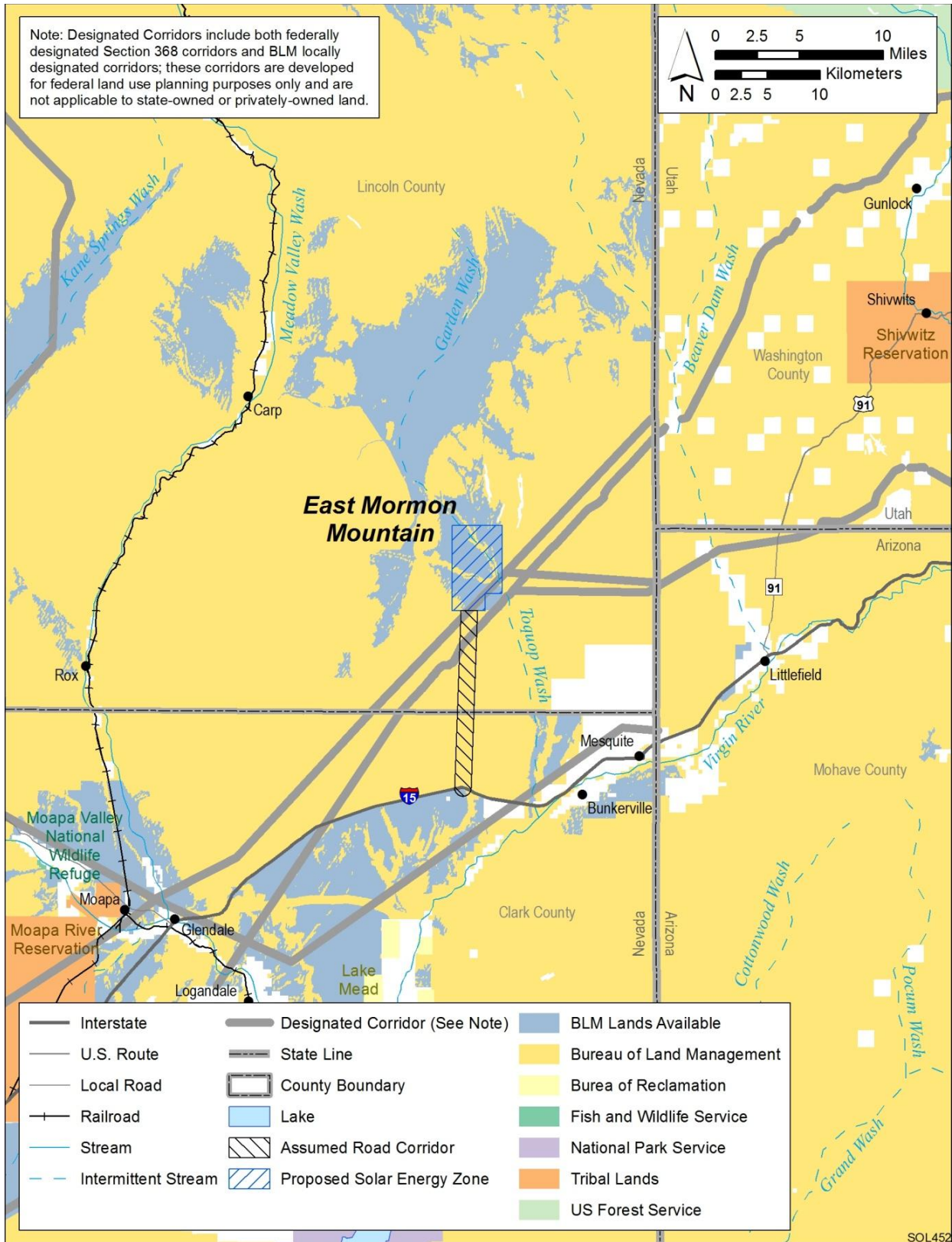
2
3
4 **B.3.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed East Mormon Mountain solar energy zone (SEZ), as presented in the Draft
8 Solar PEIS, had a total area of 8,968 acres (36 km²). It is located in Lincoln County in southern
9 Nevada (Figure B.3.2-1). The nearest towns are the cities of Mesquite and Bunkerville,
10 approximately 13 mi (21 km) southeast and south-southeast of the SEZ, respectively.
11

12 The Draft Solar PEIS also identified Interstate-15, about 11 mi (18 km) southeast of the
13 SEZ, as the nearest major road and assumed that a new access road would be constructed from
14 the proposed SEZ to I-15 to support development.
15

16 Potential environmental and other impacts identified in the Draft Solar PEIS included the
17 following:
18

- 19 • Solar development could sever existing roads and trails that access the SEZ
20 and make it difficult to access undeveloped public lands within and to the
21 west of the SEZ.
22
- 23 • Visual impacts of solar energy development would have the potential to affect
24 wilderness characteristics of the Mormon Mountains Wilderness Area (WA).
25 A new access road would pass through the Mormon Mountain Area of Critical
26 Environmental Concern (ACEC), causing fragmentation of the ACEC.
27
- 28 • If full solar development would occur in the SEZ, the Gourd Springs
29 allotment would be reduced in area by about 9.1%. Because the SEZ would
30 occupy the best grazing land in the allotment, it is likely that the grazing
31 operation would become economically infeasible and all 3,458 animal unit
32 months currently authorized would be lost.
33
- 34 • There may be some loss of wilderness recreational opportunities in up to 9.7%
35 of the Mormon Mountains WA.
36
- 37 • The U.S. Department of Defense (DoD) indicated that solar technologies with
38 structures higher than 200 ft (61 m) would intrude into military airspace and
39 would present safety concerns for military aircraft.
40
- 41 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
42 erosion by wind and runoff, sedimentation, and soil contamination) could
43 occur.
44
- 45 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
46 wet-cooling options would not be feasible.



2 **FIGURE B.3.2-1 Proposed East Mormon Mountain SEZ as Presented in the Draft Solar PEIS**

- 1 • Clearing of a large portion of the proposed SEZ could primarily affect playa
2 habitats, riparian habitats, desert dry washes, or other intermittently flooded
3 areas within or downgradient from solar projects, depending on the amount of
4 habitat disturbed. The establishment of noxious weeds could result in habitat
5 degradation. Deposition of fugitive dust could cause reduced productivity or
6 changes in plant community structure.
7
- 8 • Potentially suitable habitat for 32 special status species occurs in the affected
9 area of the proposed SEZ; less than 1.0% of the potentially suitable habitat for
10 any of these species and any wildlife species occurs in the region that would
11 be directly affected by development.
12
- 13 • If aquatic biota are present, they could be affected by the direct removal of
14 surface water features within the construction footprint, a decline in habitat
15 quantity and quality due to water withdrawals and changes in drainage
16 patterns, as well as increased sediment and contaminant inputs associated with
17 ground disturbance and construction activities.
18
- 19 • Temporary exceedances of ambient air quality standards for particulate matter
20 at the SEZ boundaries are possible during construction. These high
21 concentrations, however, would be limited to the immediate area surrounding
22 the SEZ boundary.
23
- 24 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
25 could be observed by visitors to the Mormon Mountains WA.
26
- 27 • Few, if any, impacts on significant paleontological resources are likely to
28 occur in the proposed SEZ. Areas near Toquop Wash and South Fork have
29 considerable potential for containing significant sites; thus, direct impacts on
30 significant cultural resources could occur in the proposed SEZ. Visual impacts
31 on the Old Spanish National Historic Trail are possible, as well as visual and
32 auditory effects on nearby rock art sites. The proposed SEZ does include
33 plants and animals traditionally important to Native Americans.
34
35

36 **B.3.2.2 Summary of Comments Received**

37

38 Most of the comments received on the proposed East Mormon Mountain SEZ were in
39 favor of eliminating the area as an SEZ (N-4 State Grazing Board; Lincoln County, Nevada; and
40 Western Watersheds Project). However, the Nevada Wilderness Project and The Wilderness
41 Society et al.⁸ supported designating the area as an SEZ. Many comments expressed concern for

⁸ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club–Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 ranching operations in the area and the effect of solar development in the proposed SEZ on
2 grazing allotments in the area.

3
4 The DoD recommended that any solar energy technologies that require structures higher
5 than 700 ft (1,127 m) above ground level receive additional analysis. Lincoln County opposed
6 designation of East Mormon Mountain as an SEZ because of its potential adverse impacts on the
7 Mormon Mesa ACEC, specially designated lands with wilderness characteristics and designated
8 by Congress, livestock grazing, recreation, DoD operating areas, sensitive soil, water and
9 vegetation resources, designated critical habitat for federally endangered species, and visual
10 resource values.

11
12 The Western Watersheds Project recommended eliminating East Mormon Mountain as an
13 SEZ, because the SEZ includes desert tortoise habitat and is immediately adjacent to the
14 Mormon Mesa Desert Wildlife Management Area (DWMA) and Beaver Dam Slope DWMA in
15 the Northeastern Mojave recovery unit. The Nature Conservancy recommended avoiding the
16 Toquop Wash, because it is a regionally important desert wash containing many of the Mojave
17 Desert ecoregionally significant plant and animal species.

18
19 An ethnographic study for the East Mormon Mountain SEZ area was recently conducted
20 and is summarized in the text box below. The agencies value the information shared by the
21 Tribes during the ethnographic study and will consider their input in striving to minimize the
22 impacts of solar development in the SEZ. The completed ethnographic study will be available in
23 its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>).

Tribal Perspectives on the Significance of East Mormon Mountain SEZ

The lands under consideration in the East Mormon Mountain SEZ were traditionally occupied and used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. People specifically involved in the Solar PEIS field consultations summarized here are from the Moapa Band of Paiute Indians who are representing the cultural interests of the Southern Paiute peoples. The Solar PEIS investigation includes areas that were studied during previous ethnographic research that also involved the Kaibab Band of Paiute Indians, the Paiute Indian Tribe of Utah, the Pahrump Band of Paiute Indians, the Duckwater Shoshone Tribe, and the Confederated Tribes of the Goshute Indian Reservation (Stoffle et al. 1982, 1983).

Numic-speaking peoples have gone on record in past projects and stipulate again here that they are the American Indian peoples responsible for the cultural resources (natural and manmade) in this study area, because their ancestors were placed here by the Creator and subsequently have lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene (or approximately 15,000 years), they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices persisted unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in mythic times and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS

25
26

Tribal Perspectives on the Significance of East Mormon Mountain SEZ (Cont.)

in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

Central to the American Indian interpretation of the proposed SEZ is the Mormon Mountains massif, which is about 26 mi (42 km) long from north to south and 17 mi (27 km) wide. It lies about 15 mi (24 km) west of East Mormon Mountain SEZ.

A central feature of this region is a hydrological path that begins in the high mountains and follows South Fork Toquop Wash and Toquop Wash to the Virgin River. Along this path are traditional spiritual trails known as *Puha* Paths. From distant communities, including those along the Virgin and Colorado rivers, these paths were utilized to seek power in the mountains. These activities have occurred since Creation. Along these *Puha* Paths, places were marked where special activities occurred. This is exemplified by the peckings and paintings that are found in the South Fork Toquop Wash, the paintings in Caliche Caves, and the presence of artifacts throughout the area.

Potato Woman is a long ridge located at the southwestern edge of the Mormon Mountain massif, some 23 mi (37 km) SW of the SEZ. Southern Paiute people associate Potato Woman with Creation and a mountain sheep origin story. Potato Woman is known as a powerful place—so powerful that traditionally Indian people would not live or camp near her.

Toquop Wash is located 3.5 mi (5.6 km) west of the East Mormon Mountain SEZ. Tribal representatives believed that this place is connected to the study area and both are part of the larger Mormon Mountain cultural landscape. Toquop Wash is a *Puha* connector that the Paiute people believe was used to travel to various destinations in the Mormon Mountains massif. The Toquop Wash system connects both East Mormon Mountain (via South Fork Toquop Wash) and the Clover Mountains (via Toquop Wash) to the Virgin River and beyond.

Southern Paiute representatives interviewed during the Mormon Mountain Oral History study and the Solar PEIS ethnographic studies discussed how they believe places like Toquop Wash were located along a trail system that connected Southern Paiute communities along the Virgin River to ceremonial places in the Mormon Mountains. The trail began at the junction of the wash and the river and follows the wash past the South Toquop Wash Pecking Site to Mormon Peak. Pilgrimage trails can be predicted by using Southern Paiute place logic. For example, knowing that people follow pilgrimage trails to powerful destination places, one knows that the trail must follow that natural flow of water in order to pass through places with high levels of *Puha*. A pilgrimage trail passes by a water source, a place of volcanic activity, and through some sort of narrow and constricted space. By following these trails, pilgrims travel to isolated places far away from their communities and other people.

The Salt Song Trail traverses through the Mormon Mountains region. The Salt Song Trail is a sacred song trail to the Southern Paiute people that encompasses parts of Nevada, California, Arizona, and Utah (Stoffle et al. 2002). The Salt Song is part of a ceremony known as the Cry, during which the deceased person's soul is guided to the afterlife. It is denoted by specific topographic features and spiritual places. This song trail guides the soul throughout Southern Paiute territory. This song trail is arguably the most important song trail in the Southern Paiute world, in that every person will eventually walk it.

In the historic period, this area may have been a region of refuge. The Mormon Mountains region was specifically sought out because the *Puha* of the caves could protect the most vulnerable individuals from capture, enslavement, or disease (Ruuska et al. 2011).

1
2
3
4

Tribal Perspectives on the Significance of East Mormon Mountain SEZ (Cont.)

Finally, during multiple field visits, Native American representatives identified 34 traditional-use plants within the proposed project boundary. The presence of animals in an area contributes to the overall cultural importance of an area to Indian people. One animal that drew particular interest from the cultural representatives was the Desert Horned Lizard, also commonly known as a horned toad. Traditionally, the horned lizard was used as a medicine by Southern Paiute doctors, and the lizard appears in a Creation story. Another animal that drew notice was the mountain sheep. Many mountain sheep stories and songs are also associated with this area. Mountain sheep are believed to be spiritual animals. “Their images are interpreted by Indian people as symbolic of the normal spirit helper of the rain shaman” (Stoffle et al. 2002).

B.3.2.3 Rationale for Eliminating the SEZ

On the basis of public comments received on the Draft Solar PEIS, review by the U.S. Department of the Interior Bureau of Land Management (BLM), and continued review of potential impacts identified in the Draft Solar PEIS, the East Mormon Mountain SEZ will be eliminated from further consideration and will not be identified as an SEZ in applicable land use plans. The potential impacts from solar development in the proposed East Mormon Mountain SEZ were considered sufficient reason to eliminate the area from further consideration as an SEZ.

Although the area will be dropped from consideration as an SEZ, the lands that composed the proposed East Mormon Mountain SEZ will be retained as solar right-of-way variance areas, because the BLM expects that individual projects could be sited in this area to avoid and/or minimize impacts. Any solar development within this area in the future would require appropriate environmental analysis.

1 **B.4 NEW MEXICO**

2
3
4 **B.4.1 Mason Draw**

5
6
7 **B.4.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Mason Draw solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 12,909 acres (52 km²). It is located in Doña Ana County in southern
12 New Mexico (Figure B.4.1-1). The nearest towns of Doña Ana, Las Cruces, Mesilla, Picacho,
13 and University Park are at least 12 mi (19 km) from the SEZ. The nearest residences to the SEZ
14 are about 3 mi (5 km) to the east.
15

16 Potential environmental and other impacts identified in the Draft Solar PEIS included the
17 following:
18

- 19 • The historic setting of the route of the Butterfield Trail would be adversely
20 affected by construction of solar facilities in the SEZ; this impact would be
21 difficult to mitigate. There would be minor adverse impacts on scenic and
22 recreational resources in the Prehistoric Trackways National Monument and
23 the Robledo Mountains Wilderness Study Area and Area of Environmental
24 Concern.
25
- 26 • The grazing permits for the Corralitos Ranch grazing allotment would be
27 reduced, and a maximum of 970 animal unit months would be lost.
28
- 29 • Areas developed for solar energy production would be closed to recreational
30 use, resulting in lost opportunities for backcountry driving, hiking/walking,
31 bird-watching, and hunting.
32
- 33 • The U.S. Department of Defense indicated that solar technologies with
34 structures higher than 100 ft (30 m) would adversely affect military airspace.
35
- 36 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
37 erosion by wind and runoff, sedimentation, and soil contamination) could
38 occur.
39
- 40 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
41 wet-cooling options would not be feasible.
42
- 43 • Clearing of a large portion of the proposed SEZ could affect wetland, dry
44 wash, woodland, playa, and riparian habitats, depending on the amount of
45 habitat disturbed. The establishment of noxious weeds could result in habitat
46 degradation.

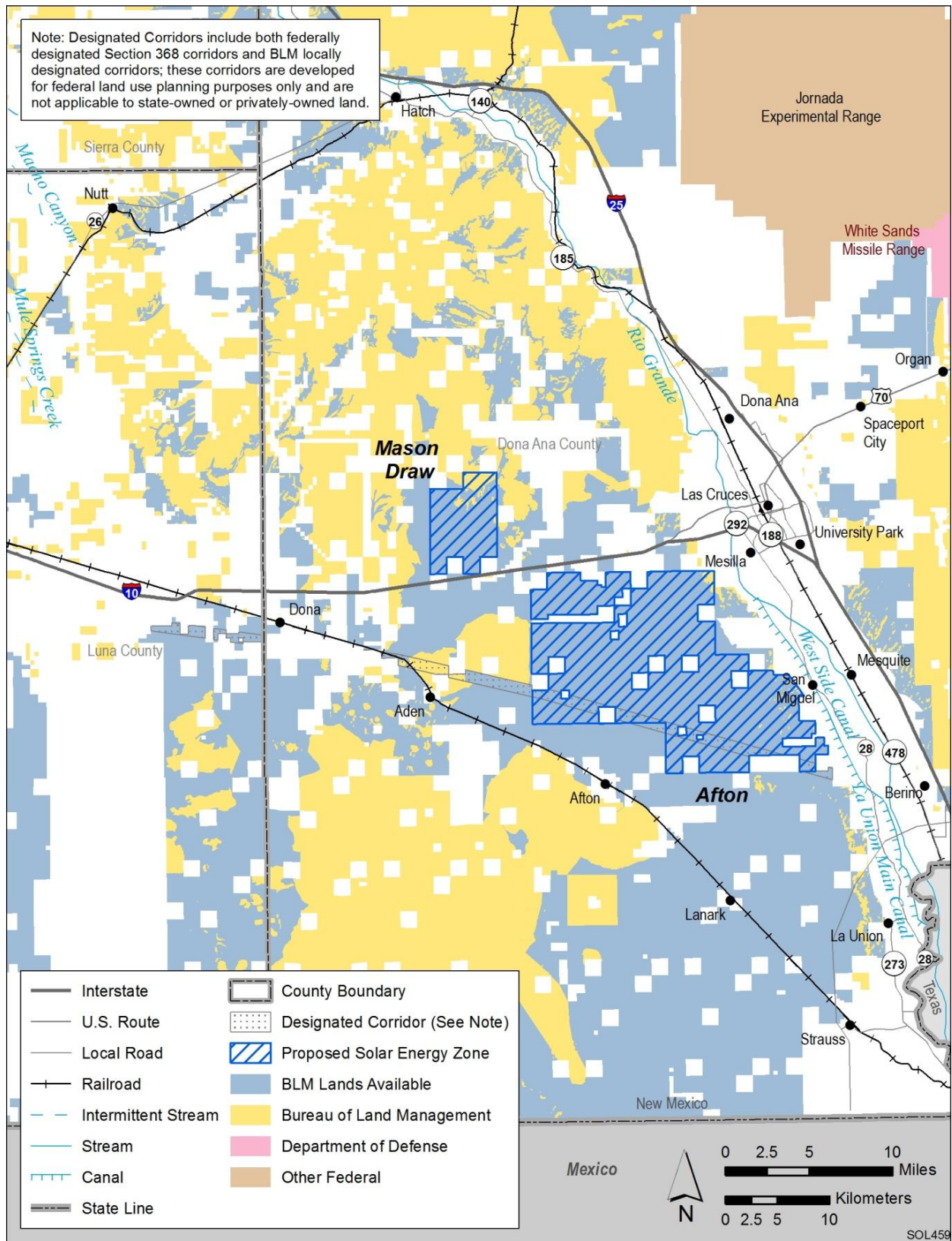


FIGURE B.4.1-1 Proposed Mason Draw SEZ as Presented in the Draft Solar PEIS

- 1 • Potentially suitable habitat for 29 special status species occurs in the affected
2 area of the proposed SEZ; less than 1.0% of the potentially suitable habitat for
3 any of these species and any wildlife species occurs in the region that would
4 be directly affected by development.
5
- 6 • If aquatic biota are present, they could be affected by the direct removal of
7 surface water features within the construction footprint, a decline in habitat
8 quantity and quality due to water withdrawals and changes in drainage
9 patterns, as well as increased sediment and contaminant inputs associated with
10 ground disturbance and construction activities.
11
- 12 • During construction, temporary exceedances of ambient air quality standards
13 for particulate matter at the SEZ boundaries are possible. These high
14 concentrations, however, would be limited to the immediate area surrounding
15 the SEZ boundary.
16
- 17 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
18 could be observed by visitors to the Butterfield Trail and for travelers on
19 Interstate-10 (I-10), I-25, and I-70. Moderate to strong visual contrasts could
20 be observed by visitors to the Aden Hills Special Recreation Management
21 Area.
22
- 23 • The potential for impacts on significant paleontological resources in the
24 proposed SEZ is unknown but could be high. Direct impacts on significant
25 cultural resources could occur in the proposed SEZ, especially in dune areas.
26 Visual impacts on two trail systems, including a National Historic Trail would
27 occur. The nearby Potrillo Mountains provided home bases for some
28 Chiricahua groups. Views from these mountains may be of cultural
29 importance.
30
- 31 • Minority populations occur within a 50-mi (80-km) radius of the proposed
32 SEZ boundary; thus adverse impacts of solar development could
33 disproportionately affect minority populations.
34
35

36 **B.4.1.2 Summary of Comments Received**

37

38 Of the comments received on the proposed Mason Draw SEZ, most were in favor of
39 eliminating the area as an SEZ (New Mexico Department of Game and Fish [NMDGF]). Others
40 supported designating the area as an SEZ, provided boundary adjustments were made. The
41 Mesilla Valley Audubon Society and The Wilderness Society et al.⁹ supported designating the

⁹ The Wilderness Society, New Mexico Wilderness Alliance, Defenders of Wildlife, Audubon New Mexico, Gila Resources Information Project, Gila Conservation Coalition, Western Environmental Law Center, Southwest Environmental Law Center, Upper Gila Watershed Alliance, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed New Mexico SEZs. Those comments are attributed to The Wilderness Society et al.

1 area as an SEZ if the boundary were adjusted to exclude the Sleeping Lady Hills unit of New
2 Mexico Wilderness Alliance’s Citizens’ Proposed Wilderness Inventory.

3
4 The New Mexico Department of Agriculture expressed concern for ranching operations
5 in the area and the disproportionate burden that would be placed on ranchers if development
6 occurred on the SEZ. The NMDFG supported elimination of the Mason Draw SEZ, because of
7 the presence of large areas of intact native grassland of the Chihuahuan Semi-Desert Grasslands
8 type, and populations of antelope, quail, and doves that make the area a popular and high-quality
9 hunting and wildlife-watching recreational resource. The Wilderness Society et al. also had
10 concerns about impacts on wildlife and wildlife habitat, including pronghorn, mule deer, and
11 Aplomado falcon, as well as overlap of the SEZ with a the portion of the Good sight Mountains’
12 Citizens’ Proposed Wilderness Area on the northern end of the unit. The Full Circle Heritage
13 Services recommended a robust Endangered Species Act and Section 106 consultation process.
14

15 16 **B.4.1.3 Rationale for Eliminating the SEZ**

17
18 On the basis of public comments received on the Draft Solar PEIS, review by the
19 U.S. Department of the Interior Bureau of Land Management (BLM) and continued review of
20 potential impacts identified in the Draft Solar PEIS, the Mason Draw SEZ will be eliminated
21 from further consideration and will not be identified as an SEZ in applicable land use plans. The
22 potential impacts from solar development in the proposed Mason Draw SEZ were considered
23 sufficient reason to eliminate the area from further consideration as an SEZ.
24

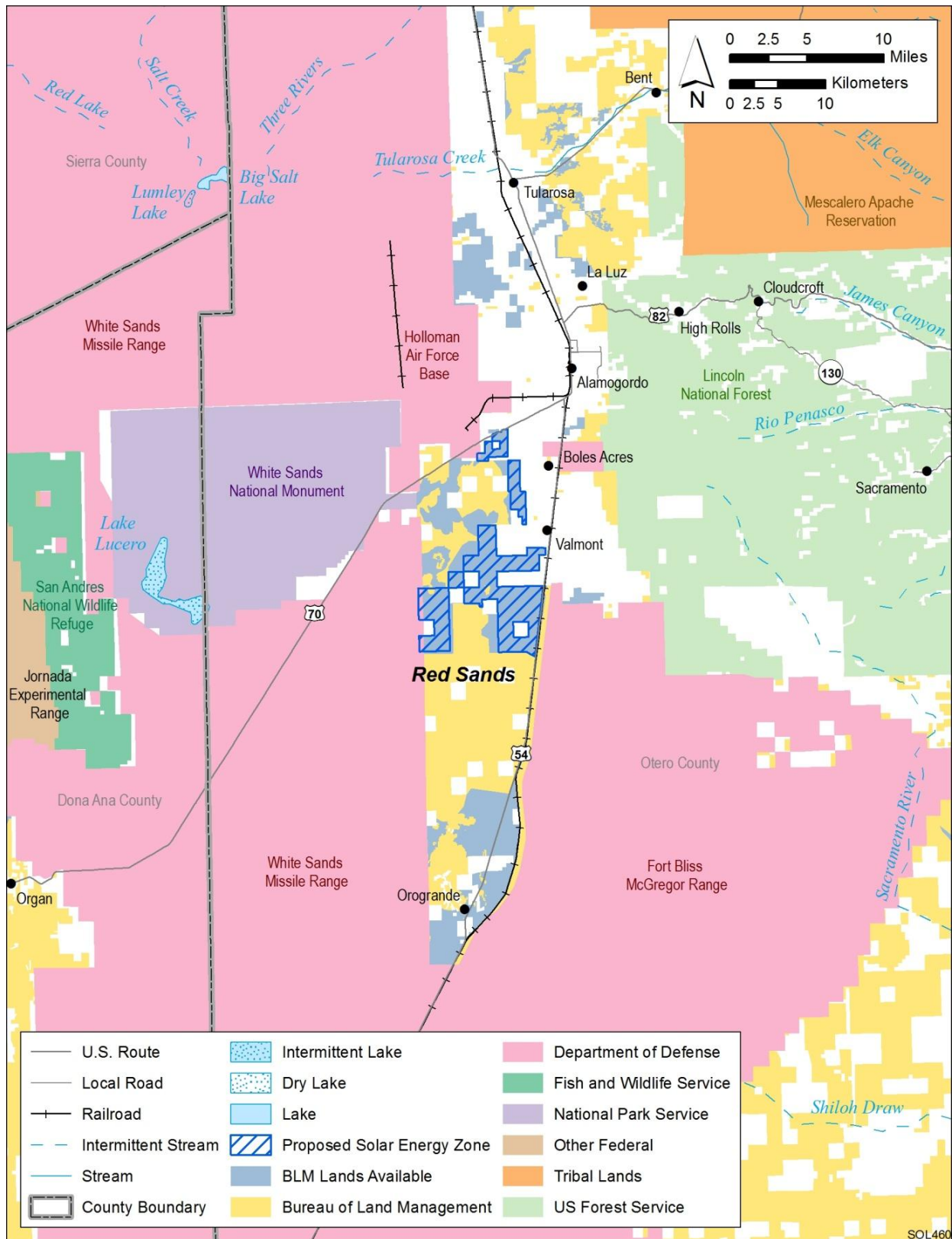
25 Although the area will be dropped from consideration as an SEZ, the lands that composed
26 the proposed Mason Draw SEZ will be retained as solar right-of-way variance areas, because the
27 BLM expects that individual projects could be sited in this area to avoid and/or minimize
28 impacts. Any solar development within this area in the future would require appropriate
29 environmental analysis.
30

31 32 **B.4.2 Red Sands**

33 34 35 **B.4.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic 36 Environmental Impact Statement (PEIS)**

37
38 The proposed Red Sands solar energy zone (SEZ), as presented in the Draft Solar PEIS,
39 had a total area of 22,520 acres (91 m²). It is located in Otero County in south–central New
40 Mexico (Figure B.4.2-1). The towns of Boles Acres and Alamogordo are located about 2 mi
41 (3 km) east and 6 mi (10 km) northeast of the SEZ, respectively.
42

43 Potential environmental and other impacts identified in the Draft Solar PEIS included the
44 following:
45



1

2 **FIGURE B.4.2-1 Proposed Red Sands SEZ as Presented in the Draft Solar PEIS**

3

- 1 • Because of the fragmented nature of the SEZ, it is likely that public access
2 routes to lands outside the SEZ would be blocked by solar development.
3
- 4 • Wilderness characteristics in the Culp Canyon Wilderness Study Area (WSA)
5 would be adversely affected. Scenic values and recreational use in the
6 Sacramento Escarpment Area of Environmental Concern (ACEC) and the
7 U.S. Forest Service (USFS) Roadless Areas on the front of the Sacramento
8 Mountains would be adversely affected. Visitors to the eastern and
9 southeastern portions of the White Sands National Monument would have
10 clear views of development in portions of the SEZ and this would have an
11 adverse effect on visitor experience in the monument.
12
- 13 • Grazing permits for the Bar H W Ranch, Diamond A Ranch, Escondido Well,
14 Lone Butte, and White Sands Ranch grazing allotments would be reduced. A
15 maximum of 2,495 animal unit months would be lost.
16
- 17 • Recreational use in the Culp Canyon WSA, Sacramento Escarpment ACEC,
18 White Sands National Monument, and the USFS Roadless Areas would be
19 adversely affected and would not be completely mitigated.
20
- 21 • The U.S. Department of Defense (DoD) expressed concern over any facilities
22 constructed in the SEZ that could affect its current operations, including the
23 potential for flight restrictions above any solar facilities and the height of solar
24 facilities that could interfere with approaches to and departures from
25 Holloman Air Force Base or that would intrude into low-level airspace.
26
- 27 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
28 erosion by wind and runoff, sedimentation, and soil contamination) could
29 occur.
30
- 31 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
32 wet-cooling options would not be feasible.
33
- 34 • Clearing of a large portion of the proposed SEZ could affect wetland, dry
35 wash, playa, and dune habitats, depending on the amount of habitat disturbed.
36 The establishment of noxious weeds could result in habitat degradation
37
- 38 • Potentially suitable habitat for 43 special status species occurs in the affected
39 area of the proposed SEZ. For most of these species and most wildlife species,
40 less than 1.0% of the potentially suitable habitat occurs in the region that
41 would be directly affected by development. For several special status species
42 and two wildlife species, between 2 and 3% of the potentially suitable habitat
43 in the region occurs in the area of direct effects.
44
- 45 • If aquatic biota are present in wetland, dry wash, riparian, or playa areas of the
46 SEZ, they could be affected by the direct removal of surface water features

1 within the construction footprint, a decline in habitat quantity and quality due
2 to water withdrawals and changes in drainage patterns, as well as increased
3 sediment and contaminant inputs associated with ground disturbance and
4 construction activities.

- 5
- 6 • Temporary exceedances of ambient air quality standards for particulate matter
7 at the SEZ boundaries are possible during construction. These high
8 concentrations, however, would be limited to the immediate area surrounding
9 the SEZ boundary.
- 10
- 11 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
12 could be observed by visitors to the White Sands National Monument, Culp
13 Canyon WSA, Sacramento Escarpment ACEC, Lone Butte, and for travelers
14 on Interstate-70 and U.S. 54. Strong visual contrasts could be observed by
15 residents of the communities of Alamogordo and Boles Acres.
- 16
- 17 • During construction, noise levels at the nearest residences could be higher
18 than the U.S. Environmental Protection Agency (EPA) guidance levels.
19 During operations, noise levels at the nearest residences could be above EPA
20 guidance levels if concentrating solar power facilities with energy storage
21 technologies (which could extend the daily operational time by 6 hours or
22 more) were used at the SEZ, and equal to EPA guidance levels if dish engine
23 technology were used at the SEZ.
- 24
- 25 • The potential for impacts on significant paleontological resources in the
26 proposed SEZ is low. Direct impacts on significant cultural resources could
27 occur in the proposed SEZ. The adjacent Sacramento and San Andres
28 Mountains provided home bases for some Mescalero groups. Views from
29 these mountains may be of cultural importance.
- 30
- 31 • Minority populations occur within a 50-mi (80-km) radius of the proposed
32 SEZ boundary; thus adverse impacts of solar development could
33 disproportionately affect minority populations.
- 34
- 35

36 **B.4.2.2 Summary of Comments Received**

37
38 Many comments on the proposed Red Sands SEZ were received. Some commentors were
39 in favor of eliminating the area as an SEZ (e.g., the National Parks Conservation Association, the
40

1 Cultural Resources Preservation Council), while others (e.g., the New Mexico Department of
2 Game and Fish and The Wilderness Society et al.¹⁰) supported designating the area as an SEZ.
3

4 The Wilderness Society et al. was concerned that groundwater withdrawals might affect
5 the White Sands pupfish. The Cultural Resources Preservation Council (CRPC) recommended
6 that the U.S. Department of the Interior Bureau of Land Management (BLM) modify the
7 boundaries or drop the SEZ entirely. The CRPC also suggested that the BLM work closely with
8 affected Tribes to determine whether development of the SEZ could cause adverse impacts on
9 sacred viewsheds and whether those impacts could be adequately mitigated. The National Parks
10 Conservation Association favored eliminating the Red Sands SEZ because development within
11 the SEZ could jeopardize groundwater at White Sands National Monument, and because it would
12 have adverse impacts on the development and stability of the gypsum sand dunes and on visual
13 resources of the White Sands National Monument. The DoD recommended that no power tower
14 facilities be allowed in the SEZ.
15

16 17 **B.4.2.3 Rationale for Eliminating the SEZ** 18

19 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
20 and continued review of the potential impacts identified in the Draft Solar PEIS, the Red Sands
21 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
22 applicable land use plans. The potential impacts from solar development in the proposed Red
23 Sands SEZ were considered sufficient reason to eliminate the area from further consideration as
24 an SEZ.
25

26 Although the area will be dropped from consideration as an SEZ, the lands that composed
27 the proposed Red Sands SEZ will be retained as solar right-of-way variance areas, because the
28 BLM expects that individual projects could be sited in this area to avoid and/or minimize
29 impacts. Any solar development within this area in the future would require appropriate
30 environmental analysis.
31

32 33 **B.5 REFERENCES** 34

35 DOE and DOI (U.S. Department of Energy and U.S. Department of the Interior), 2008,
36 *Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal*
37 *Land in the 11 Western States*, DOE/EIS-0386, Final, Nov. Available at <http://corridoreis.anl.gov/eis/guide/index.cfm>.
38
39

¹⁰ The Wilderness Society, New Mexico Wilderness Alliance, Defenders of Wildlife, Audubon New Mexico, Gila Resources Information Project, Gila Conservation Coalition, Western Environmental Law Center, Southwest Environmental Law Center, Upper Gila Watershed Alliance, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed New Mexico SEZs. Those comments are attributed to The Wilderness Society et al.

1 Ruuska, A.K., et al., 2011, *Oral Histories and Place-Making Practices of the Mormon*
2 *Mountains among the Southern Paiute and Western Shoshone*, prepared by the Bureau of
3 Applied Research in Anthropology, University of Arizona, Tucson, Ariz., for the Bureau of
4 Land Management, Nevada.
5
6 Stoffle, R.W., et al., 1982, “Southern Paiute Peoples' SIA Responses to Energy Proposals,”
7 pp. 107–134, in *Indian SIA: The Social Impact Assessment of Rapid Resource Development on*
8 *Native Peoples*, Natural Resources Sociology Monograph No. 3, C.C. Geisler, et al. (editors),
9 University of Michigan, Ann Arbor, Mich.
10
11 Stoffle, R.W., et al., 1983, *Nungwu Uakapi: Southern Paiute Indians Comment on the*
12 *Intermountain Power Project. Revised Intermountain–Adelanto Bipole I Proposal*, Applied Urban
13 Field School to Applied Conservation Technology, University of Wisconsin–Parkside, Kenosha,
14 Wisc.
15
16 Stoffle, R.W., et al., 2002, *East of Nellis: Cultural Landscapes of the Sheep and Pahrnagat*
17 *Mountain Ranges*, Bureau of Applied Research in Anthropology, University of Arizona, Tucson,
18 Ariz.
19
20 Stoffle, R.W., et al., 2004, *Puha Flows from It: The Cultural Landscape Study of the Spring*
21 *Mountains*, prepared by the Bureau of Applied Research in Anthropology, University of
22 Arizona, Tucson, Ariz., for the U.S. Forest Service Humboldt Toiyabe National Forest Spring
23 Mountains National Recreation Area.
24

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

APPENDIX C:
ACTION PLANS FOR SOLAR ENERGY ZONES TO BE CARRIED FORWARD

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

CONTENTS

APPENDIX C: ACTION PLANS FOR SOLAR ENERGY ZONES TO BE CARRIED FORWARD C-1

C.1 Arizona Proposed Solar Energy Zones C-3

 C.1.1 Brenda C-3

 C.1.1.1 Summary of Potential Impacts Identified in the Draft Solar
 Programmatic Environmental Impact Statement C-3

 C.1.1.2 Summary of Comments Received C-6

 C.1.1.3 Changes to the SEZ C-6

 C.1.1.4 Wilderness Character Status of SEZ C-6

 C.1.1.5 Additional Data Collection Recommended C-6

 C.1.1.5.1 Lands and Realty C-6

 C.1.1.5.2 Specially Designated Areas and Lands with
 Wilderness Characteristics C-6

 C.1.1.5.3 Rangeland Resources C-8

 C.1.1.5.4 Recreation C-8

 C.1.1.5.5 Military and Civilian Aviation C-8

 C.1.1.5.6 Geologic Setting and Soil Resources C-8

 C.1.1.5.7 Minerals C-8

 C.1.1.5.8 Water Resources C-8

 C.1.1.5.9 Ecological Resources C-9

 C.1.1.5.10 Air Quality and Climate C-13

 C1.1.5.11 Visual Resources C-13

 C.1.1.5.12 Acoustic Environment C-18

 C.1.1.5.13 Paleontological Resources C-18

 C.1.1.5.14 Cultural Resources and Native American
 Concerns C-18

 C.1.1.5.15 Socioeconomics and Environmental Justice C-19

 C.1.1.5.16 Cumulative Impact Considerations C-19

 C.1.2 Gillespie C-20

 C.1.2.1 Summary of Potential Impacts Identified in the Draft Solar
 Programmatic Environmental Impact Statement C-20

 C.1.2.2 Summary of Comments Received C-23

 C.1.2.3 Changes to the SEZ C-23

 C.1.2.4 Wilderness Character Status of SEZ C-23

 C.1.2.5 Additional Data Collection Recommended C-23

 C.1.2.5.1 Lands and Realty C-23

 C.1.2.5.2 Specially Designated Areas and Lands with
 Wilderness Characteristics C-24

 C.1.2.5.3 Rangeland Resources C-24

 C.1.2.5.4 Recreation C-24

 C.1.2.5.5 Military and Civilian Aviation C-24

 C.1.2.5.6 Geologic Setting and Soil Resources C-24

CONTENTS (Cont.)

1			
2			
3			
4		C.1.2.5.7 Minerals	C-24
5		C.1.2.5.8 Water Resources	C-24
6		C.1.2.5.9 Ecological Resources	C-25
7		C.1.2.5.10 Air Quality and Climate.....	C-29
8		C.1.2.5.11 Visual Resources.....	C-30
9		C.1.2.5.12 Acoustic Environment	C-35
10		C.1.2.5.13 Paleontological Resources	C-35
11		C.1.2.5.14 Cultural Resources and Native American	
12		Concerns	C-35
13		C.1.2.5.15 Socioeconomics and Environmental Justice.....	C-36
14		C.1.2.5.16 Cumulative Impact Considerations.....	C-36
15	C.2	California Proposed Solar Energy Zones.....	C-37
16	C.2.1	Imperial East	C-37
17	C.2.1.1	Summary of Potential Impacts Identified in the Draft Solar	
18	C.2.1.1	Programmatic Environmental Impact Statement.....	C-37
19	C.2.1.2	Summary of Comments Received	C-40
20	C.2.1.3	Changes to the SEZ.....	C-40
21	C.2.1.4	Wilderness Character Status of SEZ.....	C-42
22	C.2.1.5	Additional Data Collection Recommended	C-42
23	C.2.1.5.1	Lands and Realty.....	C-42
24	C.2.1.5.2	Specially Designated Areas and Lands with	
25	C.2.1.5.2	Wilderness Characteristics.....	C-42
26	C.2.1.5.3	Rangeland Resources	C-42
27	C.2.1.5.4	Recreation	C-42
28	C.2.1.5.5	Military and Civilian Aviation.....	C-42
29	C.2.1.5.6	Geologic Setting and Soil Resources	C-42
30	C.2.1.5.7	Minerals	C-43
31	C.2.1.5.8	Water Resources	C-43
32	C.2.1.5.9	Ecological Resources	C-44
33	C.2.1.5.10	Air Quality and Climate.....	C-45
34	C.2.1.5.11	Visual Resources.....	C-49
35	C.2.1.5.12	Acoustic Environment	C-49
36	C.2.1.5.13	Paleontological Resources	C-49
37	C.2.1.5.14	Cultural Resources and Native American	
38	C.2.1.5.14	Concerns	C-51
39	C.2.1.5.15	Socioeconomics and Environmental Justice.....	C-52
40	C.2.1.5.16	Cumulative Impact Considerations.....	C-52
41	C.2.2	Riverside East	C-53
42	C.2.2.1	Summary of Potential Impacts Identified in the Draft Solar	
43	C.2.2.1	Programmatic Environmental Impact Statement.....	C-53
44	C.2.2.2	Summary of Comments Received	C-57
45	C.2.2.3	Changes to the SEZ.....	C-58
46	C.2.2.4	Wilderness Character Status of SEZ.....	C-58

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.2.2.5 Additional Data Collection Recommended C-61
 - C.2.2.5.1 Lands and Realty..... C-61
 - C.2.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics..... C-61
 - C.2.2.5.3 Rangeland Resources C-61
 - C.2.2.5.4 Recreation C-61
 - C.2.2.5.5 Military and Civilian Aviation..... C-61
 - C.2.2.5.6 Geologic Setting and Soil Resources C-61
 - C.2.2.5.7 Minerals C-61
 - C.2.2.5.8 Water Resources C-62
 - C.2.2.5.9 Ecological Resources C-63
 - C.2.2.5.10 Air Quality and Climate..... C-71
 - C.2.2.5.11 Visual Resources..... C-71
 - C.2.2.5.12 Acoustic Environment C-76
 - C.2.2.5.13 Paleontological Resources C-76
 - C.2.2.5.14 Cultural Resources and Native American Concerns C-77
 - C.2.2.5.15 Socioeconomics and Environmental Justice..... C-78
 - C.2.2.5.16 Cumulative Impact Considerations..... C-78
- C.3 Colorado Proposed Solar Energy Zones C-79
 - C.3.1 Antonito Southeast..... C-79
 - C.3.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement..... C-79
 - C.3.1.2 Summary of Comments Received C-82
 - C.3.1.3 Changes to the SEZ..... C-83
 - C.3.1.4 Wilderness Character Status of SEZ..... C-83
 - C.3.1.5 Additional Data Collection Recommended C-83
 - C.3.1.5.1 Lands and Realty..... C-83
 - C.3.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics..... C-85
 - C.3.1.5.3 Rangeland Resources C-85
 - C.3.1.5.4 Recreation C-85
 - C.3.1.5.5 Military and Civilian Aviation..... C-85
 - C.3.1.5.6 Geologic Setting and Soil Resources C-85
 - C.3.1.5.7 Minerals C-85
 - C.3.1.5.8 Water Resources C-85
 - C.3.1.5.9 Ecological Resources C-86
 - C.3.1.5.10 Air Quality and Climate..... C-90
 - C.3.1.5.11 Visual Resources..... C-90
 - C.3.1.5.12 Acoustic Environment C-91
 - C.3.1.5.13 Paleontological Resources C-96
 - C.3.1.5.14 Cultural Resources and Native American Concerns C-96

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.3.1.5.15 Socioeconomics and Environmental Justice..... C-97
- C.3.1.5.16 Cumulative Impact Considerations..... C-97
- C.3.2 De Tilla Gulch..... C-98
 - C.3.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement..... C-98
 - C.3.2.2 Summary of Comments ReceivedC-101
 - C.3.2.3 Changes to the SEZ.....C-102
 - C.3.2.4 Wilderness Character Status of SEZ.....C-102
 - C.3.2.5 Additional Data Collection RecommendedC-102
 - C.3.2.5.1 Lands and Realty.....C-102
 - C.3.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics.....C-102
 - C.3.2.5.3 Rangeland ResourcesC-102
 - C.3.2.5.4 RecreationC-104
 - C.3.2.5.5 Military and Civilian Aviation.....C-104
 - C.3.2.5.6 Geologic Setting and Soil ResourcesC-104
 - C.3.2.5.7 MineralsC-104
 - C.3.2.5.8 Water ResourcesC-104
 - C.3.2.5.9 Ecological ResourcesC-105
 - C.3.2.5.10 Air Quality and Climate.....C-106
 - C.3.2.5.11 Visual Resources.....C-108
 - C.3.2.5.12 Acoustic EnvironmentC-111
 - C.3.2.5.13 Paleontological ResourcesC-111
 - C.3.2.5.14 Cultural Resources and Native American ConcernsC-111
 - C.3.2.5.15 Socioeconomics and Environmental Justice.....C-112
 - C.3.2.5.16 Cumulative Impact Considerations.....C-112
- C.3.3 Fourmile East.....C-113
 - C.3.3.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement.....C-113
 - C.3.3.2 Summary of Comments ReceivedC-116
 - C.3.3.3 Changes to the SEZ.....C-117
 - C.3.3.4 Wilderness Character Status of SEZ.....C-117
 - C.3.3.5 Additional Data Collection RecommendedC-117
 - C.3.3.5.1 Lands and Realty.....C-117
 - C.3.3.5.2 Specially Designated Areas and Lands with Wilderness Characteristics.....C-119
 - C.3.3.5.3 Rangeland ResourcesC-119
 - C.3.3.5.4 RecreationC-119
 - C.3.3.5.5 Military and Civilian Aviation.....C-119
 - C.3.3.5.6 Geologic Setting and Soil ResourcesC-119
 - C.3.3.5.7 MineralsC-119
 - C.3.3.5.8 Water ResourcesC-119

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

C.3.3.5.9	Ecological Resources	C-120
C.3.3.5.10	Air Quality and Climate.....	C-124
C.3.3.5.11	Visual Resources.....	C-124
C.3.3.5.12	Acoustic Environment	C-128
C.3.3.5.13	Paleontological Resources	C-128
C.3.3.5.14	Cultural Resources and Native American Concerns	C-128
C.3.3.5.15	Socioeconomics and Environmental Justice.....	C-129
C.3.3.5.16	Cumulative Impact Considerations.....	C-129
C.3.4	Los Mogotes East.....	C-130
C.3.4.1	Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement.....	C-130
C.3.4.2	Summary of Comments Received	C-133
C.3.4.3	Changes to the SEZ.....	C-134
C.3.4.4	Wilderness Character Status of SEZ.....	C-134
C.3.4.5	Additional Data Collection Recommended	C-134
C.3.4.5.1	Lands and Realty.....	C-134
C.3.4.5.2	Specially Designated Areas and Lands with Wilderness Characteristics.....	C-134
C.3.4.5.3	Rangeland Resources	C-134
C.3.4.5.4	Recreation	C-136
C.3.4.5.5	Military and Civilian Aviation.....	C-136
C.3.4.5.6	Geologic Setting and Soil Resources.....	C-136
C.3.4.5.7	Minerals	C-136
C.3.4.5.8	Water Resources	C-136
C.3.4.5.9	Ecological Resources	C-137
C.3.4.5.10	Air Quality and Climate.....	C-140
C.3.4.5.11	Visual Resources.....	C-141
C.3.4.5.12	Acoustic Environment	C-141
C.3.4.5.13	Paleontological Resources	C-145
C.3.4.5.14	Cultural Resources and Native American Concerns	C-145
C.3.4.5.15	Socioeconomics and Environmental Justice.....	C-146
C.3.4.5.16	Cumulative Impact Considerations.....	C-146
C.4	Nevada Proposed Solar Energy Zones.....	C-147
C.4.1	Amargosa Valley	C-147
C.4.1.1	Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement.....	C-147
C.4.1.2	Summary of Comments Received	C-150
C.4.1.3	Changes to the SEZ.....	C-151
C.4.1.4	Wilderness Character Status of SEZ.....	C-153
C.4.1.5	Additional Data Collection Recommended	C-153
C.4.1.5.1	Lands and Realty.....	C-153

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.4.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics.....C-153
- C.4.1.5.3 Rangeland ResourcesC-153
- C.4.1.5.4 RecreationC-153
- C.4.1.5.5 Military and Civilian Aviation.....C-153
- C.4.1.5.6 Geologic Setting and Soil Resources.....C-154
- C.4.1.5.7 MineralsC-154
- C.4.1.5.8 Water ResourcesC-154
- C.4.1.5.9 Ecological ResourcesC-155
- C.4.1.5.10 Air Quality and Climate.....C-159
- C.4.1.5.11 Visual Resources.....C-159
- C.4.1.5.12 Acoustic EnvironmentC-162
- C.4.1.5.13 Paleontological ResourcesC-162
- C.4.1.5.14 Cultural Resources and Native American ConcernsC-162
- C.4.1.5.15 Socioeconomics and Environmental Justice.....C-164
- C.4.1.5.16 Cumulative Impact Considerations.....C-164
- C.4.2 Dry LakeC-166
 - C.4.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement.....C-166
 - C.4.2.2 Summary of Comments ReceivedC-169
 - C.4.2.3 Changes to the SEZ.....C-169
 - C.4.2.4 Wilderness Character Status of SEZ.....C-171
 - C.4.2.5 Additional Data Collection RecommendedC-171
 - C.4.2.5.1 Lands and Realty.....C-171
 - C.4.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics.....C-171
 - C.4.2.5.3 Rangeland ResourcesC-171
 - C.4.2.5.4 RecreationC-171
 - C.4.2.5.5 Military and Civilian Aviation.....C-172
 - C.4.2.5.6 Geologic Setting and Soil Resources.....C-172
 - C.4.2.5.7 MineralsC-172
 - C.4.2.5.8 Water ResourcesC-172
 - C.4.2.5.9 Ecological ResourcesC-173
 - C.4.2.5.10 Air Quality and Climate.....C-179
 - C.4.2.5.11 Visual Resources.....C-180
 - C.4.2.5.12 Acoustic EnvironmentC-184
 - C.4.2.5.13 Paleontological ResourcesC-184
 - C.4.2.5.14 Cultural Resources and Native American ConcernsC-184
 - C.4.2.5.15 Socioeconomics and Environmental Justice.....C-186
 - C.4.2.5.16 Cumulative Impact Considerations.....C-186

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.4.3 Dry Lake Valley NorthC-187
 - C.4.3.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact StatementC-187
 - C.4.3.2 Summary of Comments ReceivedC-190
 - C.4.3.3 Changes to the SEZ.....C-191
 - C.4.3.4 Wilderness Character Status of SEZ.....C-191
 - C.4.3.5 Additional Data Collection RecommendedC-191
 - C.4.3.5.1 Lands and Realty.....C-191
 - C.4.3.5.2 Specially Designated Areas and Lands with Wilderness CharacteristicsC-191
 - C.4.3.5.3 Rangeland ResourcesC-191
 - C.4.3.5.4 RecreationC-193
 - C.4.3.5.5 Military and Civilian Aviation.....C-193
 - C.4.3.5.6 Geologic Setting and Soil ResourcesC-193
 - C.4.3.5.7 MineralsC-193
 - C.4.3.5.8 Water ResourcesC-193
 - C.4.3.5.9 Ecological ResourcesC-195
 - C.4.3.5.10 Air Quality and Climate.....C-196
 - C.4.3.5.11 Visual Resources.....C-196
 - C.4.3.5.12 Acoustic EnvironmentC-202
 - C.4.3.5.13 Paleontological ResourcesC-202
 - C.4.3.5.14 Cultural Resources and Native American ConcernsC-202
 - C.4.3.5.15 Socioeconomics and Environmental Justice.....C-203
 - C.4.3.5.16 Cumulative Impact Considerations.....C-203
- C.4.4 Gold PointC-204
 - C.4.4.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact StatementC-204
 - C.4.4.2 Summary of Comments ReceivedC-207
 - C.4.4.3 Changes to the SEZ.....C-207
 - C.4.4.4 Wilderness Character Status of SEZ.....C-209
 - C.4.4.5 Additional Data Collection RecommendedC-209
 - C.4.4.5.1 Lands and Realty.....C-209
 - C.4.4.5.2 Specially Designated Areas and Lands with Wilderness CharacteristicsC-209
 - C.4.4.5.3 Rangeland ResourcesC-209
 - C.4.4.5.4 RecreationC-209
 - C.4.4.5.5 Military and Civilian Aviation.....C-209
 - C.4.4.5.6 Geologic Setting and Soil ResourcesC-209
 - C.4.4.5.7 MineralsC-210
 - C.4.4.5.8 Water ResourcesC-210
 - C.4.4.5.9 Ecological ResourcesC-211
 - C.4.4.5.10 Air Quality and Climate.....C-215

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.4.4.5.11 Visual Resources.....C-215
- C.4.4.5.12 Acoustic EnvironmentC-218
- C.4.4.5.13 Paleontological ResourcesC-218
- C.4.4.5.14 Cultural Resources and Native American
ConcernsC-218
- C.4.4.5.15 Socioeconomics and Environmental Justice.....C-220
- C.4.4.5.16 Cumulative Impact Considerations.....C-221
- C.4.5 Millers.....C-222
 - C.4.5.1 Summary of Potential Impacts Identified in the Draft Solar
Programmatic Environmental Impact Statement.....C-222
 - C.4.5.2 Summary of Comments ReceivedC-225
 - C.4.5.3 Changes to the SEZ.....C-225
 - C.4.5.4 Wilderness Character Status of SEZ.....C-225
 - C.4.5.5 Additional Data Collection RecommendedC-227
 - C.4.5.5.1 Lands and Realty.....C-227
 - C.4.5.5.2 Specially Designated Areas and Lands with
Wilderness Characteristics.....C-227
 - C.4.5.5.3 Rangeland ResourcesC-227
 - C.4.5.5.4 RecreationC-227
 - C.4.5.5.5 Military and Civilian Aviation.....C-227
 - C.4.5.5.6 Geologic Setting and Soil ResourcesC-227
 - C.4.5.5.7 MineralsC-227
 - C.4.5.5.8 Water ResourcesC-228
 - C.4.5.5.9 Ecological ResourcesC-229
 - C.4.5.5.10 Air Quality and Climate.....C-230
 - C.4.5.5.11 Visual Resources.....C-230
 - C.4.5.5.12 Acoustic EnvironmentC-235
 - C.4.5.5.13 Paleontological ResourcesC-235
 - C.4.5.5.14 Cultural Resources and Native American
ConcernsC-235
 - C.4.5.5.15 Socioeconomics and Environmental Justice.....C-238
 - C.4.5.5.16 Cumulative Impact Considerations.....C-238
- C.5 New Mexico Proposed Solar Energy ZonesC-239
 - C.5.1 AftonC-239
 - C.5.1.1 Summary of Potential Impacts Identified in the Draft Solar
Programmatic Environmental Impact Statement.....C-239
 - C.5.1.2 Summary of Comments ReceivedC-242
 - C.5.1.3 Changes to the SEZ.....C-243
 - C.5.1.4 Wilderness Character Status of SEZ.....C-245
 - C.5.1.5 Additional Data Collection RecommendedC-245
 - C.5.1.5.1 Lands and Realty.....C-245
 - C.5.1.5.2 Specially Designated Areas and Lands with
Wilderness Characteristics.....C-245

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.5.1.5.3 Rangeland Resources C-245
- C.5.1.5.4 Recreation C-245
- C.5.1.5.5 Military and Civilian Aviation C-245
- C.5.1.5.6 Geologic Setting and Soil Resources C-246
- C.5.1.5.7 Minerals C-246
- C.5.1.5.8 Water Resources C-246
- C.5.1.5.9 Ecological Resources C-247
- C.5.1.5.10 Air Quality and Climate C-252
- C.5.1.5.11 Visual Resources C-252
- C.5.1.5.12 Acoustic Environment C-266
- C.5.1.5.13 Paleontological Resources C-266
- C.5.1.5.14 Cultural Resources and Native American
Concerns C-266
- C.5.1.5.15 Socioeconomics and Environmental Justice C-268
- C.5.1.5.16 Cumulative Impact Considerations C-268
- C.6 Utah Proposed Solar Energy Zones C-269
 - C.6.1 Escalante Valley C-269
 - C.6.1.1 Summary of Potential Impacts Identified in the Draft Solar
Programmatic Environmental Impact Statement C-269
 - C.6.1.2 Summary of Comments Received C-271
 - C.6.1.3 Changes to the SEZ C-272
 - C.6.1.4 Wilderness Character Status of SEZ C-272
 - C.6.1.5 Additional Data Collection Recommended C-272
 - C.6.1.5.1 Lands and Realty C-272
 - C.6.1.5.2 Specially Designated Areas and Lands with
Wilderness Characteristics C-272
 - C.6.1.5.3 Rangeland Resources C-274
 - C.6.1.5.4 Recreation C-274
 - C.6.1.5.5 Military and Civilian Aviation C-274
 - C.6.1.5.6 Geologic Setting and Soil Resources C-274
 - C.6.1.5.7 Minerals C-274
 - C.6.1.5.8 Water Resources C-274
 - C.6.1.5.9 Ecological Resources C-275
 - C.6.1.5.10 Air Quality and Climate C-280
 - C.6.1.5.11 Visual Resources C-280
 - C.6.1.5.12 Acoustic Environment C-281
 - C.6.1.5.13 Paleontological Resources C-281
 - C.6.1.5.14 Cultural Resources and Native American
Concerns C-281
 - C.6.1.5.15 Socioeconomics and Environmental Justice C-284
 - C.6.1.5.16 Cumulative Impact Considerations C-284

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

C.6.2 Milford Flats South.....C-285

 C.6.2.1 Summary of Potential Impacts Identified in the Draft Solar
 Programmatic Environmental Impact Statement.....C-285

 C.6.2.2 Summary of Comments ReceivedC-287

 C.6.2.3 Changes to the SEZ.....C-288

 C.6.2.4 Wilderness Character Status of SEZ.....C-288

 C.6.2.5 Additional Data Collection RecommendedC-288

 C.6.2.5.1 Lands and Realty.....C-288

 C.6.2.5.2 Specially Designated Areas and Lands with
 Wilderness Characteristics.....C-290

 C.6.2.5.3 Rangeland ResourcesC-290

 C.6.2.5.4 RecreationC-290

 C.6.2.5.5 Military and Civilian Aviation.....C-290

 C.6.2.5.6 Geologic Setting and Soil ResourcesC-290

 C.6.2.5.7 MineralsC-290

 C.6.2.5.8 Water ResourcesC-290

 C.6.2.5.9 Ecological ResourcesC-291

 C.6.2.5.10 Air Quality and Climate.....C-296

 C.6.2.5.11 Visual Resources.....C-296

 C.6.2.5.12 Acoustic EnvironmentC-298

 C.6.2.5.13 Paleontological ResourcesC-298

 C.6.2.5.14 Cultural Resources and Native American
 ConcernsC-298

 C.6.2.5.15 Socioeconomics and Environmental Justice.....C-301

 C.6.2.5.16 Cumulative Impact Considerations.....C-301

C.6.3 Wah Wah Valley.....C-302

 C.6.3.1 Summary of Potential Impacts Identified in the Draft Solar
 Programmatic Environmental Impact Statement.....C-302

 C.6.3.2 Summary of Comments ReceivedC-305

 C.6.3.3 Changes to the SEZ.....C-305

 C.6.3.4 Wilderness Character Status of SEZ.....C-305

 C.6.3.5 Additional Data Collection RecommendedC-307

 C.6.3.5.1 Lands and Realty.....C-307

 C.6.3.5.2 Specially Designated Areas and Lands with
 Wilderness Characteristics.....C-307

 C.6.3.5.3 Rangeland ResourcesC-307

 C.6.3.5.4 RecreationC-307

 C.6.3.5.5 Military and Civilian Aviation.....C-307

 C.6.3.5.6 Geologic Setting and Soil ResourcesC-307

 C.6.3.5.7 MineralsC-307

 C.6.3.5.8 Water ResourcesC-308

 C.6.3.5.9 Ecological ResourcesC-309

 C.6.3.5.10 Air Quality and Climate.....C-313

CONTENTS (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

- C.6.3.5.11 Visual Resources.....C-313
- C.6.3.5.12 Acoustic EnvironmentC-316
- C.6.3.5.13 Paleontological ResourcesC-316
- C.6.3.5.14 Cultural Resources and Native American
ConcernsC-317
- C.6.3.5.15 Socioeconomics and Environmental Justice.....C-319
- C.6.3.5.16 Cumulative Impact Considerations.....C-319
- C.7 General Additional Analysis Requirements for SEZsC-321
 - C.7.1 Revised Transmission AnalysisC-321
 - C.7.1.1 General Information.....C-321
 - C.7.1.2 Factors Limiting Predictability of Future Transmission
Needs for the SEZs Assessed in the Solar PEISC-322
 - C.7.1.3 Proposed Methodology for SEZ-Specific Transmission
Analyses for the Final Solar PEISC-324
 - C.7.1.3.1 Methodology for Identifying Likely Load Areas....C-326
 - C.7.1.3.2 Transmission Analysis MethodologiesC-330
 - C.7.1.4 Test Case Transmission Analysis for the Proposed Brenda
SEZC-332
 - C.7.2 Water Resources Action PlanC-339
 - C.7.2.1 Planning-Level Inventory of Water Resources.....C-339
 - C.7.2.2 Floodplain DeterminationsC-340
 - C.7.2.3 Jurisdictional Waters DeterminationsC-341
 - C.7.2.4 Significant Ephemeral Waters Determinations.....C-341
 - C.7.2.5 Long-Term Monitoring ProgramsC-342
 - C.7.2.5.1 Stakeholder Monitoring CommitteeC-342
 - C.7.2.5.2 Surface Water and Groundwater MonitoringC-342
 - C.7.2.6 Modification of Design FeaturesC-342
 - C.7.2.7 Groundwater Analyses.....C-343
 - C.7.3 Visual Resource Design Features for Select SEZsC-343
- C.8 References.....C-345

FIGURES

- C.1.1-1 Proposed Brenda SEZ as Presented in the Draft Solar PEIS C-4
- C.1.1-2 Proposed Brenda SEZ as Described in this Supplement C-7
- C.1.2-1 Proposed Gillespie SEZ as Presented in the Draft Solar PEIS C-21
- C.2.1-1 Proposed Imperial East SEZ as Presented in the Draft Solar PEIS C-38

FIGURES (Cont.)

1
2
3
4 C.2.1-2 Proposed Imperial East SEZ as Described in this Supplement..... C-41
5
6 C.2.2-1 Proposed Riverside East SEZ as Presented in the Draft Solar PEIS C-54
7
8 C.2.2-2 Proposed Riverside East SEZ as Described in this Supplement..... C-59
9
10 C.2.2-3 Area within the Proposed Riverside East SEZ with Wilderness Characteristics.... C-60
11
12 C.3.1-1 Proposed Antonito Southeast SEZ as Presented in the Draft Solar PEIS C-80
13
14 C.3.1-2 Proposed Antonito Southeast SEZ as Described in this Supplement C-84
15
16 C.3.2-1 Proposed De Tilla Gulch SEZ as Presented in the Draft Solar PEIS..... C-99
17
18 C.3.2 -2 Proposed De Tilla Gulch SEZ as Described in this SupplementC-103
19
20 C.3.3-1 Proposed Fourmile East SEZ as Presented in the Draft Solar PEISC-114
21
22 C.3.3-2 Proposed Fourmile East SEZ as Described in this SupplementC-118
23
24 C.3.4-1 Proposed Los Mogotes East SEZ as Presented in the Draft Solar PEIS.....C-131
25
26 C.3.4-2 Proposed Los Mogotes East SEZ as Described in this SupplementC-135
27
28 C.4.1-1 Proposed Amargosa Valley SEZ as Presented in the Draft Solar PEISC-148
29
30 C.4.1-2 Proposed Amargosa Valley SEZ as Described in this Supplement.....C-152
31
32 C.4.2-1 Proposed Dry Lake SEZ as Presented in the Draft Solar PEISC-167
33
34 C.4.2-2 Proposed Dry Lake SEZ as Described in this Supplement.....C-170
35
36 C.4.3-1 Proposed Dry Lake Valley North SEZ as Presented in the Draft Solar PEISC-188
37
38 C.4.3-2 Proposed Dry Lake Valley North SEZ as Described in this Supplement.....C-192
39
40 C.4.4-1 Proposed Gold Point SEZ as Presented in the Draft Solar PEISC-205
41
42 C.4.4-2 Proposed Gold Point SEZ as Described in this Supplement.....C-208
43
44 C.4.5-1 Proposed Millers SEZ as Presented in the Draft Solar PEISC-223
45
46 C.4.5-2 Proposed Millers SEZ as Described in this SupplementC-226

FIGURES (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

C.5.1-1 Proposed Afton SEZ as Presented in the Draft Solar PEISC-240

C.5.1-2 Proposed Afton SEZ as Described in this Supplement.....C-244

C.6.1-1 Proposed Escalante Valley SEZ as Presented in the Draft Solar PEIS.....C-270

C.6.1-2 Proposed Escalante Valley SEZ as Described in this SupplementC-273

C.6.2-1 Proposed Milford Flats South SEZ as Presented in the Draft Solar PEISC-286

C.6.2-2 Proposed Milford Flats South SEZ as Described in this SupplementC-289

C.6.3-1 Proposed Wah Wah Valley SEZ as Presented in the Draft Solar PEISC-303

C.6.3-2 Proposed Wah Wah Valley SEZ as Described in this SupplementC-306

TABLES

C-1 Summary of Changes for SEZs Being Carried Forward C-2

C.1.1-1 Special Status Species That May Occur in the Vicinity of the Proposed
Brenda SEZ..... C-11

C.1.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
Viewshed of the Proposed Brenda SEZ C-14

C.1.2-1 Special Status Species That May Occur in the Vicinity of the Proposed
Gillespie SEZ..... C-27

C.1.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
Viewshed of the Proposed Gillespie SEZ..... C-31

C.2.1-1 Special Status Species That May Occur near the Proposed Imperial
East SEZ C-46

C.2.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
Viewshed of the Proposed Imperial East SEZ..... C-50

C.2.2-1 Special Status Species That May Occur near the Proposed Riverside
East SEZ C-65

TABLES (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

C.2.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Riverside East SEZ..... C-72

C.3.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Antonito Southeast SEZ C-88

C.3.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Antonito Southeast SEZ C-92

C.3.2-1 Special Status Species That May Occur in the Vicinity of the Proposed De Tilla Gulch SEZC-107

C.3.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed De Tilla Gulch SEZC-109

C.3.3-1 Special Status Species That May Occur in the Vicinity of the Proposed Fourmile East SEZ.....C-122

C.3.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Fourmile East SEZC-125

C.3.4-1 Special Status Species That May Occur in the Vicinity of the Proposed Los Mogotes East SEZC-139

C.3.4-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Los Mogotes East SEZC-142

C.4.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Amargosa Valley SEZC-157

C.4.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Amargosa Valley SEZC-160

C.4.2-1 Special Status Species That May Occur in the Vicinity of the Proposed Dry Lake SEZ.....C-175

C.4.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi Viewshed of the Proposed Dry Lake SEZ.....C-181

C.4.3-1 Special Status Species That May Occur near the Proposed Dry Lake Valley North SEZ.....C-197

TABLES (Cont.)

1

2

3

4 C.4.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
5 Viewshed of the Proposed Dry Lake Valley North SEZ.....C-200

6

7 C.4.4-1 Special Status Species That May Occur in the Vicinity of the Proposed
8 Gold Point SEZ.....C-212

9

10 C.4.4-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
11 Viewshed of the Proposed Gold Point SEZ.....C-216

12

13 C.4.5-1 Special Status Species That May Occur in the Vicinity of the Proposed
14 Millers SEZ.....C-231

15

16 C.4.5-2 Summary of Potential Visual Impacts on SVLs within the 25-mi Viewshed
17 of the Proposed Millers SEZC-234

18

19 C.5.1-1 Special Status Species That May Occur in the Vicinity of the Proposed
20 Afton SEZ.....C-249

21

22 C.5.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
23 Viewshed of the Proposed Afton SEZ.....C-254

24

25 C.6.1-1 Special Status Species That May Occur in the Vicinity of the Proposed
26 Escalante Valley SEZC-277

27

28 C.6.2-1 Special Status Species That May Occur in the Vicinity of the Proposed
29 Milford Flats South SEZ.....C-293

30

31 C.6.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
32 Viewshed of the Milford Flats South SEZC-297

33

34 C.6.3-1 Special Status Species That May Occur in the Vicinity of the Proposed
35 Wah Wah Valley SEZC-310

36

37 C.6.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi
38 Viewshed of the Proposed Wah Wah Valley SEZC-314

39

40 C.7-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances
41 to Load Areas for the Brenda SEZC-334

42

43 C.7-2 Comparison of Potential Transmission Lines with Respect to Net Present
44 Value.....C-335

45

46

TABLES (Cont.)

1
2
3
4
5
6
7
8
9
10
11
12
13

C.7-3	Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements	C-336
C.7-4	Estimated Spare Capacity on Existing Lines from the Proposed Brenda SEZ to Phoenix and San Diego	C-338
C.7-5	Estimated Spare Capacity on Existing Lines from the Proposed Brenda SEZ to the Los Angeles Area	C-338

1
2
3
4
5
6
7
8
9
10
11
12
13
14

APPENDIX C:

ACTION PLANS FOR SOLAR ENERGY ZONES TO BE CARRIED FORWARD¹

Following completion of the Draft Solar Programmatic Environmental Impact Statement (PEIS), the U.S. Department of the Interior Bureau of Land Management (BLM) has reviewed public comments on the proposed solar energy zones (SEZs) and conducted some additional analysis. As a result, the BLM has decided to drop some SEZs from further consideration as part of the Solar PEIS (see Appendix B of this Supplement). The BLM has also decided to adjust the boundaries of some SEZs that will be carried forward in the Solar PEIS and to identify, as necessary, appropriate non-development areas within SEZs. A summary of proposed changes for the SEZs being carried forward is provided in Table C-1.

The Solar PEIS provides in-depth data collection and environmental analysis for proposed SEZs. The primary purpose of this rigorous analysis is to provide documentation from which the BLM can tier future project authorizations, thereby limiting the required scope and effort of project-specific National Environmental Policy Act of 1969 (NEPA) analyses in these areas. As requested by commentors on the Draft Solar PEIS, the BLM is committed to collecting additional SEZ-specific resource data and conducting additional analysis in order to more effectively facilitate future development in SEZs. Note that additional data and analysis will help facilitate development in SEZs but is not required to identify an area as an SEZ as part of the BLM's Solar Energy Program (see Supplement Section 1.5.1).

The BLM has developed action plans for each SEZ that it has decided to carry forward in the Final Solar PEIS; these action plans are presented by state in Sections C.1 through C.6 of this appendix. Section C.7 presents additional analyses generally applicable to all of the SEZs. Section C.7.1 presents a methodology for a proposed revised transmission analyses for all of the SEZs; Section C.7.2 presents a proposed water resources action plan for all of the SEZs; and Section C.7.3 presents revised mitigation measures to address visual resource impacts that would be applicable to some of the SEZs.

Action plans describe data gaps for individual SEZs and propose data sources and methods for collecting additional data. The BLM will prioritize the collection of additional data and analysis in those SEZs that are most likely to be developed in the near future. Some of the items identified in the action plans will be completed by the BLM and presented in the Final Solar PEIS. Data collection not completed by the BLM (as part of the Final Solar PEIS or through other efforts) would likely be required of developers as part of site-specific tiered analysis for future projects.

Data relative to SEZs going forward will be verified and updated as needed prior to the Final Solar PEIS. New information and updated impact analyses resulting from changes in the SEZs described in the sections below will also be presented in the Final Solar PEIS. For example, new viewshed analyses will be run based on the revised boundaries and proposed technology limitations for the SEZs, and impacts on grazing allotments will be updated.

¹ In this appendix, acronyms are defined in each subsection to facilitate use of the subsections as individual resources.

1 **TABLE C-1 Summary of Changes for SEZs Being Carried Forward**

State	SEZ	Area from Draft PEIS (acres)	Revised Area To Be Carried Forward (acres)	Revised Developable Area (acres)	Rationale for Changes
Arizona	Brenda	3,878	No change	3,847	Bouse Wash
	Gillespie	2,618	No change	2,618	NA ^a
California	Imperial East	5,722	No change	5,717	Wetland
	Riverside East	202,896	159,457	147,910	Intermittent lake, major washes, areas identified through approved projects, Joshua Tree National Park, wildlife migration corridor/linkage area
Colorado	Antonito	9,729	No change	9,712	Wetland, lake
	Southeast				
	De Tilla Gulch	1,522	1,064	1,064	Wildlife, Scenic Byway
	Fourmile East	3,882	2,883	2,882	Cultural resources, Scenic Byway, National Historic Trail, wildlife, riparian habitat
	Los Mogotes East	5,918	2,650	2,650	Cultural resources, grazing allotments, riparian area, wildlife, special status species
Nevada	Amargosa Valley	31,625	9,737	8,479	Death Valley National Park, desert tortoise, floodplain
	Dry Lake	15,649	6,186	5,717	Floodplain, wetland, wildlife corridor/linkage area
	Dry Lake Valley North	76,874	28,726	25,069	Sage-grouse, grazing, wetlands/playa
	Gold Point	4,810	No change	4,596	Intermittent stream
	Millers	16,787	No change	16,534	Washes and dry lake areas
New Mexico	Afton	77,623	30,706	29,964	Focus development along existing Section 368 corridor, floodplain, dry lakes
Utah	Escalante Valley	6,614	No change	6,533	Dry lake, dune area
	Milford Flats	6,480	No change	6,252	Minersville Canal
	South				
	Wah Wah Valley	6,097	No change	5,873	Wah Wah wash
Total		677,384		285,417	

^a NA = not applicable.

2
3

1 **C.1 ARIZONA PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.1.1 Brenda**

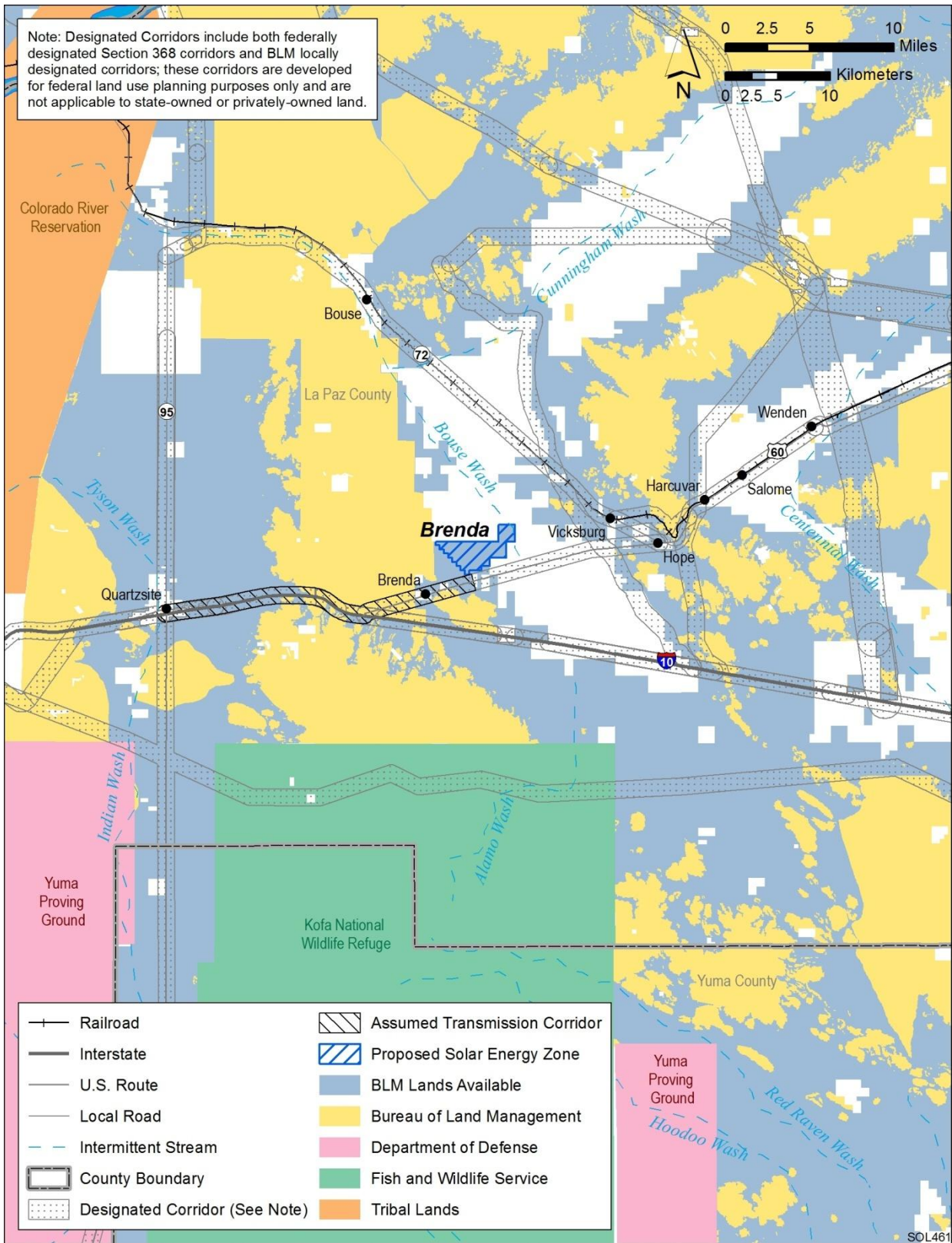
5
6
7 **C.1.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Brenda solar energy zone (SEZ), as presented in the Draft Solar PEIS, had
11 a total area of 3,878 acres (16 km²). It is located in La Paz County in west-central Arizona
12 (Figure C.1.1-1). The towns of Quartzsite and Salome in La Paz County are about 18 mi (29 km)
13 west of, and 18 mi (29 km) east of, the SEZ, respectively.
14

15 The Draft Solar PEIS identified a 161-kV transmission line 19 mi (31 km) west of the
16 SEZ as the nearest point for connection of the SEZ to the grid. Updated data indicate that a
17 500-kV transmission line exists 12 mi (19 km) from the SEZ. Details on the revised transmission
18 impact assessment to be included in the Final Solar PEIS are provided in Section C.7.1 of this
19 appendix. Analysis of transmission lines and/or access roads will be completed, as necessary, as
20 part of the project-specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
21

22 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 23
- 24 • Seven specially designated areas within 25 mi (40 km) could be affected by
25 solar energy development.
- 26
- 27 • Potential loss of 353 animal unit months in the Crowder-Weisser allotment.
- 28
- 29 • Potential loss of recreational use in the adjacent Plomosa Special Recreation
30 Management Area (SRMA), Kofa and New Water Wilderness Areas (WAs),
31 and Dripping Springs Area of Critical Environmental Concern (ACEC).
32
- 33 • Any development on the SEZ that exceeds 250 ft (76 m) could interfere with
34 military operations in three military training routes that cross the area.
35
- 36 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
37 erosion and deposition by wind and runoff, sedimentation, and soil
38 contamination) could occur.
- 39
- 40 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
41 wet-cooling options would not be feasible.
42
- 43 • Clearing of a large portion of the proposed SEZ could adversely affect dry
44 wash, dry wash woodland, chenopod scrub habitats, and saguaro cactus
45 communities, depending on the amount of available habitat disturbed. The
46



1

2 **FIGURE C.1.1-1 Proposed Brenda SEZ as Presented in the Draft Solar PEIS (Note: Assumed**

3 **transmission corridor from the Draft Solar PEIS is no longer applicable.)**

1 establishment of noxious weeds could result in habitat degradation.
2 Deposition of fugitive dust could cause reduced productivity or changes in
3 plant community structure.
4

- 5 • Potentially suitable habitat for 20 special status species and more than
6 125 wildlife species occurs in the affected area of the proposed SEZ; less than
7 1% of the potentially suitable habitat for any of these species occurs in the
8 region that would be directly affected by development.
9
- 10 • If aquatic biota are present, they could be affected by the direct removal of
11 these surface water features within the construction footprint. If present,
12 aquatic biota could also be affected by a decline in habitat quantity and quality
13 because of water withdrawals and changes in drainage patterns, as well as
14 increased sediment and contaminant inputs associated with ground
15 disturbance and construction activities.
16
- 17 • Temporary exceedances of ambient air quality standards for particulate matter
18 at the SEZ boundaries are possible during construction; however, these high
19 concentrations would be limited to the immediate area surrounding the SEZ
20 boundary.
21
- 22 • Although the SEZ is in an area of low scenic quality, weak to strong visual
23 contrasts could be observed by visitors to the Plomosa SRMA and residents of
24 Brenda, Hope, and Vicksburg. Strong visual contrasts could be expected for
25 travelers on U.S. 60 and Interstate-10 (I-10).
26
- 27 • During operations, noise levels at the nearest residences would be higher
28 than the U.S. Environmental Protection Agency (EPA) guideline level if
29 concentrating solar power facilities with energy storage technologies
30 (which could extend the daily operational time by 6 hours or more) were
31 used at the SEZ.
32
- 33 • The potential for impacts on significant paleontological and cultural resources
34 is unknown, although the SEZ has the potential for containing prehistoric sites
35 and historic resources. There may be Native American concerns about the
36 potential visual effects of solar energy development within the SEZ on the
37 landscape.
38
- 39 • Minority and low-income populations occur within a 50-mi (80-km) radius of
40 the proposed SEZ boundary; thus adverse impacts of solar development could
41 disproportionately affect minority and low-income populations.
42
43
44

1 **C.1.1.2 Summary of Comments Received**
2

3 Most of the comments received on the proposed Brenda SEZ were in favor of identifying
4 the area as an SEZ in the applicable land use plan if the design features for water use are
5 followed (The Wilderness Society et al.,² Sierra Club, and Tonopah Area Coalition). The
6 Wilderness Society also recommended that soils and desert pavement be left in place and that
7 washes in the northwestern and northeastern portion of the SEZ be avoided. The Tonopah Area
8 Coalition suggested moving the western boundary to the east to avoid a significant wash and
9 recommended low water use to avoid subsidence. The Arizona Department of Environmental
10 Quality indicated that air emissions would be acceptable if the mitigation measures specified are
11 implemented.
12

13
14 **C.1.1.3 Changes to the SEZ**
15

16 No boundary revisions were identified for the proposed SEZ. However, areas specified
17 for non-development under SEZ-specific design features were mapped, where data were
18 available. For the proposed Brenda SEZ, 31 acres (0.13 km²) of the Bouse Wash in the
19 northeastern portion of the SEZ were identified as non-development areas (see Figure C.1.1-2).
20 The remaining developable area within the SEZ is 3,847 acres (15.6 km²).
21

22
23 **C.1.1.4 Wilderness Character Status of SEZ**
24

25 A recently maintained inventory of wilderness characteristics was used to determine
26 whether public lands within the Brenda SEZ have wilderness characteristics. The finding of this
27 inventory was that these lands do not contain wilderness characteristics.
28

29
30 **C.1.1.5 Additional Data Collection Recommended**
31

32
33 **C.1.1.5.1 Lands and Realty**
34

35 None.
36

37
38 **C.1.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**
39

40 None.
41

² The Wilderness Society, Sonoran Institute, Sierra Club—Grand Canyon Chapter, Arizona Wilderness Coalition, Tucson Audubon Society, Friends of Ironwood Forest, Defenders of Wildlife, Sky Island Alliance, Grand Canyon Wildlands Council, Soda Mountains Wilderness Council, and Sierra Treks submitted joint comments on the proposed Arizona SEZs. Those comments are attributed to The Wilderness Society et al.

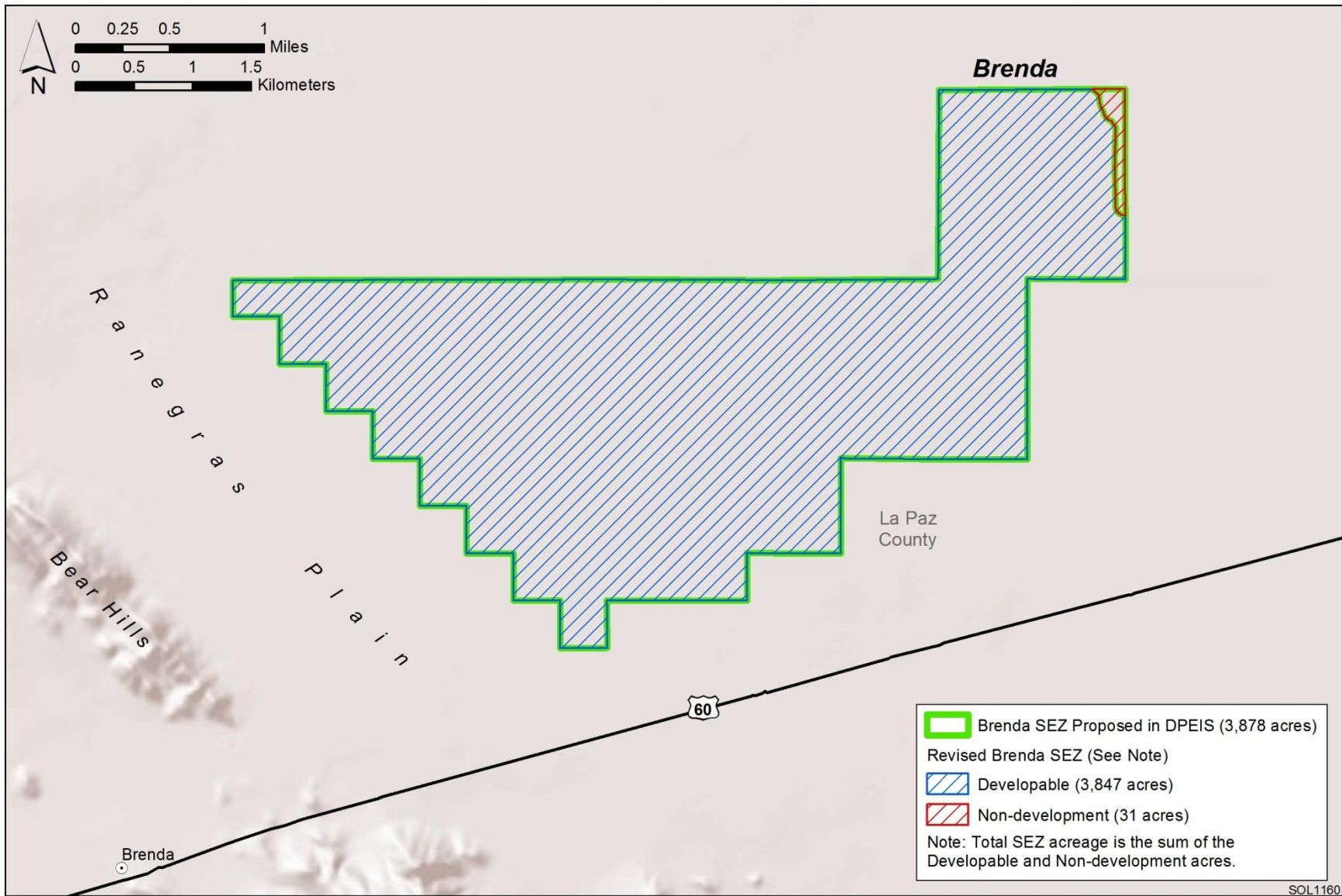


FIGURE C.1.1-2 Proposed Brenda SEZ as Described in this Supplement

1 **C.1.1.5.3 Rangeland Resources**

2
3
4 *Livestock Grazing.* None.

5
6
7 *Wild Horses and Burros.* None.

8
9
10 **C.1.1.5.4 Recreation**

11
12 The U.S. Department of the Interior Bureau of Land Management (BLM) will conduct a
13 review to determine whether the portion of the SEZ on the west side of the county road should be
14 identified as a non-development area to reduce impacts on the Plomosa SRMA.

15
16
17 **C.1.1.5.5 Military and Civilian Aviation**

18
19 The BLM will continue to consult with the U.S. Department of Defense regarding
20 potential issues with military training routes.

21
22
23 **C.1.1.5.6 Geologic Setting and Soil Resources**

24
25 None.

26
27
28 **C.1.1.5.7 Minerals**

29
30 Additional information on leasable and strategic minerals in the vicinity of the proposed
31 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
32 on a proposed 20-year withdrawal of SEZ lands.

33
34
35 **C.1.1.5.8 Water Resources**

36
37 The following additional data and actions would help further characterize potential
38 impacts on water resources for the proposed Brenda SEZ. A more detailed discussion of each of
39 these activities is included in the water resources action plan provided in Section C.7.2 of this
40 appendix.

- 41
42
 - 43 • Prepare a planning-level water resources inventory of the Renegras Plain Basin.
 - 44
 - 45 • Identify additional ephemeral stream channels and alluvial fan features for
 - 46 non-development areas through consultation with BLM Arizona, Arizona

1 Game and Fish Department (AZGFD), EPA, and U.S. Army Corps of
2 Engineers (USACE) with a focus on:

- 3 – Alluvial fans and ephemeral wash features surrounding the eastern faces
4 of the Plomosa Mountains and the Bear Hills (potential non-development
5 areas; potentially important ecologically), and
6 – Bouse Wash.

- 7
- 8 • Perform field surveys and hydrologic analyses to support jurisdictional water
9 determinations and floodplain identifications. Tasks include:

- 10 – Surveying select stream channels and alluvial fan features for elevations,
11 high water marks, sediment conditions, and
12 – Conducting hydrologic rainfall-runoff-routing analyses to identify
13 100-year floodplain areas.

- 14
- 15 • Coordinate with the USACE (Los Angeles District) regarding jurisdictional
16 water determinations for the SEZ. Water features to be considered include:
17 – Bouse Wash and its tributaries.

- 18
- 19 • Identify 100-year floodplain non-development areas (if they exist) for Bouse
20 Wash. This task would require coordination with the Federal Emergency
21 Management Agency and the following agencies:

- 22 – Arizona Department of Water Resources (Flood Mitigation Section), and
23 – La Paz County.

- 24
- 25 • Describe the formation of a stakeholder committee to conduct long-term
26 monitoring of water resources. This activity would entail:

- 27 – Identifying key stakeholder agencies,
28 – Discussing general features of a monitoring program,
29 – Providing recommendations for surface monitoring of ephemeral stream
30 networks, and
31 – Working with the U.S. Geological Survey to develop groundwater
32 monitoring well design and numerical groundwater models.

- 33
- 34 • Develop a simple, numerical groundwater model for the Renegras Plain Basin
35 to evaluate the potential impacts of full build-out. This activity would entail:

- 36 – Assessing the potential for drawdown impacts on the basin, which is
37 already in overdraft, including the potential for land subsidence.

38

39

40 **C.1.1.5.9 Ecological Resources**

41

42

43 *Vegetation and Plant Communities.* The following additional data-gathering actions
44 would help further characterize potential impacts on vegetation and plant communities for the
45 proposed Brenda SEZ:
46

- 1 • Identify and map the location and areal extent of desert dry wash, dry wash
2 woodland, and chenopod scrub habitats within the SEZ. Identify and map the
3 location and areal extent of these habitats, as well as mesquite bosque, outside
4 the SEZ that may be affected by hydrologic changes, including groundwater
5 elevations, and changes in water, sediment, and contaminant inputs associated
6 with runoff. Such effort could help determine habitat characteristics, including
7 water source, hydrologic regime, and dominant plant species.
8
- 9 • Identify and map the location and areal extent of saguaro cactus communities
10 within the SEZ.
11
12

13 **Wildlife.** The following additional data-gathering actions would help further characterize
14 potential impacts on wildlife resources for the SEZ:
15

- 16 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
17 SEZ as a movement/migratory corridor or as important habitat for mule deer.
18
- 19 • Identify and map the extent of wash habitat within the SEZ (see
20 Section C.1.1.5.8 above). These areas are important habitat for a number of
21 wildlife species.
22
23

24 **Aquatic Biota.** Investigations recommended under the water resources action plan
25 (Section C.1.1.5.8) would be useful in characterizing and protecting habitat available to aquatic
26 biota. Temporary ponding may occur near Bouse Wash, and seasonal aquatic invertebrate
27 communities may be present. Therefore, Bouse Wash could be surveyed for aquatic
28 invertebrates. Other ephemeral surface water features within the Brenda SEZ may or may not
29 contain aquatic biota; therefore, preliminary evaluations of these surface water features could be
30 conducted to determine the potential for aquatic communities to be present.
31
32

33 **Special Status Species.** The following additional data-gathering actions would be useful
34 in further characterizing and protecting habitat available to special status species:
35

- 36 • Conduct pre-disturbance surveys within the SEZ to determine the presence
37 and abundance of those special status species that are (1) federally listed,
38 proposed for listing, or candidates for listing under the Endangered Species
39 Act (ESA); or (2) designated as sensitive by the Arizona BLM State Office.
40 These species are listed in Table C.1.1-1. Surveys should focus on areas
41 identified as potentially suitable, and the suitability of these habitats to support
42 these special status species should be determined in the field. All field-
43 determined suitable habitats for special status species should be mapped.
44 Target species and survey protocols should be developed in coordination with
45 the USFWS and AZGFD.
46

1 **TABLE C.1.1-1 Special Status Species That May Occur in the Vicinity of the Proposed**
 2 **Brenda SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Amphibians			
Lowland leopard frog	<i>Lithobates yavapaiensis</i>	BLM-S	Aquatic systems in desert grasslands, pinyon-juniper woodlands, and agricultural areas, including rivers, streams, beaver ponds, springs, earthen cattle tanks, livestock guzzlers, canals, and irrigation sloughs. Nearest recorded quad-level occurrence is approximately 22 mi ^d east of the SEZ. About 189,500 acres ^e of potentially suitable habitat occurs within the SEZ region.
Reptiles			
Desert rosy boa	<i>Charina trivirgata gracia</i>	BLM-S	Scrublands, rocky deserts, and canyons with permanent or intermittent streams. Nearest recorded quad-level occurrence is approximately 7 mi east of the SEZ. About 3,583,000 acres of potentially suitable habitat occurs within the SEZ region.
Desert tortoise (Sonoran population)^f	<i>Gopherus agassizii</i>	ESA-C; BLM-S	Desert creosotebush communities on firm soils for digging burrows; often along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Quad-level occurrences for this species intersect the SEZ. About 3,381,000 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S	Year-round resident in the SEZ region. Open habitats, including deserts, shrublands, and woodlands that are associated with high, near-vertical cliffs and bluffs above 200 ft. ^g When not breeding, activity is concentrated in areas with ample prey, such as farmlands, marshes, lakes, rivers, and urban areas. Nearest recorded quad-level occurrence is from the vicinity of Alamo Lake, approximately 40 mi northeast of the SEZ. About 4,315,000 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in the SEZ region. Grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands throughout the project area. Populations are known to occur in La Paz County, Arizona. About 216,500 acres of potentially suitable foraging habitat occurs within the SEZ region.
Great egret	<i>Ardea alba</i>	BLM-S	Year-round resident in the lower Colorado River Valley. Transient in the SEZ affected area. Primarily associated with open water areas such as marshes, estuaries, lagoons, lakes, ponds, rivers and flooded fields. Nearest recorded quad-level occurrence is from the Colorado River, approximately 35 mi west of the SEZ. About 27,700 acres of potentially suitable year-round foraging and nesting habitat occurs within the SEZ region.

3

TABLE C.1.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Year-round resident in the SEZ region. Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dogs, badgers, etc.). Nearest recorded quad-level occurrence is approximately 50 mi southwest of the SEZ. About 4,124,000 acres of potentially suitable habitat occurs within the SEZ region.
Mammals			
California leaf-nosed bat	<i>Macrotus californicus</i>	BLM-S	Year-round resident in southern California and southwestern Arizona. May be locally common in some areas. Occurs in desert riparian, desert wash, desert scrub, and palm oasis habitats at elevations below 2,000 ft. Roosts in mines, caves, and buildings. Quad-level occurrences for this species intersect the SEZ. About 3,576,500 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Near forests and shrubland habitats below 9,000-ft elevation throughout the SEZ region. The species may use caves, mines, and buildings for day roosting and winter hibernation. May be a summer or year-round resident throughout the SEZ region. Nearest recorded quad-level occurrence is approximately 20 mi south of the SEZ. About 4,434,500 acres of potentially suitable habitat occurs within the SEZ region.
Western yellow bat	<i>Lasiurus xanthinus</i>	BLM-S	Year-round resident in desert riparian, desert wash, and palm oasis habitats at elevations below 2,000 ft. Roosts in trees. Nearest recorded quad-level occurrence is approximately 20 mi south of the SEZ. About 4,068,000 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Arizona BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA.

^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert mi to km, multiply by 1.609.

^e To convert acres to km², multiply by 0.004047.

^f Species in bold text have been recorded or have designated critical habitat in the affected area.

^g To convert ft to m, multiply by 0.3048.

1 The Draft Solar PEIS presents a table of Special Status Species for which
2 potential impacts need to be evaluated prior to development in the proposed
3 Brenda SEZ. The list of species presented in Table 8.1.12.1-1 of the Draft
4 Solar PEIS also includes species listed by the State of Arizona and species
5 ranked by the State of Arizona as S1 or S2. Based on the design features
6 presented in the Draft Solar PEIS, the potential for impacts on these additional
7 species will also need to be addressed before development could occur in the
8 SEZ.

- 9
- 10 • Identify and map the location and areal extent of wetland and riparian habitats
11 within the SEZ, including habitat characteristics (such as water source,
12 hydrologic regime, and dominant plant species) both within the wetland
13 boundaries and in adjacent non-wetland habitats. A species potentially
14 associated with these habitats includes the lowland leopard frog.
- 15

16 **C.1.1.5.10 Air Quality and Climate**

17 None.

18 **C1.1.5.11 Visual Resources**

19 A summary of the Draft Solar PEIS visual contrast analysis for the proposed Brenda SEZ
20 is provided in Table C.1.1-2. This table includes only those resources that would be subject to
21 moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these
22 levels of visual contrast from solar energy development in the Brenda SEZ for the following
23 sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):

- 24 • New Water Mountains Wilderness Area
- 25 • Plomosa Backcountry Byway
- 26 • Plomosa Bouse Plain
- 27 • Plomosa Mountains
- 28 • I-10
- 29 • U.S. 60
- 30 • Community of Brenda.

TABLE C.1.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Brenda SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
WAs	New Water Mountains	24,628 acres	6.5 mi south of the SEZ	4,124 acres	16.7	Minimal to weak levels of visual contrast would be expected, with potentially moderate levels of contrast expected for the highest elevations within the WA that have clear lines of sight to the SEZ. The highest contrast levels would be expected for peaks in the northern part of the WA, with lower contrasts expected for lower elevations and viewpoints in the southern part of the WA. Visibility extends to about 8.5 mi from the southern boundary of the SEZ. The SEZ is visible above the large gap in the Bear Hills southwest of SEZ.
SRMAs	Plomosa Backcountry Byway	5,987 acres	9.2 mi northwest of the SEZ	5,371 acres	89.7	For those portions of the SRMA east of the Plomosa Mountains and within a few miles of the SEZ, strong visual contrasts associated with solar energy development within the SEZ would be expected, while viewpoints farther north in the unit would experience lower levels of contrast as the distance to the SEZ increased. The high peaks in the eastern part of the Plomosa Mountains with clear lines of sight to the SEZ could be subject to moderate to strong impacts depending on distance to the SEZ. Other areas in the SRMA would be subject to lower

TABLE C.1.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
SRMAs (Cont.)						levels of contrast, and expected contrast levels for the Plomosa Backcountry Byway unit would be minimal, due primarily to very limited visibility of the SEZ. Visibility extends from the closest approach from the SEZ to about 16 mi within the SRMA.
	Plomosa Bouse Plain	75,085 acres	0.2 mi west of the SEZ	38,228 acres	50.9	For those portions of the SRMA east of the Plomosa Mountains and within a few miles of the SEZ, strong visual contrasts associated with solar energy development within the SEZ would be expected, while viewpoints farther north in the unit would experience lower levels of contrast as the distance to the SEZ increased. The high peaks in the eastern part of the Plomosa Mountains with clear lines of sight to the SEZ could be subject to moderate to strong impacts depending on distance to the SEZ. Other areas in the SRMA would be subject to lower levels of contrast. Visibility extends to about 18 mi from the northwestern boundary of the SEZ.

TABLE C.1.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
SRMAs (Cont.)	Plomosa Mountains	28,112 acres	1 mi west of the SEZ	10,579 acres	37.6	For those portions of the SRMA east of the Plomosa Mountains and within a few miles of the SEZ, strong visual contrasts associated with solar energy development within the SEZ would be expected, while viewpoints farther north in the unit would experience lower levels of contrast as the distance to the SEZ increased. The high peaks in the eastern part of the Plomosa Mountains with clear lines of sight to the SEZ could be subject to moderate to strong impacts depending on distance to the SEZ. Other areas in the SRMA would be subject to lower levels of contrast. Visibility extends approximately 6.5 mi from the western boundary of the SEZ.
Other Areas of Interest (non-management areas)	I-10 ^e	2,460 mi	Within 3.3 mi and is in the viewshed of the SEZ for about 20 mi	NA ^f	NA	Visual contrasts associated with solar energy development within the SEZ would be highly dependent on viewer location on I-10; solar facility type, size, and location within the SEZ; and other visibility factors. Weak to moderate visual contrast levels would be expected. Approximately 5 mi is located within the 5-mi viewshed.

TABLE C.1.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas) (Cont.)	U.S. 60	NA	0.4 mi at the point of closest visible approach	NA	NA	Visual contrasts associated with solar energy development within the SEZ would be highly dependent on viewer location on U.S. 60; solar facility type, size, and location within the SEZ; and other visibility factors. Weak to strong visual contrast levels would be expected. Approximately 13.4 mi is located within the 5-mi viewshed.
	Brenda	NA	2.5 mi southwest of the SEZ	NA	NA	Moderate to strong visual contrast levels would be expected, depending on viewers' locations within Brenda. The far northeastern end of Brenda is 2.3 mi southwest of the SEZ, and the far southwestern end is about 3.1 mi southwest of the SEZ.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances are based on the Draft Solar PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

^e Length of I-10: AARoads' Interstate Guide (2006b).

^f NA = data not available.

1 The following steps could be taken to better understand potential impacts on these
2 SVRAs and SVLs from solar development in the Brenda SEZ:

- 3
- 4 • Identify key observation points (KOPs) within these areas through working
5 with the management agency or other local stakeholders.
- 6
- 7 • Conduct viewshed analyses from the KOPs to determine how much of the
8 SEZ would be in view from each KOP.
- 9
- 10 • As deemed necessary, based on viewshed analysis results, prepare wireframe
11 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
12 depicting the 80% development scenario to better estimate potential impacts.
- 13

14 This additional analysis may help judge potential visual contrast more accurately for most
15 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
16 superimposition of the wireframe models onto the photos might be required or desired.

17

18 In addition, according to the Draft Solar PEIS, a Visual Resource Inventory (VRI) was
19 conducted for the area, including the Brenda SEZ, in 2010. Data from this evaluation were not
20 available for preparation of the Draft Solar PEIS. Available VRI data at the time consisted of
21 maps dated September 2006 and May 2007. Updated data, to the extent available, will be
22 incorporated into the Final Solar PEIS. If necessary, some additional SVRAs and/or SVLs may
23 need to be evaluated based on these new data.

24

25

26 **C.1.1.5.12 Acoustic Environment**

27 None.

28

29

30

31 **C.1.1.5.13 Paleontological Resources**

32

33 The BLM Regional Paleontologist will be contacted to determine whether additional
34 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
35 Arizona. A preliminary paleontological survey could be conducted to determine the PFYC of the
36 SEZ, in order to update the temporary assignment of PFYC Class 3b used in the Draft Solar
37 PEIS.

38

39

40 **C.1.1.5.14 Cultural Resources and Native American Concerns**

41

42 None of the proposed Brenda SEZ has been surveyed for cultural resources; thus, absent
43 specific information, impacts are unknown but possible. Prehistoric sites are likely and historic
44 sites related to World War II military activity and ranching/homesteading are also possible
45 within the SEZ. The SEZ is near several BLM-designated areas (ACECs and Special Cultural
46 Resource Management Areas) that are rich in cultural resources. Therefore, potential impacts

1 could also include visual and auditory impacts on sacred sites and traditional use areas within
2 these designated areas and possible destruction of segments of trails and associated sites. The
3 destruction or degradation of important plant resources and the destruction of habitat or
4 impediments to the movement of culturally important wildlife are also potential impacts of
5 concern within the SEZ.

6
7 The following additional data collection efforts could reduce the uncertainty about
8 potential impacts:

- 9
10 • Conduct a Class I literature file search to better understand (1) the site
11 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
12 through existing ethnographic reports, and (3) overall cultural sensitivity of
13 the landscape.
- 14
15 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
16 10% sample (roughly 388 acres [1.6 km²]).³ Areas of interest, as determined
17 through a Class I review, should also be identified prior to establishing the
18 survey design and sampling strategy. If appropriate, some subsurface testing
19 of dune areas should be considered in the sampling strategy as well.
- 20
21 • Prepare a cultural sensitivity map based on results of the Class II survey and
22 Class I review.
- 23
24 • Continue with government-to-government consultation as described in
25 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
26 not included in the original studies to determine whether those Tribes have
27 similar concerns. The Brenda SEZ falls in the traditional use area of primarily
28 the Yavapai, Quechan, and Mohave. Potential topics to be discussed during
29 consultation include the Ranegras Plain, Granite Wash Pass, Harquahala
30 Mountains, bighorn sheep, nearby ACECs and Special Cultural Resource
31 Management Areas, and plant and animal resources.

32 33 34 **C.1.1.5.15 Socioeconomics and Environmental Justice**

35
36 None.

37 38 39 **C.1.1.5.16 Cumulative Impact Considerations**

40
41 None.

42
43

³ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1 **C.1.2 Gillespie**

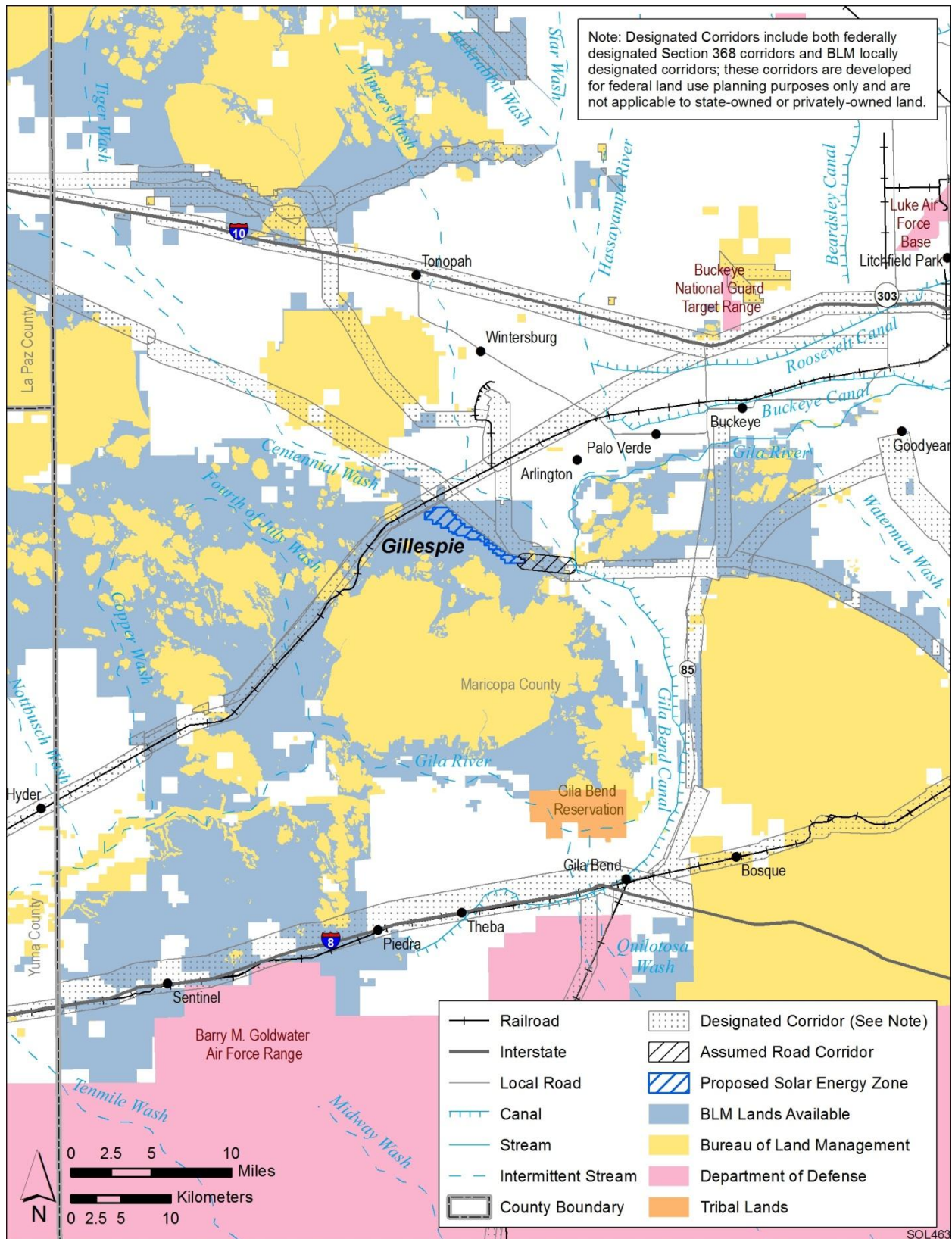
2
3
4 **C.1.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Gillespie solar energy zone (SEZ), as presented in the Draft Solar PEIS,
8 had a total area of 2,618 acres (11 km²). It is located in Maricopa County in west-central Arizona
9 (Figure C.1.2-1). The towns of Arlington and Buckeye are about 7 mi (11 km) and 17 mi
10 (27 km) northeast of the SEZ, respectively.
11

12 The Draft Solar PEIS identified Old U.S. 80, located about 3 mi (5 km) to the east of the
13 SEZ, as the nearest major road, and assumed that a new access road would be constructed from
14 the proposed SEZ to Old U.S. 80 to support development. The location of a new access road that
15 could be constructed in the future may be different from that assumed in the Draft Solar PEIS.
16 The Draft Solar PEIS also identified a 500-kV transmission line adjacent to the SEZ as the
17 nearest point for connection of the SEZ to the grid. Details on the revised transmission impact
18 assessment to be included in the Final Solar PEIS are provided in Appendix C, Section C.7.1 of
19 this appendix. Additional analysis of transmission lines and/or access roads will be completed, as
20 necessary, as part of the project-specific environmental reviews (see Section 2.2.2.2.2 of this
21 Supplement).
22

23 Potential adverse impacts identified in the Draft Solar PEIS included the following:
24

- 25 • Wilderness values in the Woolsey Peak and Signal Mountain Wilderness
26 Areas (WAs) would be adversely affected and solar development would
27 contribute to a further reduction in the scenic viewshed of the Saddle
28 Mountain Special Recreation Management Area (SRMA). A new access
29 road would also contribute to adverse impacts on wilderness values.
30
- 31 • There would be about a 15% reduction in future ephemeral grazing
32 authorizations in the Layton grazing allotment.
33
- 34 • Inventoried off-highway vehicle routes in the SEZ would be closed to
35 recreational use; there could be a loss of recreational use in the nearby WAs
36 and SRMA.
37
- 38 • Any development on the SEZ that exceeds 250 ft (76 m) could interfere with
39 U.S. Department of Defense (DoD) operations in the military training route
40 (MTR) that crosses the SEZ.
41
- 42 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
43 erosion by wind and runoff), sedimentation, and soil contamination) could
44 occur.
45
46



1

2 **FIGURE C.1.2-1 Proposed Gillespie SEZ as Presented in the Draft Solar PEIS**

- 1 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
2 wet-cooling options would not be feasible. Clearing of a large portion of the
3 proposed SEZ could adversely affect desert dry washes, dry wash woodland,
4 and wetland habitats, and saguaro cactus communities, depending on the
5 amount of available habitat disturbed.
6
- 7 • Potentially suitable habitat for 29 special status species and more than
8 125 wildlife species occurs in the affected area of the proposed SEZ; less than
9 1% of the potentially suitable habitat for any of these species occurs in the
10 region that would be directly affected by development.
11
- 12 • Impacts on aquatic biota could result from the direct removal of ephemeral
13 washes and small wetlands within the construction footprint. Aquatic biota in
14 surface water features could also be affected by a decline in habitat quantity
15 and quality due to water withdrawals and changes in drainage patterns, as well
16 as increased sediment and contaminant inputs associated with ground
17 disturbance and construction activities.
18
- 19 • Temporary exceedances of ambient air quality standards for particulate
20 matter at the SEZ boundaries are possible during construction. These high
21 concentrations, however, would be limited to the immediate area surrounding
22 the SEZ boundary.
23
- 24 • Although the SEZ is in an area of low scenic quality, weak to strong visual
25 contrasts could be observed by visitors to Signal Peak WA, Woolsey Peak
26 WA, and Saddle Mountain SRMA, and travelers on the Agua Caliente Road,
27 Salome Highway and Old U.S. 80. Residents of the town of Arlington could
28 observe strong visual contrasts, and weak visual contrasts could be observed
29 by the residents of the towns of Palo Verde, Buckeye, and Wintersburg.
30 Because of these potential impacts, it was recommended that development of
31 power tower facilities be prohibited within the SEZ.
32
- 33 • The potential for impacts on significant paleontological and cultural resources
34 is unknown. Impacts on cultural resources are also possible in areas related to
35 the assumed access road. Paleontological and cultural resources surveys will
36 likely be needed to identify any potential impacts. It is possible that there will
37 be Native American concerns about the potential visual effects of solar energy
38 development within the SEZ on the landscape, as well as from the elimination
39 of traditionally important plants and animals.
40
- 41 • Minority populations occur within a 50-mi (80-km) radius of the proposed
42 SEZ boundary; thus adverse impacts of solar development could
43 disproportionately affect minority and low-income populations.
44
45

1 **C.1.2.2 Summary of Comments Received**
2

3 Most of the comments received from environmental groups on the proposed Gillespie
4 SEZ were generally in favor of identifying the area as an SEZ, with boundary adjustments
5 (The Wilderness Society et al.⁴). The Wilderness Society et al., Tonopah Area Coalition, and
6 the Sierra Club recommended that the southern boundary be adjusted north of the Agua Caliente
7 Road. The Nature Conservancy suggested that the northwest portion of the Gillespie SEZ be
8 reshaped into a more compact area. The Western Watersheds Project and others expressed
9 concern for visual impacts on the Sonoran Desert National Monument, Signal Peak Wilderness,
10 and Woolsey Peak Wilderness, and suggested that U.S. Department of the Interior Bureau of
11 Land Management (BLM) include the retirement of grazing allotments as a mitigation measure.
12 The Wilderness Society et al. had concerns about groundwater withdrawals and the potential
13 impacts on riparian habitats and species.
14

15
16 **C.1.2.3 Changes to the SEZ**
17

18 No boundary revisions were identified for the proposed SEZ. The Draft Solar PEIS
19 identified potential visual impacts on the Woolsey Peak WA. To reduce the visual resource
20 impacts on this area and on Agua Caliente Road from solar development within the SEZ,
21 allowable solar technologies within the SEZ will be limited to photovoltaic systems with height
22 of panels no greater than 10 ft (3.3 m), or technologies with comparable or lower heights and
23 reflectivity. Additional required mitigation measures to address potential visual resource impacts
24 are given in Section C.7.3 of this appendix.
25

26
27 **C.1.2.4 Wilderness Character Status of SEZ**
28

29 A recently maintained inventory of wilderness characteristics was used to determine
30 whether public lands within the Gillespie SEZ have wilderness characteristics. The finding of
31 this inventory was that these lands do not contain wilderness characteristics.
32

33
34 **C.1.2.5 Additional Data Collection Recommended**
35

36
37 **C.1.2.5.1 Lands and Realty**
38

39 None.
40

⁴ The Wilderness Society, Sonoran Institute, Sierra Club—Grand Canyon Chapter, Arizona Wilderness Coalition, Tucson Audubon Society, Friends of Ironwood Forest, Defenders of Wildlife, Sky Island Alliance, Grand Canyon Wildlands Council, Natural Resources Defense Council, Soda Mountains Wilderness Council, and Sierra Treks submitted joint comments on the proposed Arizona SEZs. Those comments are attributed to The Wilderness Society et al.

1 **C.1.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

2
3 None

4
5
6 **C.1.2.5.3 Rangeland Resources**

7
8
9 *Livestock Grazing.* None.

10
11
12 *Wild Horses and Burros.* None.

13
14
15 **C.1.2.5.4 Recreation**

16
17 None.

18
19
20 **C.1.2.5.5 Military and Civilian Aviation**

21
22 The proposed technology restrictions described in Sections C.1.2.3 and C.7.3 are
23 expected to minimize or eliminate any potential issues with the MTR that crosses the SEZ;
24 however, the BLM will continue to consult with the DoD regarding potential issues with the
25 MTR.

26
27
28 **C.1.2.5.6 Geologic Setting and Soil Resources**

29
30 None.

31
32
33 **C.1.2.5.7 Minerals**

34
35 Additional information on leasable and strategic minerals in the vicinity of the proposed
36 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
37 on a proposed 20-year withdrawal of SEZ lands.

38
39
40 **C.1.2.5.8 Water Resources**

41
42 The following additional data and actions would help further characterize potential
43 impacts on water resources for the proposed Gillespie SEZ. A more detailed discussion of each
44 of these activities is included in the water resources action plan provided Section C.7.2 of this
45 appendix.

- 1 • Prepare a planning-level water resources inventory of the Lower Hassayampa
2 basin.
- 3
- 4 • Identify additional ephemeral stream channels and alluvial fan features
5 for non-development areas through consultation BLM Arizona, Arizona
6 Game and Fish Department (AZGFD), Arizona Department of Water
7 Resources (ADWR), U.S. Environmental Protection Agency, and U.S. Army
8 Corps of Engineers (USACE) with a focus on:
9 – The unnamed wash tributaries to Centennial Wash.
- 10
- 11 • Perform field surveys and hydrologic analyses to support jurisdictional water
12 determinations and floodplain identifications. Tasks include:
13 – Surveying unnamed wash tributaries of Centennial Wash for surface
14 elevations, high water marks, and sediment conditions; and
15 – Conducting hydrologic rainfall-runoff-routing analyses to identify
16 100-year floodplain areas.
- 17
- 18 • Coordinate with the USACE (Los Angeles District) regarding jurisdictional
19 water determinations for the SEZ. Water features that need to be considered
20 include:
21 – The unnamed wash tributaries to Centennial Wash.
- 22
- 23 • Identify 100-year floodplain non-development areas (if they exist) for
24 unnamed wash tributaries to Centennial Wash. This task would require
25 coordination with the Federal Emergency Management Agency (FEMA)
26 and the following agencies:
27 – AZDWR (Flood Mitigation Section), and
28 – The Flood Control District of Maricopa County.
- 29
- 30 • Describe the formation of a stakeholder committee to conduct long-term
31 monitoring of water resources. This activity would entail:
32 – Identifying key stakeholder agencies,
33 – Discussing general features of a monitoring program, and
34 – Working with the U.S. Geological Survey to develop groundwater
35 monitoring well design and numerical groundwater models.
- 36
- 37

38 **C.1.2.5.9 Ecological Resources**

39
40
41 ***Vegetation and Plant Communities.*** The following additional data-gathering actions
42 would help further characterize potential impacts on vegetation and plant communities for the
43 proposed Gillespie SEZ:

- 44
- 45 • Identify and map the location and areal extent of desert dry wash, dry wash
46 woodland, and wetland habitats within the SEZ. Identify and map the location

1 and areal extent of these habitats, as well as mesquite bosque and riparian
2 habitats, outside the SEZ that may be affected by hydrologic changes,
3 including groundwater elevations, and changes in water, sediment, and
4 contaminant inputs associated with runoff. Such effort could help determine
5 habitat characteristics, including water source, hydrologic regime, and
6 dominant plant species.

- 7
- 8 • Identify and map the location and areal extent of saguaro cactus communities
9 within the SEZ. Identify and map the locations of all cacti occurring on the
10 SEZ, including saguaro, pencil cholla, barrel cactus, and others.

11
12
13 **Wildlife.** None.

14
15
16 **Aquatic Biota.** Investigations recommended under the water resources action plan
17 (Section C.1.2.5.8) would be useful in characterizing and protecting habitat available to aquatic
18 biota. Most washes and wetlands in the SEZ are typically dry and contain water only for brief
19 periods following precipitation. These features may or may not contain aquatic biota; therefore,
20 preliminary evaluations of these surface water features could be conducted to determine the
21 potential for aquatic communities to be present.

22
23
24 **Special Status Species.** The following additional data-gathering actions would be useful
25 in further characterizing and protecting habitat available to special status species:

- 26
- 27 • Conduct pre-disturbance surveys within the SEZ to determine the presence
28 and abundance of those special status species that are (1) federally listed,
29 proposed for listing, or candidates for listing under the Endangered Species
30 Act; or (2) designated as sensitive by the Arizona BLM State Office. These
31 species are listed in Table C.1.2-1. Surveys should focus on areas identified
32 as potentially suitable, and the suitability of these habitats to support these
33 special status species should be determined in the field. All field-determined
34 suitable habitats for special status species should be mapped. Target species
35 and survey protocols should be developed in coordination with the U.S. Fish
36 and Wildlife Service (USFWS) and AZGFD.

37
38 The Draft Solar PEIS presents a table of special status species for which
39 potential impacts need to be evaluated prior to development in the proposed
40 Gillespie SEZ. The list of species presented in Table 8.3.12.1-1 of the Draft
41 Solar PEIS also includes species listed by the State of Arizona and species
42 ranked by the State of Arizona as S1 or S2. Based on the design features
43 presented in the Draft Solar PEIS, the potential for impacts on these additional
44 species will also need to be addressed before development could occur in the
45 SEZ.

1 **TABLE C.1.2-1 Special Status Species That May Occur in the Vicinity of the Proposed**
 2 **Gillespie SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Hohokam agave	<i>Agave murpheyi</i>	BLM-S	Endemic to Arizona and Sonora, Mexico on benches or alluvial terraces on gentle bajada slopes above major drainages in desert scrub communities. Elevation ranges between 1,300 and 3,200 ft. ^d Nearest recorded quad-level occurrences are approximately 45 mi ^e north of the SEZ. About 50,800 acres ^f of potentially suitable habitat occurs within the SEZ region.
Tumamoc globeberry	<i>Tumamoca macdougalii</i>	BLM-S	Endemic to southern Arizona and northern Mexico in xeric situations, in shady areas of nurse plants along gullies and sandy washes at elevations below 3,000 ft. Nearest quad-level occurrence is approximately 35 mi southeast of the SEZ. About 50,800 acres of potentially suitable habitat occurs within the SEZ region.
Fish			
Roundtail chub^g	<i>Gila robusta</i>	BLM-S	Larger tributaries in the Colorado Basin, from Wyoming south to Arizona and New Mexico; cool to warm water streams and rivers consisting of pools adjacent to riffles and runs and with boulders, tree roots, submerged trees and branches, and undercut cliff walls. Historic quad-level occurrence intersects the affected area from the Gila River, within 5 mi east of the SEZ. The species is currently not known to occur in the affected area. About 300 mi of potentially suitable habitat within the Gila and Hassayampa Rivers occurs within the SEZ region.
Amphibians			
Lowland leopard frog	<i>Lithobates yavapaiensis</i>	BLM-S	Aquatic systems in desert grasslands, pinyon-juniper woodlands, and agricultural areas, including rivers, streams, beaver ponds, springs, earthen cattle tanks, livestock guzzlers, canals, and irrigation sloughs. Quad-level occurrences intersect the affected area. About 246,500 acres of potentially suitable habitat occurs within the SEZ region.
Reptiles			
Desert tortoise (Sonoran population)	<i>Gopherus agassizii</i>	ESA-C; BLM-S	Desert creosotebush communities on firm soils for digging burrows, along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Quad-level occurrences intersect the affected area. About 3,750,000 acres of potentially suitable habitat occurs within the SEZ region.
Mexican rosy boa	<i>Charina trivirgata trivirgata</i>	BLM-S	Sonoran Desert near rocky hillsides and rock outcroppings. Nearest quad-level occurrence is approximately 20 mi southeast of the SEZ. About 3,800,000 acres of potentially suitable habitat occurs within the SEZ region.
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	ESA-C	Endemic to Arizona from Pima, Pinal, and Maricopa Counties in creosote-mesquite floodplain habitats with soft sandy loam soils and sparse gravel. Nearest quad-level occurrence is approximately 20 mi southeast of the SEZ. About 1,436,500 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.1.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds</i>			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in the SEZ region. Grasslands, sagebrush and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands. Nests in tall trees or on rock outcrops along cliff faces. Known to occur in Maricopa County, Arizona. About 395,000 acres of potentially suitable foraging habitat occurs within the SEZ region.
Great egret	<i>Ardea alba</i>	BLM-S	Year-round resident in the lower Colorado River Valley in open water areas such as marshes, estuaries, lagoons, lakes, ponds, rivers and flooded fields. Nearest quad-level occurrence is from Painted Rock Reservoir, approximately 11 mi (18 km) south of the SEZ. About 28,750 acres of potentially suitable habitat occurs within the SEZ region.
Snowy egret	<i>Egretta thula</i>	BLM-S	Year-round resident in the lower Colorado River Valley in open water areas such as marshes, estuaries, lagoons, lakes, ponds, rivers and flooded fields. Nearest quad-level occurrence is from Painted Rock Reservoir, approximately 11 mi (18 km) south of the SEZ. About 675,200 acres of potentially suitable habitat occurs within the SEZ region. The species is expected to occur as a transient only on the SEZ.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	ESA-E	Riparian shrublands and woodlands, thickets, scrubby and brushy areas, open second growth, swamps, and open woodlands. Quad-level occurrences intersect the affected area. About 50,000 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Nearest quad-level occurrence is approximately 14 mi (22 km) east of the SEZ. About 4,376,000 acres of potentially suitable habitat occurs within the SEZ region.
Western yellow-billed cuckoo	<i>Coccyzus americanus</i>	ESA-C	Considered to be a riparian obligate, usually found in large tracts of cottonwood/willow habitats with dense sub-canopies. Quad-level occurrences intersect the affected area. About 50,000 acres of potentially suitable habitat occurs within the SEZ region.
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	ESA-E	Year-round resident in the SEZ region. Freshwater marshes containing dense stands of cattails. Nests on dry hummocks or in small shrubs among dense cattails or bulrushes along the edges of shallow ponds in freshwater marshes with stable water levels. Quad-level occurrences intersect the affected area. About 50,000 acres of potentially suitable habitat occurs within the SEZ region.
<i>Mammals</i>			
California leaf-nosed bat	<i>Macrotus californicus</i>	BLM-S	Year-round resident in desert riparian, desert wash, desert scrub, and palm oasis habitats at elevations below 2,000 ft (600 m). Roosts in mines, caves, and buildings. Quad-level occurrences intersect the affected area. About 3,960,000 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.1.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals</i>			
<i>(Cont.)</i>			
Western red bat	<i>Lasiurus blossevillii</i>	BLM-S	Year-round resident in SEZ region. Forages in riparian and other wooded areas. Roosts primarily in cottonwood trees along riparian areas. Nearest recorded quad-level occurrence is from the Hassayampa River, approximately 50 mi north of the SEZ. About 17,400 acres of potentially suitable habitat occurs within the SEZ region.
Western yellow bat	<i>Lasiurus xanthinus</i>	BLM-S	Year-round resident in desert riparian, desert wash, and palm oasis habitats at elevations below 2,000 ft. Roosts in trees. Nearest quad-level occurrence is from the vicinity of Phoenix, approximately 40 mi (64 km) northeast of the SEZ. About 4,407,500 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Arizona BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-E = listed as endangered under the ESA.

^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

- Identify and map the areal extent of wetland and riparian habitats within the SEZ, including habitat characteristics (such as water source, hydrologic regime, and dominant plant species) both within the wetland boundaries and in adjacent non-wetland habitats. Species potentially associated with these habitats include the Hohokam agave, Tumamoc globeberry, lowland leopard frog, snowy egret, southwestern willow flycatcher, western yellow-billed cuckoo, Yuma clapper rail, and western yellow bat.

C.1.2.5.10 Air Quality and Climate

None.

1 **C.1.2.5.11 Visual Resources**

2
3 Visual resources will be re-evaluated for the Final Solar PEIS based on proposed
4 technology restrictions described in Section C.1.2.3 of this Supplement. A summary of the Draft
5 Solar PEIS visual contrast analysis for the proposed Gillespie SEZ is provided in Table C.1.2-2.
6 This table includes only the resources that would be subject to moderate or strong visual contrast.
7 The Draft Solar PEIS visual impact analysis predicted these levels of visual contrast from solar
8 energy development in the Gillespie SEZ for the following sensitive visual resource areas
9 (SVRAs) and sensitive viewing locations (SVLs):

- 10
11 • Signal Mountain WA
12
13 • Woolsey Peak WA
14
15 • Saddle Mountain SRMA
16
17 • Agua Caliente Road
18
19 • Salome Highway
20
21 • Old U.S. 80
22
23 • Arlington.

24
25 The following steps could be taken to better understand potential impacts on these
26 SVRAs and SVLs from solar development in the Gillespie SEZ:

- 27
28 • Identify key observation points (KOPs) within these areas through working
29 with the management agency or other local stakeholders.
30
31 • Conduct viewshed analyses from the KOPs to determine how much of the
32 SEZ would be in view from each KOP.
33
34 • As deemed necessary, based on viewshed analysis results, prepare wireframe
35 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
36 depicting the 80% development scenario to better estimate potential impacts.
37

38 This additional analysis may help judge potential visual contrast more accurately for most
39 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
40 superimposition of the wireframe models onto the photos might be required or desired.

41
42 Additional required mitigation measures to address potential visual resource impacts are
43 given in Section C.7.3 of this appendix.
44

TABLE C.1.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Gillespie SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WAs	Signal Mountain	13,467 acres	3.5 mi southwest of the SEZ	2,514 acres	18.7	Portions of the WA are within a relatively short distance of the SEZ, and regardless of the elevation of the viewpoints, where open views of the SEZ existed, viewers in these areas could be subjected to strong visual contrasts from solar facilities; in other portions of the WA, topographic screening of portions of the SEZ and lower height facilities would tend to reduce visual contrast levels, as would decreased elevation of viewpoints and increased distance from the SEZ: Visible area of the WA extends about 6.5 mi from the southwestern boundary of the SEZ
	Woolsey Peak	64,465 acres	2.1 mi south of the SEZ	11,389 acres	17.7	WA is sufficiently close to the SEZ that for many viewpoints, and particularly for elevated viewpoints in the northern portion, solar energy development would be expected to result in strong visual contrast levels; lower contrast levels would be expected for lower elevation viewpoints, and for higher elevation viewpoints deeper in the interior of the WA: visible area of the WA extends about 12.5 mi from the southern boundary of the SEZ.

TABLE C.1.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
SRMA	Saddle Mountain	47,696 acres	4.3 mi northwest of the SEZ	27,237 acres	57.1	SRMA is sufficiently close to the SEZ that for some viewpoints within the SRMA, solar energy development within the SEZ would be expected to result in moderate to strong visual contrast levels; lower contrast levels would be expected for lower elevation viewpoints, and for higher elevation viewpoints in the northwestern portion, farther from the SEZ. Visible area extends from the point of closest approach to 12 mi within the SRMA; development likely would be visible from low elevation areas in the southeast of the SRMA, and from the south and east facing slopes of the Saddle Mountain and the Palo Verde Hills
Other Areas of Interest (non-management areas)	Agua Caliente Road (Agua Caliente Scenic Drive)	49 mi	1.6 mi from the southeastern boundary of the SEZ	2.2 mi	4.5	Visual contrast levels arising from solar facilities would vary depending on viewer location and the type, size, location, and layout of solar facilities; weak to strong levels of visual contrast would be expected for travelers, primarily because the road crosses the SEZ several times and otherwise passes very near the SEZ. Proposed BLM Backcountry Byway

TABLE C.1.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (Cont.)	Salome Highway	NA ^g	9 to 10 mi northeast of the SEZ	11	NA	Moderate levels of visual contrast would be expected for most viewpoints on the Salome Highway: Portions in viewshed of SEZ are about 9-10 mi northeast of SEZ
	Old U.S. 80 ^h	1,032 mi	2 mi northeast of the southeast corner of the SEZ	29 mi	2.8	Strong levels of visual contrast would be expected to result from solar energy development: viewpoints along Old U.S. 80 are generally slightly lower in elevation than the SEZ, particularly in the southern sections of the road within the SEZ viewshed
	Arlington	NA	7 mi northeast of the SEZ	NA	NA	Strong levels of visual contrast would be expected, as seen from unscreened viewpoints within Arlington: Located approximately 7 mi from northeast of SEZ; A detailed future site-specific NEPA analysis is required to determine visibility precisely

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

Footnotes continued on next page.

TABLE C.1.2-2 (Cont.)

- ^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.
- ^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percent total acreages/mileages visible within 25 mi (40 km) of the SEZ.
- ^f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.
- ^g NA = data not available.
- ^h Length of U.S. 80: US-Highways.com (2007).

1 **C.1.2.5.12 Acoustic Environment**

2
3 None.

4
5
6 **C.1.2.5.13 Paleontological Resources**

7
8 The BLM Regional Paleontologist will be contacted to determine whether additional
9 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
10 Arizona. A preliminary paleontological survey could be conducted to determine the PFYC of the
11 SEZ, in order to update the temporary assignment of PFYC Class 3b used in the Draft Solar
12 PEIS.

13
14
15 **C.1.2.5.14 Cultural Resources and Native American Concerns**

16
17 A very small percentage of the proposed Gillespie SEZ has been surveyed for cultural
18 resources, so, absent specific information, impacts are unknown but possible. Five small surveys
19 had been conducted within the SEZ, but no sites were recorded. A spur of the Southern Pacific
20 Railroad, the second transcontinental railroad in the United States, is located 1 mi (1.6 km) north
21 of the SEZ, and the Craig Railroad Station, listed in the *National Register of Historic Places*, is
22 located within 5 mi (8 km). Gillespie Dam Highway Bridge is also listed on the *National*
23 *Register of Historic Places* and is located within 3 mi of the SEZ. The Juan Batista de Anza
24 National Historic Trail is approximately 17 mi (27 km) south of the SEZ, but intervening
25 topography would preclude most visibility of the SEZ—only a 4-mi (6.4 km) stretch of the trail
26 would be within a 25-mi (40-km) viewshed and visual impacts were assessed as minimal.

27
28 Prehistoric sites are likely and historic sites related to the railroad and ranching/
29 homesteading are also possible within the SEZ. The eastern portion of the SEZ, closest to the
30 Gila River, has the most potential for containing sensitive prehistoric archaeological sites. The
31 newly proposed Gila River Terraces Area of Critical Environmental Concern (ACEC) is a
32 corridor containing significant resources that runs along the Gila River.⁵ These resources may
33 extend into the Gillespie SEZ.

34
35 The northern area of the SEZ has the highest potential for historic sites associated with
36 the railroad. Potential impacts could also include visual and auditory impacts on sacred sites and
37 traditional use areas along the Gila River corridor and within the Gila Bend Mountains.
38 Drawdown of groundwater and water rights issues may be of potential concern for the Tohono
39 O’odham Reservation that is located 16 mi (26 km) south of the SEZ. The destruction or
40 degradation of important plant resources and the destruction of habitat or impediments to the
41 movement of culturally important wildlife are also potential impacts of concern within the SEZ.

42
43 The following additional data collection efforts could reduce the uncertainty about
44 potential impacts on cultural resources:

⁵ Information on the proposed Gila River Terraces ACEC is new and was not presented in the Draft Solar PEIS.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

- Conduct a Class I literature file search to better understand (1) the site distribution pattern in the vicinity of the SEZ; (2) potential trail networks; and (3) overall cultural sensitivity of the landscape. A Class I review can determine the actual percentage of survey coverage already conducted within the SEZ.
- Conduct a Class II Stratified Random Sample Survey of the proposed SEZ to obtain a 10% sample (roughly 262 acres [1.1 km²] or less).⁶ Areas of interest, as determined through a Class I review, should also be identified prior to establishing the survey design and sampling strategy.
- Prepare a cultural sensitivity map based on results of the Class II survey and Class I review.
- Continue with government-to-government consultation as described in Section 2.4.3, including follow-up to recent ethnographic studies with Tribes not included in the original studies to determine whether those Tribes have similar concerns. The Gillespie SEZ falls in the traditional use area of primarily the Maricopa, Akimel O’odham (Pima), and Tohono O’odham (Papago). Potential topics to be discussed during consultation include: water rights, the Gila River corridor, sacred mountains in the area, local Hohokam sites, and plant and animal resources.

C.1.2.5.15 Socioeconomics and Environmental Justice

None.

C.1.2.5.16 Cumulative Impact Considerations

None.

⁶ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1 **C.2 CALIFORNIA PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.2.1 Imperial East**

5
6
7 **C.2.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Imperial East solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 5,722 acres (23.2 km²). It is located in Imperial County in southeastern
12 California, near the United States–Mexico border (Figure C.2.1-1). The nearest town is the
13 community of Holtville, located approximately 10 mi (16 km) northwest of the SEZ.
14

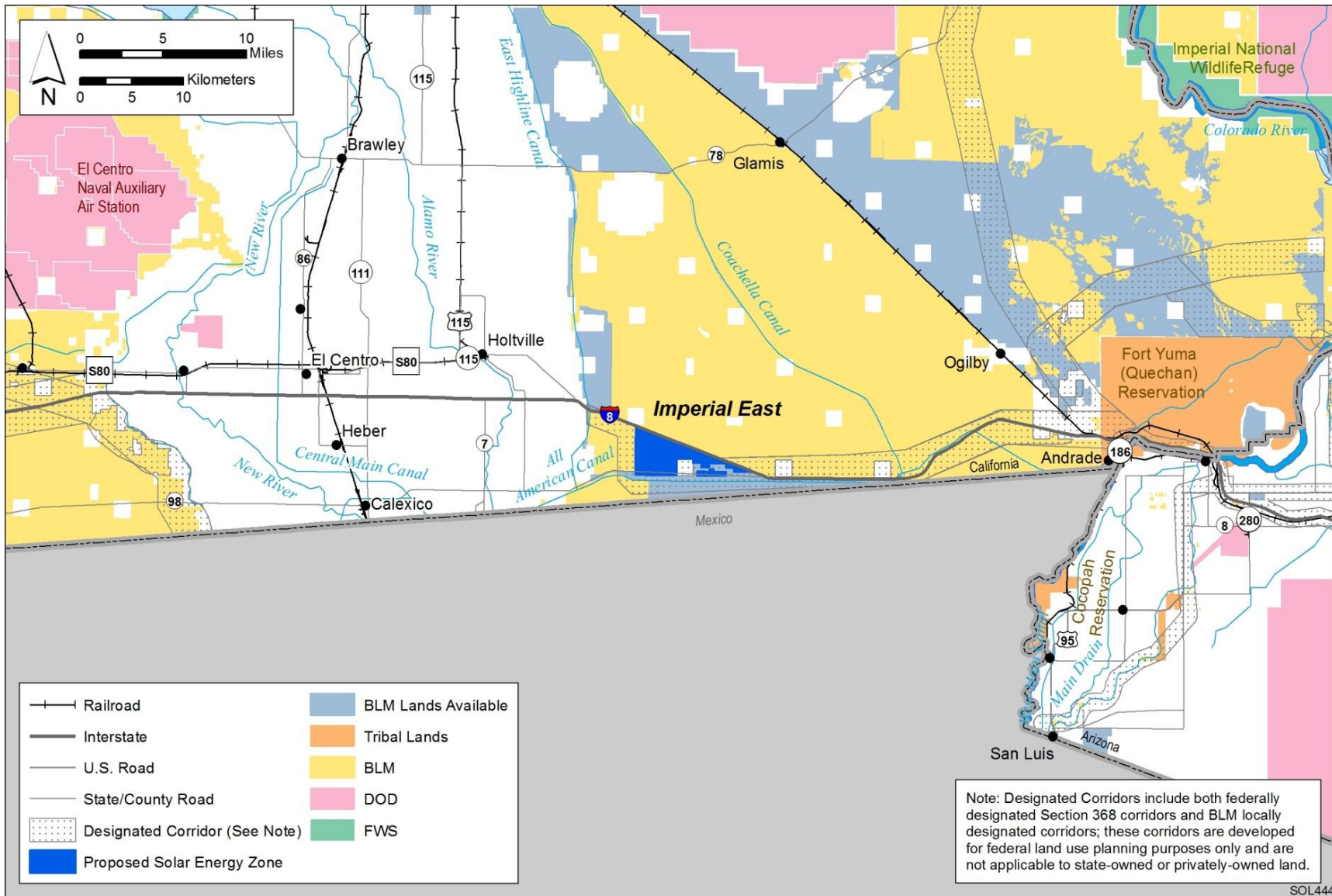
15 A designated Section 368 energy corridor covers about 80% of the SEZ, potentially
16 leaving less than 1,000 acres (4 km²) available for solar development.⁷ This corridor could limit
17 development in the SEZ because solar facilities cannot be constructed under transmission lines.
18 The discussion of impacts of solar energy development in the SEZ in the Draft Solar PEIS
19 acknowledged that the presence of the corridor would reduce the amount of land available for
20 solar power production, and, conversely, that full development of solar facilities within the SEZ
21 would limit use of the transmission corridor.
22

23 The location of new transmission that could be constructed for this SEZ in the future may
24 be different from that assumed in the Draft Solar PEIS. Details on the revised transmission
25 impact assessment to be included in the Final Solar PEIS are provided in Section C.7.1 of this
26 appendix. Analysis of transmission lines and/or access roads will be completed, as necessary, as
27 part of the project-specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
28

29 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 30
- 31 • Impacts on two nearby Areas of Critical Environmental Concern (ACECs)
32 with prehistoric resources (Lake Cahuilla C and D) could occur due to
33 increased human traffic.
 - 34 • Development could encroach into military training routes (MTRs) and special
35 use airspace (SUA), thereby creating safety issues and conflicting with
36 military training. Also, power towers could pose some hazard to operation of
37 the Mexicali Airport.
38

⁷ Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the U.S. Department of the Interior Bureau of Land Management (BLM), U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense (DoD) prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.



SOL444

FIGURE C.2.1-1 Proposed Imperial East SEZ as Presented in the Draft Solar PEIS

- 1 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
2 erosion and deposition by wind and runoff, sedimentation, and soil
3 contamination) could occur.
- 4
- 5 • About 60% of the SEZ is included within a known geothermal resource area
6 (KGRA); solar development would prevent geothermal resource development.
- 7
- 8 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
9 wet-cooling options would not be feasible.
- 10
- 11 • Runoff of water and sediments from the proposed SEZ could adversely affect
12 the existing wetlands and mitigation wetlands.
- 13
- 14 • Clearing of a large portion of the proposed SEZ could adversely affect
15 wetlands, riparian habitats, desert dry washes, and sand dune habitats,
16 depending on the amount of available habitat disturbed. The establishment of
17 noxious weeds could result in habitat degradation. Deposition of fugitive dust
18 could cause reduced productivity or changes in plant community structure.
- 19
- 20 • Potentially suitable habitat for 35 special status species and 160 wildlife
21 species occurs in the affected area of the proposed SEZ; less than 1% of the
22 potentially suitable habitat for any of these species occurs in the region that
23 would be directly affected by development.
- 24
- 25 • Temporary exceedances of ambient air quality standards for particulate
26 matter at the SEZ boundaries are possible during construction. These high
27 concentrations, however, would be limited to the immediate area surrounding
28 the SEZ boundary.
- 29
- 30 • Generally, there would be minimal visual impacts on communities and highly
31 sensitive visual resource areas; however, portions of the Juan Baptista de
32 Anza Historic Trail auto route lie within the SEZ and the viewshed. Two
33 major roads are also within the SEZ viewshed. Strong visual contrasts could
34 be observed by travelers on these routes.
- 35
- 36 • Noise levels at the nearest residences could be higher during construction
37 than the U.S. Environmental Protection Agency guideline levels. During
38 operations, it was estimated that noise levels at the nearest residences would
39 exceed county regulation levels if concentrating solar power facilities with
40 energy storage technologies (which could extend the daily operational time by
41 6 hours or more) were used at the SEZ.
- 42
- 43 • The potential for impacts on significant paleontological and cultural resources
44 is unknown. It is possible that there will be Native American concerns about
45 the potential for burials within or near the SEZ and visual impacts on
46 landscape features.

- 1 • Minority populations occur within a 50-mi (80-km) radius of the proposed
2 SEZ boundary; thus adverse impacts of solar development could
3 disproportionately affect minority populations.
4
- 5 • Users of California State Route 98 could experience moderate traffic
6 congestion during construction at the SEZ.
7

8 9 **C.2.1.2 Summary of Comments Received**

10
11 Most of the comments received on the proposed Imperial East SEZ were in favor of
12 identifying the area as an SEZ in the applicable land use plan, but with reduction in size to
13 eliminate conflicts (California Public Utilities Commission, California Desert Coalition, Natural
14 Resources Defense Council [NRDC] et al.,⁸ and Center for Biological Diversity). The California
15 Energy Commission and Department of Fish and Game (CDFG) were in favor of expanding the
16 SEZ, assuming Areas of Rare Species Richness could be avoided (these are being evaluated in
17 the Desert Renewable Energy Conservation Plan [DRECP]). However, the Quechan Tribe,
18 Western Watersheds Project, and California State Parks recommended eliminating the SEZ
19 because of cultural, wildlife, and special status species concerns.
20

21 With respect to cumulative impacts, the NRDC requested that information from other
22 solar energy EISs in the vicinity of this SEZ be considered in the Final Solar PEIS. In addition,
23 a member of a wildlife organization noted the absence of a means for prioritizing competing
24 renewable energy interests in a given area, noting that a KGRA underlies the SEZ.
25

26 Several comments from the solar industry requested additional analysis of transmission
27 capacity and details on when, where, and how transmission would be developed.
28
29

30 **C.2.1.3 Changes to the SEZ**

31
32 No boundary revisions were identified for the proposed SEZ. However, areas specified
33 for non-development under SEZ-specific design features were mapped, where data were
34 available. For the proposed Imperial East SEZ, 5 acres (0.02 km²) of wetlands along the southern
35 border of the SEZ were identified as non-development areas (see Figure C.2.1-2). The remaining
36 developable area within the SEZ is 5,717 acres (23.1 km²).
37
38

⁸ The Natural Resources Defense Council, Audubon Society, California Native Plant Society, California Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those comments are attributed to The Natural Resources Defense Council et al.

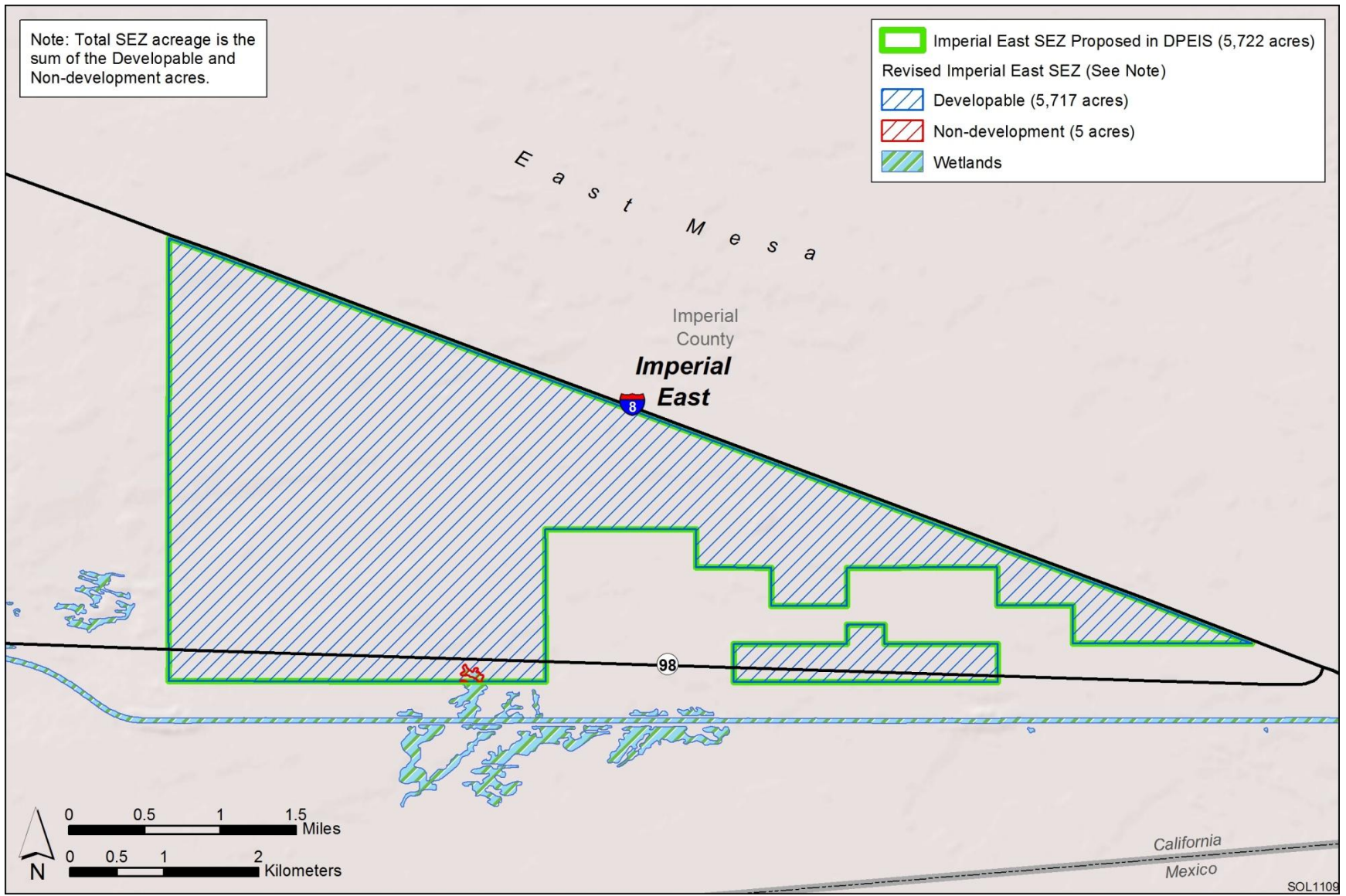


FIGURE C.2.1-2 Proposed Imperial East SEZ as Described in this Supplement

1 **C.2.1.4 Wilderness Character Status of SEZ**

2
3 A recently maintained inventory of wilderness characteristics was used to determine
4 whether public lands within the Imperial East SEZ have wilderness characteristics. The finding
5 of this inventory was that these lands do not contain wilderness characteristics.
6

7
8 **C.2.1.5 Additional Data Collection Recommended**

9
10
11 **C.2.1.5.1 Lands and Realty**

12
13 None.
14

15
16 **C.2.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

17
18 None.
19

20
21 **C.2.1.5.3 Rangeland Resources**

22
23
24 *Livestock Grazing.* None.
25

26
27 *Wild Horses and Burros.* None.
28

29
30 **C.2.1.5.4 Recreation**

31
32 None.
33

34
35 **C.2.1.5.5 Military and Civilian Aviation**

36
37 The BLM will continue to consult with the DoD regarding potential issues with MTRs
38 and SUA. The potential impact of power towers in this SEZ, including the ability of power
39 towers to comply with Federal Aviation Administration regulations pertaining to air navigation
40 obstructions, could be further investigated.
41

42
43 **C.2.1.5.6 Geologic Setting and Soil Resources**

44
45 None.
46

1 **C.2.1.5.7 Minerals**
2

3 Sixty percent of the SEZ is within a KGRA. The compatibility of solar and geothermal
4 development could be further investigated.
5

6 Additional information on leasable and strategic minerals in the vicinity of the proposed
7 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
8 on a proposed 20-year withdrawal of SEZ lands.
9

10 **C.2.1.5.8 Water Resources**
11

12 The following additional data and actions would help further characterize potential
13 impacts on water resources for the proposed Imperial East SEZ. A more detailed discussion of
14 each of these activities is included in the water resources action plan provided in Section C.7.2 of
15 this appendix.
16

- 17
- 18 • Prepare a planning-level water resources inventory of the Imperial Valley
19 Basin.
20
 - 21 • Verify the mitigation wetland enhancement project for jurisdictional water
22 determinations with the U.S. Army Corps of Engineers (USACE)
23 (Los Angeles District) and the Imperial Irrigation District (IID). It is likely
24 these were considered jurisdictional waters during the IID’s restoration
25 efforts. If no jurisdictional water determination has been made for the
26 wetlands along the southern border of SEZ, then:
 - 27 – A field survey should be conducted, and
 - 28 – A jurisdictional water determination should be obtained from the USACE
29 (Los Angeles District).
 - 30
 - 31 • Describe the formation of a stakeholder committee to conduct long-term
32 monitoring of water resources. This activity would entail:
 - 33 – Identifying key stakeholder agencies,
 - 34 – Discussing general features of a monitoring program, and
 - 35 – Working with the U.S. Geological Survey to develop groundwater
36 monitoring well design and numerical groundwater models.
37
 - 38 • Develop a simple, numerical groundwater model for the southern portion of
39 Imperial Valley. This activity would entail:
 - 40 – Assessing the potential for drawdown impacts on the restored, mitigation
41 wetlands located along the All-American Canal, and
 - 42 – Coordinating with the IID to identify any potential groundwater
43 drawdown concerns regarding its operations (e.g., All-American Canal,
44 East Highland Canal, other drainage ditches) to be evaluated in the
45 numerical groundwater model.
46

1 **C.2.1.5.9 Ecological Resources**
2
3

4 **Vegetation and Plant Communities.** The following additional data-gathering actions
5 would help further characterize potential impacts on vegetation and plant communities for the
6 proposed Imperial East SEZ.
7

- 8 • Identify and map the location and areal extent of desert riparian, wash, and
9 wetland habitats within the SEZ. Identify and map the location and areal
10 extent of desert riparian, wash, and wetland habitats outside the SEZ that may
11 be affected by hydrologic changes, including groundwater elevations, and
12 changes in water, sediment, and contaminant inputs associated with runoff.
13 Such effort could determine the habitat characteristics (including water
14 source, hydrologic regime, and dominant plant species) both within the
15 wetland boundaries and in adjacent non-wetland habitats.
16
- 17 • Identify and map the location and areal extent of sand dunes and sand
18 transport systems within the SEZ.
19
20

21 **Wildlife.** The following additional data-gathering actions would help further characterize
22 potential impacts on wildlife resources for the SEZ:
23

- 24 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
25 SEZ as a movement/migratory corridor for desert bighorn sheep.
26
- 27 • Identify and map the location and areal extent of desert riparian wash,
28 wetland, and sand dune and sand transport habitats within the SEZ. These
29 areas are important habitat areas for many game and nongame species of
30 wildlife.
31
32

33 **Aquatic Biota.** Wetlands are present, and, therefore, direct impacts on wetland
34 communities are possible as a result of solar energy development within the SEZ. These areas
35 could be surveyed for aquatic communities. Additionally, the man-made All-American Canal
36 and East Highline Canal and associated palustrine wetlands within 5 mi (8 km) of the SEZ could
37 be indirectly affected by development and operation of solar energy facilities. However, the All-
38 American Canal and associated wetlands have primarily non-native fish, and no protected
39 aquatic biota are known to be present. Thus, impacts on aquatic biota would likely be to invasive
40 or common species. New surveys could be conducted to confirm this, but the primary value of
41 these features is for nonaquatic animals that may consume aquatic biota within the SEZ.
42 Therefore, no surveys are recommended.
43
44
45

1 **Special Status Species.** The following additional data-gathering actions would be useful
2 in further characterizing and protecting habitat available to special status species:

- 3
4 • Conduct pre-disturbance surveys within the SEZ to determine the presence
5 and abundance of those special status species that are (1) federally listed,
6 proposed for listing, or candidates for listing under the Endangered Species
7 Act (ESA); (2) listed by the State of California as endangered, threatened, or
8 fully protected; or (3) designated as sensitive by the California BLM State
9 Office. These species are listed in Table C.2.1-1. Surveys should focus on
10 areas identified as potentially suitable, and the suitability of these habitats to
11 support these special status species should be determined in the field. All
12 field-determined suitable habitats for special status species should be mapped.
13 Target species and survey protocols should be developed in coordination with
14 the U.S. Fish and Wildlife Service and CDFG.

15
16 The Draft Solar PEIS presents a table of special status species for which
17 potential impacts need to be evaluated prior to development in the proposed
18 Imperial East SEZ. The list of species presented in Table 9.1.12.1-1 of the
19 Draft Solar PEIS also includes species listed by the State of California and
20 species ranked by the State of California as S1 or S2. Based on the design
21 features presented in the Draft Solar PEIS, the potential for impacts on these
22 additional species will also need to be addressed before development could
23 occur in the SEZ.

- 24
25 • Identify and map the location and areal extent of desert riparian, wash, and
26 wetland habitats within the SEZ, including habitat characteristics (such as
27 water source, hydrologic regime, and dominant plant species) both within the
28 wetland boundaries and in adjacent non-wetland habitats. Species potentially
29 associated with these habitats include Munz's cholla, Colorado Desert fringe-
30 toed lizard, California black rail, ferruginous, least bittern, Yuma clapper rail,
31 California leaf-nosed bat, pallid bat, Townsend's big-eared bat, and western
32 mastiff bat.
- 33
34 • Identify and map the location and areal extent of sand dunes and sand
35 transport systems on the SEZ. Species potentially associated with these
36 habitats include chaparral sand-verbena, flat-seeded spurge, giant Spanish-
37 needle, sand food, Colorado Desert fringe-toed lizard, and flat-tailed horned
38 lizard.

39 40 41 **C.2.1.5.10 Air Quality and Climate**

42
43 None.

1 **TABLE C.2.1-1 Special Status Species That May Occur near the Proposed Imperial East SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Chaparral sand-verbena	<i>Abronia villosa</i> var. <i>aurita</i>	BLM-S	Endemic to southern California. Chaparral desert sand dunes at elevations between 350 and 5,250 ft. ^d Historically occurred on and in the vicinity of the SEZ; the species has not been recorded in the project area since 1964. Most recent recorded occurrences are 15 mi ^e west of the SEZ. About 190,582 acres ^f of potentially suitable habitat occurs within the SEZ region.
Flat-seeded spurge	<i>Chamaesyce platysperma</i>	BLM-S	Sandy substrates of desert dunes within Sonoran desertscrub communities at elevations below 650 ft. Nearest recorded occurrences are 45 mi from the SEZ. About 1,249,216 acres of potentially suitable habitat occurs within the SEZ region.
Giant Spanish-needle^g	<i>Palafoxia arida</i> var. <i>gigantea</i>	BLM-S	Desert sand dune habitats at elevations below 330 ft. Known to occur in the affected area within 5 mi east of the SEZ. About 190,187 acres of potentially suitable habitat occurs within the SEZ region.
Munz's cholla	<i>Opuntia munzii</i>	BLM-S	Gravelly or sandy to rocky soils, often on lower bajadas, washes, and flats. Also occurs in hills and canyon sides. Occurs in Sonoran Desert creosotebush shrub communities at elevations below 3,280 ft. Nearest recorded occurrences are 25 mi north (upgradient) of the SEZ. About 1,856,676 acres of potentially suitable habitat occurs within the SEZ region.
Sand food	<i>Pholisma sonorae</i>	BLM-S	Sonoran sand dune habitats at elevations below 650 ft. Known to occur in the affected area within 5 mi east of the SEZ. About 190,187 acres of potentially suitable habitat occurs within the SEZ region.
Reptiles			
Colorado Desert fringe-toed lizard	<i>Uma notata</i>	BLM-S	Sparsely vegetated arid areas with windblown sand, including dunes, flats, and washes at elevations below 1,600 ft. Nearest recorded occurrence is 6 mi northeast of the SEZ. About 658,770 acres of potentially suitable habitat occurs within the SEZ region.
Flat-tailed horned lizard	<i>Phrynosoma mcallii</i>	BLM-S	Sandy desert hardpan, gravel flats, and dunes with sparse vegetation of low species diversity at elevations below 850 ft. Known to occur in the affected area within 3 mi north of the SEZ. About 281,300 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds			
California black rail	<i>Laterallus jamaicensis coturniculus</i>	BLM-S; CA-FP; CA-T	Year-round resident in the Imperial Valley and lower Colorado River in Arizona and California. Locally common in marshes along the Colorado River or canal systems. Known to occur in the affected area from the All-American Canal. About 184,792 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident and migrant at lower elevations and open grasslands, shrublands, and agricultural areas in southern California. Open grasslands, sagebrush flats, desertscrub, desert valleys, and fringes of pinyon-juniper habitats. This species is known to occur in Imperial County, California. About 1,252,826 acres of potentially suitable habitat occurs within the SEZ region.
Least bittern	<i>Ixobrychus exilis</i>	BLM-S	Year-round resident in the lower Colorado River Valley, including the Salton Sea and the Colorado River in California and Arizona. Emergent vegetation of larger bodies of water such as lakes, ponds, and rivers. Nests in dense cattail marshes and thickets of saltcedar. The species occurs near the Colorado River as near as 35 mi and 40 mi east and northwest of the SEZ, respectively. About 206,149 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Year-round resident within the SEZ region. Open areas with short sparse vegetation, including grasslands, agricultural fields, and disturbed areas. Nests in burrows created by mammals or tortoises. Feeds on insects and small mammals. Nearest recorded occurrence is 10 mi west of the SEZ. About 2,531,363 acres of potentially suitable habitat occurs within the SEZ region.
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	ESA-E; CA-FP; CA-T	Freshwater marshes containing dense stands of cattails. Nests on dry hummocks or in small shrubs among dense cattails or bulrushes along the edges of shallow ponds in freshwater marshes with stable water levels. Known to occur in the affected area along the All-American Canal within 0.5 mi south of the SEZ. About 185,175 acres of potentially suitable habitat occurs within the SEZ region.
Mammals			
California leaf-nosed bat	<i>Macrotus californicus</i>	BLM-S	Year-round resident in SEZ region. Desert riparian, desert wash, desertscrub, and palm oasis habitats at elevations below 2,000 ft. Roosts in mines, caves, and buildings. Nearest recorded occurrences are 20 mi east of the SEZ. About 1,539,377 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Mammals (Cont.)			
Pallid bat	<i>Antrozous pallidus</i>	BLM-S	Year-round resident throughout the California solar region. Inhabits low-elevation desert communities, including grasslands, shrublands, and woodlands. Day roosts in caves, crevices, and mines. Nearest recorded occurrence is from the North Algodones Dunes Wilderness, approximately 18 mi north of the SEZ. About 1,403,590 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Found throughout California, in all but subalpine and alpine habitats, and may be found at any season throughout its range. Roosts in caves, mines, tunnels, buildings, or other man-made structures. Nearest recorded occurrence is approximately 35 mi from the SEZ. About 2,919,158 acres of potentially suitable habitat occurs within the SEZ region.
Western mastiff bat	<i>Eumops perotis californicus</i>	BLM-S	Year-round resident in southern California and southwestern Arizona in many open semiarid habitats, including conifer and deciduous woodlands, shrublands, grasslands, chaparral, and urban areas. Day roosts in crevices in cliff faces, buildings, and tall trees. Nearest recorded occurrence is 16 mi west of the SEZ. About 2,435,906 acres of potentially suitable habitat occurs within the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) California BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; CA-FP = listed as fully protected by the State of California; CA-T = listed as threatened by the State of California; ESA-E = listed as endangered under the ESA
- ^c For plant and invertebrate species, potentially suitable habitat was determined by using California Regional Gap Analysis Project (CAREGAP) and Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005, 2010). For reptile, bird, and mammal species, potentially suitable habitat was determined by using CAREGAP and SWReGAP habitat suitability models as well as CAREGAP and SWReGAP land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2

1 **C.2.1.5.11 Visual Resources**
2

3 A summary of the Draft Solar PEIS visual contrast analysis for the proposed Imperial
4 East SEZ is provided in Table C.2.1-2. This table includes only those resources that would be
5 subject to moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis
6 predicted these levels of visual contrast from solar energy development in the Imperial East SEZ
7 for the following sensitive visual resource areas (SVRAs) and sensitive viewing locations
8 (SVLs):
9

- 10 • Juan Batista de Anza National Historic Trail
11
12 • Interstate 8 (I-8)
13
14 • State Route 98.
15

16 The following steps could be taken to better understand potential impacts on these
17 SVRAs and SVLs from solar development in the Imperial East SEZ:
18

- 19 • Identify key observation points (KOPs) within these areas through working
20 with the management agency or other local stakeholders.
21
22 • Conduct viewshed analyses from the KOPs to determine how much of the
23 SEZ would be in view from each KOP.
24
25 • As deemed necessary, based on viewshed analysis results, prepare wireframe
26 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
27 depicting the 80% development scenario to better estimate potential impacts.
28

29 This additional analysis may help judge potential visual contrast more accurately for most
30 KOPs. For KOPs of particularly high sensitivity (e.g., the historic trail), a site visit with
31 photography and superimposition of the wireframe models onto the photos might be required or
32 desired.
33

34 **C.2.1.5.12 Acoustic Environment**
35

36 None.
37
38

39 **C.2.1.5.13 Paleontological Resources**
40

41 The BLM Regional Paleontologist will be contacted to determine whether additional
42 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
43 California. A preliminary paleontological survey could be conducted to determine the PFYC of
44 the SEZ, in order to update the temporary assignment of PFYC Class 3b used in the Draft Solar
45 PEIS. In addition, the San Bernardino County Museum paleontologist could be contacted to
46

TABLE C.2.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Imperial East SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/ Mileage ^{a,b} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^c	Total Acreage/ Mileage Visible within 25 mi	Percentage of Total Acreage/ Mileage Visible within 25 mi	Notes
National Historic Trail	Juan Batista de Anza	1,210 mi	10 mi south of the SEZ	4 mi	0.3	Strong visual contrasts observed within and near the SEZ would be anticipated for travelers on the auto tour route. Minimal visual contrast would be experienced by nonmotorized trail users.
Other Areas of Interest (non-management areas)	I-8 and State Route 98	NA ^d	Passes through the southern portion of the SEZ	NA	NA	Strong visual contrasts could be observed within and near the SEZ by travelers on I-8 and State Route 98.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Distances are based on the Draft Solar PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

^d NA = data not available.

1 obtain more detailed information about the potential paleontological resources that may occur in
2 the vicinity of the SEZ.

3 4 5 **C.2.1.5.14 Cultural Resources and Native American Concerns** 6

7 Very little area within the proposed Imperial East SEZ has been surveyed for cultural
8 resources (only about 300 acres [1.2 km²] in the northwest corner); thus, absent specific
9 information, impacts are unknown but possible on archaeological sites. Two sites are recorded in
10 the SEZ, and two burial sites are recorded with the Native American Heritage Commission in
11 Township/Range sections partially included within or near the SEZ. More than 50 sites were
12 recorded south of the SEZ during the All-American Canal survey.
13

14 The SEZ is in the midst of a sacred landscape traversed by a network of trails. The
15 Yuma-San Diego Trail is either close to or goes through the SEZ. This trail links two sacred
16 areas: Pilot Knob (to the east) and Yuha Mesa (to the west). Other related sacred areas with
17 possible viewsheds encompassing the SEZ include the western branch of the Xam Kwatcan Trail
18 at Indian Pass, Gold Basin and Rand Intaglios, and Picacho Peak—all within approximately
19 35 mi (56.3 km) of the SEZ, to the northeast. Potential impacts could include visual and auditory
20 impacts on sacred sites and possible destruction of segments of the trails system and associated
21 sites.
22

23 The destruction or degradation of important plant resources and the destruction of habitat
24 or impediments to the movement of culturally important wildlife are also potential impacts of
25 concern within the SEZ.
26

27 The following additional data collection efforts could reduce the uncertainty about
28 potential impacts on cultural resources:
29

- 30 • Conduct a Class I literature file search to better understand (1) the site
31 distribution pattern in the vicinity of the SEZ, (2) the trail networks through
32 existing ethnographic reports, and (3) overall cultural sensitivity of the
33 landscape. (SWCA Environmental Consultants is currently conducting a
34 Class I study of all California SEZs on behalf of the BLM.
35
- 36 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
37 10% sample (roughly 572 acres [2.3 km²]).⁹ If the roughly 300 acres
38 (1.2 km²) previously surveyed meets current survey standards, then
39 approximately 272 additional acres (1.1 km²) of survey could satisfy a 10%
40 sample. However, all approximately 300 acres (1.2 km²) are clustered in one
41 area of the SEZ, and additional areas should be considered to provide a more
42 representative sample of the SEZ. Areas of interest as determined through the

⁹ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1 Class I review should also be identified when defining the sampling strategy.
2 If appropriate, some subsurface testing of dune areas should be considered in
3 the sampling strategy as well.
4

- 5 • Prepare a cultural sensitivity map based on results of Class I and Class II
6 studies (and incorporation of the results of the DRECP cultural sensitivity
7 map, if applicable for this SEZ).
8
- 9 • Continue with government-to-government consultation as described in
10 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
11 not included in the original studies to determine whether those Tribes have
12 similar concerns. The Imperial East SEZ falls in the traditional use area of
13 primarily the Quechan, Cocopah, and Cahuilla. Potential topics to be
14 discussed during consultation include two known burials identified in the
15 NAHC database, Indian Pass, Xam Kwatcan Trail, Pilot Knob, Picacho Peak,
16 Yuha Basin, Yuma-San Diego Trail, Lake Cahuilla ACEC Areas C and D,
17 and plant and animal resources.
18

19
20 **C.2.1.5.15 Socioeconomics and Environmental Justice**

21
22 None.
23
24

25 **C.2.1.5.16 Cumulative Impact Considerations**

26
27 None.
28

1 **C.2.2 Riverside East**
2
3

4 **C.2.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Riverside East solar energy zone (SEZ), as presented in the Draft Solar
8 PEIS, had a total area of 202,896 acres (821 km²). It is located in Riverside County in
9 southeastern California (Figure C.2.2-1). The small town of Desert Center is located at the far
10 southwestern edge of the SEZ, along Interstate 10 (I-10). The towns of Blythe and Indio are about
11 6 mi (10 km) southeast of and 45 mi (72 km) west of the SEZ, respectively.
12

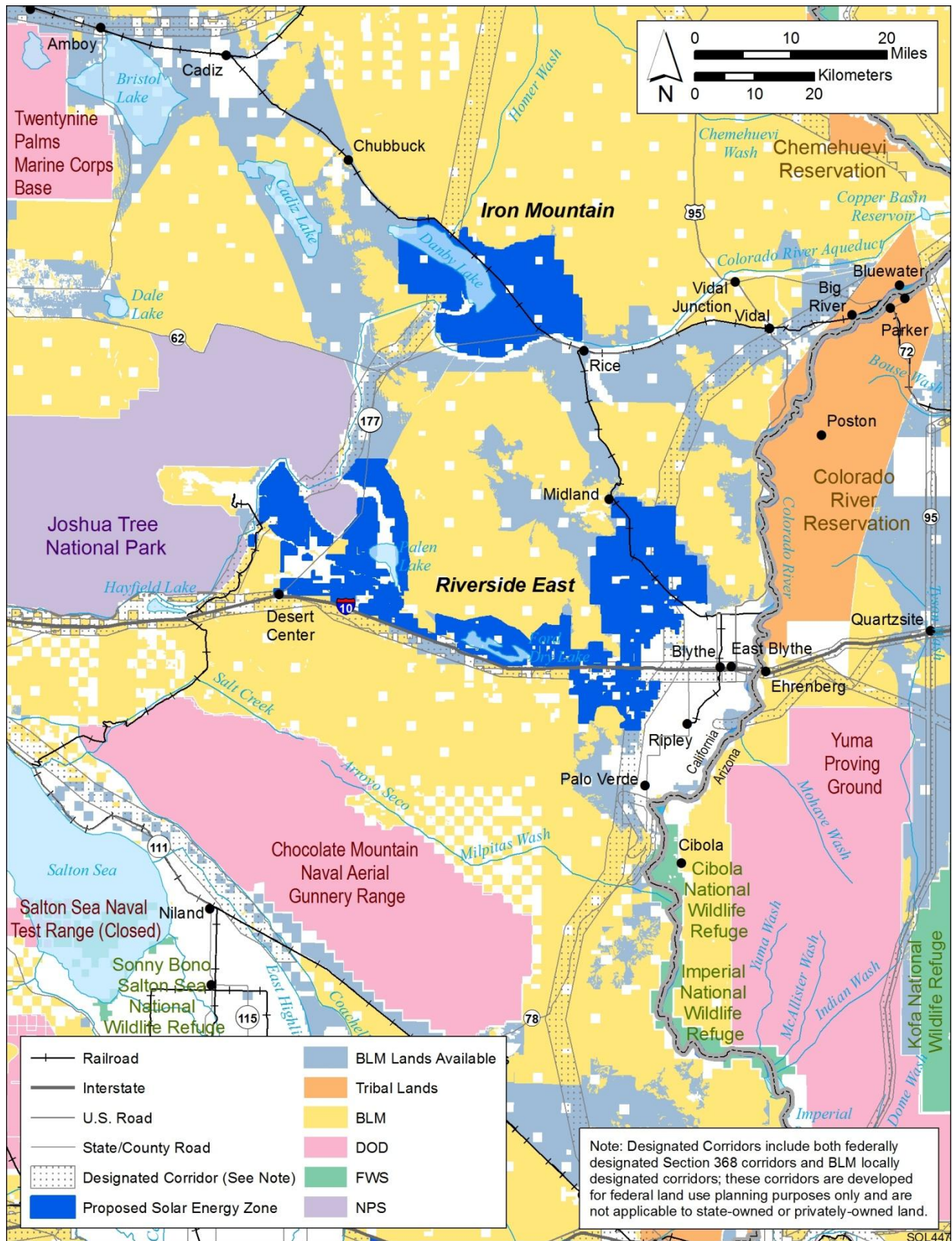
13 The Draft Solar PEIS identified a 500-kV transmission line that runs east–west parallel
14 to the southern SEZ boundary as the nearest point for connection of the SEZ to the grid. In
15 addition, a 230-kV line passes through the far western section of the SEZ, and a 69-kV line
16 passes through the eastern portion of the SEZ. The location of new transmission that could be
17 constructed for this SEZ in the future may be different from that assumed in the Draft Solar
18 PEIS. Details on the updated transmission impact assessment to be included in the Final Solar
19 PEIS are provided in Section C.7.1 of this appendix. Analysis of transmission lines and/or access
20 roads will be completed, as necessary, as part of project-specific environmental reviews (see
21 Section 2.2.2.2.2 of this Supplement).
22

23 A Section 368 federally designated energy corridor overlaps the SEZ along I-10.¹⁰ In
24 addition, there are two north–south corridors within the SEZ; one is located in the western
25 portion of the SEZ, and one is in the eastern portion. These corridors could limit development in
26 the SEZ because solar facilities cannot be constructed under transmission lines. The discussion
27 of impacts of solar energy development in the SEZ in the Draft Solar PEIS acknowledged that
28 the presence of the corridor would reduce the amount of land available for solar power
29 production and that, conversely, full development of solar facilities within the SEZ would limit
30 use of the transmission corridor.
31

32 Potential adverse impacts identified in the Draft Solar PEIS included the following:
33

- 34 • Solar development in the western portion of the SEZ would likely create
35 conflict with existing residential use near Desert Center, Lake Tamarisk
36 Resort, and scattered private residences.
37

10 Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the U.S. Department of the Interior Bureau of Land Management (BLM), U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense (DoD) prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.



1

2 **FIGURE C.2.2-1 Proposed Riverside East SEZ as Presented in the Draft Solar PEIS**

- 1 • Development in the SEZ would adversely affect wilderness characteristics in
2 the Palen-McCoy, Rice Valley, Big Maria Mountains, Chuckwalla Mountains,
3 and Little Chuckwalla Mountains Wilderness Areas (WAs) and in Joshua Tree
4 National Park (NP). There is potential for adverse impacts on resources within
5 the seven Areas of Critical Environmental concern (ACECs) in and near the
6 SEZ. Solar facility development could adversely affect the scenic view from
7 Joshua Tree NP, the natural soundscape, and the quality of the night sky
8 environment as viewed from the National Park and WAs in the region.
9
- 10 • The BLM Midland Long Term Visitor Area (LTVA) is located within the
11 SEZ, although the impact of solar development on the use of the LTVA by
12 winter visitors is not known. Solar development would discourage recreational
13 use in areas adjacent to the SEZ, including designated wilderness,
14 undesignated public lands, and Joshua Tree NP.
15
- 16 • There is potential for adverse impacts on military use and training in
17 eight military training routes (MTRs). Any solar facility that intrudes into
18 military airspace would adversely affect the use of that airspace. The potential
19 impact on operations of two civilian airports located within or adjacent to the
20 SEZ will need to be considered if solar development is proposed.
21
- 22 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
23 erosion by wind and runoff, sedimentation, and soil contamination) could
24 occur. Palen and Ford Dry Lakes may not be suitable locations for
25 construction.
26
- 27 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
28 wet-cooling options would not be feasible. High total dissolved solids values
29 of groundwater could produce water that is nonpotable and corrosive to
30 infrastructure.
31
- 32 • Clearing of a large portion of the proposed SEZ could primarily affect
33 wetland, riparian, playa, dry wash woodland, and chenopod scrub, depending
34 on the amount of habitat disturbed. The establishment of noxious weeds could
35 result in habitat degradation. Deposition of fugitive dust could cause reduced
36 productivity or changes in plant community structure.
37
- 38 • Potentially suitable habitat for 69 special status species and more than
39 130 wildlife species occurs in the affected area of the proposed SEZ; between
40 1 and 10% of the potentially suitable habitat for most of these species occurs
41 in the region that would be directly affected by development. For several
42 dune-obligate special status species, up to 32% of the potentially suitable
43 habitat in the region occurs in the area of direct effects.
44
- 45 • If aquatic biota exist within McCoy Wash, ephemeral washes, the Palen Lake
46 or Ford Dry Lake, they could be affected by the direct removal of these

1 surface water features within the construction footprint. Some of these
2 features may be defined as non-development areas, and such areas would not
3 be directly affected by ground disturbance. Aquatic biota, if present, could
4 also be indirectly affected by a decline in habitat quantity and quality due to
5 water withdrawals and changes in drainage patterns, as well as increased
6 sediment and contaminant inputs associated with ground disturbance and
7 construction activities.
8

- 9 • Temporary exceedances of ambient air quality standards for particulate
10 matter at the SEZ boundaries are possible during construction. These high
11 concentrations, however, would be limited to the immediate area surrounding
12 the SEZ boundary. Modeling indicates that emissions from construction
13 activities could result in considerable impacts at the nearest Class I area
14 (Joshua Tree NP), but the potential impacts would be temporary.
15
- 16 • Strong visual contrasts could be observed by visitors to Joshua Tree NP,
17 Joshua Tree WA, Big Maria Mountains WA, Rice Valley WA, Corn Springs
18 ACEC, travelers on I-10 and Route 177, and from the communities of Desert
19 Center and Lake Tamarisk. Moderate to strong visual contrasts could be
20 observed by visitors to the Little Chuckwalla Mountains WA. Weak to strong
21 visual contrasts could be observed from the Chuckwalla Mountains WA, the
22 Little Chuckwalla Mountains WA, the Bradshaw Trail BLM Backcountry
23 Byway, and residents of Blythe, East Blythe, and Ripley. Weak to moderate
24 visual contrast would be observed by visitors to the Palo Verde Mountains
25 WA and residents of Ehrenberg and Palo Verde. The SEZ is located within the
26 California Desert Conservation Area (CDCA), and substantial, immitigable
27 visual impacts will occur within the CDCA in the SEZ and surrounding lands.
28
- 29 • During construction, noise levels at the nearest residences could be higher
30 than the U.S. Environmental Protection Agency (EPA) guideline level. During
31 operations, on the basis of analyses presented in the Draft Solar PEIS, noise
32 levels at the nearest residences could be higher than the EPA guideline level if
33 concentrating solar power facilities with energy storage technologies (which
34 could extend the daily operational time by 6 hours or more) or if dish engine
35 technologies were used at the SEZ.
36
- 37 • Impacts on significant paleontological resources are unknown, but could be
38 high in some areas. Direct impacts on significant cultural resources could
39 occur in the SEZ; numerous prehistoric and Native American sites and trails
40 are potentially located within the SEZ and could be affected by solar energy
41 development. Concerns have been expressed in the past over the Salt Song
42 Trail, and solar development within the SEZ is likely to be visible from the
43 trail. Additional features of potential concern include Big Maria, Coxcomb,
44 and Eagle Mountains, Alligator Rock, Black Rock, and McCoy Springs. The
45 Soboba Band of Luiseno Indians and the Quechan have expressed concern
46 over highly sensitive areas within their Tribal Traditional Use Areas.

- 1 • Minority and low-income populations occur within a 50-mi (80-km) radius of
2 the proposed SEZ boundary; thus adverse impacts of solar development could
3 disproportionately affect minority and low-income populations.
4

5
6 **C.2.2.2 Summary of Comments Received**
7

8 Many of the comments received on the proposed Riverside East SEZ were in favor of
9 identifying the area as an SEZ, with boundary adjustments (The California Public Utilities
10 Commission, Center for Biological Diversity, California Energy Commission, Defenders of
11 Wildlife, Natural Resources Defense Council [NRDC] et al.,¹¹ California Native Plant Society,
12 and The Wildlands Conservancy). In particular, the Center for Biological Diversity
13 recommended eliminating all Wildlife Habitat Management Areas (WHMAs) and the sand
14 transport corridor. In addition, NRDC suggested that the microphyll woodlands and habitat
15 connectivity areas also be excluded from solar energy development. The Cultural Resources
16 Preservation Coalition and Partnership for the National Trails System proposed that lands within
17 the western end of the SEZ be eliminated to avoid impacts on Joshua Tree National Park’s
18 cultural and natural resources. The National Parks Conservation Association also recommended
19 reconfiguring the SEZ to avoid impacts on Joshua Tree National Park’s southern and eastern
20 border.
21

22 Residents of Lake Tamarisk and Desert Center opposed designating the area as an SEZ
23 because of its proximity to the two towns. The California Desert Coalition and the Western
24 Watersheds Project recommended that the Riverside East SEZ be eliminated because of occupied
25 desert tortoise habitat and other wildlife habitat, important cultural sites, and off-highway vehicle
26 use that would be affected by solar energy development. The Big Pine Paiute of the Owens
27 Valley favored eliminating the area as an SEZ because of conflicts with environmentally and/or
28 culturally sensitive resources.
29

30 Many commentors expressed concern for the potential impact on Joshua Tree NP and
31 wildlife corridors. EnXco expressed concern over the proposed visual resource mitigation
32 requirements for the Riverside East SEZ in the Draft Solar PEIS and other restrictions that would
33 constrain solar energy development within the SEZ. The Society for American Archaeology
34 expressed concern for impacts on Native American trails such as the Salt Song Trail and
35 adequacy of government-to-government consultation. The EPA was concerned that full build-out
36 of the Riverside East SEZ would be unlikely, given the groundwater availability and its potential
37 impacts on groundwater resources and groundwater-dependent species. The Metropolitan Water
38 District of Southern California was concerned about the transmission line assumptions made in
39 the Draft Solar PEIS and questioned whether those lines would actually be available for
40 interconnection.

¹¹ The Natural Resources Defense Council, Audubon Society, California Native Plant Society, California
Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks
Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness
Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those
comments are attributed to The Natural Resources Defense Council et al.

1 **C.2.2.3 Changes to the SEZ**
2

3 The proposed Riverside East SEZ has been reconfigured to eliminate 43,439 acres
4 (176 km²) in the northwest portion of the SEZ (see Figure C.2.2-2). Excluding this area will
5 reduce impacts on Joshua Tree NP. In addition, 11,547 acres (46.7 km²) within the SEZ
6 boundaries have been identified as non-development areas. These areas consist of intermittent
7 lakes, major washes, and areas identified for non-development through investigations for
8 approved projects. The remaining developable area within the SEZ is 147,910 acres (598.6 km²).
9

10 To reduce the visual resource impacts of solar development within the proposed
11 Riverside East SEZ which is proximate to and at a lower elevation than Joshua Tree NP and
12 several WAs, SEZ-specific visual resource mitigation requirements have been developed.
13 All forms of development within the area identified as needing to meet Visual Resource
14 Management (VRM) Class II-consistent objectives in the Draft Solar PEIS will be limited to
15 10 ft (3.3 m) or under, and technology will be restricted to either photovoltaic technologies of
16 less than 10 ft (3.3 m), or technologies with comparable or lower height and reflectivity. Within
17 the area of the SEZ that was identified as needing to meet VRM Class III-consistent objectives in
18 the Draft Solar PEIS, the solar development will be restricted to either PV technologies of less
19 than 10 ft (3.3 m), or technologies with comparable or lower heights and reflectivity. Additional
20 required mitigation measures to address potential visual resource impacts are given in
21 Section C.7.3 of this appendix.
22

23 The lands that had composed the northwest area of the proposed SEZ that are being
24 eliminated from the SEZ through this Supplement will be considered solar right-of-way
25 exclusion areas; that is, applications for solar development on these lands will not be accepted by
26 the BLM. Additionally, lands within the SEZ identified during investigations for approved
27 projects as areas where solar energy development should not occur will be defined as non-
28 development areas.
29

30 All proposed projects within the Riverside East SEZ will continue to be reviewed by
31 California’s Renewable Energy Action Team (see Section 2.2.2.2.6 of this Supplement) to ensure
32 consistency with the ongoing efforts of the Desert Renewable Energy Conservation Plan,
33 minimize impacts on habitat connectivity, and address other resource concerns in the SEZ area.
34
35

36 **C.2.2.4 Wilderness Character Status of SEZ**
37

38 A recently maintained inventory of wilderness characteristics was used to determine
39 whether public lands within the proposed Riverside East SEZ have wilderness characteristics.
40 The inventory found that approximately 11,925 acres (48.3 km²) on the eastern side of the SEZ
41 (in the area of McCoy Wash) have wilderness characteristics. The lands are shown in
42 Figure C.2.2-3.
43
44

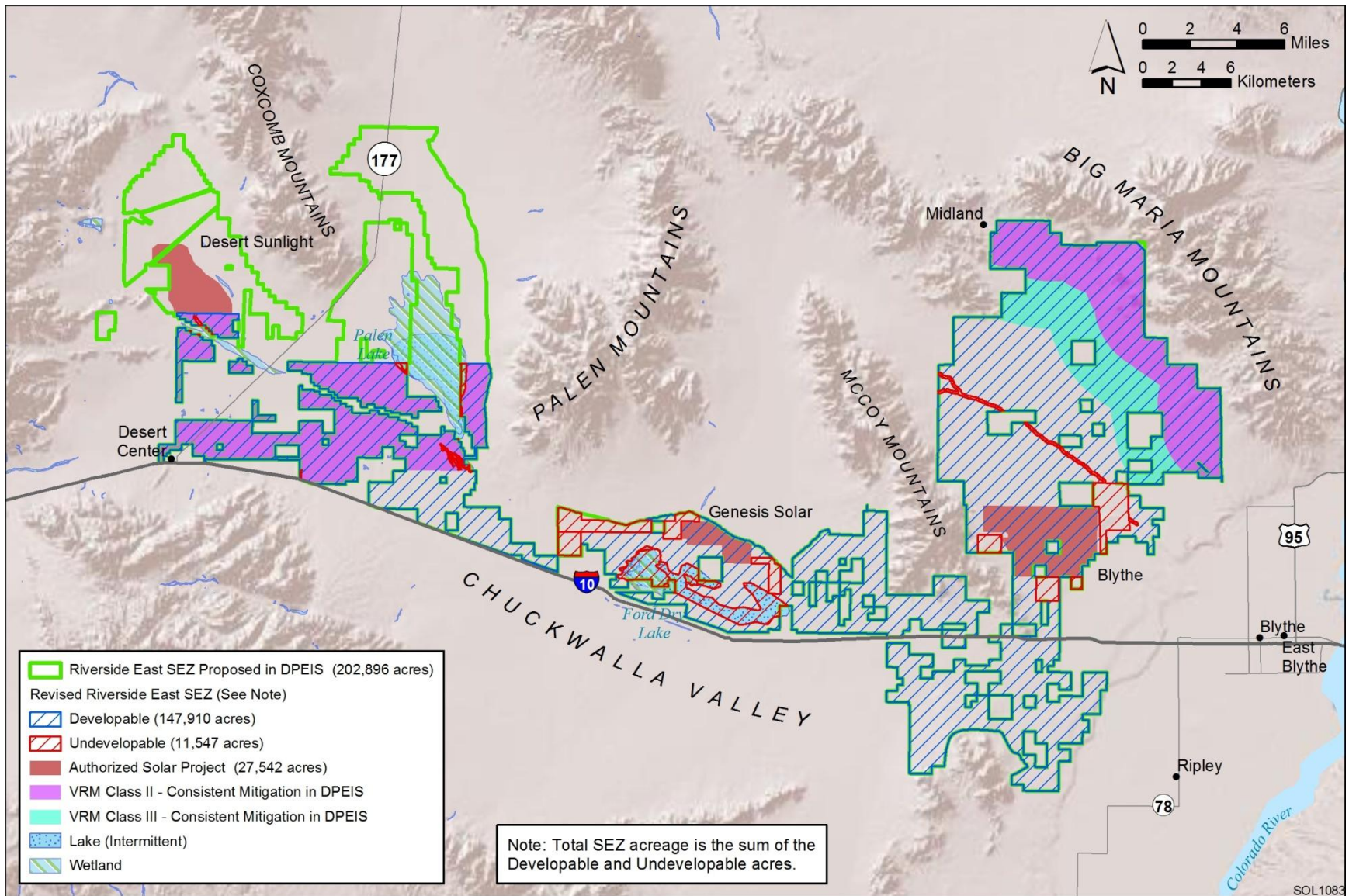
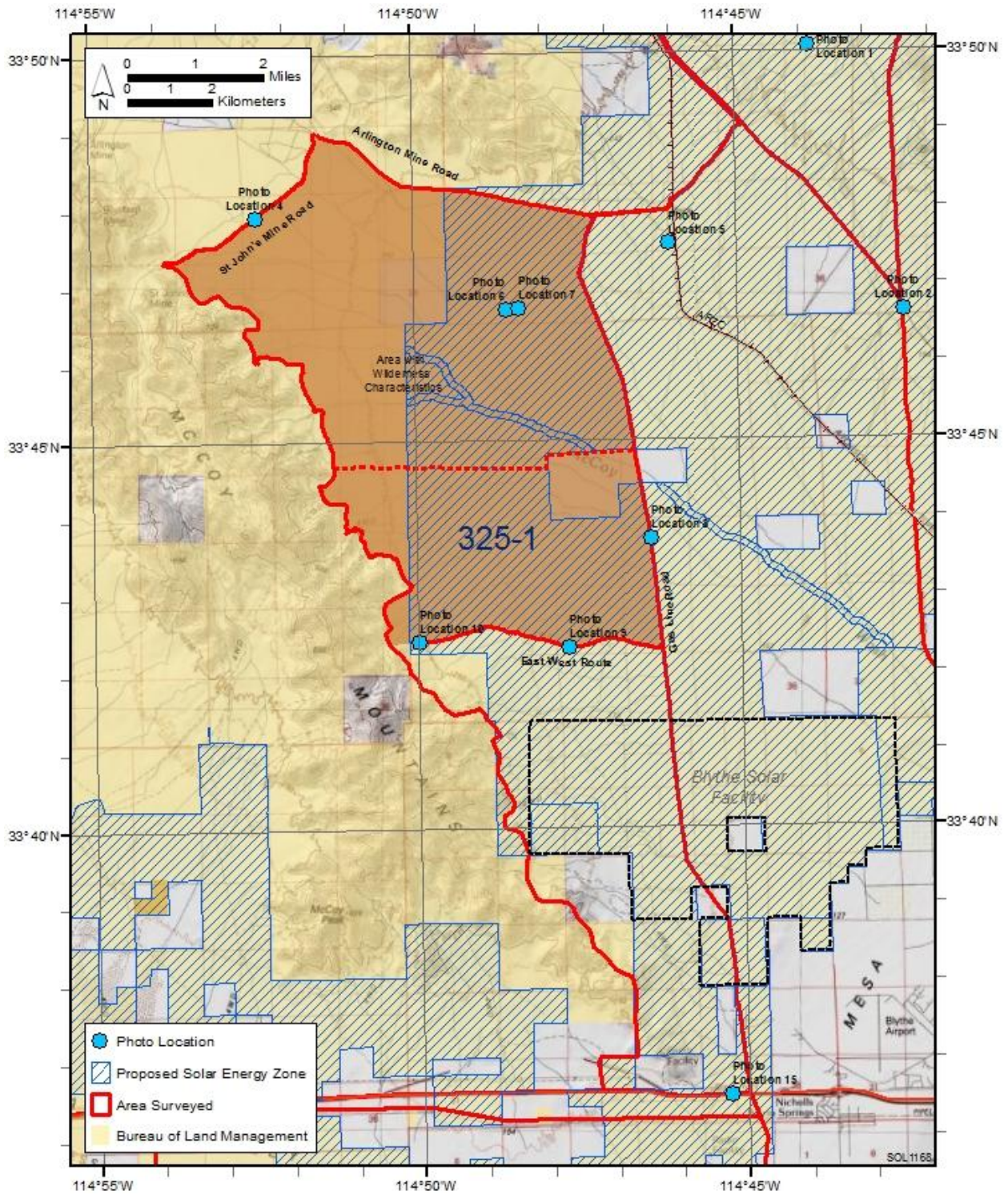


FIGURE C.2.2-2 Proposed Riverside East SEZ as Described in this Supplement



1

2 **FIGURE C.2.2-3 Area within the Proposed Riverside East SEZ with Wilderness Characteristics**

3

1 **C.2.2.5 Additional Data Collection Recommended**

2
3
4 **C.2.2.5.1 Lands and Realty**

5
6 None.

7
8
9 **C.2.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

10
11 None.

12
13
14 **C.2.2.5.3 Rangeland Resources**

15
16
17 *Livestock Grazing.* None.

18
19
20 *Wild Horses and Burros.* None.

21
22
23 **C.2.2.5.4 Recreation**

24
25 None.

26
27
28 **C.2.2.5.5 Military and Civilian Aviation**

29
30 The BLM will continue to consult with the DoD regarding potential issues with MTRs.
31 The potential impact of power towers in this SEZ, including the ability of power towers to
32 comply with Federal Aviation Administration regulations pertaining to air navigation
33 obstructions, could be further investigated.
34

35
36 **C.2.2.5.6 Geologic Setting and Soil Resources**

37
38 None.

39
40
41 **C.2.2.5.7 Minerals**

42
43 Additional information on leasable and strategic minerals in the vicinity of the proposed
44 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
45 on a proposed 20-year withdrawal of SEZ lands.
46

1 **C.2.2.5.8 Water Resources**
2

3 The following additional data and actions would help further characterize potential
4 impacts on water resources for the proposed Riverside East SEZ. A more detailed discussion of
5 each of these activities is included in the water resources action plan provided in Section C.7.2 of
6 this appendix.
7

- 8 • Prepare a planning-level water resources inventory of the Chuckwalla and
9 Palo Verde Mesa basins.

- 10 • Identify additional ephemeral stream channels and alluvial fan features for
11 non-development areas through consultation with the California Department
12 of Fish and Game (CDFG), California BLM, EPA, and U.S. Army Corps of
13 Engineers (USACE) with a focus on (moving west to east):
 - 14 – Alluvial fans and sand dune features surrounding Palen Lake and western
15 face of Coxcomb Mountains,
 - 16 – Alluvial fan features on south face of Palen Mountains,
 - 17 – Alluvial fan features on western and southern faces of McCoy Mountains,
 - 18 – Alluvial fan features on western, northern, and eastern faces of Mule
19 Mountains,
 - 20 – Ephemeral headwater channels of McCoy Wash,
 - 21 – Alluvial fan features on eastern face of McCoy Mountains,
 - 22 – Alluvial fan features on southern and eastern faces of Little Maria
23 Mountains, and
 - 24 – Alluvial fan features on western face of Big Maria Mountains.

- 25 • Perform field surveys and hydrologic analyses to support jurisdictional water
26 determinations and floodplain identifications. Tasks include:
 - 27 – Surveying select stream channels and alluvial fan features for elevations,
28 high water marks, and sediment conditions, and
 - 29 – Conducting hydrologic rainfall-runoff-routing analyses to identify
30 100-year floodplain areas.

- 31 • Coordinate with the USACE (Los Angeles District) regarding jurisdictional
32 water determinations. Water features to be considered include:
 - 33 – McCoy Wash and its tributaries.

- 34 • Identify 100-year floodplain exclusion areas for the SEZ. This task would
35 require coordination with the California Department of Water Resources
36 (Division of Flood Management), the Riverside County Flood Control and
37 Water Conservation District, and the Southern California Alluvial Fan Task
38 Force.

- 39 • Describe the formation of a stakeholder committee to conduct long-term
40 monitoring of water resources. This activity would entail:
 - 41 – Identifying key stakeholder agencies;
 - 42 –
 - 43 –
 - 44 –
 - 45 –
 - 46 –

- 1 – Discussing general features of a monitoring program;
- 2 – Providing recommendations of surface monitoring of ephemeral stream
- 3 networks through consultations with CDFG, California BLM, EPA, and
- 4 USACE; and
- 5 – Working with the U.S. Geological Survey to develop groundwater
- 6 monitoring well design and numerical groundwater models.
- 7
- 8 • Develop a modified version of the Leake et al. (2008) superposition
- 9 groundwater model in order to estimate potential impacts of full-build-out
- 10 groundwater pumping scenarios (according to estimated, technology-specific
- 11 water requirements) to include:
- 12 – Assessing the potential for drawdown impacts on the Colorado River
- 13 Accounting Surface;
- 14 – Coordinating with the U.S. Bureau of Reclamation (managing agency of
- 15 Colorado River Act) regarding results and implications;
- 16 – Assessing the potential for drawdown impacts on Palen Lake (wet playa)
- 17 and other surface water features identified in planning level inventory; and
- 18 – Assessing the potential for drawdown impacts on other groundwater
- 19 users of the Chuckwalla and Palo Verde Mesa basins.
- 20
- 21

22 **C.2.2.5.9 Ecological Resources**

23

24

25 *Vegetation and Plant Communities.* The following additional data-gathering actions

26 would help further characterize potential impacts on vegetation and plant communities for the

27 proposed Riverside East SEZ:

28

- 29 • Identify and map the location and areal extent of desert dry washes, dry wash
- 30 woodland/microphyll woodland (including ironwood forest), riparian
- 31 (including mesquite bosque), desert chenopod scrub, and wetland habitats
- 32 within the SEZ. Identify and map the location and areal extent of these
- 33 habitats, as well as bush seep-weed (*Suaeda moquinii*) communities, outside
- 34 the SEZ that could be affected by hydrologic changes, including groundwater
- 35 elevations, and changes in water, sediment, and contaminant inputs associated
- 36 with runoff. Such efforts could determine habitat characteristics, including
- 37 water source, hydrologic regime, and dominant plant species.
- 38
- 39 • Identify and map the location and areal extent of sand dunes and sand
- 40 transport systems within the SEZ.
- 41
- 42 • Identify and map the location of cactus, including barrel cactus and cholla,
- 43 and *Yucca* species, within the SEZ.
- 44
- 45

1 **Wildlife.** The following additional data-gathering actions would help further characterize
2 potential impacts on wildlife resources for the SEZ:

- 3
- 4 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
- 5 SEZ as a movement/migratory corridor or as important habitat for mule deer.
- 6
- 7 • Identify and map the location and areal extent of wash and playa habitats
- 8 within the SEZ (see Section C.2.2.5.8 above). These areas are important
- 9 habitat for a number of wildlife species.

10

11

12 **Aquatic Biota.** Investigations recommended under the water resources action plan
13 (Section C.2.2.5.8) would be useful in characterizing and protecting habitat available to aquatic
14 biota. No surveys are necessary for surface water features that have been identified as non-
15 development areas (e.g., McCoy Wash). However, if it is determined that the surface water
16 features in the non-development areas could be affected indirectly by water withdrawals,
17 changes in drainage patterns, and construction activities, the potential for aquatic communities in
18 these areas to be affected could require further investigation prior to development. Other surface
19 water features within the SEZ not identified as non-development zones may contain aquatic
20 biota; therefore, preliminary evaluations of these surface water features could be conducted to
21 determine the potential for aquatic communities to be present.

22

23

24 **Special Status Species.** The following additional data-gathering actions would be useful
25 in further characterizing and protecting habitat available to special status species:

- 26
- 27 • Conduct pre-disturbance surveys within the SEZ to determine the presence
- 28 and abundance of those special status species that are federally listed,
- 29 proposed for listing, or candidates for listing under the Endangered Species
- 30 Act; (2) listed by the State of California as endangered, threatened, or fully
- 31 protected; or (3) designated as sensitive by the California BLM State Office.
- 32 These species are listed in Table C.2.2-1. Surveys should focus on areas
- 33 identified as potentially suitable and the suitability of these habitats to support
- 34 these special status species should be determined in the field. All field-
- 35 determined suitable habitats for special status species should be mapped.
- 36 Target species and survey protocols should be developed in coordination with
- 37 the U.S. Fish and Wildlife Service (USFWS) and CDFG.

38

39 The Draft Solar PEIS presents a table of special status species for which
40 potential impacts need to be evaluated prior to development in the proposed
41 Riverside East SEZ. The list of species presented in Table 9.4.12.1-1 of the
42 Draft Solar PEIS also includes species listed by the State of California and
43 species ranked by the States of California or Arizona as S1 or S2, or species of
44 concern by the State of California. Based on the design features presented in
45 the Draft Solar PEIS, the potential for impacts on these additional species will
46 also need to be addressed before development could occur in the SEZ.

47

1 **TABLE C.2.2-1 Special Status Species That May Occur near the Proposed Riverside East SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Plants</i>			
Alkali mariposa-lily	<i>Calochortus striatus</i>	BLM-S	Alkaline seeps, springs, and meadows at elevations between 2,600 and 4,600 ft. ^d Nearest recorded occurrences are 40 mi ^e west of the SEZ. About 68,658 acres ^f of potentially suitable habitat occurs within the SEZ region.
Chaparral sand-verbena	<i>Abronia villosa</i> var. <i>aurita</i>	BLM-S	Endemic to southern California. Inhabits chaparral desert sand dunes at elevations between 350 and 5,250 ft. Historically occurred on and in the vicinity of the SEZ; the species has not been recorded in the project area since 1964. Most recent recorded occurrences are 23 mi from the SEZ. About 84,357 acres of potentially suitable habitat occurs within the SEZ region.
Creamy blazing star	<i>Mentzelia tridentata</i>	BLM-S	Mojave desert creosotebush scrub communities on rocky and sandy substrates at elevations below 3,900 ft. Nearest recorded occurrences are 45 mi west of the SEZ. About 2,215,155 acres of potentially suitable habitat occurs within the SEZ region.
Giant spanish-needle	<i>Palafoxia arida</i> var. <i>gigantea</i>	BLM-S	Desert sand dune habitats at elevations below 330 ft. Nearest recorded occurrences are 40 mi south of the SEZ. Suitable habitat may exist on the site. About 84,168 acres of potentially suitable habitat occurs within the SEZ region.
Harwood's eriastrum	<i>Eriastrum harwoodii</i>	BLM-S	Known from fewer than 20 occurrences in southern California on desert dunes and other sandy habitats at elevations between 650 and 3,000 ft. Nearest recorded occurrence is 15 mi northwest of the SEZ in the Pinto Mountains DWMA (Desert Wildlife Management Area). About 84,168 acres of potentially suitable habitat occurs within the SEZ region.
Latimer's woodland-gilia	<i>Saltugilia latimeri</i>	BLM-S	Mojave Desert scrub communities, pinyon-juniper woodlands, and washes on rocky or sandy substrates at elevations between 1,300 and 6,500 ft. Nearest recorded occurrence is 30 mi west of the SEZ. About 2,920,277 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants (Cont.)			
Little San Bernardino Mountains linanthus	<i>Linanthus maculatus</i>	BLM-S	Known from fewer than 20 occurrences in southern California near Joshua Tree NP in desert dunes and sandy flats with creosotebush scrub and Joshua tree woodland communities at elevations less than 6,900 ft. Nearest recorded occurrences are 30 mi west of the SEZ. About 84,168 acres of potentially suitable habitat occurs within the SEZ region.
Munz's cholla	<i>Opuntia munzii</i>	BLM-S	Gravelly or sandy to rocky soils, often on lower bajadas, washes, flats, hills and canyon sides in Sonoran Desert creosotebush shrub communities at elevations below 3,280 ft. Nearest recorded occurrences are from the Chuckwalla DWMA, approximately 20 mi south of the SEZ. About 4,187,934 acres of potentially suitable habitat occurs within the SEZ region.
Orocopia sage ^g	<i>Salvia greatae</i>	BLM-S	Creosotebush scrub communities and dry washes at elevations less than 2,600 ft. Known to occur in the affected area. Nearest occurrences are from the Chuckwalla DWMA about 2 mi south of the SEZ. About 2,853,196 acres of potentially suitable habitat occurs within the SEZ region.
White-margined beardtongue	<i>Penstemon albomarginatus</i>	BLM-S	Desert sand dune habitats and Mojave Desert scrub communities at elevations below 3,600 ft. Nearest recorded occurrences are 50 mi north of the SEZ. About 2,366,404 acres of potentially suitable habitat occurs within the SEZ region.
Reptiles			
Desert tortoise	<i>Gopherus agassizii</i>	ESA-T; CA-T	Mojave and Sonoran Deserts in desert creosotebush communities on firm soils for digging burrows, along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Known to occur on the SEZ (western and northeastern portions) and in the affected area. About 4,205,025 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Reptiles (Cont.)			
Mojave fringe-toed lizard	<i>Uma scoparia</i>	BLM-S	Sandy habitats in the Mojave Desert from Death Valley south to the Colorado River near Blythe, California and extreme western Arizona. Sparsely-vegetated desert areas with fine windblown sand, including dunes, flats, and washes at elevations below 3,000 ft. Nearest recorded occurrences are 25 mi north of the SEZ. About 1,840,628 acres of potentially suitable habitat occurs within the SEZ region.
Rosy boa	<i>Charina trivirgata</i>	BLM-S	Southeastern California and western Arizona in scrublands, rocky deserts, and canyons with permanent or intermittent streams. Nearest recorded occurrences are from Joshua Tree NP, approximately 25 mi west of the SEZ. About 4,171,153 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
Bendire's thrasher	<i>Toxostoma bendirei</i>	BLM-S	Summer resident in the SEZ region in a variety of desert habitats with fairly large shrubs or cacti and open ground, or open woodland with scattered shrubs and trees, between 0 and 1,180 ft elevation. Nearest recorded occurrence is 2 mi south of the SEZ in the Chuckwalla DWMA. About 2,526,161 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident and migrant in the SEZ region at lower elevations in open grasslands, shrublands, sagebrush flats, desert scrub, desert valleys, and fringes of pinyon-juniper habitats. Occurs in Riverside County, California in the SEZ region. About 1,978,858 acres of potentially suitable habitat occurs within the SEZ region.
Gila woodpecker	<i>Melanerpes uropygialis</i>	CA-E	Year-round resident in the SEZ region along the Colorado River in desert riparian and desert wash habitats, orchards, vineyards, and urban habitats. Nearest recorded occurrence is from the Colorado River, approximately 6 mi east of the SEZ. About 297,582 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds (Cont.)</i>			
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Year-round resident in the SEZ region. Open areas with short, sparse vegetation, including grasslands, agricultural fields, and disturbed areas. Nests in burrows created by mammals or tortoises. Known to occur in the affected area. Nearest occurrences are within 1 mi east of the SEZ. About 4,653,092 acres of potentially suitable habitat occurs within the SEZ region.
<i>Mammals</i>			
California leaf-nosed bat	<i>Macrotus californicus</i>	BLM-S	Year-round resident in SEZ region in desert riparian, desert wash, desert scrub, and palm oasis habitats at elevations below 2,000 ft. Roosts in mines, caves, and buildings. Known to occur in the affected area. Nearest recorded occurrences are from the Palen/McCoy Wilderness within 2 mi of the SEZ. About 3,973,317 acres of potentially suitable habitat occurs within the SEZ region.
Cave myotis	<i>Myotis velifer</i>	BLM-S	Year-round resident in SEZ region in desert scrub, shrublands, washes, and riparian habitats. Roosts in colonies in caves. Known to occur in the affected area. Nearest recorded occurrence is from the Mule Mountains ACEC about 2 mi south of the SEZ. About 4,136,719 acres of potentially suitable habitat occurs within the SEZ region.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM-S	Open, steep rocky terrain in mountainous habitats of the eastern Mojave and Sonoran Deserts in California. Rarely uses desert lowlands, except as corridors for travel between mountain ranges. Known to occur in the affected area. Nearest recorded occurrences are from the Joshua Tree Wilderness and the Chuckwalla DWMA, about 2 mi north, west, and south of the SEZ. About 1,896,141 acres of potentially suitable habitat occurs within the SEZ region.
Pallid bat	<i>Antrozous pallidus</i>	BLM-S	Year-round resident in SEZ region in low-elevation desert communities, including grasslands, shrublands, and woodlands. Roosts in caves, crevices, and mines. Known to occur in the affected area. Nearest recorded occurrence is from the Chuckwalla Mountains Wilderness approximately 5 mi south of the SEZ. About 3,668,119 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Mammals (Cont.)			
Palm Springs pocket mouse	<i>Perognathus longimembris bangsi</i>	BLM-S	Creosote scrub, desert scrub, and grasslands on loose or sandy soils. Nearest recorded occurrence is from the Chuckwalla DWMA, approximately 25 mi west of the SEZ. About 3,749,649 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S	Year-round resident in SEZ region in deserts, grasslands, and mixed coniferous forests at elevations below 10,000 ft. Roosts in caves, rock crevices, and buildings. Nearest recorded occurrence is 40 mi west of the SEZ. Suitable habitat exists on the site. About 2,363,936 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Year-round resident in SEZ region in all habitats but subalpine and alpine habitats, and at any season. Roosts in caves, mines, tunnels, buildings, or other man-made structures. Known to occur in the affected area. Nearest recorded occurrences are approximately 4 mi southeast of the SEZ. About 5,065,765 acres of potentially suitable habitat occurs within the SEZ region.
Western mastiff bat	<i>Eumops perotis californicus</i>	BLM-S	Year-round resident in SEZ region in open semiarid habitats, including conifer and deciduous woodlands, shrublands, grasslands, chaparral, and urban areas. Roosts in crevices in cliff faces, buildings, and tall trees. Known to occur in the affected area. Nearest recorded occurrence is 5 mi south of the SEZ. About 4,069,881 acres of potentially suitable habitat occurs within the SEZ region.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Year-round resident in SEZ region in woodland and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Nearest recorded occurrence is from the Chocolate Mountains, approximately 30 mi south of the SEZ. About 661,873 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.2.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds			
Western yellow bat	<i>Lasiurus xanthinus</i>	BLM-S	Year-round resident in SEZ region in desert riparian, desert wash, and palm oasis habitats at elevations below 2,000 ft. Roosts in trees. Nearest recorded occurrence is from Blythe, California, approximately 6 mi east of the SEZ. About 1,340,978 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) California BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; CA-E = listed as endangered by the State of California; CA-T = listed as threatened by the State of California; ESA-T = listed as threatened under the ESA..

^c For plant and invertebrate species, potentially suitable habitat was determined using California Regional Gap Analysis Project (CAREGAP) and Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005, 2010). For reptile, bird, and mammal species, potentially suitable habitat was determined using CAREGAP and SWReGAP habitat suitability models as well as CAREGAP and SWReGAP land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

- Identify and map the location and areal extent of desert playa and wash habitats within the SEZ, including habitat characteristics (such as water source, hydrologic regime, and dominant plant species) both within the habitat boundaries and in adjacent habitats. Species potentially associated with these habitats include alkali mariposa-lily, California saw-grass, Coves' cassia, Emory's crucifixion-thorn, jackass-clover, Salt Spring checkerbloom, sand evening-primrose, Roberts' rhopalolemma bee, and crissal thrasher.
- Identify and map the location and areal extent of sand dunes and sand transport systems on the SEZ. Species potentially associated with these habitats include chaparral sand-verbena, dwarf germander, giant Spanish-needle, Harwood's eriastrum, jackass-clover, Little San Bernardino Mountains linanthus, and Mojave fringe-toed lizard.
- Identify and map the location and areal extent of woodland habitats on the SEZ should be determined and mapped. Species potentially associated with

1 these habitats include loggerhead shrike, Lucy’s warbler, Arizona myotis, and
2 western yellow bat.

- 3
- 4 • Identify and map the location and areal extent of rocky cliff and outcrop
5 habitats on the SEZ. Species potentially associated with these habitats include
6 California leaf-nosed bat (roosting), cave myotis (roosting), Nelson’s bighorn
7 sheep, pallid bat (roosting), pocketed free-tailed bat (roosting), spotted bat
8 (roosting), Townsend’s big-eared bat (roosting), western mastiff bat
9 (roosting), and western small-footed myotis (roosting).

10

11

12 **C.2.2.5.10 Air Quality and Climate**

13 None.

14

15

16

17 **C.2.2.5.11 Visual Resources**

18

19 Visual resources will be re-evaluated for the Final Solar PEIS based on the boundary
20 adjustments and proposed technology restrictions described in Section C.2.2.3 of this
21 Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the Riverside East
22 SEZ is provided in Table C.2.2-2. This table includes only the resources that would be subject to
23 moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these
24 levels of visual contrast from solar energy development in the Riverside East SEZ for the
25 following sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):

- 26
- 27 • California Desert Conservation Area
- 28
- 29 • Joshua Tree NP
- 30
- 31 • Big Maria Mountains WA
- 32
- 33 • Chuckwalla Mountains WA
- 34
- 35 • Joshua Tree WA
- 36
- 37 • Little Chuckwalla Mountains WA
- 38
- 39 • Palen-McCoy WA
- 40
- 41 • Palo Verde Mountains WA
- 42
- 43 • Rice Valley WA
- 44
- 45 • Corn Springs ACEC
- 46

1 **TABLE C.2.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Riverside**
 2 **East SEZ**

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
National Conservation Area (NCA)	CDCA	25,919,319 acres	Riverside East SEZ is located within the CDCA.	1,494,552 acres	5.8	Construction and operation of solar facilities would result in strong visual contrasts within the SEZ viewshed that might not be completely mitigated
NP	Joshua Tree	793,331 acres	The eastern boundary of the NP is adjacent to the SEZ's northwestern boundary, and other portions are located between 0.2 and 2.5 mi of the SEZ.	117,591 acres	14.8	Strong visual contrasts could be observed by NP and WA visitors. The 650-ft viewshed extends approximately 14.2 mi into the NP from the northwestern boundary of the SEZ.
Scenic Highway	Bradshaw Trail ^g	70 mi	Near the southeastern corner of the SEZ, passes within 1.7 mi of the SEZ and parallels the SEZ at roughly that distance for more than 6 mi.	23 mi	32.9	Weak to strong visual contrasts could be observed within and near the SEZ by travelers.
WAs	Big Maria Mountains	46,056 acres	0.3 mi east of the SEZ	8,873 acres	19.3	Strong visual contrasts could be observed by WA visitors.
	Chuckwalla Mountains	88,202 acres	1.1 mi south of the western portion of the SEZ	49,952 acres	56.6	Weak to strong visual contrasts could be observed by WA visitors.

TABLE C.2.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WAs (Cont.)	Joshua Tree	586,623 acres	Same as for the Joshua Tree NP	99,460 acres	17.0	Strong visual contrasts could be observed by NP and WA visitors.
	Little Chuckwalla Mountains	28,708 acres	5.0 mi south of the SEZ	16,679 acres	58.1	Moderate to strong visual contrasts could be observed by WA visitors.
	Palen-McCoy	224,414 acres	Adjacent to the northern and eastern boundaries of the western portion of the SEZ	170,666 acres	76.0	Weak to strong visual contrasts could be observed by WA visitors.
	Palo Verde Mountains	30,403 acres	6.2 mi south of the SEZ	13,254 acres	43.6	Weak to moderate visual contrasts could be observed by WA visitors.
	Rice Valley	43,412 acres	0.5 mi north of the SEZ	35,773 acres	82.4	Strong visual contrasts could be observed by WA visitors; WA includes portion of Big Maria Mountains.
ACECs designated for outstanding scenic values	Corn Springs	2,463 acres	4.8 mi south of the SEZ	1,075 acres	43.6	Strong visual contrasts could be observed by ACEC visitors. Portions of the ACEC within the viewshed extend from the nearest approach to approximately 5.9 mi from the SEZ.

TABLE C.2.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas)	I-10 ^h	2,460 mi	Passes through the SEZ for a distance of approximately 4.0 mi, abuts the southern boundary of the SEZ for an additional 1.7 mi, and is within 0.67 mi of the SEZ for an additional 34 mi.	79 mi	3.2	Strong levels of visual contrast would be expected as travelers in both directions approached and passed through the SEZ.
	State Route 177	NA ⁱ	Passes through or is immediately adjacent to the SEZ for a distance of approximately 8.4 mi.	27	NA ^k	Solar energy development could potentially cause strong visual contrasts for travelers and would likely dominate the view from some locations: generally open views of the SEZ throughout the viewshed. However, solar collector/reflector arrays within the SEZ would be seen nearly edge-on. This would reduce their apparent size, conceal their strong regular geometry, and cause them to repeat the horizontal line of the plain in which the SEZ is situated.
	Blythe ^j	16,013 acres	8.3 mi east of the SEZ	NA	NA	Moderate to strong visual contrasts may be observed.
	East Blythe ^j	326 acres	9.6 mi east of the SEZ	NA	NA	Moderate to strong visual contrasts may be observed.

TABLE C.2.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (<i>Cont.</i>)	Ehrenberg ^k	NA	13 mi east of the SEZ	NA	NA	Contrast levels would be expected to be weak to moderate.
	Palo Verde ^j	378 acres	5.8 mi south of the SEZ	NA	NA	Weak to moderate visual contrasts may be observed.
	Ripley ^k	NA	4.5 mi east of the SEZ	NA	NA	Moderate to strong visual contrasts may be observed.
	Desert Center ^k	NA	Adjacent to the southwest boundary of the SEZ	NA	NA	Strong visual contrasts may be observed.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percent total acreages/mileages visible within 25 mi (40 km) of the SEZ.

^f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

^g Length of Bradshaw Trail: BLM California (2011).

^h Length of I-10: AA Roads' Interstate Guide (2006b).

ⁱ NA = data not available.

^j Acreage of California Towns/Cities: U.S. Bureau of the Census (2011c).

^k Acreage of Arizona Towns: U.S. Bureau of the Census (2011d).

- 1 • Bradshaw Trail Scenic Highway
- 2
- 3 • I-10
- 4
- 5 • State Route 177
- 6
- 7 • Communities of Blythe, East Blythe, Ehrenberg, Palo Verde, Ripley, and
- 8 Desert Center.
- 9

10 The following steps could be taken to better understand potential impacts on these
11 SVRAs and SVLs from solar development in the Riverside East SEZ:

- 12
- 13 • Identify key observation points (KOPs) within these areas through working
- 14 with the management agency or other local stakeholders.
- 15
- 16 • Conduct viewshed analyses from the KOPs to determine how much of the
- 17 SEZ would be in view from each KOP.
- 18
- 19 • As deemed necessary, based on viewshed analysis results, prepare wireframe
- 20 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
- 21 depicting the 80% development scenario to better estimate potential impacts.
- 22

23 This additional analysis may help judge potential visual contrast more accurately for
24 most KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
25 superimposition of the wireframe models onto the photos might be required or desired.

26

27 A visual resource inventory (VRI) was conducted for the area including the Riverside
28 East SEZ in 2010. The area was re-examined in 2011 for maintenance of an inventory for lands
29 with wilderness characteristics. Because these two efforts reached somewhat different
30 conclusions concerning visual resource values on the eastern side of the McCoy Mountains and
31 the western face of the Big Maria Mountains, additional analysis of the visual values in these
32 areas may be needed to determine if adjustments to the SEZ-specific mitigation identified in the
33 Draft Solar PEIS are warranted.

34

35 Additional required mitigation measures to address potential visual resource impacts are
36 given in Section C.7.3 of this appendix.

37

38

39 **C.2.2.5.12 Acoustic Environment**

40 None.

41

42

43

44 **C.2.2.5.13 Paleontological Resources**

45

46 The BLM Regional Paleontologist will be contacted to determine whether additional
47 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in

1 California, such as from recent solar applications in which paleontological surveys were
2 completed. A preliminary paleontological survey could be conducted to determine the PFYC of
3 the SEZ, in order to update the temporary assignment of PFYC 3b used in the Draft Solar PEIS
4 for most of the SEZ.
5
6

7 **C.2.2.5.14 Cultural Resources and Native American Concerns** 8

9 Approximately 108 surveys for cultural resources have occurred in the revised Riverside
10 East SEZ area, identifying about 327 sites within the SEZ. At least six of these sites are
11 considered eligible for listing in the *National Register of Historic Places* (NRHP). At least
12 160 sites have been recorded within 5 mi (8 km) of the larger, original SEZ footprint. As with
13 other SEZs, dune areas and areas along washes and dry lakes have the highest potential for
14 containing significant archaeological resources. Several culturally-important areas have also
15 been identified near the SEZ, including specific mountain ranges and peaks, rock formations,
16 geoglyphs and rock art, sacred trails, ACECs, and important water sources. The destruction and
17 degradation of important plant resources and the destruction of habitat or impediments to the
18 movement of culturally important wildlife are also potential impacts of concern within the SEZ.
19

20 The following additional data collection efforts could reduce the uncertainty about
21 potential impacts on cultural resources:
22

- 23 • Incorporate the Class I literature file search currently being conducted by
24 SWCA Environmental Consultants on behalf of the BLM.
25
- 26 • Conduct a Class II reconnaissance level stratified random sample survey of
27 the SEZ to achieve a 10% sample (a total of approximately 15,959 acres
28 [64.5 km²], but will be less than that once it is determined through the Class I
29 review how many acres have already been sufficiently surveyed).¹² Areas of
30 interest, such as dune areas and along washes and dry lakes, as determined
31 through the Class I review, should also be identified prior to establishing the
32 survey design and sampling strategy. If appropriate, some subsurface testing
33 of dune areas should be considered in the sampling strategy as well.
34
- 35 • Prepare a cultural sensitivity map based on the results of the Class I and
36 Class II studies (and incorporating the results of the Desert Renewable Energy
37 Conservation Plan cultural sensitivity map, if available).
38
- 39 • Continue government-to-government consultation as described in
40 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
41 not included in the original studies in Utah and Nevada to determine whether
42 those Tribes have similar concerns or whether they would want to participate
43 in a similar ethnographic study. The Riverside East SEZ falls in the traditional

¹² The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1 use area of the Serrano, Cahuilla, Quechan, Mohave, and Chemehuevi.
2 Potential topics presented in the Draft Solar PEIS to be discussed during
3 consultation include the proposed Prehistoric Trail Network Cultural
4 Landscape/Historic District, which includes the Salt Song Trail, the *Xam*
5 *Kwatcan* Trail, and the Cocomaricopa Trail; effects of workers and increased
6 traffic on sacred sites; the loss of culturally important plants; the use and
7 availability of water and the contamination of groundwater; ecological
8 segmentation; important natural landscape features, such as the Big Marias,
9 Coxcomb Mountains, Eagle Mountain, Alligator Rock, Black Rock, Palen
10 Dry Lake, Ford Dry Lake, McCoy Springs, Corn Springs; local shrines and
11 sacred sites; and several nearby ACECs and NRHP-listed properties, such as
12 the Blythe Intaglios.
13

14 **C.2.2.5.15 Socioeconomics and Environmental Justice**

15
16 None.
17
18

19 **C.2.2.5.16 Cumulative Impact Considerations**

20
21
22 None.
23
24

1 **C.3 COLORADO PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.3.1 Antonito Southeast**

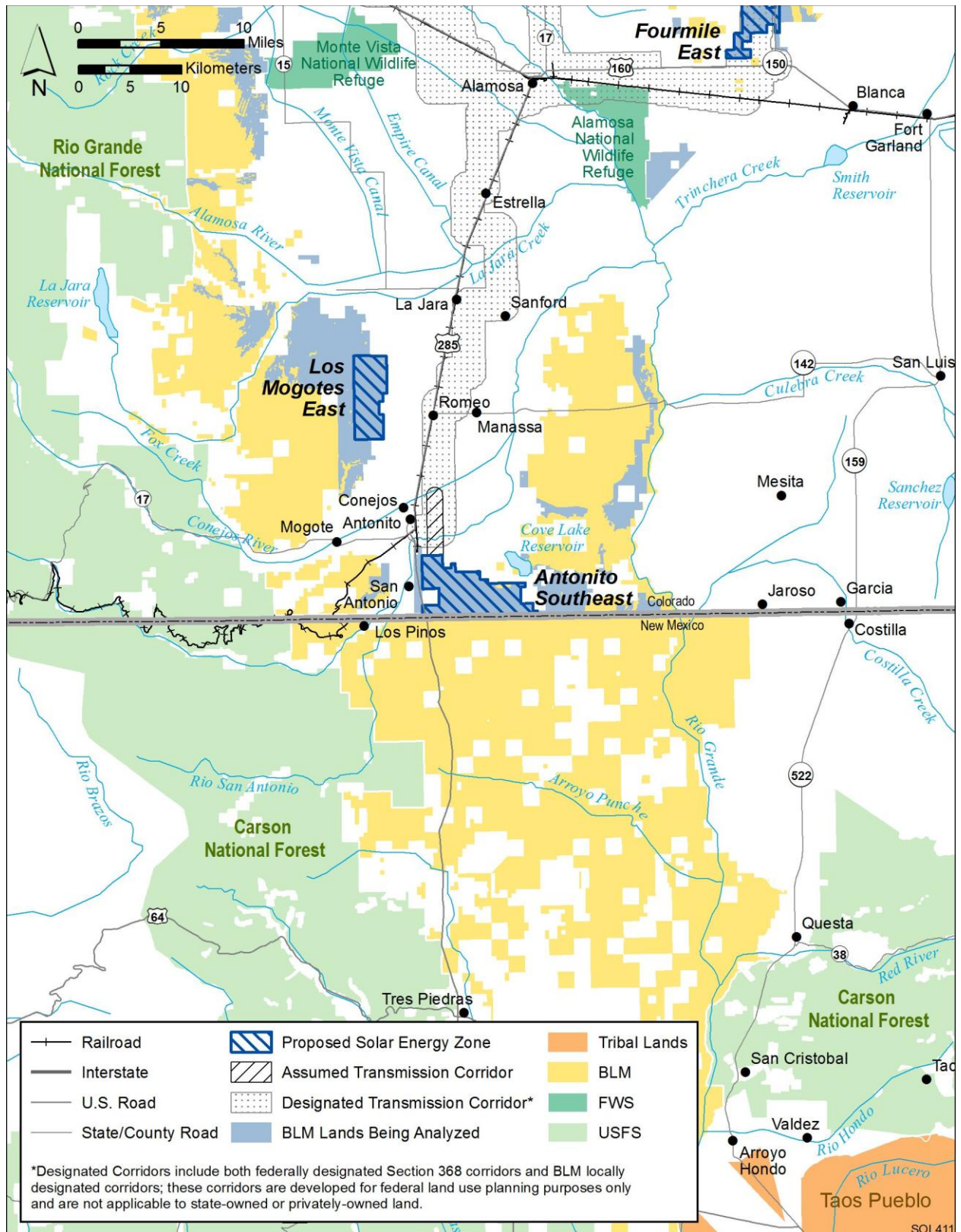
5
6
7 **C.3.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Antonito Southeast solar energy zone (SEZ), as presented in the Draft
11 Solar PEIS, had a total area of 9,729 acres (39.4 km²). It is located in Conejos County on the
12 southern Colorado state boundary with New Mexico (Figure C.3.1-1). The largest nearby town,
13 Alamosa, is located about 34 mi (55 km) to the north of the SEZ. Several small towns lie closer
14 to the SEZ, with Antonito, Colorado about 2 mi (3 km) to the northwest of the SEZ.
15

16 The Draft Solar PEIS identified a 69-kV transmission line that is located about 4 mi
17 (6 km) north of the SEZ as the nearest point for connection of the SEZ to the grid. The location
18 of new transmission that could be constructed for this SEZ in the future may be different from
19 that assumed in the Draft Solar PEIS. Details on the revised transmission impact assessment to
20 be included in the Final Solar PEIS are provided in Section C.7.1 of this appendix. Analysis of
21 transmission lines and/or access roads will be completed, as necessary, as part of the project-
22 specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
23

24 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 25
26 • Access to U.S. Department of the Interior Bureau of Land Management
27 (BLM), state, and private lands to the east and south of the SEZ could be
28 affected by solar development if public access through the SEZ is not
29 maintained. The current boundary of the SEZ would create an isolated parcel
30 of public land that could be difficult to manage.
31
- 32 • The Cumbres & Toltec Area of Environmental Concern (ACEC) could be
33 moderately affected by development within the SEZ, and there is potential
34 that the scenic train ride experience could be diminished for some visitors.
35 Wilderness characteristics within the San Antonio Wilderness Study Area
36 (WSA) in New Mexico could be impaired. Potential impact on use of the
37 Los Caminos Antiguos Scenic Byway is not known. The SEZ is located
38 within the designated Sangre de Cristo National Heritage Area. The SEZ has
39 the potential to adversely affect the West Fork of the North Branch of the Old
40 Spanish Trail.
41
- 42 • Three seasonal grazing allotments would be cancelled and 575 animal unit
43 months would be lost. Five grazing permittees would be displaced and would
44 incur economic and possible social impacts.
45



1
 2 **FIGURE C.3.1-1 Proposed Antonito Southeast SEZ as Presented in the Draft Solar PEIS**
 3

- 1 • The SEZ is located under two military training routes (MTRs) and any solar
2 facility that impinges into military airspace would interfere with military
3 training activities.
- 4
- 5 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
6 erosion by wind and runoff, sedimentation, and soil contamination) could
7 occur.
- 8
- 9 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
10 wet-cooling options would not be feasible.
- 11
- 12 • Clearing of a large portion of the proposed SEZ could primarily affect semi-
13 desert shrub steppe semi-desert grassland, and may adversely affect desert dry
14 wash or wetland habitats, depending on the amount of habitat disturbed. The
15 establishment of noxious weeds could result in habitat degradation.
- 16
- 17 • Potentially suitable habitat for 38 special status species and more than
18 50 wildlife species occurs in the affected area of the proposed SEZ; less than
19 1% of the potentially suitable habitat for any of these species occurs in the
20 region that would be directly affected by development.
- 21
- 22 • If aquatic biota are present in ephemeral washes and Alta Lake and associated
23 wetlands, they could be affected by the direct removal of surface water
24 features within the construction footprint. Aquatic biota, if present in surface
25 water features within the SEZ, could be indirectly affected by a decline in
26 habitat quantity and quality because of water withdrawals and changes in
27 drainage patterns, as well as increased sediment and contaminant inputs
28 associated with ground disturbance and construction activities.
- 29
- 30 • Temporary exceedances of ambient air quality standards for particulate matter
31 at the SEZ boundaries are possible during construction. These high
32 concentrations, however, would be limited to the immediate area surrounding
33 the SEZ boundary. Modeling indicates that emissions from construction
34 activities could exceed Class I Prevention of Significant Deterioration (PSD)
35 PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or less)
36 increments at the nearest federal Class I areas (Wheeler Peak Wilderness Area
37 [WA] and Great Sand Dunes WA).
- 38
- 39 • Strong visual contrasts could be observed by visitors to the San Antonio
40 WSA, the Los Caminos Antiguos Scenic Byway, and the Cumbres & Toltec
41 Scenic Railroad depot in Antonito. Moderate visual contrasts could be
42 observed from some locations by visitors to the San Luis Hills WSA and
43 scenic ACEC, and the Cumbres & Toltec Scenic Railroad scenic ACEC.
44 Because of these potential impacts, Visual Resource Management (VRM)
45 Class II- and III-consistent mitigation measures were recommended for
46 application to approximately the western half of the SEZ.

- 1 • During operations, noise levels at the nearest residences could be higher
2 than the U.S. Environmental Protection Agency (EPA) guideline level if
3 concentrating solar power facilities with energy storage technologies (which
4 could extend the daily operational time by 6 hours or more) were used at the
5 SEZ.
6
- 7 • Few impacts on significant paleontological resources are expected because
8 these resources are not exposed and are not likely to occur within the SEZ.
9 Direct impacts on significant cultural resources could occur. Further
10 evaluation is needed to determine the effects of solar energy development on
11 the West Fork of the North Branch of the Old Spanish Trail. Preliminary
12 viewshed analyses indicate that the visual integrity of the Cumbres & Toltec
13 Scenic Railroad Corridor ACEC and depot in the town of Antonito could be
14 affected. It is possible that there will be Native American concerns about
15 potential visual and noise effects of solar energy development in the SEZ on
16 Blanca Peak. Effects on traditionally important plants and animals are also
17 possible.
18
- 19 • Minority populations occur within a 50-mi (80-km) radius of the proposed
20 SEZ boundary; thus adverse impacts of solar development could
21 disproportionately affect minority populations.
22
23

24 **C.3.1.2 Summary of Comments Received**

25
26 Many of the comments received from environmental groups on the proposed Antonito
27 Southeast SEZ were in favor of identifying the area as an SEZ (e.g., The Wilderness
28 Society et al.¹³). Several members of the public commented that development of the SEZ would
29 affect their ranching operations, while others were in support of the designating the area as an
30 SEZ. Conejos County Clean Water, Inc., requested that representatives from the Town of
31 Antonito, the Town of Romeo, and the Conejos County Board of Commissioners be added as
32 cooperating agency officials for further National Environmental Policy Act of 1969 (NEPA)
33 analysis for SEZs.
34

35 The EPA expressed concern with wetland protection in the Antonito Southeast SEZ,
36 including Alta Lake, and suggested that the Final Solar PEIS include specific design criteria for
37 wetland protection. The San Luis Valley Renewable Communities Alliance (SLVRCA) was
38 concerned that the SEZ contains Colorado Department of Wildlife (CDOW)-identified elk severe
39 winter range for pronghorn and recommended that activity should be limited outside of project
40 fencing during severe winters when elk are using these areas.

¹³ The Wilderness Society, Center for Native Ecosystems, Biodiversity Conservation Alliance, Rocky Mountain Recreation Initiative, Colorado Wild, Wild Connections, High Country Citizens' Alliance, Colorado Environmental Coalition, Audubon Colorado, Natural Resources Defense Council, Sierra Club, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Colorado SEZs. Those comments are attributed to The Wilderness Society et al.

1 The Wilderness Society et al. and SLVRCA were concerned that the SEZ contains a
2 Gunnison prairie dog colony of unknown status and that surveys for the species have not been
3 conducted. The Wilderness Society et al. also provided recommendations to avoid impacts on the
4 Gunnison prairie dog, including avoidance of active colonies, clearance surveys within any area
5 defined by CDOW as having colonies of inactive or unknown status, potential off-site mitigation
6 within areas of high species viability, and project siting that avoids blocking migration corridors
7 used by the species to migrate between colonies. The Conejos County Clean Water, Inc., group
8 was concerned about the potential socioeconomic impact of solar energy development at the
9 proposed Antonito Southeast SEZ.

10 11 12 **C.3.1.3 Changes to the SEZ**

13
14 No boundary revisions were identified for the proposed SEZ. However, areas specified
15 for non-development under SEZ-specific design features were mapped, where data were
16 available. For the proposed Antonito Southeast SEZ, 17 acres (0.07 km²) of non-development
17 wetland and lake areas were identified. (see Figure C.3.1-2). The remaining developable area
18 within the SEZ is 9,712 acres (39.3 km²).

19
20 To reduce the visual resource impacts of solar development within the proposed Antonito
21 Southeast SEZ, SEZ-specific visual resource mitigation requirements have been developed. On
22 the western side of the SEZ that was labeled to meet VRM Class II-consistent objectives in the
23 Draft Solar PEIS, all forms of development will be limited to 10 ft (3.3 m) or under, and the
24 technology will be restricted to either photovoltaic technologies of less than 10 ft (3.3 m), or
25 technologies with comparable or lower height and reflectivity. Within the area of the SEZ that
26 was labeled to meet VRM Class III-consistent objectives in the Draft Solar PEIS, the solar
27 development will be restricted to either PV technologies of less than 10 ft (3.3 m) or
28 technologies with comparable or lower height and reflectivity. Additional required mitigation
29 measures to address potential visual resource impacts are given in Section C.7.3 of this appendix.

30 31 32 **C.3.1.4 Wilderness Character Status of SEZ**

33
34 A recently maintained inventory of wilderness characteristics was used to determine
35 whether public lands within the Antonito Southeast SEZ have wilderness characteristics. The
36 finding of this inventory was that these lands do not contain wilderness characteristics.

37 38 39 **C.3.1.5 Additional Data Collection Recommended**

40 41 42 **C.3.1.5.1 Lands and Realty**

43
44 None.

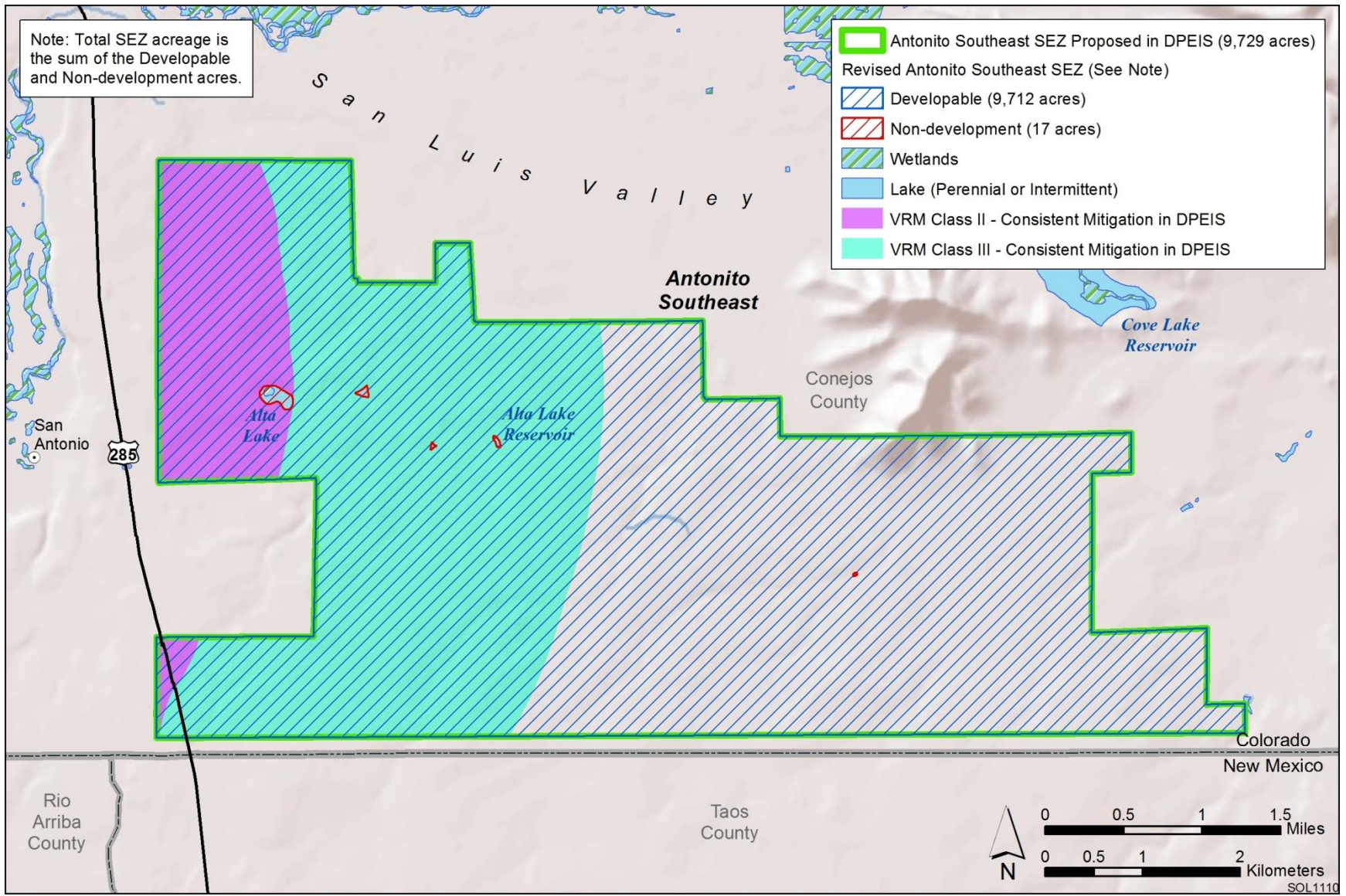


FIGURE C.3.1-2 Proposed Antonito Southeast SEZ as Described in this Supplement

1 **C.3.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

2
3 None.

4
5
6 **C.3.1.5.3 Rangeland Resources**

7
8
9 *Livestock Grazing.* None.

10
11
12 *Wild Horses and Burros.* None.

13
14
15 **C.3.1.5.4 Recreation**

16
17 Additional information on the potential impacts on hunting for big game species would
18 help further characterize impacts on recreation. In addition, the San Luis Valley-wide effort to
19 promote recreational use could warrant additional consideration. The status of off-highway
20 vehicle use designation in the area may also warrant additional consideration.

21
22
23 **C.3.1.5.5 Military and Civilian Aviation**

24
25 The BLM will continue to consult with the U.S. Department of Defense (DoD) regarding
26 potential issues with MTRs.

27
28
29 **C.3.1.5.6 Geologic Setting and Soil Resources**

30
31 None.

32
33
34 **C.3.1.5.7 Minerals**

35
36 Additional information on leasable and strategic minerals in the vicinity of the proposed
37 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
38 on a proposed 20-year withdrawal of SEZ lands.

39
40
41 **C.3.1.5.8 Water Resources**

42
43 The following additional data and actions would help further characterize potential
44 impacts on water resources for the proposed Antonito Southeast SEZ. A more detailed discussion
45 of each of these activities is included in the water resources action plan provided in Section C.7.2
46 of this appendix.

- 1 • Prepare a planning-level water resources inventory of the San Luis Valley
2 (southern portion).
3
- 4 • Identify additional ephemeral stream channels and wetland features for non-
5 development areas through consultation with Colorado Division of Water
6 Resources (CDWR) (Division 3), CDOW, EPA, and U.S. Army Corps of
7 Engineers (USACE) with a focus on:
8 – Taos Valley Canal and its tributaries (western half of SEZ),
9 – Unnamed tributaries to Cove Lake Reservoir (western half of SEZ), and
10 – Ephemeral channels flowing southwest to northeast on the eastern half of
11 the SEZ.
12
- 13 • Conduct a field survey to:
14 – Survey Taos Valley Canal and ephemeral channels for surface elevations,
15 high water marks, and sediment conditions, and
16 – Conduct hydrologic rainfall-runoff-routing analyses to identify 100-year
17 floodplain areas.
18
- 19 • Coordinate with the USACE (Albuquerque District) regarding jurisdictional
20 water determinations for the SEZ. Water features to be considered include:
21 – Taos Valley Canal and its tributaries (western half of SEZ),
22 – Unnamed tributaries to Cove Lake Reservoir (western half of SEZ), and
23 – Ephemeral channels flowing southwest to northeast on eastern half of
24 SEZ.
25
- 26 • Identify 100-year floodplain exclusion areas for the SEZ. This task would
27 require coordination with the Federal Emergency Management Agency and
28 the Colorado Water Conservation Board.
29
- 30 • Describe the formation of a stakeholder committee to conduct long-term
31 monitoring of water resources. This activity would entail:
32 – Identifying key stakeholder agencies,
33 – Discussing general features of a monitoring program, and
34 – Working with the U.S. Geological Survey and the CDWR (Division 3) to
35 develop groundwater monitoring well design and numerical groundwater
36 models. (Groundwater monitoring should coordinate with the Rio Grande
37 Decision Support System through the CDWR [Division 3].)
38

39 **C.3.1.5.9 Ecological Resources**

40
41
42
43 *Vegetation and Plant Communities.* The following additional data-gathering action
44 would help further characterize potential impacts on vegetation and plant communities for the
45 proposed Antonito Southeast SEZ:
46

- Identify and map the location and areal extent of dry wash and wetland communities within the SEZ. Identify and map the location and areal extent of these habitats, as well as riparian and greasewood flats habitats, outside the SEZ that may be affected by hydrologic changes, including groundwater elevations, and changes in water, sediment, and contaminant inputs associated with runoff.. Such effort could help determine habitat characteristics, including water source, hydrologic regime, and dominant plant species.

Wildlife. The following additional data-gathering actions would help further characterize potential impacts on wildlife resources for the SEZ:

- Conduct pre-disturbance surveys within the SEZ to determine the use of the SEZ as a movement/migratory corridor or as important habitat for elk and pronghorn.

Aquatic Biota. Investigations recommended under the water resources action plan (Section C.3.1.5.8) would be useful in characterizing and protecting habitat available to aquatic biota. Alta Lake likely contains aquatic biota and has been designated a non-development area. Therefore, a preliminary survey of Alta Lake is not necessary. However, if it is determined that Alta Lake could be affected indirectly by water withdrawals, changes in drainage patterns, and construction activities, the potential for aquatic communities to be affected in these areas could require further investigation prior to development. Ephemeral streams and wetlands within the SEZ are typically dry and contain water only for brief periods. They may or may not contain aquatic biota; therefore, preliminary evaluations of these surface water features could be conducted to determine the potential for aquatic communities to be present.

Special Status Species. The following additional data-gathering actions would be useful in further characterizing and protecting habitat available to special status species:

- Conduct pre-disturbance surveys within the SEZ to determine the presence and abundance of those special status species that are (1) federally listed, proposed for listing, or candidates for listing under the Endangered Species Act (ESA); or (2) listed by the State of Colorado as threatened or endangered; or (3) designated as sensitive by the Colorado BLM State Office. These species are listed in Table C.3.1-1. Surveys should focus on areas identified as potentially suitable, and the suitability of these habitats to support these special status species should be determined in the field. All field-determined suitable habitats for special status species should be mapped. Target species and survey protocols should be developed in coordination with the U.S. Fish and Wildlife Service (USFWS) and CDOW. The BLM is currently conducting surveys for various special status species (e.g., mountain plover, western burrowing owl, Gunnison prairie dog) within the State of Colorado. In areas where these surveys overlap with the Colorado SEZs and areas of direct

1 **TABLE C.3.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Antonito**
 2 **Southeast SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Brandegee's milkvetch	<i>Astragalus brandegeei</i>	BLM-S	Sandy or gravelly banks, flats, and stony meadows within pinyon-juniper woodlands. Substrates are usually sandstone with granite or occasional basalt. Elevation ranges between 5,400 and 8,800 ft. ^d Nearest occurrences are approximately 10 mi ^e west of the SEZ. About 1,628,700 acres ^f of potentially suitable habitat occurs within the analysis area.
Ripley's milkvetch ^g	<i>Astragalus ripleyi</i>	BLM-S	Mixed conifer woodlands on rocky volcanic substrates at elevations above 8,000 ft. Known to occur approximately 5 mi west of the SEZ. About 1,819,100 acres of potentially suitable habitat occurs within the analysis area.
Fish			
Rio Grande chub	<i>Gila pandora</i>	BLM-S	Clear, cool, fast-flowing water over rubble or gravel substrates. Quad-level occurrences intersect the affected area north of the SEZ. The nearest potentially suitable habitat is located in the Rio San Antonio, approximately 1 mi north (downgradient) of the SEZ. Approximately 29.3 mi of potentially suitable habitat in the Rio San Antonio, Rio de los Pinos, and the Conejos River occurs within the area of indirect effects.
Rio Grande sucker	<i>Catostomus plebeius</i>	CO-E	Restricted to streams of the Rio Grande Basin in channels and backwaters near rapidly flowing waters. Nearest potentially suitable habitat is located in the Rio San Antonio, approximately 1 mi north (downgradient) of the SEZ. Approximately 29.3 mi of potential habitat in the Rio San Antonio, Rio de los Pinos, and the Conejos River occurs within the area of indirect effects.
Reptiles			
Milk snake	<i>Lampropeltis triangulum</i>	BLM-S	Shortgrass prairie, sandhills, shrubby hillsides, pinyon-juniper woodlands, and arid river valleys at elevations below 8,000 ft. The species is known to occur in Conejos County, Colorado. About 42,000 acres of potentially suitable habitat occurs in the affected area.
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S	Year-round resident in the SEZ region. Open spaces associated with high, near vertical cliffs and bluffs above 200 ft in height overlooking rivers. Nearest occurrences are from the Rio Grande National Forest approximately 20 mi west of the SEZ. About 3,747,350 acres of potentially suitable habitat occurs within the analysis area.
Bald eagle	<i>Haliaeetus leucocephalus</i>	CO-T	Year-round resident in the SEZ region. Seldom seen far from water, especially larger rivers, lakes, and reservoirs. Occurs locally in semiarid shrubland habitats where there is an abundance of small mammal prey. Known to occur in riparian habitats along the Rio Grande as near as 7 mi east of the Antonito Southeast SEZ. About 96,000 acres of potentially suitable habitat occurs in the affected area.
Barrow's goldeneye	<i>Bucephala islandica</i>	BLM-S	Winter resident in the SEZ region on larger lakes and rivers. Known to occur in the San Luis Valley. About 150,000 acres of potentially suitable habitat occurs in the affected area.

3

TABLE C.3.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Summer resident in the affected area, but year-round resident in the SEZ region. Grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands throughout the project area. Nests in tall trees or on rock outcrops along cliff faces. Known to occur approximately 10 mi east of the Antonito Southeast SEZ. About 28,000 acres of potentially suitable habitat occurs in the affected area.
Mountain plover	<i>Charadrius montanus</i>	BLM-S	Summer resident in the SEZ region. Prairie grasslands and arid plains and fields. Nests in shortgrass prairies associated with prairie dogs, bison, and cattle. More than 50% of the global population nests in the states of Colorado and New Mexico. Known to occur about 5 mi east of the Antonito Southeast SEZ. About 100,000 acres of potentially suitable habitat occurs in the affected area.
Southwestern willow flycatcher	<i>Empidonax traillii eximius</i>	ESA-E; CO-E	Nests in thickets, scrubby and brushy areas, open second growth, swamps, and open woodlands in the Alamosa National Wildlife Refuge along the Rio Grande, approximately 25 mi northeast of the SEZ. About 4,400 acres of potentially suitable habitat occurs in the affected area.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S; CO-T	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Conejos County, Colorado. About 1,984,700 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	ESA-C	Mountain valleys, plateaus, and open brush habitats in the project area at elevations between 1,000 and 12,000 ft. Known to occur in the SEZ affected area in Colorado and northern New Mexico. About 83,000 acres of potentially suitable habitat occurs in the affected area.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Colorado BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; CO-E = listed as endangered by the State of Colorado; CO-T = listed as threatened by the State of Colorado; ESA-C = candidate for listing under the ESA; ESA-E = listed as endangered under the ESA.
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3

1 effects, the BLM survey information will be used to make appropriate
2 determinations regarding the potential occurrence of species and their habitats.
3 Additional survey efforts may be necessary, as appropriate.
4

5 The Draft Solar PEIS presents a table of special status species for which
6 potential impacts need to be evaluated prior to development in the proposed
7 Antonito Southeast SEZ. The list of species presented in Table 10.1.12.1-1 of
8 the Draft Solar PEIS also includes species listed by the states of Colorado or
9 New Mexico and species ranked by the States of Colorado or New Mexico as
10 S1 or S2 or species of concern. Based on the design features presented in the
11 Draft Solar PEIS, the potential for impacts on these additional species will
12 also need to be addressed before development could occur in the SEZ.
13

- 14 • Identify and map the location and areal extent of grassland habitat within the
15 SEZ. The suitability of this habitat for special status species should be
16 determined. Species potentially associated with grassland habitat include the
17 milk snake, mountain plover, and western burrowing owl.
18
- 19 • Identify and map the location and areal extent of aquatic, wetland, and
20 riparian habitats within the SEZ. The suitability of these habitats for special
21 status species should be determined. Species potentially associated with these
22 habitats include the Rio Grande chub, Rio Grande sucker, milk snake, bald
23 eagle, Barrow's goldeneye, ferruginous hawk, and southwestern willow
24 flycatcher.
25
- 26 • Identify and map the location and areal extent of woodland habitats within the
27 SEZ. The suitability of these habitats for special status species should be
28 determined. Species potentially associated with woodland habitats include the
29 Brandegee's milkvetch, Ripley's milkvetch, milk snake, and ferruginous
30 hawk.
31
- 32 • Identify and map the location and areal extent of active Gunnison prairie dog
33 colonies within the SEZ. Associated burrows also could be used by western
34 burrowing owls.
35

36 **C.3.1.5.10 Air Quality and Climate**

37 None.
38

39 **C.3.1.5.11 Visual Resources**

40
41
42
43
44 Visual resources will be reevaluated for the Final Solar PEIS based on the proposed
45 technology restrictions described in Section C.3.1.3 of this Supplement. A summary of the Draft
46 Solar PEIS visual contrast analysis for the proposed Antonito Southeast SEZ is provided in

1 Table C.3.1-2. This table includes only the resources that would be subject to moderate or strong
2 visual contrast. The Draft Solar PEIS visual impact analysis predicted these levels of visual
3 contrast from solar energy development in the Antonito Southeast SEZ for the following
4 sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):

- 5
- 6 • San Antonio WSA
- 7
- 8 • San Luis Hills WSA
- 9
- 10 • Los Caminos Antiguos Scenic Highway
- 11
- 12 • Cumbres & Toltec Railroad Corridor ACEC
- 13
- 14 • San Luis Hills ACEC
- 15
- 16 • Antonito
- 17
- 18 • West Fork of the North Branch of the Old Spanish Trail.
- 19

20 The following steps could be taken to better understand potential impacts on these
21 SVRAs and SVLs from solar development in the Antonito Southeast SEZ:

- 22
- 23 • Identify key observation points (KOPs) within these areas through working
24 with the management agency or other local stakeholders.
- 25
- 26 • Conduct viewshed analyses from the KOPs to determine how much of the
27 SEZ would be in view from each KOP.
- 28
- 29 • As deemed necessary, based on viewshed analysis results, prepare wireframe
30 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
31 depicting the 80% development scenario to better estimate potential impacts.
- 32

33 This additional analysis may help judge potential visual contrast more accurately for most
34 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
35 superimposition of the wireframe models onto the photos might be required or desired.

36
37 Additional required mitigation measures to address potential visual resource impacts are
38 given in Section C.7.3 of this appendix.

39 40 41 **C.3.1.5.12 Acoustic Environment**

42
43 None.

TABLE C.3.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Antonito Southeast SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WSAs	San Antonio	7,321 acres	1.5 mi southwest of the SEZ	6,920 acres	94.5	Visual contrast would be highly dependent on viewer location and project location and characteristics. Solar energy development would be expected to create weak to strong visual contrasts as viewed from the WSA; roughly half of the WSA is within 3 to 5 mi of the SEZ.
	San Luis Hills	10,896 acres	6 mi northeast of the SEZ	5,258 acres	48.3	Visual contrast would be dependent on viewer and project locations and the projects' characteristics. Solar energy development would be expected to create weak to moderate visual contrasts. Contrast levels would be highest at high-elevation viewpoints in the southwestern part of the WSA, and lower for low-elevation viewpoints, such as in canyons or on bajadas. Visible areas extend from approximately 6 mi from the northern boundary of the SEZ to approximately 9 mi from the SEZ.
Scenic Highways	Los Caminos Antiguos ^g	129 mi	2 mi northwest of the northwest corner of the SEZ	38 mi	29.5	Range of contrast would be highly dependent on viewer and project locations and design. Solar facilities could attract attention but are not likely to dominate views from the byway. Solar energy development would be expected to create weak to strong visual contrasts.

TABLE C.3.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percent Total Acreage/ Mileage Visible within 25 mi	Notes ^f
ACECs designated for Outstanding Scenic Values	Cumbres & Toltec Railroad Corridor	3,868 acres	1.5 mi north-northwest of the SEZ	3,219 acres	83.2	Moderate visual contrasts from solar energy development at some points on the railroad would be expected. In some locations, development might create strong contrasts in form, line, color, and texture, especially if viewed against a sky backdrop. A detailed future site-specific NEPA analysis would be required to determine visibility and potential impacts precisely.
	San Luis Hills	39,421 acres	5 mi north-northeast of the SEZ	12,516 acres	31.7	Range of visual contrasts would depend on viewer and solar facility locations, as well the projects' characteristics. Solar facilities could attract attention but would not likely dominate the view and would be expected to create weak to moderate visual contrasts. Contrast levels would be highest at high-elevation viewpoints in the southern part of the ACEC, and lower for low-elevation viewpoints or high-elevation viewpoints in the northern portion of the ACEC.

TABLE C.3.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percent Total Acreage/ Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas)	Antonito ^h	250 acres	1.5 mi north-northwest of the SEZ	NA ⁱ	NA	Where clear views to the SEZ exist, residents and visitors could observe strong visual contrasts. Locations farther north generally would be subject to lower visual contrast due to the increased distance, but also because of the more extensive screening of views of the SEZ by vegetation and buildings within the community. A detailed future site-specific NEPA analysis is required to determine visibility.
	West Fork of the North Branch of the Old Spanish Trail ^j	2,700 mi	Passes within approximately 0.1 mi of the SEZ	NA	NA	Trail users would be expected to observe strong visual contrasts from solar energy development at some points on the trail. The SEZ would be visible from many points along the trail starting approximately 9 mi south of the SEZ to beyond 25 mi north of the SEZ.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percentage of total acreages/mileages visible within 25 mi (40 km) of the SEZ.

Footnotes continued on next page.

TABLE C.3.1-2 (Cont.)

- f The assessment of impacts is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs and SVLs due to the reduction in the overall footprint of the SEZ.
- g Length of byway: America's Byways (2011a).
- h Acreage of Colorado towns: U.S. Bureau of the Census (2011a).
- i NA = data not available.
- j Length of trail: BLM (2011a).

1 **C.3.1.5.13 Paleontological Resources**
2

3 The potential for impacts on paleontological resources within the proposed Antonito
4 Southeast SEZ is low. Most of the SEZ has a Potential Fossil Yield Classification (PFYC) of
5 Class 1 as noted in the Draft Solar PEIS. Only about 4 acres (0.016 km²) is currently classified
6 as Class 4/5 in an area in the northern part of the SEZ. Prior to development, the depth of the
7 potentially paleontologically significant Alamosa Formation would need to be determined in that
8 small area, and the remainder of the SEZ should be field checked to verify the PFYC
9 classification of Class 1.

10
11 The BLM Regional Paleontologist will be contacted to determine whether additional
12 information is available regarding the paleontological potential of the SEZ.
13

14
15 **C.3.1.5.14 Cultural Resources and Native American Concerns**
16

17 None of the proposed Antonito Southeast SEZ has been systematically surveyed, and
18 consequently no sites have been recorded within the original footprint of the SEZ. About 80 sites
19 (including isolated finds) have been recorded within 5 mi (8 km) of the SEZ. Paleoindian sites
20 could be encountered throughout the San Luis Valley. Several linear features have been noted in
21 the Draft Solar PEIS as being within the SEZ, and, more recently some of these features were
22 spotted on light detection and ranging (LIDAR) imagery. These features may be associated with
23 former railroads, irrigation features, and general trail routes. The West Fork of the North Branch
24 of the Old Spanish Trail is a culturally significant trail that proceeds close to the western
25 boundary of the SEZ. Visual and auditory impacts are possible on the trail and also on Blanca
26 Peak, a sacred mountain to the Navajo northeast of the SEZ. Impacts on the visual integrity of
27 the Cumbres and Toltec Scenic Railroad are also possible. The destruction and degradation of
28 important plant resources and the destruction of habitat or impediments to the movement of
29 culturally important wildlife are also potential impacts of concern within the SEZ.
30

31 The following additional data collection efforts could reduce the uncertainty about
32 potential impacts on cultural resources:
33

- 34 • Conduct a Class I literature file search to better understand (1) the site
35 distribution pattern in the vicinity of the SEZ; (2) trail networks through
36 existing ethnographic reports; and 3) overall cultural sensitivity of the
37 landscape.
- 38
39 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
40 10% sample (roughly 971 acres [3.9 km²]). Areas of interest, as determined
41 through a Class I review, should also be identified prior to establishing the
42 survey design and sampling strategy. A Class III inventory of linear features
43 detected using LIDAR in the Antonito SEZ is currently under way and will
44 account for a portion of the recommended sample.
45

- 1 • Prepare a cultural sensitivity map based on results of the Class II survey, the
2 Class I review, and the Class III inventory of linear features.
3
- 4 • Identify the integrity and historical significance of the portion of the West
5 Fork of the North Branch of the Old Spanish Trail in the vicinity of the SEZ,
6 and conduct viewshed analyses from key points along the trail. If this portion
7 of the trail is determined significant, a mitigation strategy would need to be
8 developed to address unavoidable impacts on the trail.
9
- 10 • Continue with government-to-government consultation as described in
11 Section 2.4.3., including follow-up to recent ethnographic studies covering
12 some SEZs in Nevada and Utah with Tribes not included in the original
13 studies to determine whether those Tribes have similar concerns. The
14 Antonito Southeast SEZ was used by Tribes historically for hunting and
15 trading rather than long-term settlement. The Ute, Jicarilla Apache, Navajo,
16 Kiowa, Comanche, Arapaho, Pueblo groups, and Cheyenne may all have
17 traditional interests in the valley. Potentially significant sites and landscapes
18 for the Navajo, Upper Rio Grande Pueblo (Tewa), and Taos Pueblo are
19 present in the San Luis Valley (Blanca Peak, Great Sand Dunes, San Luis
20 Lakes). Potential topics to be discussed during consultation include the above-
21 mentioned places, trail systems, mountain springs and other water sources,
22 mineral resources, burial sites, ceremonial areas, and plant and animal
23 resources. An ethnographic study of the SEZs in the San Luis Valley is
24 currently proposed; results of the study will be incorporated into the Final
25 Solar PEIS, if available at the time of publication.
26

27 **C.3.1.5.15 Socioeconomics and Environmental Justice**

28 None.
29

30 **C.3.1.5.16 Cumulative Impact Considerations**

31 None.
32
33
34
35
36

1 **C.3.2 De Tilla Gulch**

2
3
4 **C.3.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

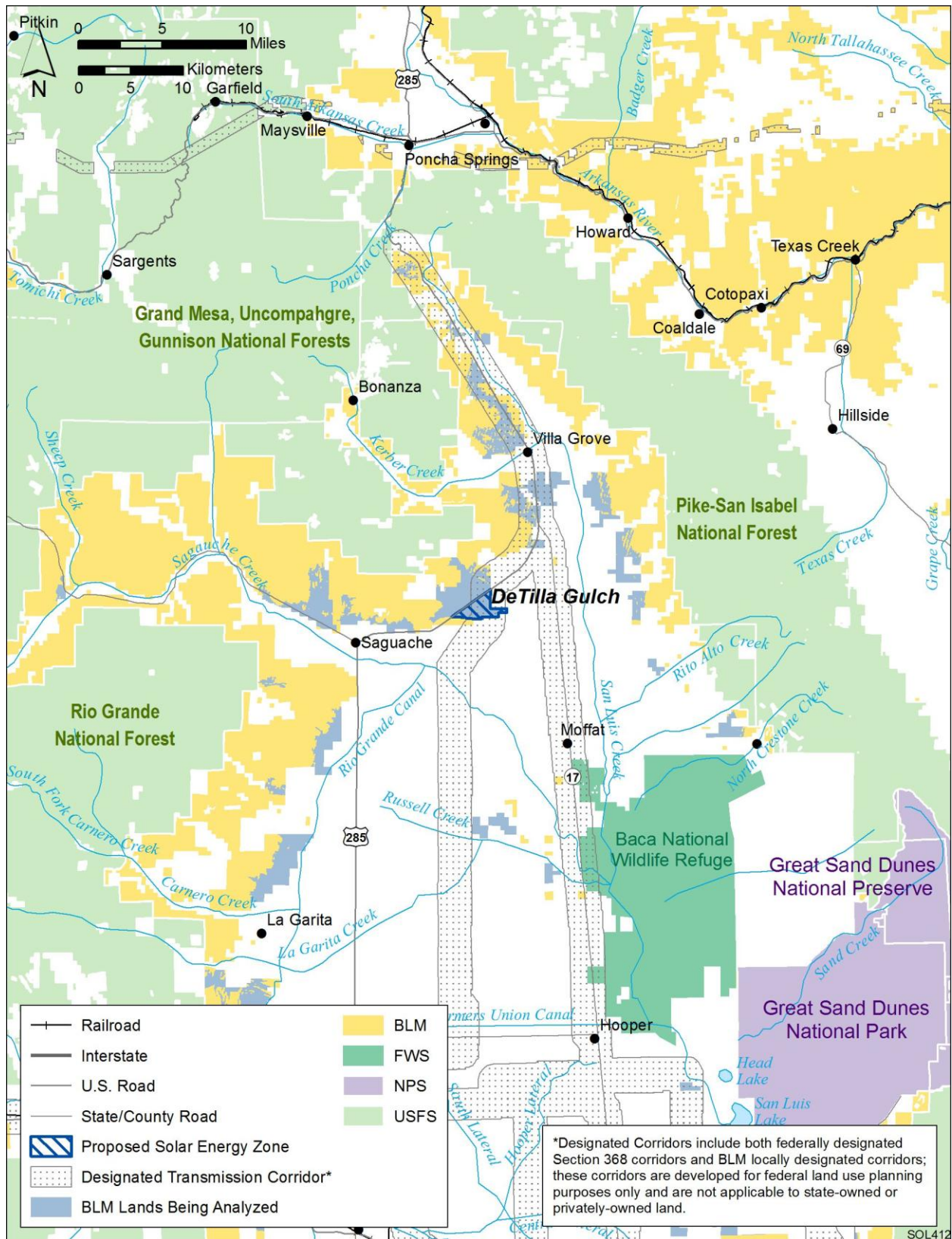
7 The proposed De Tilla Gulch solar energy zone (SEZ), as presented in the Draft Solar
8 PEIS, had a total area of 1,522 acres (6.2 km²). It is located in Saguache County in south-central
9 Colorado (Figure C.3.2-1). The towns of Lund and Zane are about 4 mi (6 km) north of, and 5 mi
10 (8 km) west of, the SEZ, respectively. The town of Saguache is located about 8 mi (12 km) west
11 of the SEZ, and the larger town of Alamosa is located about 50 mi (80 km) to the south.
12

13 A U.S. Department of the Interior Bureau of Land Management (BLM)-designated
14 transmission corridor covers about two-thirds of the SEZ and could limit development in the
15 SEZ because solar facilities cannot be constructed under transmission lines. The discussion of
16 impacts of solar energy development in the SEZ in the Draft Solar PEIS acknowledged that the
17 presence of the corridor would reduce the amount of land available for solar power production,
18 and that, conversely, full development of solar facilities within the SEZ would limit use of the
19 transmission corridor.
20

21 The Draft Solar PEIS identified a 115-kV transmission line adjacent to the proposed
22 De Tilla Gulch SEZ as the nearest point for connection of the SEZ to the grid. The actual
23 location of connection to the transmission grid could be different than that assumed in the Draft
24 Solar PEIS. Details on a revised transmission impact assessment for the SEZs to be included in
25 the Final Solar PEIS are provided in Section C.7.1 of this appendix. Analysis of transmission
26 lines and/or access roads will be completed, as necessary, as part of the project-specific
27 environmental reviews (see Section 2.2.2.2.2 of this Supplement).
28

29 Potential adverse impacts identified in the Draft Solar PEIS included the following:
30

- 31 • Development of the site could further fragment the public land in the area and
32 could make the remaining lands more difficult to manage. Non-mitigable
33 impacts on private and state lands related to changes in existing land uses may
34 occur.
35
- 36 • The historic setting of the designated Old Spanish National Historic Trail and
37 future management of the trail would be adversely affected.
38
- 39 • The SEZ is located in an area under a military training route (MTR) and is
40 identified as being a consultation area for the U.S. Department of Defense
41 (DoD). Development of any solar or transmission facilities that impinge into
42 airspace used by the military would be of concern to the military and could
43 interfere with military training activities.
44



1

2 **FIGURE C.3.2-1 Proposed De Tilla Gulch SEZ as Presented in the Draft Solar PEIS**

- 1 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
2 erosion by wind and runoff, sedimentation, and soil contamination) could
3 occur.
4
- 5 • Clearing of a large portion of the proposed SEZ could primarily affect
6 semidesert shrub steppe and may adversely affect desert dry wash and
7 greasewood flats habitats, depending on the amount of habitat disturbed.
8 The establishment of noxious weeds could result in habitat degradation.
9 Deposition of fugitive dust could cause reduced productivity or changes in
10 plant community structure.
11
- 12 • Potentially suitable habitat for 13 special status species and more than
13 50 wildlife species occurs in the affected area of the proposed SEZ; less than
14 1.0% of the potentially suitable habitat for any of these species occurs in the
15 region that would be directly affected by development.
16
- 17 • If aquatic biota exist within the small ephemeral washes, they could be
18 affected by the direct removal of these surface water features within the
19 construction footprint, a decline in habitat quantity and quality due to water
20 withdrawals and changes in drainage patterns, as well as increased sediment
21 and contaminant inputs associated with ground disturbance and construction
22 activities.
23
- 24 • Temporary exceedances of ambient air quality standards for particulate matter
25 at the SEZ boundaries are possible during construction. These high
26 concentrations, however, would be limited to the immediate area surrounding
27 the SEZ boundary. Modeling indicates that emissions from construction
28 activities could exceed Class I Prevention of Significant Deterioration (PSD)
29 PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or less)
30 increments at the nearest Class I area (the Great Sand Dunes Wilderness
31 Area), but the potential impacts would be moderate and temporary.
32
- 33 • Strong visual contrasts could be observed by visitors along the Old Spanish
34 National Historic Trail and travelers on U.S. 285. Weak to moderate visual
35 contrasts could be observed from the northern portions of the Baca National
36 Wildlife Refuge (NWR), and weak visual contrast would be observed by
37 residents of Moffat. Because of these potential impacts, it was recommended
38 that development of power tower facilities be prohibited within the SEZ.
39
- 40 • During operations, noise levels at the nearest residences could be higher than
41 the U.S. Environmental Protection Agency (EPA) guideline level if
42 concentrating solar power facilities with energy storage technologies (which
43 could extend the daily operational time by 6 hours or more) were used at the
44 SEZ.
45

- 1 • Impacts on significant paleontological and cultural resources are unknown.
2 Further investigation is needed to determine the possibility of the Old Spanish
3 National Historic Trail crossing through a portion of the SEZ. It is possible
4 that there will be Native American concerns about potential visual and noise
5 effects of solar energy development in the SEZ on culturally significant
6 locations within the valley.
7
8

9 **C.3.2.2 Summary of Comments Received**

10
11 Many of the comments received on the proposed De Tilla Gulch SEZ were in favor of
12 identifying the area as an SEZ with proper siting, design, and mitigation (The Wilderness
13 Society et al.¹⁴ and others).
14

15 The residents of Saguache, Colorado, commented that they expect to be involved in any
16 solar energy development that takes place on the SEZ. The Wilderness Society et al. proposed
17 adjusting the boundary to remove the active prairie dog colony that overlaps the northern edge of
18 the SEZ. Also, if surveys performed within the intersection area of the SEZ and Mineral Hot
19 Springs Potential Conservation Area (PCA) indicate that there is significant activity by special
20 status species within the SEZ, boundary adjustments should be considered to eliminate the PCA.
21 Because the SEZ contains Colorado Division of Wildlife (CDOW)-identified severe winter range
22 for elk and winter concentration habitat for pronghorn, The Wilderness Society et al.
23 recommended that disturbance during the winter season be avoided or minimized in these areas.
24 The CDOW recommends that the BLM and U.S. Department of Energy consider re-evaluating
25 the magnitude of impacts of habitat loss within each SEZ for individual species or groups of
26 species.
27

28 The Cultural Resources Preservation Coalition recommended the removal of the De Tilla
29 Gulch SEZ because of potential impacts on the Old Spanish National Historic Trail. If the area is
30 retained as an SEZ, the coalition suggested that solar development should be restricted to areas
31 that do not have the potential to adversely affect the setting of the trail, and a combination of
32 mitigation measures should be required to minimize impacts on high-potential route segments
33 located within the SEZ viewshed.
34

35 The EPA suggested that if wet cooling is considered as an option for the De Tilla Gulch
36 SEZ, the Final Solar PEIS should clearly identify the level of groundwater withdrawal that can
37 be maintained without adversely affecting groundwater levels in the area. The CDOW
38 recommended that SEZ-specific design features be adopted that require off-site habitat
39 improvement projects and/or compensatory mitigation that offsets habitats losses in order to
40 minimize displacement of big game and lost hunting opportunities for pronghorn.

14 The Wilderness Society, Center for Native Ecosystems, Biodiversity Conservation Alliance, Rocky Mountain Recreation Initiative, Colorado Wild, Wild Connections, High Country Citizens' Alliance, Colorado Environmental Coalition, Audubon Colorado, Natural Resources Defense Council, Sierra Club, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Colorado SEZs. Those comments are attributed to The Wilderness Society et al.

1 **C.3.2.3 Changes to the SEZ**

2
3 The proposed De Tilla Gulch SEZ has been reconfigured to eliminate 458 acres
4 (1.9 km²) along the northwest edge of the SEZ (i.e., the area that had bordered U.S. 285)
5 (see Figure C.3.2-2). Excluding this area will avoid impacts on an active Gunnison prairie dog
6 colony, on pronghorn winter range and winter concentration area, and on the proposed
7 Cochetopa Scenic Byway. The remaining SEZ area is 1,064 acres (4.3 km²). No additional areas
8 for non-development were identified within the SEZ.
9

10 Because of the extensive potential impacts from solar development in the portion of the
11 De Tilla Gulch SEZ that has been eliminated, those lands will be considered solar right-of-way
12 exclusion areas; that is, applications for solar development on those lands will not be accepted by
13 the BLM.
14

15
16 **C.3.2.4 Wilderness Character Status of SEZ**

17
18 A recently maintained inventory of wilderness characteristics was used to determine
19 whether public lands within the De Tilla Gulch SEZ have wilderness characteristics. The finding
20 of this inventory was that these lands do not contain wilderness characteristics.
21

22
23 **C.3.2.5 Additional Data Collection Recommended**

24
25
26 **C.3.2.5.1 Lands and Realty**

27
28 None.
29

30
31 **C.3.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

32
33 None.
34

35
36 **C.3.2.5.3 Rangeland Resources**

37
38
39 *Livestock Grazing.* The potential impact on the Crow grazing allotment will be
40 re-evaluated based on the revised boundaries.
41

42
43 *Wild Horses and Burros.* None.
44
45

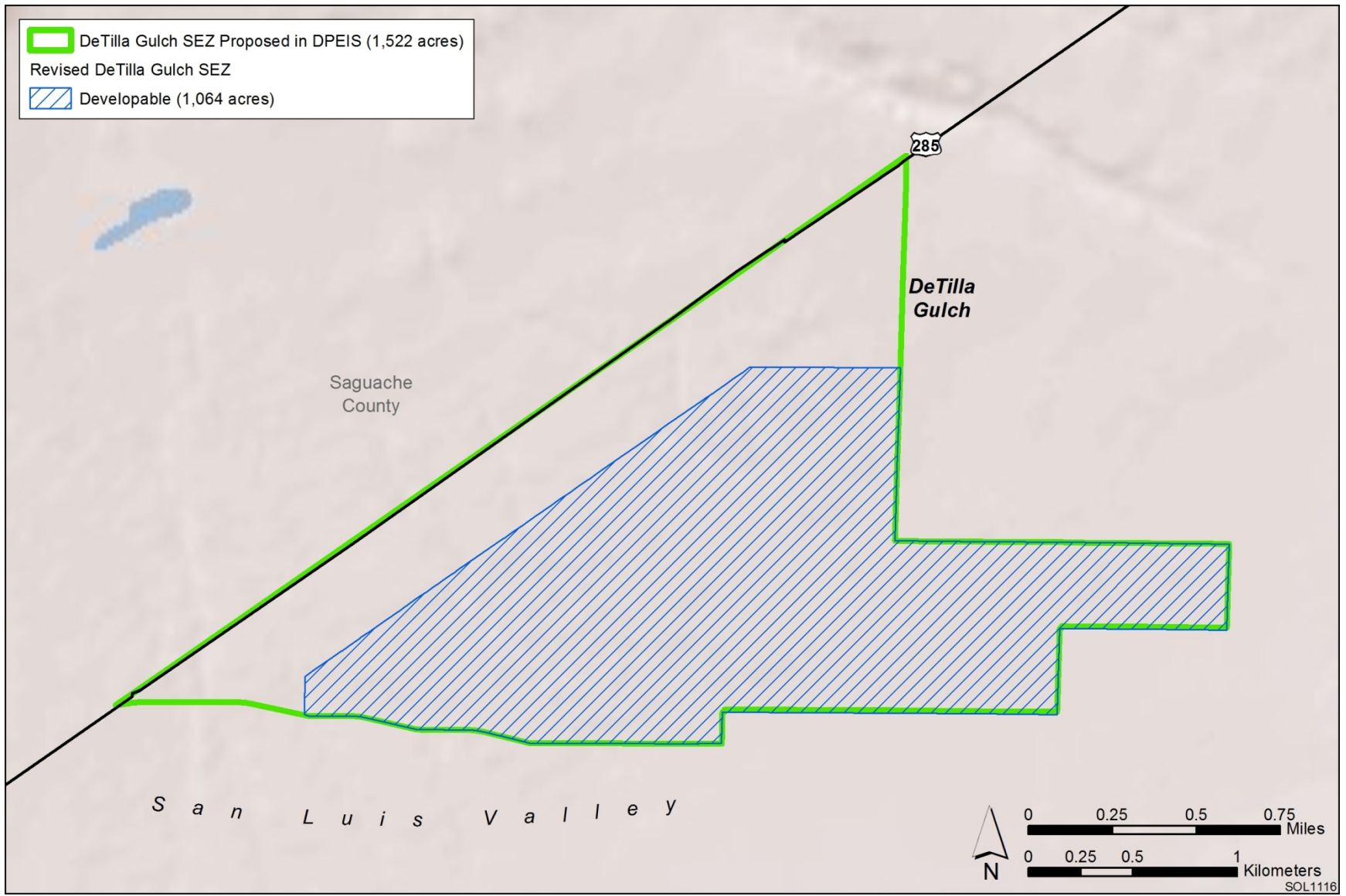


FIGURE C.3.2-2 Proposed De Tilla Gulch SEZ as Described in this Supplement

1 **C.3.2.5.4 Recreation**

2
3 Additional information on the potential impacts on hunting for big game species would
4 help further characterize impacts on recreation. In addition, the San Luis Valley-wide effort to
5 promote recreational use could warrant additional consideration. The status of off-highway
6 vehicle use designation in the area may also warrant additional consideration.
7

8
9 **C.3.2.5.5 Military and Civilian Aviation**

10 None.
11
12

13
14 **C.3.2.5.6 Geologic Setting and Soil Resources**

15 None.
16
17

18
19 **C.3.2.5.7 Minerals**

20
21 Additional information on leasable and strategic minerals in the vicinity of the proposed
22 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
23 on a proposed 20-year withdrawal of SEZ lands.
24

25
26 **C.3.2.5.8 Water Resources**

27
28 The following additional data and actions would help further characterize potential
29 impacts on water resources for the proposed De Tilla Gulch SEZ. A more detailed discussion of
30 each of these activities is included in the water resources action plan provided in Section C.7.2 of
31 this appendix.
32

- 33 • Prepare a planning-level water resources inventory of the San Luis Valley
34 (northern portion).
- 35
36 • Identify additional ephemeral stream channels and wetland features for non-
37 development areas through consultation with the Colorado Division of Water
38 Resources (CDWR) (Division 3), CDOW, EPA, and U.S. Army Corps of
39 Engineers (USACE) with a focus on:
 - 40 – Several ephemeral channels that cross the SEZ from northwest to
41 southeast (including De Tilla Gulch and Schecker Gulch).
- 42
43 • Conduct a field survey to:
 - 44 – Survey the ephemeral channels for surface elevations, high water marks,
45 and sediment conditions, and

- 1 – Conduct hydrologic rainfall-runoff-routing analyses to identify 100-year
2 floodplain areas.
- 3
- 4 • Coordinate with the USACE (Albuquerque District) regarding jurisdictional
5 water determinations for the SEZ. Water features to be considered include:
6 – Several ephemeral channels that cross the SEZ from northwest to
7 southeast (including De Tilla Gulch and Schecker Gulch).
- 8
- 9 • Identify 100-year floodplain exclusion areas for the SEZ. This task would
10 require coordination with the Federal Emergency Management Agency and
11 the Colorado Water Conservation Board.
- 12
- 13 • Describe the formation of a stakeholder committee to conduct long-term
14 monitoring of water resources. This activity would entail:
15 – Identifying key stakeholder agencies;
16 – Discussing general features of a monitoring program; and
17 – Working with the U.S. Geological Survey and CDWR (Division 3) to
18 develop groundwater monitoring well design and numerical groundwater
19 models. (Groundwater monitoring should coordinate with the Rio Grande
20 Decision Support System through the CDWR [Division 3].)
- 21

22

23 **C.3.2.5.9 Ecological Resources**

24

25

26 ***Vegetation and Plant Communities.*** The following additional data-gathering action
27 would help further characterize potential impacts on vegetation and plant communities for the
28 proposed De Tilla Gulch SEZ.

- 29
- 30 • Identify and map the location and areal extent of dry wash and greasewood
31 flat communities within the SEZ. Identify and map the location and areal
32 extent of these habitats, as well as wetland and riparian habitats, outside the
33 SEZ that may be affected by hydrologic changes, including groundwater
34 elevations, and changes in water, sediment, and contaminant inputs associated
35 with runoff. Such efforts could help determine habitat characteristics,
36 including water source, hydrologic regime, and dominant plant species.
- 37

38

39 ***Wildlife.*** The following additional data-gathering action would help further characterize
40 potential impacts on wildlife resources for the SEZ.

- 41
- 42 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
43 SEZ as a movement/migratory corridor or as important habitat for the elk,
44 mule deer, and pronghorn.
- 45

46

1 ***Aquatic Biota.*** Investigations recommended under the water resources action plan
2 (Section C.3.2.5.8) would be useful in characterizing and protecting habitat available to aquatic
3 biota. Most washes in the SEZ are typically dry and contain water only for brief periods. They
4 may or may not contain aquatic biota; therefore, preliminary evaluations of these surface water
5 features could be conducted to determine the potential for aquatic communities to be present.
6 Any aquatic biota found in these features would likely be desiccation-adapted aquatic
7 invertebrates typical of the region, and the primary value may be as food sources to nonaquatic
8 animals.

9
10
11 ***Special Status Species.*** The following additional data-gathering actions would be useful
12 in further characterizing and protecting habitat available to special status species.

- 13
14 • Conduct pre-disturbance surveys within the SEZ to determine the presence
15 and abundance of those special status species that are (1) federally listed,
16 proposed for listing, or candidates for listing under the Endangered Species
17 Act (ESA); or (2) listed by the State of Colorado as threatened or endangered;
18 or (3) designated as sensitive by the Colorado BLM State Office. These
19 species are listed in Table C.3.2-1. Surveys should focus on areas identified as
20 potentially suitable, and the suitability of these habitats to support these
21 special status species should be determined in the field. All field-determined
22 suitable habitats for special status species should be mapped. Target species
23 and survey protocols should be developed in coordination with the U.S. Fish
24 and Wildlife Service (USFWS) and CDOW. The BLM is currently conducting
25 surveys for various special status species (e.g. mountain plover, western
26 burrowing owl, Gunnison prairie dog) within the State of Colorado. In areas
27 where these surveys overlap with the Colorado SEZs and areas of direct
28 effects, the BLM survey information will be used to make appropriate
29 determinations regarding the potential occurrence of species and their habitats.
30 Additional survey efforts may be necessary, as appropriate.

31
32 The Draft Solar PEIS presents a table of special status species for which
33 potential impacts need to be evaluated prior to development in the proposed
34 De Tilla Gulch SEZ. The list of species presented in Table 10.2.12.1-1 of the
35 Draft Solar PEIS also includes species listed by the State of Colorado and
36 species ranked by the State of Colorado as S1 or S2 or species of concern. On
37 the basis of design features presented in the Draft Solar PEIS, the potential for
38 impacts on these additional species will also need to be addressed before
39 development could occur in the SEZ.

40 41 42 **C.3.2.5.10 Air Quality and Climate**

43
44 None.

1 **TABLE C.3.2-1 Special Status Species That May Occur in the Vicinity of the Proposed De Tilla**
 2 **Gulch SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S	Year-round resident in the SEZ region. Open spaces associated with high, near vertical cliffs and bluffs above 200 ft ^d in height overlooking rivers. Nearest occurrences are from the Rio Grande National Forest approximately 16 mi ^e southwest of the SEZ. Suitable foraging habitat for this species may occur within the affected area. About 3,375,750 acres ^f of potentially suitable habitat occurs in the SEZ region.
Bald eagle	<i>Haliaeetus leucocephalus</i>	CO-T	Year-round resident in the SEZ region. Seldom seen far from water, especially larger rivers, lakes, and reservoirs. Also occurs locally in semiarid shrubland habitats where there is an abundance of small mammal prey. Known from the San Luis Creek in the Baca NWR as near as 12 mi southeast (downgradient) of the SEZ. About 1,443,500 acres of potentially suitable habitat occurs in the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Summer resident in the SEZ region. Grasslands, sagebrush, and saltbush habitats, as well as the periphery of pinyon-juniper woodlands throughout the San Luis Valley. Known to occur in the Baca NWR about 30 mi southeast of the SEZ. About 950,500 acres of potentially suitable habitat occurs in the SEZ region.
Gunnison sage-grouse	<i>Centrocercus minimus</i>	ESA-UR; BLM-S	Year-round resident in the SEZ region. Primarily found in the Gunnison Basin in south-central Colorado, the species inhabits large expanses of sagebrush with mixed grasses and forbs. Populations have been observed as near as 10 mi north of the SEZ. About 657,100 acres of potentially suitable habitat occurs in the SEZ region.
Mountain plover	<i>Charadrius montanus</i>	BLM-S	Summer resident in the SEZ region. Prairie grasslands and arid plains and fields. Nests in shortgrass prairies associated with prairie dogs, bison, and cattle. Known to occur within 10 mi west (upgradient) of the SEZ. About 970,750 acres of potentially suitable habitat occurs in the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S; CO-T	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Saguache County, Colorado. About 1,135,500 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Big free-tailed bat	<i>Nyctinomops macrotis</i>	BLM-S	Roosts in rock crevices on cliff faces or in buildings. Forages primarily in coniferous forests and arid shrublands to feed on moths. About 1,246,800 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.3.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	ESA-C	Mountain valleys, plateaus, and open brush habitats in southwestern and south-central Colorado at elevations between 6,000 and 12,000 ft. Known to occur about 35 mi southwest of the SEZ. About 1,470,200 acres of potentially suitable habitat occurs in the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Colorado BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; CO-T = listed as threatened by the State of Colorado; ESA-C = candidate for listing under the ESA; ESA-E = listed as endangered under the ESA; ESA-UR = under review for listing under the ESA.

^c For bird and mammal species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) habitat suitability models (USGS 2005). Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

C.3.2.5.11 Visual Resources

Visual resources will be reevaluated for the Final Solar PEIS based on the revisions to boundaries described in Section C.4.3.3 of this Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the proposed De Tilla Gulch SEZ is provided in Table C.3.2-2. This table includes only the resources that would be subject to moderate or strong levels of visual contrast. The Draft Solar PEIS visual impact analysis predicted these levels of visual contrast from solar energy development in the De Tilla Gulch SEZ for the following sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):

- Old Spanish National Historic Trail
- U.S. 285.

The following steps could be taken to better understand potential impacts on these SVRAs and SVLs from solar development in the De Tilla Gulch SEZ:

- Identify key observation points (KOPs) within these areas through working with the management agency or other local stakeholders.
- Conduct viewshed analyses from the KOPs to determine how much of the SEZ would be in view from each KOP.

TABLE C.3.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed De Tilla Gulch SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
National Historic Trail	Old Spanish ^g	2,700 mi	Passes within 0.6 to 0.25 mi of the SEZ as it parallels the entire southern boundary of the SEZ	34.6 mi	1.3	Westbound trail users would have extended views of solar facilities as they crossed the lower slopes of the Sangre de Cristo Mountains, then turned west to cross the San Luis Valley, and approached the SEZ directly. Visual contrast levels from solar facilities would gradually increase until they reached strong levels in the vicinity of the SEZ. Topographic screening would prevent eastbound trail users from seeing the SEZ until they were about 5 mi from the SEZ, at which point contrast levels would rise quickly to strong levels.
Other Areas of Interest (non-management areas)	U.S. 285 ^h	835 mi	2.9 mi of the highway is immediately adjacent to the SEZ	NA ⁱ	NA	As highway users passed the extreme southern tip of McIntyre Ridge (approximately 1.3 mi west of the SEZ), the entire SEZ would come into view. As users travel along the northwest side of the SEZ, facilities located within the SEZ would strongly attract the eye and would likely dominate views from U.S. 285.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

Footnotes continued on next page.

TABLE C.3.2-2 (Cont.)

- ^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.
- ^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.
- ^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percent total acreages/mileages visible within 25 mi (40 km) of the SEZ.
- ^f The assessment of impacts is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.
- ^g Length of Old Spanish National Historic Trail: BLM (2011a).
- ^h Length of U.S. 285: US-Highways.com (2010).
- ⁱ NA = data not available.

- 1 • As deemed necessary, based on viewshed analysis results, prepare wireframe
2 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
3 depicting the 80% development scenario to better estimate potential impacts.
4

5 This additional analysis may help judge potential visual contrast more accurately for
6 most KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
7 superimposition of the wireframe models onto the photos might be required or desired.
8

9
10 **C.3.2.5.12 Acoustic Environment**

11 None.
12
13

14
15 **C.3.2.5.13 Paleontological Resources**

16
17 The BLM Regional Paleontologist will be contacted to determine whether additional
18 information is available regarding the paleontological potential of the SEZ. A preliminary
19 paleontological survey could be conducted to verify the Potential Fossil Yield Classification
20 (PFYC) of the SEZ as Class 3b as used in the Draft Solar PEIS and determine whether
21 paleontological resources are likely to be affected.
22

23
24 **C.3.2.5.14 Cultural Resources and Native American Concerns**

25
26 Approximately 3.8% of the original 1,522-acre (6.2-km²) proposed De Tilla Gulch SEZ
27 has been surveyed (roughly 51 acres [0.2 km²]; however, one of the larger surveys conducted
28 was in an area no longer included in the SEZ; thus the amount of survey coverage of the revised
29 1,089 acres (4.4 km²) is less than that. No sites have been recorded to date within the SEZ.
30 Fifteen sites have been recorded within 5 mi (8 km) of the SEZ. Paleoindian sites could be
31 encountered throughout the San Luis Valley. The Old Spanish National Historic Trail is mapped
32 as within 0.25 mi (0.4 km) of the SEZ, but this segment of the trail has not been ground-truthed
33 and may actually cross the SEZ; a high-potential segment of that trail is located within the
34 viewshed of the SEZ. The West Fork of the Old Spanish Trail is a significant cultural resource,
35 although not part of the National Historic Trail system, and is also located within the viewshed
36 of the SEZ. The destruction or degradation of important plant resources and the destruction of
37 habitat or impediments to the movement of culturally important wildlife are also potential
38 impacts of concern within the SEZ.
39

40 The following additional data collection efforts could reduce the uncertainty about
41 potential impacts on cultural resources:
42

- 43 • Conduct a Class I literature file search to better understand (1) the site
44 distribution pattern in the vicinity of the SEZ, (2) trail networks through
45 existing ethnographic reports, and (3) overall cultural sensitivity of the
46 landscape.

- 1 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
2 10% sample (roughly 109 acres [0.4 km²]). Areas of interest, as determined
3 through a Class I review, should also be identified prior to establishing the
4 survey design and sampling strategy. A Class III inventory of linear features
5 detected using LIDAR in the De Tilla Gulch SEZ is currently underway and
6 will account for a portion of the recommended sample.
7
- 8 • Prepare a cultural sensitivity map based on results of the Class II survey and
9 Class I review.
10
- 11 • Identify the location of the Old Spanish National Historic Trail in the vicinity
12 of the SEZ and viewshed analyses from key points along the trail. High-
13 potential segments of the trail have been identified to the east between
14 Crestone, Colorado, and the Fourmile East SEZ and also to the west, west
15 of Saguache, Colorado. The trail segment to the east would be within the
16 viewshed at about 16 mi (26 km) regardless of solar technology type. Also
17 within the viewshed at about 6 mi (10 km) would be the West Fork of the Old
18 Spanish Trail, not currently part of the National Historic Trail system, but still
19 an important trail and significant cultural resource that would be visually
20 affected along an approximately 20-mi (32-km) stretch of the trail.
21
- 22 • Continue with government-to-government consultation as described in
23 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
24 not included in the original studies to determine whether those Tribes have
25 similar concerns. The De Tilla Gulch SEZ falls in the traditional use area of
26 primarily the Northern Cheyenne and the Northern Arapaho, although
27 potentially significant sites and landscapes for the Navajo and the Pueblos
28 may also be present near the SEZ (Blanca Peak, Great Sand Dunes, San Luis
29 Lakes). Potential topics to be discussed during consultation include the above-
30 mentioned places, trail systems, mountain springs, mineral resources, burial
31 sites, ceremonial areas, and plant and animal resources.
32

33 **C.3.2.5.15 Socioeconomics and Environmental Justice**

34 None.
35

36 **C.3.2.5.16 Cumulative Impact Considerations**

37 None.
38
39
40
41
42

1 **C.3.3 Fourmile East**

2
3
4 **C.3.3.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

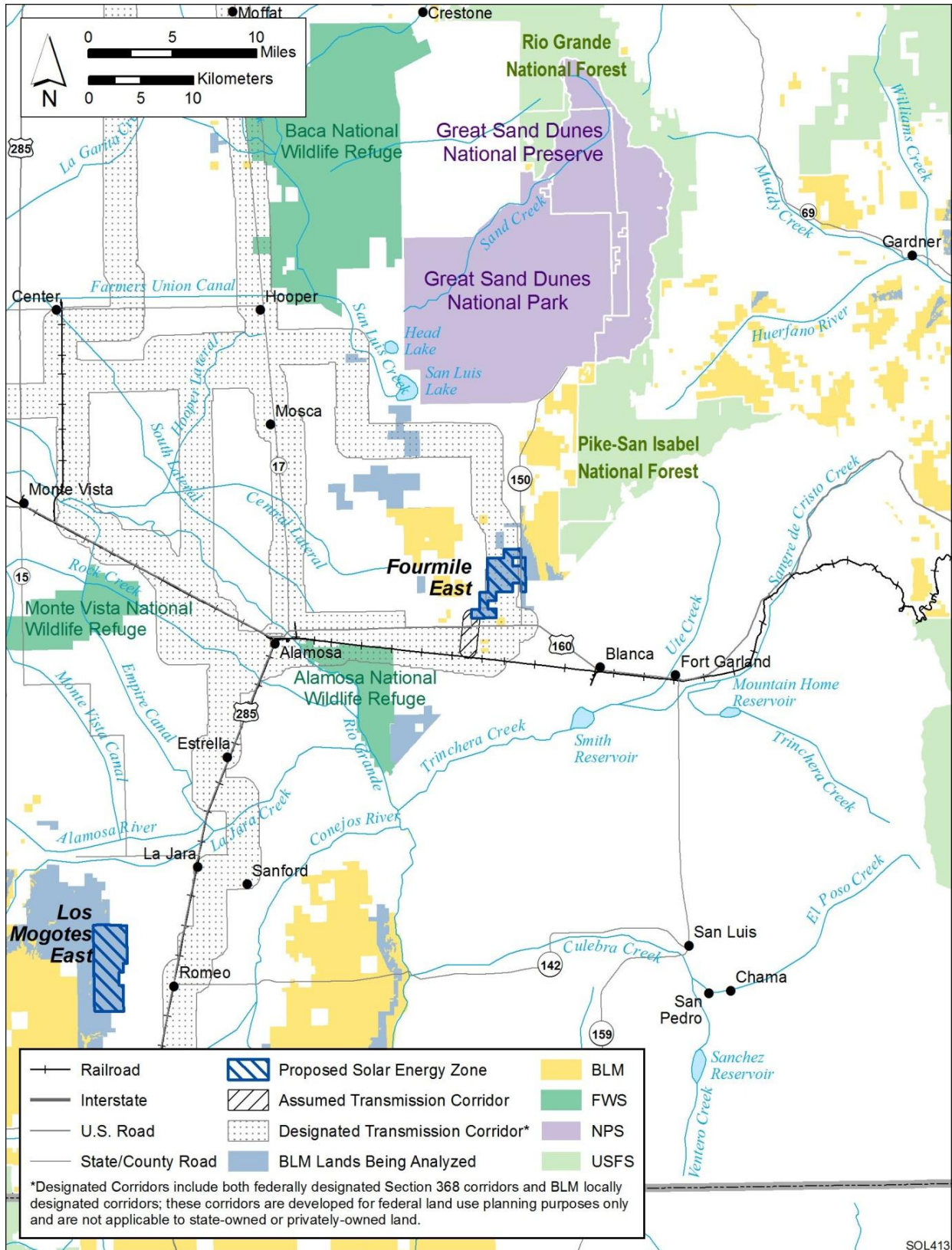
7 The proposed Fourmile East solar energy zone (SEZ), as presented in the Draft Solar
8 PEIS, had a total area of 3,882 acres (15.7 km²). It is located in Alamosa County in south-central
9 Colorado (Figure C.3.3-1). The town of Alamosa is located about 13 mi (21 km) west of the
10 SEZ.

11
12 A U.S. Department of the Interior Bureau of Land Management (BLM)-designated
13 transmission corridor that does not currently contain any transmission facilities passes through
14 most of the SEZ. This corridor could limit development in the SEZ because solar facilities
15 cannot be constructed under transmission lines. The Draft Solar PEIS discussion of impacts of
16 solar energy development in the SEZ acknowledged that the presence of the corridor could
17 reduce the amount of land available for solar power production, and that conversely, full
18 development of solar facilities within the SEZ would limit the use of the transmission corridor.
19

20 The Draft Solar PEIS identified a 69-kV transmission line that ends about 2 mi (3 km)
21 south of the SEZ as the nearest point of connection of the SEZ to the grid. There is also a 230-kV
22 line located about 8 mi (13 km) to the north of the SEZ. The location of new transmission that
23 could be constructed for this SEZ in the future may be different from that assumed in the Draft
24 Solar PEIS. Details on the updated transmission impact assessment to be included in the Final
25 Solar PEIS are provided in Section C.7.1 of this appendix. Analysis of transmission lines and/or
26 access roads will be completed as necessary as part of the project-specific environmental reviews
27 (see Section 2.2.2.2.2 of this Supplement).
28

29 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 30
- 31 • Possible non-mitigable impacts are related to induced changes to existing land
32 uses on nearby state and private lands.
33
 - 34 • SEZ development would have a significant effect on recreational users of
35 the Blanca Area of Critical Environment Concern/Special Recreation
36 Management Area (ACEC/SRMA), and there would be an adverse impact
37 on wilderness characteristics in a small portion of the Sangre de Cristo
38 Wilderness Area (WA). There is potential for adverse impacts on night sky
39 viewing opportunities in Great Sand Dunes National Park (NP) and in other
40 specially designated areas near the SEZ. The historic setting along 12 mi
41 (19 km) of the Old Spanish National Historic Trail would be adversely
42 affected, and there would be potential impact on 14 mi (23 mi) of the
43 Los Caminos Antiguos Scenic Byway. There may be an adverse impact on
44 Native American religious values associated with Blanca Peak. Because the
45 SEZ is located within the recently designated Sangre de Cristo National
46 Heritage Area, solar development could be inconsistent with this new
47 designation.



1

2 **FIGURE C.3.3-1 Proposed Fourmile East SEZ as Presented in the Draft Solar PEIS**

- 1 • One seasonal grazing allotment would likely be cancelled and 139 animal unit
2 months would be lost. One grazing permittee would be displaced and would
3 incur economic and possible social impacts.
- 4
- 5 • Development of the SEZ would be a dominating factor for the scenic byway
6 that passes through the SEZ and for a portion of the scenic railway route that
7 passes south of the SEZ. Because of the large number of specially designated
8 areas, scenic resources, and sensitive recreation resources near the SEZ, it is
9 likely that there would be unmitigated adverse impacts on recreational use
10 from development of the SEZ.
- 11
- 12 • The SEZ is located under a military training route (MTR), and any solar
13 facility that impinges into military airspace could interfere with military
14 training and would be a concern to the military.
- 15
- 16 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
17 erosion by wind and runoff, sedimentation, and soil contamination) could
18 occur.
- 19
- 20 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
21 wet-cooling options would not be feasible.
- 22
- 23 • Clearing of a large portion of the proposed SEZ could primarily affect
24 semidesert shrub steppe and greasewood flat, and may adversely affect desert
25 dry wash, playa, wetland, greasewood flat, and sand dune habitats, depending
26 on the amount of habitat disturbed. The establishment of noxious weeds could
27 result in habitat degradation.
- 28
- 29 • Potentially suitable habitat for 59 special status species and more than
30 50 wildlife species occurs in the affected area of the proposed SEZ; less than
31 1% of the potentially suitable habitat for any of these species occurs in the
32 region that would be directly affected by development.
- 33
- 34 • If aquatic biota are present in the small wetlands along the western boundary
35 of the proposed SEZ, they could be affected by the direct removal of surface
36 water features within the construction footprint, a decline in habitat quantity
37 and quality due to water withdrawals and changes in drainage patterns, as well
38 as increased sediment and contaminant inputs associated with ground
39 disturbance and construction activities.
- 40
- 41 • Temporary exceedances of ambient air quality standards for particulate matter
42 at the SEZ boundaries are possible during construction. These high
43 concentrations, however, would be limited to the immediate area surrounding
44 the SEZ boundary. Modeling indicates that emissions from construction
45 activities could exceed Class I Prevention of Significant Deterioration (PSD)

1 PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or less)
2 increments at the nearest federal Class I area (the Great Sand Dunes WA).

- 3
4 • Strong visual contrasts could be observed by visitors to the Old Spanish
5 National Historic Trail and Blanca Wetlands SRMA/ACEC, and from some
6 locations along the Los Caminos Antiguos Scenic Byway and along State
7 Highway 150 and U.S. 160. Weak to strong visual contrasts could be observed
8 by visitors to the Sangre de Cristo WA, while moderate visual contrasts could
9 be observed by visitors to the Zapata Falls SRMA and Blanca Peak.
- 10
11 • There is potential for impacts on significant paleontological and cultural
12 resources. Further evaluation is needed to determine the effects of solar
13 energy development on a high-potential segment of the Old Spanish National
14 Historic Trail. It is possible that there would be Native American concerns
15 about culturally significant archaeological sites, the potential for Native
16 American human remains and associated cultural items to be present within
17 the proposed SEZ, and the potential for visual and noise effects of solar
18 energy development on culturally significant locations within the valley as
19 consultation continues and additional analyses are undertaken. Effects on
20 traditionally important plants and animals are also possible.
- 21
22 • Minority populations occur within a 50-mi (80-km) radius of the proposed
23 SEZ boundary; thus adverse impacts of solar development could
24 disproportionately affect minority populations.

25 26 27 **C.3.3.2 Summary of Comments Received**

28
29 Most of the comments received from environmental groups on the proposed Fourmile
30 East SEZ were in favor of identifying the area as an SEZ (e.g., The Wilderness Society et al.¹⁵).
31 However, these groups proposed adjusting the eastern boundary 0.25 mi (0.40 km) west of State
32 Highway 150 to avoid adverse impacts on the Old Spanish National Historic Trail and the
33 Los Caminos Antiguos Scenic Byway (The Wilderness Society et al., Cultural Resources
34 Preservation Coalition, and Partnership for the National Trails System). The San Luis Valley
35 Renewable Communities Alliance was concerned that the SEZ contains winter range for
36 pronghorn. Also, the southern tip of the SEZ intersects a Gunnison prairie dog colony of
37 unknown status, and surveys for the species have not been conducted. The Wilderness Society
38 provided recommendations to avoid impacts on the Gunnison prairie dog, including avoidance of
39 active colonies, clearance surveys within any area defined by the Colorado Division of Wildlife
40 (CDOW) as having colonies of inactive or unknown status, potential off-site mitigation within

¹⁵ The Wilderness Society, Center for Native Ecosystems, Biodiversity Conservation Alliance, Rocky Mountain Recreation Initiative, Colorado Wild, Wild Connections, High Country Citizens' Alliance, Colorado Environmental Coalition, Audubon Colorado, Natural Resources Defense Council, Sierra Club, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Colorado SEZs. Those comments are attributed to The Wilderness Society et al.

1 areas of high species viability, and project siting that avoids blocking migration corridors used
2 by the species to migrate between colonies.
3
4

5 **C.3.3.3 Changes to the SEZ**

6

7 The proposed Fourmile East SEZ has been reconfigured to eliminate 999 acres (4 km²),
8 mainly along the eastern boundary of the SEZ, and also a small area on the west side of the
9 proposed SEZ (see Figure C.3.3-2). Excluding these areas will avoid impacts on known cultural
10 resources, a historic playa basin, Caminos Antiguos Scenic Byway, the Old Spanish National
11 Historic Trail, the Pike National Historic Trail, big game winter range, and important riparian
12 habitat. Small additional wetland areas with a total area of about 1-acre (0.004-km²) have been
13 identified as non-development areas within the SEZ. The remaining developable area within the
14 SEZ area is 2,882 acres (11.7 km²).
15

16 To reduce the visual resource impacts of solar development within the proposed Fourmile
17 East SEZ, SEZ-specific visual resource mitigation requirements have been developed. Within
18 the area of the SEZ that was labeled to meet Visual Resource Management (VRM) Class II-
19 consistent objectives in the Draft Solar PEIS, all forms of development will be limited to 10 ft
20 (3.3 m) or less, and the technology must be restricted to either photovoltaic technologies of less
21 than 10 ft (3.3 m), or technologies with comparable or lower heights and reflectivity. For all
22 remaining portions of the SEZ, the solar development will be restricted to either PV technologies
23 of less than 3.3 m (10 ft), or technologies with comparable or lower height and reflectivity.
24 Additional required mitigation measures to address potential visual resource impacts are
25 described in Section C.7.3 of this appendix.
26

27 Because of the extensive potential impacts from solar development in the portion of the
28 Fourmile East SEZ that has been eliminated, those lands will be considered solar right-of-way
29 exclusion areas; that is, applications for solar development on those lands will not be accepted by
30 the BLM.
31
32

33 **C.3.3.4 Wilderness Character Status of SEZ**

34

35 A recently maintained inventory of wilderness characteristics was used to determine
36 whether public lands within the Fourmile East SEZ have wilderness characteristics. The finding
37 of this inventory was that these lands do not contain wilderness characteristics.
38
39

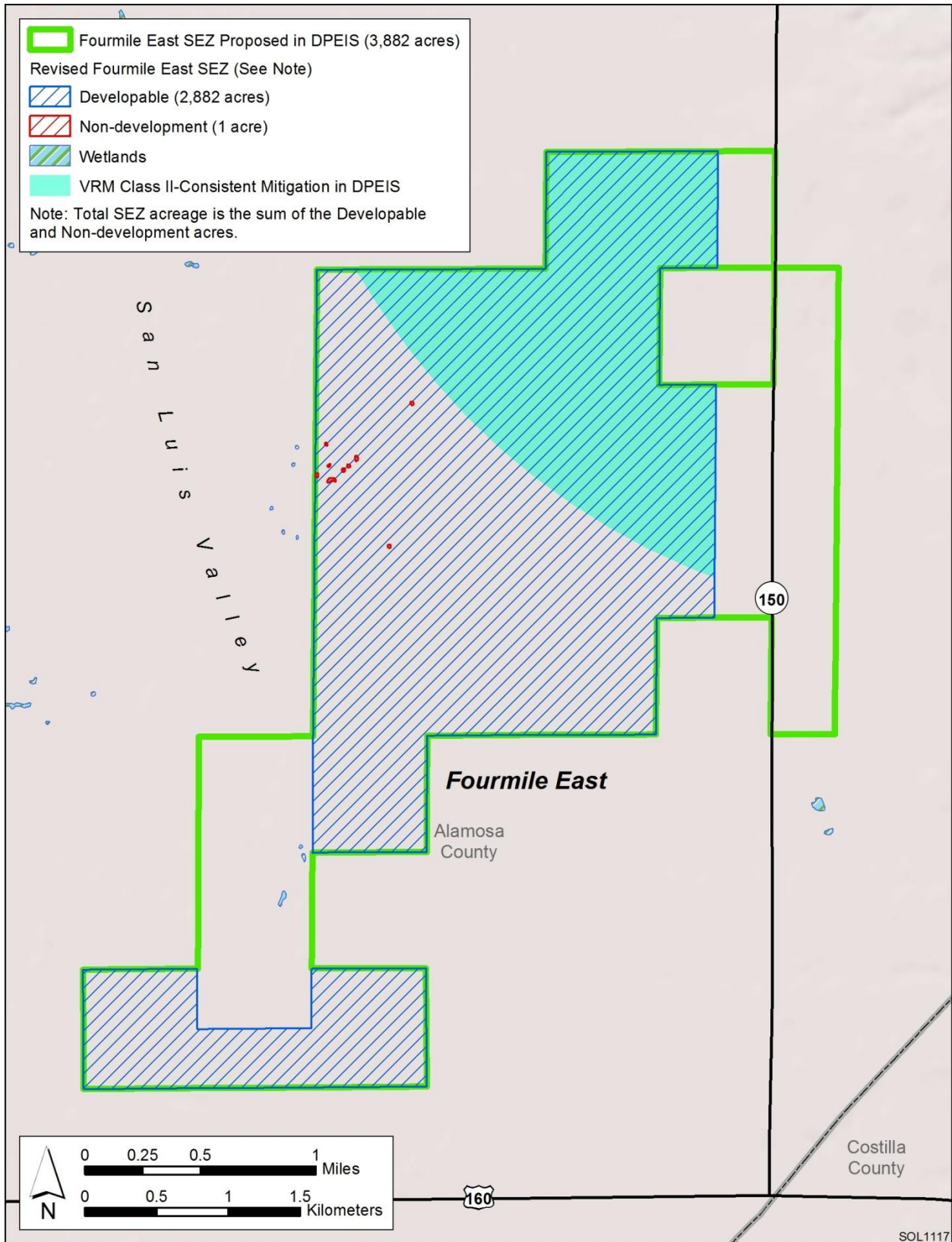
40 **C.3.3.5 Additional Data Collection Recommended**

41

42 **C.3.3.5.1 Lands and Realty**

43

44 None.
45
46



1

2 **FIGURE C.3.3-2 Proposed Fourmile East SEZ as Described in this Supplement**

1 **C.3.3.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

2
3 None.

4
5
6 **C.3.3.5.3 Rangeland Resources**

7
8
9 *Livestock Grazing.* The potential impact on the Tobin Creek and Foothills grazing
10 allotments will be re-evaluated based on the revised boundaries.

11
12
13 *Wild Horses and Burros.* None.

14
15
16 **C.3.3.5.4 Recreation**

17
18 The San Luis Valley-wide effort to promote recreational use could warrant additional
19 consideration. The status of off-highway vehicle use designation in the area may also warrant
20 additional consideration.

21
22
23 **C.3.3.5.5 Military and Civilian Aviation**

24
25 The proposed technology restrictions described in Sections C.3.3.3 and C.7.3 are
26 expected to minimize or eliminate any potential issues with MTRs; however, the BLM will
27 continue to consult with the U.S. Department of Defense regarding potential issues with MTRs.

28
29
30 **C.3.3.5.6 Geologic Setting and Soil Resources**

31
32 None.

33
34
35 **C.3.3.5.7 Minerals**

36
37 Additional information on leasable and strategic minerals in the vicinity of the proposed
38 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
39 on a proposed 20-year withdrawal of SEZ lands.

40
41
42 **C.3.3.5.8 Water Resources**

43
44 The following additional data and actions would help further characterize potential
45 impacts on water resources for the proposed Fourmile East SEZ. A more detailed discussion of

1 each of these activities is included in the water resources action plan provided in Section C.7.2 of
2 this appendix.

- 3
- 4 • Prepare a planning-level water resources inventory of the San Luis Valley
5 (eastern portion).
- 6
- 7 • Perform field surveys and hydrologic analyses to support jurisdictional water
8 determinations and floodplain identifications. Tasks include:
 - 9 – Surveying wetland and low-lying areas for surface elevations, high water
10 marks, and sediment conditions; and
 - 11 – Conducting hydrologic rainfall-runoff-routing analyses to identify
12 100-year floodplain areas.
- 13
- 14 • Coordinate with the U.S. Army Corps of Engineers (USACE) (Albuquerque
15 District) regarding jurisdictional water determinations for the SEZ. Water
16 features to be considered include:
 - 17 – Small wetland features.
- 18
- 19 • Identify 100-year floodplain exclusion areas for the SEZ. This task would
20 require coordination with the Federal Emergency Management Agency and
21 the Colorado Water Conservation Board.
- 22
- 23 • Describe the formation of a stakeholder committee to conduct long-term
24 monitoring of water resources. This activity would entail:
 - 25 – Identifying key stakeholder agencies,
 - 26 – Discussing general features of a monitoring program, and
 - 27 – Working with the U.S. Geological Survey and Colorado Division of Water
28 Resources (CDWR) (Division 3) to develop groundwater monitoring well
29 design and numerical groundwater models. (Groundwater monitoring
30 should coordinate with the Rio Grande Decision Support System through
31 the CDWR [Division 3].)
- 32

33

34 **C.3.3.5.9 Ecological Resources**

35

36

37 ***Vegetation and Plant Communities.*** The following additional data-gathering actions
38 would help further characterize potential impacts on vegetation and plant communities for the
39 proposed Fourmile East SEZ:

- 40
- 41 • Identify and map the location and areal extent of dry wash, playa, wetland,
42 and greasewood flat communities within the SEZ. Identify and map the
43 location and areal extent of these habitats, as well as riparian habitats, outside
44 the SEZ that may be affected by hydrologic changes, including groundwater
45 elevations, and changes in water, sediment, and contaminant inputs associated

1 with runoff. Such effort may help determine habitat characteristics, including
2 water source, hydrologic regime, and dominant plant species.

- 3
4 • Identify and map the location and areal extent of sand dunes and sand
5 transport systems within the SEZ.
6

7
8 **Wildlife.** The following additional data-gathering action would help further characterize
9 potential impacts on wildlife resources for the SEZ:

- 10
11 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
12 SEZ as a movement/migratory corridor or as important habitat for elk, mule
13 deer, and pronghorn.
14

15
16 **Aquatic Biota.** Investigations recommended under the water resources action plan
17 (Section C.3.3.5.8) would be useful in characterizing and protecting habitat available to aquatic
18 biota. Wetlands identified within the SEZ may or may not contain aquatic biota; therefore,
19 preliminary evaluations of these surface water features could be conducted to determine the
20 potential for aquatic communities to be present.
21

22 **Special Status Species.** The following additional data-gathering actions would be useful
23 in further characterizing and protecting habitat available to special status species:
24

- 25 • Conduct pre-disturbance surveys within the SEZ to determine the presence
26 and abundance of those special status species that are (1) federally listed,
27 proposed for listing, or candidates for listing under the Endangered Species
28 Act (ESA); or (2) listed by the State of Colorado as threatened or endangered;
29 or (3) designated as sensitive by the Colorado BLM State Office. These
30 species are listed in Table C.3.3-1. Surveys should focus on areas identified as
31 potentially suitable, and the suitability of these habitats to support these
32 special status species should be determined in the field. All field-determined
33 suitable habitats for special status species should be mapped. Target species
34 and survey protocols should be developed in coordination with the U.S. Fish
35 and Wildlife Service and CDOW. The BLM is currently conducting surveys
36 for various special status species (e.g., mountain plover, western burrowing
37 owl, Gunnison prairie dog) within the State of Colorado. In areas where these
38 surveys overlap with the Colorado SEZs and areas of direct effects, the BLM
39 survey information will be used to make appropriate determinations regarding
40 the potential occurrence of species and their habitats. Additional survey
41 efforts may be necessary, as appropriate.
42

43 The Draft Solar PEIS presents a table of special status species for which
44 potential impacts need to be evaluated prior to development in the proposed
45 Fourmile East SEZ. The list of species presented in Table 10.3.12.1-1 of the
46 Draft Solar PEIS also includes species listed by the State of Colorado and

1 **TABLE C.3.3-1 Special Status Species That May Occur in the Vicinity of the Proposed Fourmile**
 2 **East SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Brandegee's milkvetch	<i>Astragalus brandegeei</i>	BLM-S	Sandy or gravelly banks, flats, and stony meadows within pinyon-juniper woodlands. Substrates are usually sandstone with granite or basalt. Elevation ranges between 5,400 and 8,800 ft. ^d Nearest occurrences are located 40 mi ^e southwest of the SEZ. About 733,938 acres ^f of potentially suitable habitat occurs within the SEZ region.
Fragile rockbrake	<i>Cryptogramma stelleri</i>	BLM-S	Moist soils on shaded limestone cliffs at elevations greater than 7,000 ft and often in association with mosses. The nearest known occurrences are located in the San Juan Mountains, about 50 mi to the west of the SEZ. About 12,297 acres of potentially suitable habitat occurs within the SEZ region.
Many-stemmed spider-flower^g	<i>Cleome multicaulis</i>	BLM-S	San Luis Valley on saturated soils created by waterfowl management on public lands. Nearest occurrences intersect the affected area from the Blanca Wetlands, about 3 mi west and northwest of the SEZ. About 4,439 acres of potentially suitable habitat occurs within the SEZ region in the Blanca Wetlands.
Ripley's milkvetch	<i>Astragalus ripleyi</i>	BLM-S	Mixed conifer and shrubland habitats on rocky substrates at elevations above 8,000 ft. The nearest known occurrences are located 30 mi to the west of the SEZ. About 394,308 acres of potentially suitable habitat occurs within the SEZ region.
Rock-loving aletes	<i>Neoparrya lithophila</i>	BLM-S	Igneous rock outcrops on north-facing cliffs and ledges within pinyon-juniper woodlands at elevations greater than 7,000 ft. Endemic to south-central Colorado. Found as near as 15 mi southwest of the SEZ. About 434,485 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S	Year-round resident in the SEZ region. Open spaces associated with high, near-vertical cliffs and bluffs above 200 ft in height overlooking rivers. Nearest occurrences are from the Rio Grande National Forest about 40 mi northwest of the SEZ. About 3,277,511 acres of potentially suitable habitat occurs within the SEZ region.
Bald eagle	<i>Haliaeetus leucocephalus</i>	CO-T	Year-round resident in the SEZ region. Seldom seen far from water, especially larger rivers, lakes, and reservoirs. Occurs locally in semiarid shrubland habitats where there is an abundance of small mammal prey. Known to occur in riparian habitats along the Rio Grande about 10 mi west of the SEZ. About 2,072,279 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Summer resident in the affected area, but year-round resident in portions of the SEZ region. Grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands. Known to occur in San Luis State Park and Wildlife Area, about 10 mi northwest of the SEZ. About 1,360,614 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.3.3-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont).			
Mountain plover	<i>Charadrius montanus</i>	BLM-S	Summer resident in the SEZ region. Prairie grasslands and arid plains and fields. Nests in shortgrass prairies associated with prairie dogs, bison, and cattle. Known to occur within 25 mi southeast of the SEZ. About 1,709,413 acres of potentially suitable habitat occurs within the SEZ region.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	ESA-E; CO-E	Nests in thickets, scrubby and brushy areas, open second growth, swamps, and open woodlands in the Alamosa National Wildlife Refuge along the Rio Grande, about 7.5 mi southwest of the SEZ. Suitable habitats may occur in the Blanca Wetlands about 3 mi west of the SEZ. About 210,962 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S; CO-T	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in the San Luis Valley. About 2,209,000 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Big free-tailed bat	<i>Nyctinomops macrotis</i>	BLM-S	Year-round resident in the SEZ region. Roosts in rock crevices on cliff faces or in buildings. Forages primarily in coniferous forests and arid shrublands to feed on moths. May occur in the San Luis Valley. About 2,745,262 acres of potentially suitable habitat occurs within the SEZ region.
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	ESA-C	Mountain valleys, plateaus, and open brush habitats in the project area at elevations between 6,000 and 12,000 ft. Known to occur as near as 20 mi south of the SEZ. About 1,938,641 acres of potentially suitable habitat occurs within the SEZ region.
Pale Townsend's big-eared bat	<i>Corynorhinus townsendii pallescens</i>	BLM-S	Year-round resident in the SEZ region. Semiarid shrublands, pinyon-juniper woodlands, and montane forests to elevations of 9,500 ft. Roosts in caves, mines, rock crevices, under bridges, or within buildings. Known to occur in the San Luis Valley about 25 mi southwest of the SEZ. About 3,075,160 acres of potentially suitable habitat occurs within the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Colorado BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; CO-E = listed as endangered by the State of Colorado; CO-T = listed as threatened by the State of Colorado; ESA-C = candidate for listing under the ESA; ESA-E = listed as endangered under the ESA.
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1 species ranked by the State of Colorado as S1 or S2 or species of concern.
2 Based on the design features presented in the Draft Solar PEIS, the potential
3 for impacts on these additional species will also need to be addressed before
4 development could occur in the SEZ.
5
6

7 **C.3.3.5.10 Air Quality and Climate**

8
9 None.
10

11 **C.3.3.5.11 Visual Resources**

12
13
14 Visual resources will be re-evaluated for the Final Solar PEIS based on the boundary
15 adjustments and proposed technology restrictions described in Section C.3.3.3 of this
16 Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the proposed
17 Fourmile East SEZ is provided in Table C.3.3-2. This table includes only those resources that
18 would be subject to moderate or strong visual contrast. The Draft Solar PEIS visual impact
19 analysis predicted these levels of visual contrast from solar energy development in the Fourmile
20 East SEZ for the following sensitive visual resource areas (SVRAs) and sensitive viewing
21 locations (SVLs):
22

- 23 • Old Spanish National Historic Trail
- 24
- 25 • Sangre de Cristo WA
- 26
- 27 • Blanca Wetlands SRMA
- 28
- 29 • Zapata Falls SRMA
- 30
- 31 • Blanca Peak
- 32
- 33 • Rio Grande Scenic Railroad.
- 34

35 The following steps could be taken to better understand potential impacts on these
36 SVRAs and SVLs from solar development in the Fourmile East SEZ:
37

- 38 • Identify key observation points (KOPs) within these areas through working
39 with the management agency or other local stakeholders.
- 40
- 41 • Conduct viewshed analyses from the KOPs to determine how much of the
42 SEZ would be in view from each KOP.
- 43
- 44 • As deemed necessary, based on viewshed analysis results, prepare wireframe
45 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
46 depicting the 80% development scenario to better estimate potential impacts.

1 **TABLE C.3.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Fourmile**
 2 **East SEZ**

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
National Historic Trail	Old Spanish National Historic Trail ^g	2,700 mi	Passes within 0.86 mi on the east side of the SEZ	50 mi	1.9	A high potential segment of the trail begins 1.25 mi northeast of the northeast corner of the SEZ; approximately 25 mi of the high-potential segment is within the 25-mi viewshed. Nearby elevated locations with open views of the SEZ could be subject to strong levels of visual contrast. Some viewpoints at lower elevations would have expansive views of the SEZ, but because of the lower viewing angle, these would be expected to be subjected to lower levels of visual contrast. Contrast levels would range from minimal levels for distant or low-elevation points to strong levels for locations close to the SEZ and for those points on the trail at higher elevations than the SEZ.
WAs	Sangre de Cristo	217,702 acres	2.8 mi northeast of the SEZ	10,479 acres	4.8	Solar energy development would be expected to create weak to strong visual contrasts for viewers. Visible portions extend up to 4.5 mi from the northern boundary of the SEZ.

TABLE C.3.3-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percent Total Acreage/Mileage Visible within 25 mi	Notes ^f
SRMAs	Blanca Wetlands	8,598 acres	Southern unit is located 0.5 mi (0.8 km) from the western edge of the SEZ; the northern unit is located 1.8 mi from the northwest corner of the SEZ	8,598 acres	100.0	Solar energy development would be expected to cause weak to strong visual contrasts with the generally natural-appearing surroundings. The SEZ is visible from within the SRMA at distances between 0.5 and 6.7 mi.
	Zapata Falls	3,702 acres	4.6 mi from the northeast corner of the SEZ	2,338 acres	63.2	Solar development would be expected to create weak to moderate contrasts as seen from visible locations within the SRMA. The visible area extends from the point of closest approach to 7.0 mi from the SEZ.
Other Areas of Interest (non-management areas)	Blanca Peak	NA ^h	7 mi (11 km) northeast of the SEZ	NA	NA	As seen from Blanca Peak, the SEZ would occupy a substantial part of the observer's field of view; solar energy development would be likely to attract attention, though it would not be expected to dominate the view and would thus be expected to create moderate levels of visual contrasts.

TABLE C.3.3-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percent Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (Cont.)	Rio Grande Scenic Railroad	NA	Passes within 2.3 mi of the southern boundary of the SEZ	NA	NA	Solar energy development would be expected to cause strong visual contrasts with the generally natural-appearing surroundings. Because this viewpoint is near the closest point on the railroad to the SEZ, other potential viewpoints on the railroad would be subject to similar or lower contrast levels.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percentage of total acreages/mileages visible within 25 mi (40 km) of the SEZ.

^f The assessment of impacts is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

^g Length of trail: BLM (2011a).

^h NA = data not available.

1 This additional analysis may help judge potential visual contrast more accurately for most
2 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
3 superimposition of the wireframe models onto the photos might be required or desired.
4

5 Additional required mitigation measures to address potential visual resource impacts are
6 given in Section C.7.3 of this appendix.
7

8 9 **C.3.3.5.12 Acoustic Environment**

10
11 None.
12

13 14 **C.3.3.5.13 Paleontological Resources**

15
16 The BLM Regional Paleontologist will be contacted to determine whether additional
17 information is available regarding the paleontological potential of the SEZ. A preliminary
18 paleontological survey could be conducted to verify the Potential Fossil Yield Classification
19 (PFYC) of the SEZ as Class 4/5 as used in the Draft Solar PEIS and determine whether
20 paleontological resources are likely to be affected.
21

22 23 **C.3.3.5.14 Cultural Resources and Native American Concerns**

24
25 None of the proposed Fourmile East SEZ has been systematically surveyed, although
26 six sites have been recorded to date within the original footprint of the SEZ. More than 100 sites
27 (including isolated finds) have been recorded within 5 mi (8 km) of the SEZ. Paleoindian sites
28 could be encountered throughout the San Luis Valley, and well-known Folsom sites are recorded
29 in similar dune areas just north of the SEZ. Burials have been noted in the nearby Great Sand
30 Dunes NP and Preserve and have been encountered as a result of shifting dunes. The Old
31 Spanish National Historic Trail is mapped as slightly more than 1.0 mi (1.6 km) from the SEZ
32 and includes a high-potential segment of that trail that would be visually affected. Blanca Peak,
33 reportedly a sacred mountain of the Navajo, is located just to the east, and the SEZ is within view
34 of that location. The destruction or degradation of important plant resources and the destruction
35 of habitat or impediments to the movement of culturally important wildlife are also potential
36 impacts of concern within the SEZ.
37

38 The following additional data collection efforts could reduce the uncertainty about
39 potential impacts on cultural resources:
40

- 41 • Conduct a Class I literature file search to better understand (1) the site
42 distribution pattern in the vicinity of the SEZ, (2) trail networks through
43 existing ethnographic reports, and (3) overall cultural sensitivity of the
44 landscape.
45

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

- Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a 10% sample (roughly 288 acres [1.2 km²]). Areas of interest, as determined through a Class I review, should also be identified prior to establishing the survey design and sampling strategy, such as the dune areas throughout the SEZ. Subsurface testing of dune areas should be a component of the sampling strategy as well.
- Prepare a cultural sensitivity map based on results of the Class II survey and Class I review.
- Identify the location of the Old Spanish National Historic Trail in the vicinity of the SEZ and viewshed analyses from key points along the trail. A high-potential segment of the trail has been identified directly to the northeast from Crestone, Colorado, to the SEZ. It is clearly within the viewshed of the SEZ and would be affected visually. A mitigation strategy would need to be developed to address unavoidable impacts on the National Historic Trail.
- Continue with government-to-government consultation as described in Section 2.4.3, including follow-up to up recent ethnographic studies covering some SEZs in Nevada and Utah with Tribes not included in the original studies to determine whether those Tribes have similar concerns. The Fourmile East SEZ falls in the traditional use area of primarily the Northern Cheyenne and the Northern Arapaho, although potentially significant sites and landscapes for the Navajo and the Pueblos may also be present near the SEZ (Blanca Peak, Great Sand Dunes, San Luis Lakes). Potential topics to be discussed during consultation include the above-mentioned places, trail systems, mountain springs, mineral resources, burial sites, ceremonial areas, water resources, and plant and animal resources.

C.3.3.5.15 Socioeconomics and Environmental Justice

None.

C.3.3.5.16 Cumulative Impact Considerations

None.

1 **C.3.4 Los Mogotes East**
2
3

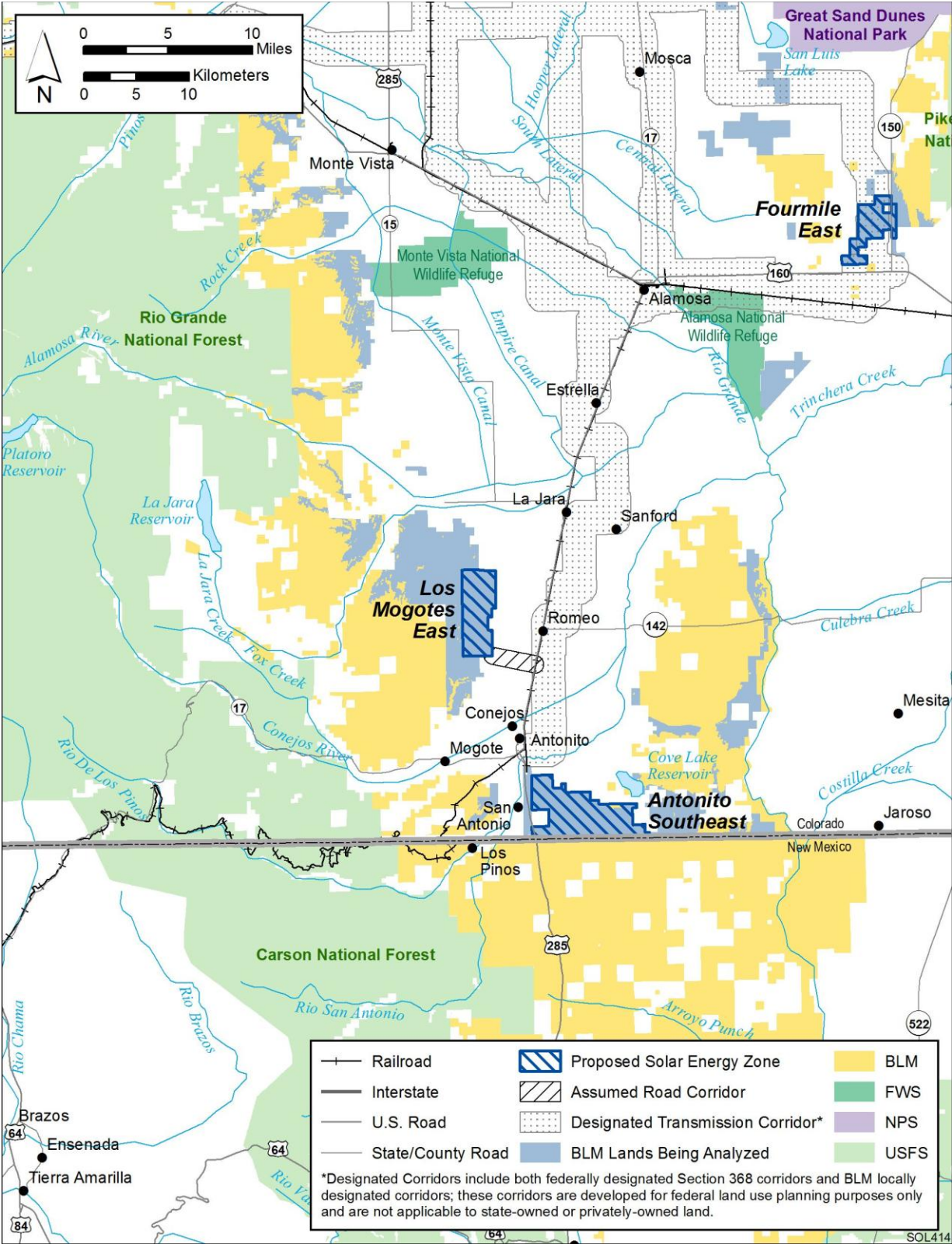
4 **C.3.4.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Los Mogotes East solar energy zone (SEZ), as presented in the Draft Solar
8 PEIS, had a total area of 5,918 acres (24 km²). It is located in Conejos County in south–central
9 Colorado, about 12 mi (19 km) north of the New Mexico border (Figure C.3.4-1). The largest
10 nearby town, Alamosa, is located about 22 mi (35 km) northeast of the SEZ. The town of Romeo
11 is located about 3 mi (5 km) directly to the east of the SEZ.
12

13 The Draft Solar PEIS identified a 69-kV transmission line adjacent to the proposed
14 Los Mogotes East SEZ as the nearest point for connection of the SEZ to the grid. The actual
15 location of connection to the transmission grid could be different than that assumed in the Draft
16 Solar PEIS. Details on the updated transmission impact assessment for SEZs to be included in
17 the Final Solar PEIS are provided in Section C.7.1 of this appendix. The Draft Solar PEIS
18 identified U.S. 285, located about 3 mi (5 km) to the east of the SEZ, as the nearest major road,
19 and assumed that a new access road would be constructed from the proposed SEZ to U.S. 285 to
20 support development. The location of a new access road that could be constructed in the future
21 may be different from that assumed in the Draft Solar PEIS. Analysis of transmission lines
22 and/or access roads will be completed as necessary as part of the project-specific environmental
23 reviews (see Section 2.2.2.2.2 of this Supplement).
24

25 Potential adverse impacts identified in the Draft Solar PEIS included the following:
26

- 27 • Access to U.S. Department of the Interior Bureau of Land Management
28 (BLM), state, and private lands to the west of the SEZ could be affected by
29 solar development if public access through the SEZ is not maintained.
30
- 31 • The Los Mogotes Area of Environmental Concern (ACEC) is located within
32 1 mi (1.6 km) of the SEZ and could be affected by its development, with
33 increased vehicular traffic and disturbance that could impair its value to
34 wildlife. The Los Caminos Antiguos Scenic Byway passes within 3 mi (5 km)
35 of the SEZ; any impact of development of the SEZ on the byway and byway
36 users is not known, but it would be highly visible. The SEZ is located within
37 the designated Sangre de Cristo National Heritage Area. The SEZ is within
38 1 mi (1.6 km) of the route of the West Fork of the North Branch of the Old
39 Spanish Trail, and development would have a major impact on the historic
40 and visual integrity of the trail.
41
- 42 • The Ciscom Flat grazing allotment would likely be cancelled, and the Capulin
43 and Little Mogotes allotments would be reduced, resulting in 475 animal unit
44 months lost. Four grazing permittees would be affected.
45



1

2 **FIGURE C.3.4-1 Proposed Los Mogotes East SEZ as Presented in the Draft Solar PEIS**

3

- 1 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
2 erosion by wind and runoff, sedimentation, and soil contamination) could
3 occur.
- 4
- 5 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
6 wet-cooling options would not be feasible.
- 7
- 8 • Clearing of a large portion of the proposed SEZ could primarily affect
9 semidesert shrub steppe and may adversely affect dry wash or greasewood flat
10 habitats, depending on the amount of habitat disturbed. The establishment of
11 noxious weeds could result in habitat degradation.
- 12
- 13 • Potentially suitable habitat for 51 special status species and more than
14 50 wildlife species occurs in the affected area of the proposed SEZ; less than
15 1% of the potentially suitable habitat for any of these species occurs in the
16 region that would be directly affected by development.
- 17
- 18 • If aquatic biota are present in the small ephemeral washes located in the
19 proposed SEZ, they could be affected by the direct removal of surface water
20 features within the construction footprint, a decline in habitat quantity and
21 quality due to water withdrawals and changes in drainage patterns, as well as
22 increased sediment and contaminant inputs associated with ground
23 disturbance and construction activities.
- 24
- 25 • Temporary exceedances of ambient air quality standards for particulate matter
26 at the SEZ boundaries are possible during construction. These high
27 concentrations, however, would be limited to the immediate area surrounding
28 the SEZ boundary. Modeling indicates that emissions from construction
29 activities could exceed Class I Prevention of Significant Deterioration (PSD)
30 PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or less)
31 increments at the nearest federal Class I area (the Great Sand Dunes
32 Wilderness Area [WA]).
- 33
- 34 • Strong visual contrasts could be observed by visitors to the West Fork of the
35 North Branch of the Old Spanish Trail. Weak to moderate visual contrasts
36 could be observed by visitors to the San Luis Hills Wilderness Study Area
37 (WSA), and weak to strong visual contrasts could be observed by users of the
38 Los Caminos Antiguos Scenic Byway where screening is absent. Where
39 screening is absent, strong visual contrasts could be observed from the
40 community of Romeo. Because of these potential impacts, the Draft Solar
41 PEIS recommended that power tower facilities should be prohibited within the
42 SEZ
- 43
- 44 • During operations, noise levels at the nearest residences could be higher than
45 the U.S. Environmental Protection Agency (EPA) guideline level if
46 concentrating solar power facilities with energy storage technologies (which

1 could extend the daily operational time by 6 hours or more) were used at the
2 SEZ.

- 3
4 • Few, if any, impacts on significant paleontological resources in a large
5 percentage of the SEZ are likely to occur, although there could be impacts in
6 the eastern 12% of the SEZ. Direct impacts on significant cultural resources
7 could occur. Further evaluation is needed to determine the effects of solar
8 energy development on the West Fork of the North Branch of the Old Spanish
9 Trail. It is possible that there will be Native American concerns about
10 potential visual and noise effects of solar energy development in the SEZ on
11 culturally significant locations within the valley. Effects on traditionally
12 important plants and animals are also possible.
- 13
14 • Minority populations occur within a 50-mi (80-km) radius of the proposed
15 SEZ boundary; thus adverse impacts of solar development could
16 disproportionately affect minority populations.

17 18 19 **C.3.4.2 Summary of Comments Received**

20
21 Most of the comments received from environmental groups on the proposed Los Mogotes
22 East SEZ were in favor of identifying the area as an SEZ (e.g., The Wilderness Society et al.¹⁶).
23 The San Luis Valley Ecosystem Council was concerned with the distance to transmission lines
24 and commented that shallow soils would make development of the SEZ difficult. The National
25 Wildlife Federation was concerned because the Los Mogotes East SEZ contains pronghorn
26 winter concentration areas. The Colorado Division of Wildlife (CDOW) recommended that the
27 BLM require off-site habitat improvement projects and/or compensatory mitigation to offsets
28 habitat losses in order to minimize both displacement of big game and lost hunting opportunities
29 for pronghorn. The San Luis Valley Renewable Communities Alliance (SLVRCA) was
30 concerned that the SEZ contains winter range, severe winter range, and winter concentration
31 areas for pronghorn, severe winter range and winter range for elk, and winter range for mule
32 deer.

33
34 The Wilderness Society and SLVRCA were concerned that the SEZ contains a Gunnison
35 prairie dog colony of unknown status. The SLVRCA also commented that the Old Spanish
36 National Historic Trail is located immediately east of the SEZ, and the area is known to have a
37 number of cultural and historical resources that have not been adequately inventoried. The
38 Conejos County Clean Water, Inc., group was concerned with the socioeconomic impact of solar
39 energy development at the proposed Los Mogotes East SEZ.

40
41

¹⁶ The Wilderness Society, Center for Native Ecosystems, Biodiversity Conservation Alliance, Rocky Mountain
Recreation Initiative, Colorado Wild, Wild Connections, High Country Citizens' Alliance, Colorado
Environmental Coalition, Audubon Colorado, Natural Resources Defense Council, Sierra Club, Soda Mountain
Wilderness Council, and Sierra Trek submitted joint comments on the proposed Colorado SEZs. Those
comments are attributed to The Wilderness Society et al.

1 **C.3.4.3 Changes to the SEZ**
2

3 The proposed Los Mogotes East SEZ has been reconfigured to eliminate more than
4 half of the area, 3,268 acres (13.2 km²) on the western side of the SEZ (see Figure C.3.4-2).
5 Excluding these areas will avoid impacts on significant cultural resources; grazing allotments;
6 an important riparian area; Gunnison prairie dog, burrowing owl, ferruginous hawk, mountain
7 plover, pronghorn birthing and winter habitat; and visual resources.
8

9 To reduce the visual resource impacts of solar development within the proposed
10 Los Mogotes East SEZ, allowable solar technologies within the remaining area comprising the
11 SEZ will be limited to photovoltaic systems with panel heights no greater than 10 ft (3.3 m), or
12 technologies with comparable or less height and reflectivity. Additional required mitigation
13 measures to address potential visual resource impacts are given in Section C.7.3 of this appendix.
14

15 Because of the extensive potential impacts from solar development in the portion of the
16 Los Mogotes East SEZ that has been eliminated, those lands will be considered solar right-of-
17 way exclusion areas; that is, applications for solar development on those lands will not be
18 accepted by the BLM.
19

20
21 **C.3.4.4 Wilderness Character Status of SEZ**
22

23 A recently maintained inventory of wilderness characteristics was used to determine
24 whether public lands within the Los Mogotes East SEZ have wilderness characteristics. The
25 finding of this inventory was that these lands do not contain wilderness characteristics.
26
27

28 **C.3.4.5 Additional Data Collection Recommended**
29
30

31 **C.3.4.5.1 Lands and Realty**
32

33 None.
34
35

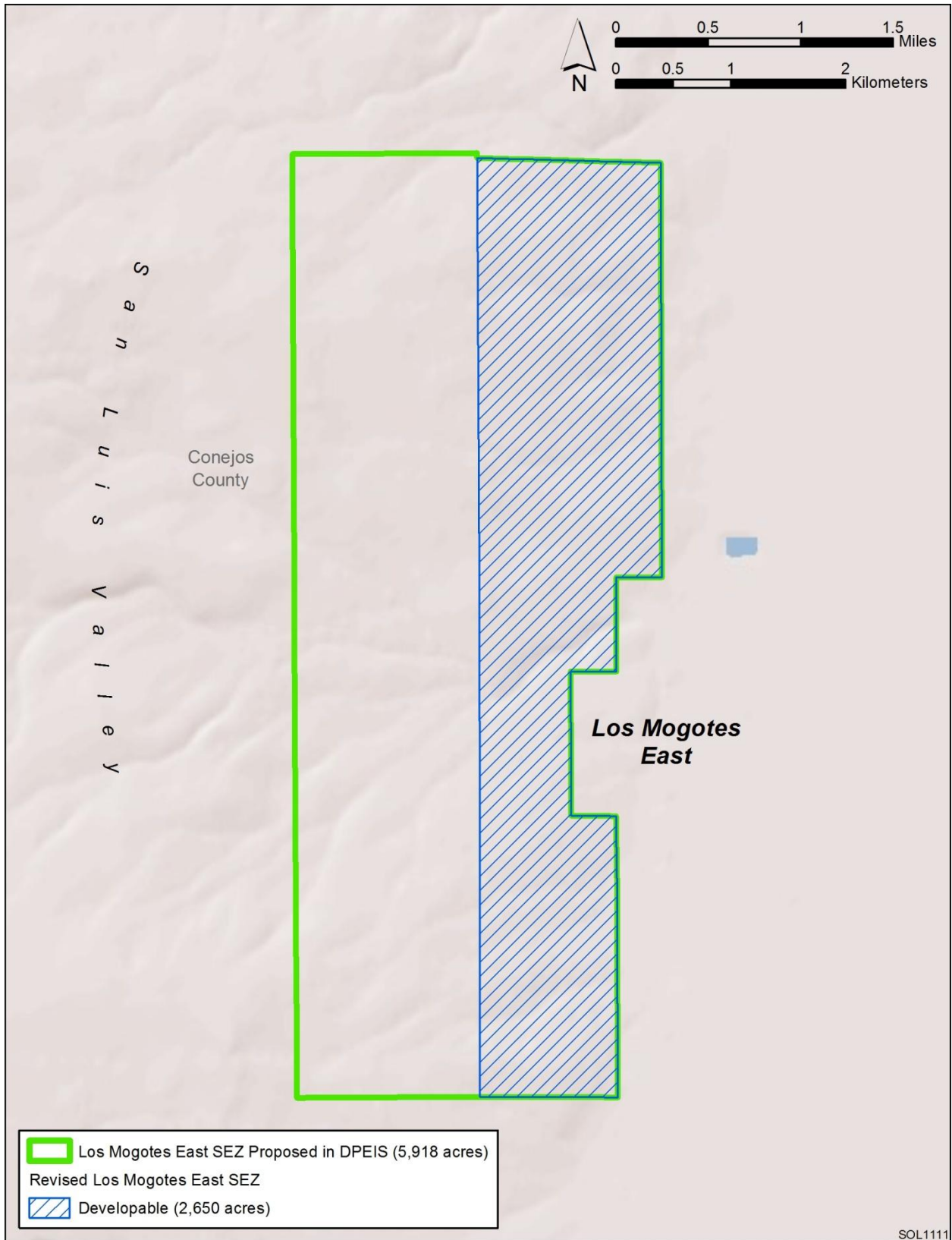
36 **C.3.4.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**
37

38 None.
39
40

41 **C.3.4.5.3 Rangeland Resources**
42
43

44 **Livestock Grazing.** The potential impact on three grazing allotments will be re-evaluated
45 based on the revised boundaries.
46
47

48 **Wild Horses and Burros.** None.



1

2 **FIGURE C.3.4-2 Proposed Los Mogotes East SEZ as Described in this Supplement**

1 **C.3.4.5.4 Recreation**

2
3 Additional information on the potential impacts on hunting for big game species would
4 help further characterize impacts on recreation. In addition, the San Luis Valley-wide effort to
5 promote recreational use could warrant additional consideration. The status of off-highway
6 vehicle use designations in the area may also warrant additional consideration.
7

8
9 **C.3.4.5.5 Military and Civilian Aviation**

10 None.
11
12

13
14 **C.3.4.5.6 Geologic Setting and Soil Resources**

15 None.
16
17

18
19 **C.3.4.5.7 Minerals**

20
21 Additional information on leasable and strategic minerals in the vicinity of the proposed
22 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
23 on a proposed 20-year withdrawal of SEZ lands.
24

25
26 **C.3.4.5.8 Water Resources**

27
28 The following additional data and actions would help further characterize potential
29 impacts on water resources for the proposed Los Mogotes East SEZ. A more detailed discussion
30 of each of these activities is included in the water resources action plan provided in Section C.7.2
31 of this appendix.
32

- 33 • Prepare a planning-level water resources inventory of the San Luis Valley
34 (southern portion).
- 35
36 • Identify additional ephemeral stream channels and wetland features for non-
37 development areas through consultation with the Colorado Division of Water
38 Resources (CDWR) (Division 3), CDOW, EPA, and U.S. Army Corps of
39 Engineers (USACE) with a focus on:
 - 40 – Unnamed ephemeral tributary to Romero Ditch (center of SEZ), and
 - 41 – Several unnamed ephemeral streams flowing west to east across SEZ.
- 42
43 • Perform field surveys and hydrologic analyses to support jurisdictional water
44 determinations and floodplain identifications. Tasks include:
 - 45 – Surveying ephemeral channels for surface elevations, high water marks,
 - 46 and sediment conditions, and

- 1 – Conducting hydrologic rainfall-runoff-routing analyses to identify
- 2 100-year floodplain areas.
- 3
- 4 • Coordinate with the USACE (Albuquerque District) regarding jurisdictional
- 5 water determinations for the SEZ. Water features to be considered include:
- 6 – Ephemeral stream channels within the SEZ.
- 7
- 8 • Identify 100-year floodplain exclusion areas for the SEZ. This task would
- 9 require coordination with the Federal Emergency Management Agency and
- 10 the Colorado Water Conservation Board.
- 11
- 12 • Describe the formation of a stakeholder committee to conduct long-term
- 13 monitoring of water resources. This activity would entail:
- 14 – Identifying key stakeholder agencies,
- 15 – Discussing general features of a monitoring program, and
- 16 – Working with the U.S. Geological Survey and CDWR (Division 3) to
- 17 develop groundwater monitoring well design and numerical groundwater
- 18 models. (Groundwater monitoring should coordinate with the Rio Grande
- 19 Decision Support System through the CDWR [Division 3].)
- 20

21

22 **C.3.4.5.9 Ecological Resources**

23

24

25 ***Vegetation and Plant Communities.*** The following additional data-gathering action

26 would help further characterize potential impacts on vegetation and plant communities for the

27 proposed Los Mogotes East SEZ:

28

- 29 • Identify and map the location and areal extent of dry wash and greasewood
- 30 flat communities within the SEZ. Identify and map the location and areal
- 31 extent of these habitats, as well as riparian and wetland habitats, outside the
- 32 SEZ that may be affected by hydrologic changes, including groundwater
- 33 elevations, and changes in water, sediment, and contaminant inputs associated
- 34 with runoff. Such efforts could help determine habitat characteristics,
- 35 including water source, hydrologic regime, and dominant plant species.
- 36

37

38 ***Wildlife.*** The following additional data-gathering action would help further characterize

39 potential impacts on wildlife resources for the SEZ:

40

- 41 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
- 42 SEZ as a movement/migratory corridor or as important habitat for pronghorn.
- 43

44

45 ***Aquatic Biota.*** Investigations recommended under the water resources action plan

46 (Section C.3.4.5.8) would be useful in characterizing and protecting habitat available to aquatic

1 biota. Most washes in the SEZ are typically dry and contain water only for brief periods. They
2 may or may not contain aquatic biota; therefore, preliminary evaluations of these surface water
3 features could be conducted to determine the potential for aquatic communities to be present.
4 Any aquatic biota found in these features would likely be desiccation-adapted aquatic
5 invertebrates typical of the region, and the primary value may be as food sources to nonaquatic
6 animals.

7
8
9 ***Special Status Species.*** The following additional data-gathering actions would be useful
10 in further characterizing and protecting habitat available to special status species:

- 11
- 12 • Conduct pre-disturbance surveys within the SEZ to determine the presence
13 and abundance of those special status species that are (1) federally listed,
14 proposed for listing, or candidates for listing under the Endangered Species
15 Act (ESA); or (2) listed by the State of Colorado as threatened or endangered;
16 or (3) designated as sensitive by the Colorado BLM State Office. These
17 species are listed in Table C.3.4-1. Surveys should focus on areas identified as
18 potentially suitable, and the suitability of these habitats to support these
19 special status species should be determined in the field. All field-determined
20 suitable habitats for special status species should be mapped. Target species
21 and survey protocols should be developed in coordination with the U.S. Fish
22 and Wildlife Service (USFWS) and CDOW. The BLM is currently conducting
23 surveys for various special status species (e.g., mountain plover, western
24 burrowing owl, Gunnison prairie dog) within the State of Colorado. In areas
25 where these surveys overlap with the Colorado SEZs and areas of direct
26 effects, the BLM survey information will be used to make appropriate
27 determinations regarding the potential occurrence of species and their habitats.
28 Additional survey efforts may be necessary, as appropriate.

29
30 The Draft Solar PEIS presents a table of special status species for which
31 potential impacts need to be evaluated prior to development in the proposed
32 Los Mogotes East SEZ. The list of species presented in Table 10.4.12.1-1 of
33 the Draft Solar PEIS also includes species listed by the State of Colorado and
34 species ranked by the State of Colorado as S1 or S2 or species of concern. On
35 the basis of design features presented in the Draft Solar PEIS, the potential for
36 impacts on these additional species will also need to be addressed before
37 development could occur in the SEZ.

- 38
- 39 • Identify and map the location and areal extent of grassland habitat within the
40 SEZ. The suitability of this habitat for special status species should be
41 determined. Species potentially associated with grassland habitat include the
42 mountain plover, ferruginous hawk, and western burrowing owl.
 - 43
44 • Identify and map the location and areal extent of wetland habitats within the
45 SEZ. The suitability of these habitats for special status species should be
46 determined. Species potentially associated with wetland habitats include the
47 Brandegees' milkvetch and Great Basin silverspot butterfly.

1 **TABLE C.3.4-1 Special Status Species That May Occur in the Vicinity of the Proposed**
 2 **Los Mogotes East SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Brandegee's milkvetch	<i>Astragalus brandegeei</i>	BLM-S	Sandy or gravelly banks, flats, and stony meadows within pinyon-juniper woodlands. Substrates are usually sandstone with granite or occasional basalt. Elevation ranges between 5,400 and 8,800 ft. ^d Nearest occurrences are located 8 mi ^e southwest of the SEZ. About 769,336 acres ^f of potentially suitable habitat occurs within the SEZ region.
Ripley's milkvetch	<i>Astragalus ripleyi</i>	BLM-S	Mixed conifer and shrubland habitats on rocky substrates at elevations above 8,000 ft. The nearest known occurrences are located 9 mi to the west of the SEZ. About 375,332 acres of potentially suitable habitat occurs within the SEZ region in the San Juan Mountains.
Rock-loving aletes^g	<i>Neoparrya lithophila</i>	BLM-S	Endemic to south-central Colorado on igneous rock outcrops on north-facing cliffs and ledges. Found within pinyon-juniper woodlands at elevations greater than 7,000 ft. Quad-level occurrences intersect the affected area approximately 5 mi west of the SEZ. About 366,037 acres of potentially suitable habitat occurs within the SEZ region.
Invertebrates			
Great Basin silverspot butterfly	<i>Speyeria nokomis nokomis</i>	BLM-S	Streamside meadows and open seepage areas associated with violets (<i>Viola</i> spp.). Nearest potentially suitable habitat is located on BLM lands in the La Jara Front Range approximately 9 mi northwest of the SEZ. About 502,789 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S	Year-round resident in the SEZ region. Open spaces associated with high, near-vertical cliffs and bluffs above 200 ft in height overlooking rivers. Nearest occurrences are from the Rio Grande National Forest approximately 17 mi northwest of the SEZ. About 3,653,800 acres of potentially suitable habitat occurs within the SEZ region.
Bald eagle	<i>Haliaeetus leucocephalus</i>	CO-T	Year-round resident in the SEZ region. Seldom seen far from water, especially larger rivers, lakes, and reservoirs. Occurs locally in semiarid shrubland habitats where there is an abundance of small mammal prey. Quad-level occurrences intersect the affected area approximately 5 mi east of the SEZ. About 1,645,504 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Summer resident in the affected area, but year-round resident in the SEZ region. Grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands throughout the San Luis Valley. Quad-level occurrences intersect the affected area approximately 5 mi west of the SEZ. About 1,388,420 acres of potentially suitable habitat occurs within the SEZ region.
Mountain plover	<i>Charadrius montanus</i>	BLM-S	Summer resident in the SEZ region. Prairie grasslands and arid plains and fields. Nests in shortgrass prairies associated with prairie dogs, bison, and cattle. Known to occur within 5 mi southeast of the SEZ. About 1,344,723 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.3.4-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds (Cont.)</i>			
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Open grasslands and prairies as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Conejos County, Colorado. About 2,036,700 acres of potentially suitable habitat occurs in the SEZ region.
<i>Mammals</i>			
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	ESA-C	Mountain valleys, plateaus, and open brush habitats in the project area at elevations between 6,000 and 12,000 ft. Known to occur in the San Luis Valley about 5 mi south and west of the SEZ. About 1,831,120 acres of potentially suitable habitat occurs within the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Colorado BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; CO-T = listed as threatened by the State of Colorado; ESA-C = candidate for listing under the ESA.
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

- Identify and map the location and areal extent of woodland habitats within the SEZ. The suitability of these habitats for special status species should be determined. Species potentially associated with woodland habitats include the Brandegee's milkvetch, Ripley's milkvetch, rock-loving aletes, and ferruginous hawk.
- Identify and map the location and areal extent of active Gunnison prairie dog colonies within the SEZ should be determined and mapped. Associated burrows also could be used by western burrowing owls.

C.3.4.5.10 Air Quality and Climate

None.

1 **C.3.4.5.11 Visual Resources**

2
3 Visual resources will be re-evaluated for the Final Solar PEIS based on the boundary
4 adjustments and proposed technology restrictions described in Section C.3.4.3 of this
5 Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the proposed Los
6 Mogotes East SEZ is provided in Table C.3.4-2. This table includes only the resources that
7 would be subject to moderate or strong visual contrast. The Draft Solar PEIS visual impact
8 analysis predicted these levels of visual contrast from solar energy development in the Los
9 Mogotes East SEZ for the following sensitive visual resource areas (SVRAs) and sensitive
10 viewing locations (SVLs):

- 11
- 12 • San Luis Hills WSA
 - 13
 - 14 • Los Caminos Antiguos Scenic Highway
 - 15
 - 16 • San Luis Hills ACEC
 - 17
 - 18 • Communities of La Jara, Romeo, Sanford, and Manassa
 - 19
 - 20 • West Fork of the North Branch of the Old Spanish Trail.
- 21

22 The following steps could be taken to better understand potential impacts on these
23 SVRAs and SVLs from solar development in the Los Mogotes East SEZ:

- 24
- 25 • Identify key observation points (KOPs) within these areas through working
26 with the management agency or other local stakeholders.
 - 27
 - 28 • Conduct viewshed analyses from the KOPs to determine how much of the
29 SEZ would be in view from each KOP.
 - 30
 - 31 • As deemed necessary, based on viewshed analysis results, prepare wireframe
32 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
33 depicting the 80% development scenario to better estimate potential impacts.
- 34

35 This additional analysis may help judge potential visual contrast more accurately for most
36 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
37 superimposition of the wireframe models onto the photos might be required or desired.

38

39 Additional required mitigation measures to address potential visual resource impacts are
40 given in Section C.7.3 of this appendix.

41

42

43 **C.3.4.5.12 Acoustic Environment**

44

45 None.

46

1 **TABLE C.3.4-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed**
 2 **Los Mogotes East SEZ**

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WSAs	San Luis Hills	10,896 acres	8.8 mi east-southeast of the SEZ	3,311 acres	30.4	Solar energy development would be expected to create weak to moderate visual contrasts; contrast levels would be highest at high-elevation viewpoints in the western part of the WSA, and lower for low-elevation viewpoints such as in canyons or on bajadas. Visible areas within the WSA extend from approximately 8.8 mi to approximately 13 mi from the eastern boundary of the SEZ
ACECs Designated for Outstanding Scenic Values	San Luis Hills	39,421 acres	9.4 mi east of the SEZ	15,610 acres	39.6	Range of visual contrasts would be dependent on viewer location and project locations and the projects' characteristics. Solar energy facilities would be expected to attract attention but would not be likely to dominate views and would be expected to create weak to moderate visual contrasts. Contrast levels would be highest at high-elevation viewpoints in the western part of the ACEC and lower for low-elevation viewpoints, such as in canyons or on bajadas.

TABLE C.3.4-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Scenic Highways/ Byways	Los Caminos Antiguos ^e	129 mi	2.6 mi east-southeast of the southeast corner of the SEZ	27.1 mi	21.0	Solar energy development would be expected to create weak to strong visual contrasts, depending on viewer location and other visibility factors. Other features screen many views of the SEZ. The byway runs through the San Luis Valley and is located in close proximity to several of the proposed SEZs.
Other Areas of Interest (non-management areas)	West Fork of the North Branch of the Old Spanish Trail ^h	1,200 mi	1.0 mi from the SEZ	54.0 mi	4.5	Where screening is absent, because of the short distance, strong visual contrasts could be observed by trail users near the point of closest approach. Minimal to strong visual contrasts could be observed from points on the trail farther from the SEZ
	La Jara ⁱ	224 acres	5.3 mi northeast of the proposed SEZ	NA ^j	NA	Moderate levels of visual contrast would be expected. A detailed future site-specific National Environmental Policy Act (NEPA) analysis is required to determine visibility precisely.
	Romeo	NA	3.0 mi east of the proposed SEZ	NA	NA	Where screening is absent, Romeo could experience strong visual contrasts. A detailed future site-specific NEPA analysis is required to determine visibility precisely.



TABLE C.3.4-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas)	Sanford ⁱ	902 acres	7.7 mi (12.4 km) east northeast of the SEZ	NA	NA	Moderate to strong visual contrasts would be expected where there are unobstructed views to the SEZ. A detailed future site-specific NEPA analysis is required to determine visibility precisely.
	Manassa ^j	602 acres	5.5 mi east of the SEZ	NA	NA	Where screening was absent, the SEZ could potentially stretch across much of the field of view; expected contrast levels would be strong where there are unobstructed views to the SEZ. A detailed future site-specific NEPA analysis is required to determine visibility precisely.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percent total acreages/mileages visible within 25 mi (40 km) of the SEZ.

^f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

^g Length of byway: America's Byways (2011a).

^h Length of Continental Divide trail managed by the BLM: BLM (2010).

ⁱ Acreage of Colorado towns: U.S. Bureau of the Census (2011a).

^j NA = data not available.

1 **C.3.4.5.13 Paleontological Resources**
2

3 The potential for impacts on paleontological resources is low in 73% of the SEZ, where
4 the Potential Fossil Yield Classification (PFYC) has been identified as Class 1 in the Draft Solar
5 PEIS. Approximately 27% (718 acres [2.9 km²]) of the SEZ, along the eastern edge is classified
6 as Class 4/5. The depth of the Alamosa Formation would need to be determined in that area, and
7 the remainder of the SEZ would need to be field-checked to verify the PFYC classification of
8 Class 1.
9

10 The BLM Regional Paleontologist will be contacted to determine whether additional
11 information is available regarding the paleontological potential of the SEZ.
12
13

14 **C.3.4.5.14 Cultural Resources and Native American Concerns**
15

16 None of the proposed Los Mogotes East SEZ has been systematically surveyed, and
17 consequently no sites have been recorded in the original footprint of the SEZ. About 144 sites
18 (including isolated finds) have been recorded within 5 mi (8 km) of the SEZ. Many significant
19 archaeological sites are recorded just west of the SEZ, which is one of the reasons the size of the
20 original SEZ has been reduced. Paleoindian sites could be encountered throughout the San Luis
21 Valley. Traditional cultural properties of significance to the Hispanic community also may be
22 present in the vicinity of the SEZ. The West Fork of the North Branch of the Old Spanish Trail
23 proceeds close to the eastern boundary of the SEZ. Visual and auditory impacts are possible on
24 the trail and also on Blanca Peak, a sacred mountain of the Navajo that is northeast of the SEZ.
25 Impacts on the visual integrity of the Cumbres and Toltec Scenic Railroad are possible, but the
26 technology limitation described in Section 3.4.3 is expected to significantly reduce such impacts.
27 The destruction and degradation of important plant resources and the destruction of habitat or
28 impediments to the movement of culturally important wildlife are also potential impacts of
29 concern within the SEZ.
30

31 The following additional data collection efforts could reduce the uncertainty about
32 potential impacts on cultural resources:
33

- 34 • Conduct a Class I literature file search to better understand (1) the site
35 distribution pattern in the vicinity of the SEZ, (2) trail networks through
36 existing ethnographic reports, and (3) overall cultural sensitivity of the
37 landscape
38
- 39 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
40 10% sample (roughly 265 acres [1.1 km²]). Areas of interest, as determined
41 through a Class I review, should also be identified prior to establishing the
42 survey design and sampling strategy.
43
- 44 • Prepare a cultural sensitivity map based on the results of the Class II survey
45 and Class I review.
46

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

- Identify the integrity and historical significance of the portion of the West Fork of the North Branch of the Old Spanish Trail in the vicinity of the SEZ, and conduct viewshed analyses from key points along the trail. If this portion of the trail is determined significant, a mitigation strategy would need to be developed to address unavoidable impacts on the trail.
- Continue with government-to-government consultation, as described in Section 2.4.3, including follow-up to recent ethnographic studies covering some SEZs in Nevada and Utah with Tribes not included in the original studies to determine whether those Tribes have similar concerns. The Los Mogotes East SEZ area was used by Tribes historically for hunting and trading rather than long-term settlement. The Ute, Jicarilla Apache, Navajo, Kiowa, Comanche, Arapaho, Pueblo groups and Cheyenne may all have traditional interests in the valley. Potentially significant sites and landscapes for the Navajo, Upper Rio Grande Pueblo (Tewa), and Taos Pueblo are present in the San Luis Valley (Blanca Peak, Great Sand Dunes, and San Luis Lakes). Potential topics to be discussed during consultation include the above mentioned places, trail systems, mountain springs and other water sources, mineral resources, burial sites, ceremonial areas, and plant and animal resources. An ethnographic study of the SEZs in the San Luis Valley is currently proposed; results of the study will be incorporated into the Final Solar PEIS, if available at the time of publication.

C.3.4.5.15 Socioeconomics and Environmental Justice

None.

C.3.4.5.16 Cumulative Impact Considerations

None.

1 **C.4 NEVADA PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.4.1 Amargosa Valley**

5
6
7 **C.4.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Amargosa Valley solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 31,625 acres (128 km²). It is located in Nye County in southern Nevada
12 near the California border (Figure C.4.1-1). The towns of Beatty and Amargosa Valley are
13 located about 11 mi (18 km) north of, and 12 mi (20 km) southeast of, the SEZ respectively.
14

15 The Draft Solar PEIS identified a 138-kV transmission line adjacent to the proposed
16 Amargosa Valley SEZ as the nearest point for connection of the SEZ to the grid. The actual
17 location of connection to the transmission grid could be different than that assumed in the Draft
18 Solar PEIS. Details on the updated transmission impact assessment for SEZs to be included in
19 the Final Solar PEIS are provided in Section C.7.1 of this appendix. Analysis of transmission
20 lines and/or access roads will be completed, as necessary, as part of the project-specific
21 environmental reviews (see Section 2.2.2.2.2 of this Supplement).
22

23 Potential adverse impacts identified in the Draft Solar PEIS included the following:
24

- 25 • Travel on existing dirt roads and in dry washes would be disrupted, resulting
26 in the creation of isolated parcels of public land between the SEZ and the
27 Death Valley National Park (NP) boundary.
28
- 29 • Wilderness characteristics on 19,406 acres (78.5 km²) of designated
30 wilderness within the Death Valley NP would be adversely affected. Night
31 sky viewing from the National Park could be impaired. Additional
32 groundwater withdrawals could adversely affect portions of the Death Valley
33 NP, the National Wildlife Refuge (NWR), and three Areas of Critical
34 Environmental Concern (ACECs) that are dependent on maintaining current
35 water levels.
36
- 37 • Recreation use would be eliminated from portions of the SEZ that would be
38 developed for solar energy production. There would be an impact on the
39 existing off-highway vehicle (OHV) use in the area, but the magnitude is not
40 known. Portions of an approved desert racing and commercial tour route
41 would be lost. Access to public land and National Park Service (NPS) areas
42 south and west of the SEZ would be lost, or, at a minimum, made much more
43 difficult by development of the SEZ.
44
- 45 • The U.S. Department of Defense (DoD) expressed serious concern over solar
46 energy facilities being constructed within the SEZ, and Nellis Air Force Base
47

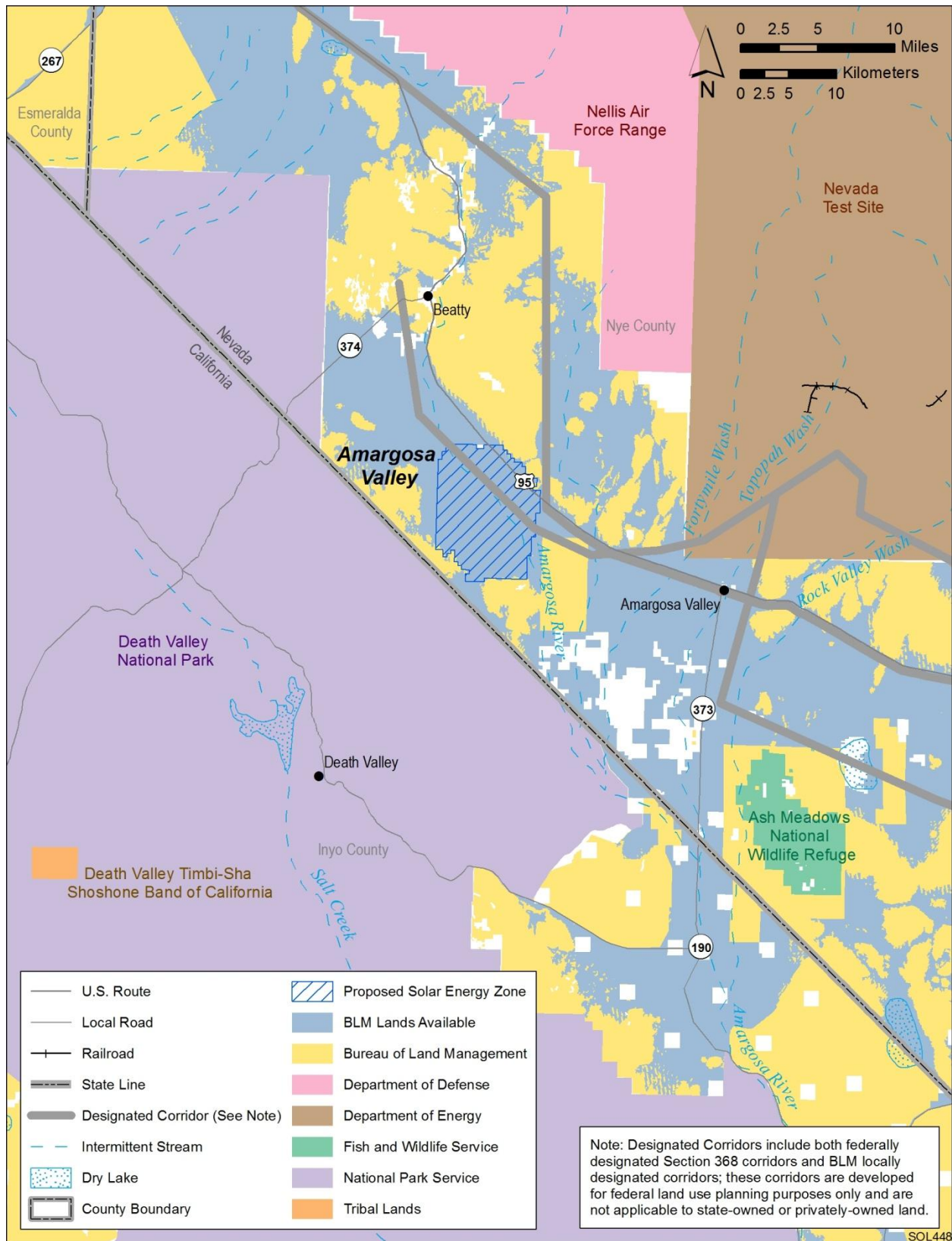


FIGURE C.4.1-1 Proposed Amargosa Valley SEZ as Presented in the Draft Solar PEIS

1 indicated that any facilities higher than 50 ft (15 m) may be incompatible with
2 low-level aircraft use of the military training route (MTR). Further, the
3 Nevada Test and Training Range (NTTR) indicated that solar technologies
4 requiring structures higher than 50 ft (15 m) above ground level may present
5 unacceptable electromagnetic compatibility concerns for their test mission.
6

- 7 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
8 erosion by wind and runoff, sedimentation, and soil contamination) could
9 occur.
- 10
- 11 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
12 wet-cooling options would not be feasible.
- 13
- 14 • Clearing of a large portion of the proposed SEZ could primarily affect
15 creosote-white bursage desert scrub, and may adversely affect desert dry
16 washes and playa habitats, depending on the amount of habitat disturbed.
17 The establishment of noxious weeds could result in habitat degradation.
18 Deposition of fugitive dust could cause reduced productivity or changes in
19 plant community structure.
- 20
- 21 • Potentially suitable habitat for 52 special status species and more than
22 75 wildlife species occurs in the affected area of the proposed SEZ; up to
23 2.0% of the potentially suitable habitat for any of these species occurs in the
24 region that would be directly affected by development.
- 25
- 26 • If aquatic biota are present in the Amargosa River, they could be could be
27 indirectly affected by a decline in habitat quantity and quality due to water
28 withdrawals and changes in drainage patterns, as well as increased sediment
29 and contaminant inputs associated with ground disturbance and construction
30 activities.
- 31
- 32 • Temporary exceedances of ambient air quality standards for particulate matter
33 at the SEZ boundaries are possible during construction. These high
34 concentrations, however, would be limited to the immediate area surrounding
35 the SEZ boundary. Modeling indicates that emissions from construction
36 activities could exceed Class I PSD Prevention of Significant Deterioration
37 (PSD) PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or
38 less) increments at the nearest federal Class I area (John Muir Wilderness
39 Area [WA]).
- 40
- 41 • Strong visual contrasts could be observed by visitors to the Big Dune
42 special recreation management area (SRMA) and travelers on U.S. 95.
43 Weak to strong visual contrasts could be observed by visitors to the California
44 Desert Conservation Area (CDCA) and Death Valley NP and WA. Weak to
45 moderate visual contrasts could be observed by travelers on State Route 374.
46

- 1 • Few, if any, impacts on significant paleontological resources are likely to
2 occur within the SEZ. Direct impacts on significant cultural resources could
3 occur; at least four sites have been recorded within the proposed SEZ, and at
4 least one of them is considered potentially eligible for listing in the *National*
5 *Register of Historic Places* (NRHP). It is possible that Native American
6 concerns will be expressed over potential visual and other effects of solar
7 energy development within the SEZ on specific resources and culturally
8 important landscapes.
9
- 10 • On an individual census block group basis, there are low-income and minority
11 populations within a 50-mi (80-km) radius of the proposed SEZ boundary, so
12 adverse impacts of solar development could disproportionately affect low-
13 income and minority populations.
14

16 **C.4.1.2 Summary of Comments Received**

17
18 Some comments received on the proposed Amargosa Valley SEZ were in favor of
19 identifying the area as an SEZ, provided that specific concerns are addressed in the Final Solar
20 PEIS (e.g., Nevada Wilderness Project, The Wilderness Society et al.¹⁷). Many commentors,
21 however, opposed designating the area as an SEZ because of the potential negative impact on
22 Death Valley wilderness and water resources and endangered desert species, including the
23 Devil’s Hole pupfish. Other commentors recommended that Amargosa Valley be reduced or
24 reconfigured to avoid potential impacts. The Nevada Wilderness Project, Wilderness Society,
25 and others suggested a boundary adjustment to avoid the 100-year flood channel and the
26 secondary wash that is tributary to the Amargosa River, including a buffer to avoid potential
27 impacts on wildlife and plant habitat, for flood control, and the preservation of hydrologic
28 function. The National Parks Conservation Association recommended that the SEZ be moved to
29 an area further from Death Valley NP to avoid impacts on special status species and important
30 water resources.
31

32 The U.S. Fish and Wildlife Service (USFWS) recommended that the SEZ area be
33 reconfigured to address potential impacts on groundwater-dependent species, a national wildlife
34 refuge, and desert tortoise. The Nevada Department of Wildlife (NDOW) recommended that the
35 portion of the SEZ to the northeast of U.S. 95 be eliminated.
36

37 Concerns were expressed over potential impacts of groundwater withdrawals on the Ash
38 Meadows National Wildlife Refuge (NWR), Devil’s Hole, and the Amargosa Mesquite Trees
39 ACEC (Western Watersheds Project, Amargosa Conservancy). The U.S. Environmental
40 Protection Agency (EPA) suggested eliminating the SEZ or restricting technologies to those that
41 use the least amount of water, such as photovoltaic (PV). The Nature Conservancy supported the

¹⁷ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club—Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountains Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 elimination of the Amargosa SEZ, citing the over-allocated groundwater basin, an important
2 corridor for desert tortoise, the potential impact on the Devil’s Hole pupfish, and the presence of
3 Big Dune. The Western Watersheds Project opposed the SEZ because of its location within
4 desert tortoise and other special status species habitat and because the region lacks both
5 groundwater and surface water resources. The Amargosa Conservancy was similarly concerned
6 with the over-allocated Amargosa basin and the potential long-term impacts of solar energy
7 development on the SEZ.
8

9 The Society for the Protection and Care of Wildlife recommended that impacts on water
10 availability, listed species, and viewshed for the Amargosa Valley SEZ should also be discussed
11 in the Draft Solar PEIS in relation to impacts in California. The DoD was concerned that
12 facilities exceeding 50 ft (15 m) in height could be incompatible with low-level aircraft
13 operations conducted in MTRs, and/or present electromagnetic compatibility concerns, and that
14 glare and heat emissions could present both flight and ground safety concerns. The Pahrump
15 Paiute Tribe opposed solar development in Amargosa Valley because of its proximity to
16 numerous unrecorded archaeological sites, religious sites, songscapes, and storyscapes important
17 to Southern Paiute people and the Pahrump Paiute Tribe. The Tribe also requested ethnographic
18 studies be conducted.
19
20

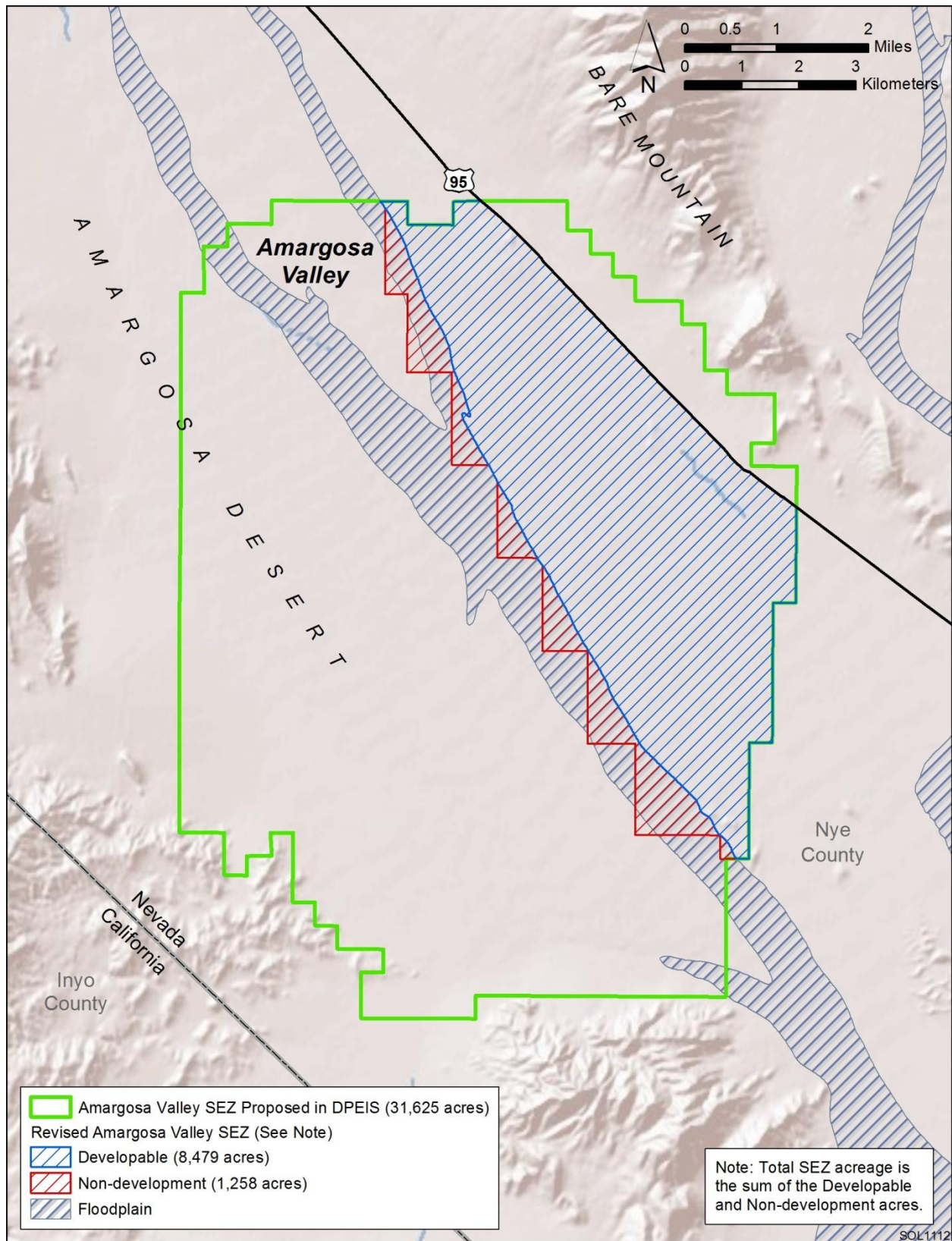
21 **C.4.1.3 Changes to the SEZ**

22
23 The proposed Amargosa Valley SEZ has been reconfigured to eliminate the area south
24 and west of the Amargosa River floodplain and the area northeast of U.S. 95, a total of
25 21,888 acres (88.6 km²) (see Figure C.4.1-2). Excluding these areas will mitigate many potential
26 impacts, including impacts on Death Valley NP and desert tortoise. In addition, 1,258 acres
27 (5.1 km²) within the SEZ boundaries have been identified as non-development areas. These areas
28 consist of lands within the Amargosa River floodplain that were included in the SEZ only to
29 facilitate definition of the boundaries using the Public Land Survey System. The remaining
30 developable area within the SEZ is 8,479 acres (34.3 km²).
31

32 To reduce the visual resource impacts of solar development within the proposed
33 Amargosa Valley SEZ, SEZ-specific visual resource mitigation requirements were presented in
34 the Draft Solar PEIS. However, the area of the SEZ that was labeled to meet Visual Resource
35 Management (VRM) Class II-consistent objectives in the Draft Solar PEIS has been eliminated
36 from the SEZ.
37

38 On the basis of the water impact analysis provided in the Draft Solar PEIS, development
39 within the remaining area of the SEZ may need to be restricted to PV technology or a technology
40 with equivalent or lower water use. Updated analyses taking the revised SEZ boundaries into
41 consideration will be included in the Final Solar PEIS.
42

43 Because of the extensive potential impacts from solar development in the portion of the
44 Amargosa Valley SEZ that has been eliminated, those lands will be considered solar right-of-
45 way exclusion areas; that is, applications for solar development on those lands will not be
46 accepted by the U.S. Department of the Interior Bureau of Land Management (BLM).



2 **FIGURE C.4.1-2 Proposed Amargosa Valley SEZ as Described in this Supplement**

1 **C.4.1.4 Wilderness Character Status of SEZ**

2
3 A recently maintained inventory of wilderness characteristics was used to determine
4 whether public lands within the Amargosa Valley SEZ have wilderness characteristics. The
5 finding of this inventory was that these lands do not contain wilderness characteristics.
6

7
8 **C.4.1.5 Additional Data Collection Recommended**

9
10
11 **C.4.1.5.1 Lands and Realty**

12
13 None.
14

15
16 **C.4.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

17
18 The potential impact on wilderness characteristics will be re-evaluated based on the
19 revised boundaries of the proposed Amargosa Valley SEZ.
20

21
22 **C.4.1.5.3 Rangeland Resources**

23
24
25 *Livestock Grazing.* None.
26

27
28 *Wild Horses and Burros.* None.
29

30
31 **C.4.1.5.4 Recreation**

32
33 The potential impacts on recreation use, including OHV, desert racing, and commercial
34 tour use, will be re-evaluated based on the revised boundaries of the of the proposed Amargosa
35 Valley SEZ.
36

37
38 **C.4.1.5.5 Military and Civilian Aviation**

39
40 The DoD has expressed continued concern regarding the potential impact of solar
41 development in this SEZ on military operations. The proposed technology restrictions described
42 in Sections C.4.1.3 and C.7.3 are expected to minimize or eliminate any potential issues with
43 military operations; however, the BLM will continue to consult with the DoD regarding potential
44 issues with MTRs.
45
46

1 **C.4.1.5.6 Geologic Setting and Soil Resources**

2
3 None.

4
5
6 **C.4.1.5.7 Minerals**

7
8 Additional information on leasable and strategic minerals in the vicinity of the proposed
9 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
10 on a proposed 20-year withdrawal of SEZ lands.

11
12
13 **C.4.1.5.8 Water Resources**

14
15 The following additional data and actions would help further characterize potential
16 impacts on water resources for the proposed Amargosa Valley SEZ. A more detailed discussion
17 of each of these activities is included in the water resources action plan provided in Section C.7.2
18 of this appendix.

- 19
20 • Prepare a planning-level water resources inventory of the Amargosa Valley
21 basin.
- 22
23 • Identify additional ephemeral stream channels for non-development areas
24 through consultation with the Nevada BLM, Nevada Division of Water
25 Resources (NDWR), EPA, and U.S. Army Corps of Engineers (USACE) with
26 a focus on:
27 – Unnamed ephemeral streams flowing northwest to southeast across SEZ
28 – Distributary channels of Amargosa River within the SEZ
- 29
30 • Conduct a field survey to:
31 – Survey ephemeral stream channels and distributary channels of the
32 Amargosa River for surface elevations, high water marks, and sediment
33 conditions.
- 34
35 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
36 water determinations for the SEZ. Water features to be considered include:
37 – Channels feeding into the Amargosa River
- 38
39 • Describe the formation of a stakeholder committee to conduct long-term
40 monitoring of water resources. This activity would entail:
41 – Identifying key stakeholder agencies,
42 – Discussing general features of a monitoring program, and
43 – Working with U.S. Geological Survey (USGS) to develop groundwater
44 monitoring well design and numerical groundwater models.
- 45

- 1 • Perform groundwater modeling analyses for the Amargosa Valley in the
2 region of the SEZ to estimate potential impacts of full build-out groundwater
3 pumping scenarios (according to estimated, technology-specific water
4 requirements). Tasks include:
 - 5 – Develop superposition-type groundwater model and modify the regional-
6 scale Death Valley Regional Flow System (DVRFS) model,
 - 7 – Coordinate with USGS-NV regarding modeling analyses and use of
8 DVRFS model, and
 - 9 – Address potential impacts on groundwater relevant to Ash Meadows
10 National Wildlife Reserve and Devil’s Hole.

11 12 13 **C.4.1.5.9 Ecological Resources**

14
15
16 ***Vegetation and Plant Communities.*** The following additional data-gathering actions
17 would help further characterize potential impacts on vegetation and plant communities for the
18 proposed Amargosa Valley SEZ:

- 19
20 • Identify and map the location and areal extent of desert dry washes and playa
21 habitats within the SEZ. Identify and map the location and areal extent of
22 these habitats, as well as wetland, riparian, greasewood flat, desert chenopod
23 scrub, and mesquite bosque habitats, and Amargosa River shrub communities,
24 outside the SEZ that may be affected by hydrologic changes, including
25 groundwater elevations, and changes in water, sediment, and contaminant
26 inputs associated with runoff. Such efforts could help determine habitat
27 characteristics, including water source, hydrologic regime, and dominant plant
28 species.
- 29
30 • Identify and map the location of cactus species within the SEZ.

31
32
33 ***Wildlife.*** The following additional data-gathering actions would help further characterize
34 potential impacts on wildlife resources for the SEZ:

- 35
36 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
37 SEZ as movement/migratory corridor or as important habitat for the mule
38 deer.
- 39
40 • Identify and map the location, areal extent, and wildlife use of intermittent
41 stream habitat (Amargosa River) within the SEZ. These areas provide
42 important habitat for a number of wildlife species.

43
44
45 ***Aquatic Biota.*** Investigations recommended under the water resources action plan
46 (Section C.4.1.5.8) would be useful in characterizing and protecting habitat available to aquatic

1 biota. The Amargosa River floodplain likely contains aquatic biota and has been designated a
2 non-development area. Therefore, a preliminary evaluation of that area is not necessary.
3 However, if it is determined that the Amargosa River or its floodplain could be affected
4 indirectly by water withdrawals, changes in drainage patterns, and construction activities, the
5 potential for aquatic communities to be affected in these areas would require further
6 investigation prior to development.

7
8
9 ***Special Status Species.*** The following additional data-gathering actions would be useful
10 in further characterizing and protecting habitat available to special status species:

- 11
- 12 • Conduct pre-disturbance surveys within the SEZ to determine the presence
13 and abundance of those special status species that are (1) federally listed,
14 proposed for listing, candidates for listing, or under review for listing under
15 the Endangered Species Act; or (2) protected by the State of Nevada; or
16 (3) designated as sensitive by the Nevada BLM State Office. These species
17 are listed in Table C.4.1-1. Surveys should focus on areas identified as
18 potentially suitable, and the suitability of these habitats to support these
19 special status species should be determined in the field. All field-determined
20 suitable habitats for special status species should be mapped. Target species
21 and survey protocols should be developed in coordination with the USFWS
22 and NDOW.

23
24 The Draft Solar PEIS presents a table of special status species for which
25 potential impacts need to be evaluated prior to development in the proposed
26 Amargosa SEZ. The list of species presented in Table 11.1.12.1-1 of the Draft
27 Solar PEIS also includes species listed by the State of Nevada and species
28 ranked by the States of California or Nevada as S1 or S2, or species of
29 concern by the states of California or Nevada. On the basis of the design
30 features presented in the Draft Solar PEIS, the potential for impacts on these
31 additional species will also need to be addressed before development could
32 occur in the SEZ.

- 33
- 34 • Identify and map the location and areal extent of desert wash or riparian
35 habitats within the SEZ. The suitability of these habitats for special status
36 species should be determined. Species potentially associated with these
37 habitats include the Holmgren lupine, Amargosa toad, phainopepla, and
38 western small-footed myotis.
 - 39 • Identify and map the location and areal extent of woodland habitats within the
40 SEZ. The suitability of these habitats for special status species should be
41 determined. Species potentially associated with these habitats include the
42 ferruginous hawk, phainopepla, fringed myotis, pallid bat, spotted bat, and
43 western small-footed myotis.
44
45
46

1 **TABLE C.4.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Amargosa**
 2 **Valley SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Death Valley beardtongue	<i>Penstemon fruticiformis</i> ssp. <i>amargosae</i>	BLM-S	Known only from the Death Valley region of California and southern Nevada. It inhabits Mojave desert scrub communities at elevations between 2,800 and 4,600 ft. ^d Nearest recorded occurrence is approximately 13 mi ^e east of the SEZ. About 2,424,000 acres ^f of potentially suitable habitat occurs within the SEZ region.
Holmgren lupine	<i>Lupinus holmgrenianus</i>	BLM-S	Known only from the Death Valley region of California and southern Nevada. It inhabits dry desert slopes, washes, and valleys on volcanic substrates, sometimes in association with pinyon-juniper woodlands. The species occurs at elevations between 4,600 and 8,200 ft. Nearest recorded occurrence is from the Death Valley NP, approximately 15 mi northwest of the SEZ. About 132,350 acres of potentially suitable habitat occurs within the SEZ region.
White-margined beardtongue	<i>Penstemon albomarginatus</i>	BLM-S	Inhabits desert sand dune habitats and Mojave desert scrub communities at elevations below 3,600 ft. Nearest recorded occurrence is approximately 17 mi east of the SEZ. About 2,464,200 acres of potentially suitable habitat occurs within the SEZ region.
Amphibians			
Amargosa toad	<i>Bufo nelsoni</i>	ESA-UR; BLM-S; NV-P	Endemic to the Amargosa Valley in Nye County, Nevada, where it is confined to isolated riparian and spring-fed habitats along the Amargosa River. Usually observed near water at the outflow of warm springs. Nearest recorded occurrence is approximately 8 mi north of the SEZ in the vicinity of Beatty, Nevada. About 24,600 acres of potentially suitable habitat occurs within the SEZ region.
Reptiles			
Desert tortoise ^g	<i>Gopherus agassizii</i>	ESA-T; NV-P	Desert creosotebush communities on firm soils for digging burrows. Often found along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Known to occur on the SEZ. About 2,717,800 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in the SEZ region. Forages in grasslands, shrublands, agricultural lands, and the periphery of pinyon-juniper forests. Known to occur in Nye County, Nevada. About 1,239,000 acres of potentially suitable habitat occurs within the SEZ region.
Phainopepla	<i>Phainopepla nitens</i>	BLM-S; NV-P	Desert scrub, mesquite, and pinyon-juniper woodland communities. Also occurs in desert riparian areas and orchards. Nests in trees or shrubs in riparian habitats from 3 to 45 ft above the ground. About 1,369,100 acres of potentially suitable habitat occurs within the SEZ region.

3

TABLE C.4.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Prairie falcon	<i>Falco mexicanus</i>	BLM-S	Year-round resident in the SEZ region, primarily in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Typically nests in well-sheltered ledges of rocky cliffs and outcrops. About 2,338,500 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports. Nests in burrows constructed by mammals (prairie dog, badger, etc.). About 4,559,600 acres of potentially suitable habitat occurs within the SEZ region.
Mammals			
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S; NV-P	Year-round resident in the SEZ region in a wide range of habitats including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. Nearest recorded occurrence is from the DOE Nevada Test Site, approximately 13 mi east of the SEZ. About 3,348,000 acres of potentially suitable habitat occurs within the SEZ region.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM-S	Open, steep rocky terrain in mountainous habitats of the eastern Mojave Desert. Rarely uses desert lowlands, but may use them as corridors for travel between mountain ranges. Nearest recorded occurrence is from the Funeral Mountains, approximately 2 mi southwest of the SEZ. About 2,343,300 acres of potentially suitable habitat occurs within the SEZ region.
Pallid bat	<i>Antrozous pallidus</i>	BLM-S; NV-P	Year-round resident in the SEZ region in low-elevation desert communities, including grasslands, shrublands, and woodlands. Roosts in caves, crevices, and mines. Nearest recorded occurrence is from the DOE Nevada Test Site, approximately 13 mi east of the SEZ. About 3,500,600 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S; NV-P	Year-round resident in the SEZ region near forests and shrubland habitats throughout the SEZ region. Roosts and hibernates in caves and rock crevices. About 2,955,200 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S; NV-P	Year-round resident in the SEZ region in all but subalpine and alpine habitats, and may be found at any season throughout its range. Roosts in caves, mines, tunnels, buildings, or other man-made structures. Nearest recorded occurrence is approximately 12 mi north of the SEZ. About 3,739,000 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.4.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals</i>			
<i>(Cont.)</i>			
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Year-round resident in the SEZ region in a variety of woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Nearest recorded occurrence is from the DOE Nevada Test Site, approximately 13 mi east of the SEZ. About 4,194,700 acres of potentially suitable habitat occurs within the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Nevada BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; ESA-T = listed as threatened under the ESA; ESA-UR = under review for listing under the ESA; NV-P = protected by the State of Nevada.
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

C.4.1.5.10 Air Quality and Climate

None.

C.4.1.5.11 Visual Resources

Visual resources will be re-evaluated for the Final Solar PEIS based on the boundary adjustments and proposed technology restrictions described in Section C.4.1.3 of this Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the proposed Amargosa Valley SEZ is provided in Table C.4.1-2. This table includes only those resources that would be subject to moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these levels of visual contrast from solar energy development in the Amargosa Valley SEZ for the following sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):

- Death Valley NP
- Death Valley WA

TABLE C.4.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-mi) Viewshed of the Proposed Amargosa Valley SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
NP	Death Valley	3,397,062 acres	0.7 mi southwest to west of the SEZ	105,519 acres	3.1	Strong visual contrasts would be likely to occur where clear views of the SEZ exist, even beyond the 5 mi limit of the foreground-middle ground zone. There would be very limited visibility from higher elevations on Tucki Mountain and in the Panamint Range, but because of topographic screening and the long distance to the SEZ, expected visual contrasts would be weak. Potential visibility of solar facilities extends beyond 25 mi from the southwestern boundary of the SEZ
WAs	Death Valley	3,074,256 acres	0.7 mi southwest of the SEZ	67,944 acres	2.2	Same as for the Death Valley NP
SRMA	Big Dune	11,572 acres	0.4 mi east of the SEZ	11,198 acres	96.8	Strong levels of visual contrast would be expected in areas with a clear view of the SEZ; contrast would be slightly weaker from viewpoints in the southeastern portion of the SRMA, because the distance to the SEZ is greater.
Other Areas of Interest (non-management areas)	U.S. 95 ^g	1,574 mi	Passes through the northeast corner of the SEZ	31 mi	2.0	Solar facilities would strongly command visual attention and would likely dominate views from some locations along the roadway.

Footnotes on next page.

TABLE C.4.1-2 (Cont.)

- a To convert mi to km, multiply by 1.609.
- b To convert acres to km², multiply by 0.004047.
- c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.
- d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.
- e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percentage of total acreage/mileage visible within 25 mi (40 km) of the SEZ.
- f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.
- g Length of U.S. 95: US-Highways.com (2010).

- 1 • Big Dune SRMA
- 2
- 3 • U.S. 95.
- 4

5 The following steps could be taken to better understand potential impacts on these
6 SVRAs and SVLs from solar development in the Amargosa Valley SEZ:

- 7
- 8 • Identify key observation points (KOPs) within these areas through working
9 with the management agency or other local stakeholders.
- 10
- 11 • Conduct viewshed analyses from the KOPs to determine how much of the
12 SEZ would be in view from each KOP.
- 13
- 14 • As deemed necessary, based on viewshed analysis results, prepare wireframe
15 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
16 depicting the 80% development scenario to better estimate potential impacts.
- 17

18 This additional analysis may help judge potential visual contrast more accurately for most
19 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
20 superimposition of the wireframe models onto the photos might be required or desired.

21

22

23 **C.4.1.5.12 Acoustic Environment**

24 None.

25

26

27

28 **C.4.1.5.13 Paleontological Resources**

29 The BLM Regional Paleontologist will be contacted to determine whether additional
30 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
31 Nevada. A preliminary paleontological survey could be conducted to determine the PFYC of the
32 SEZ, in order to update the temporary assignment of PFYC Class 2 used in the Draft Solar PEIS
33 that was based on preliminary field findings during a brief 2010 visit and comparable project
34 area findings nearby.

35

36

37

38 **C.4.1.5.14 Cultural Resources and Native American Concerns**

39 Approximately 3% of the original proposed Amargosa Valley SEZ footprint had been
40 surveyed for cultural resources, identifying four sites within the SEZ. Two of the four sites have
41 been determined not eligible for listing in the *National Register of Historic Places*, one is eligible
42 for listing, and the eligibility of the remaining site is undetermined. For the revised footprint,
43 approximately 1.6% has been surveyed (142 acres [0.6 km²]), and only one of the four sites are
44 in the revised portion of the SEZ. The site is a railroad siding associated with the Tonopah and
45 Tidewater Railroad; it has been determined not eligible for a lack of integrity. At least 60 sites
46

1 have been recorded with 5 mi (8 km) of the original SEZ footprint. As with other SEZs, dune
2 areas and areas along washes have the highest potential for containing significant archaeological
3 resources within the SEZ. Several culturally important areas have also been identified near the
4 SEZ, including specific mountain ranges and peaks, dunes, canyons, trails, and water sources.
5 The destruction or degradation of important water resources and plant resources and the
6 destruction of habitat or impediments to the movement of culturally important wildlife are also
7 potential impacts of concern within the SEZ.
8

9 The following additional data collection efforts could reduce the uncertainty about
10 potential impacts on cultural resources:
11

- 12 • Conduct a Class I literature file search to better understand (1) the site
13 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
14 through existing ethnographic reports, and (3) overall cultural sensitivity of
15 the landscape.
16
- 17 • Conduct a Class II reconnaissance level stratified random sample survey of
18 the SEZ to obtain a 10% sample (roughly 878 acres [3.6 km²]).¹⁸ Areas of
19 interest, such as dune areas and along washes, as determined through a Class I
20 review, should also be identified prior to establishing the survey design and
21 sampling strategy. If appropriate, some subsurface testing of dune areas
22 should be considered in the sampling strategy as well.
23
- 24 • Prepare a cultural sensitivity map based on results of the Class II survey and
25 Class I review.
26
- 27 • Continue with government-to-government consultation as described in
28 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
29 not included in the original studies to determine whether those Tribes have
30 similar concerns. The Amargosa Valley SEZ falls in the traditional use area of
31 primarily the Western Shoshone and the Southern Paiute, but also of the
32 Owens Valley Paiute. Potential topics presented in the Draft Solar PEIS
33 and/or in an ethnographic study with the Timbisha Shoshone and the Pahrump
34 Paiute to be discussed during consultation include Fortymile Canyon, Bare
35 Mountain, Eagle Mountain, Big Dune, Amargosa River, Ash Meadows, Salt
36 Song and Southern Fox Trails; rock art sites; clay, salt, and pigment sources;
37 water resources; and plant and animal resources. The agencies value the
38 information shared by the Tribes during the ethnographic study and will
39 consider their input in striving to minimize the impacts of solar development
40 in the SEZ. The completed ethnographic study will be available in its entirety
41 on the Solar PEIS Web site (<http://solareis.anl.gov>). A summary of the
42 contents of that report is also provided in the following text box.
43
44

¹⁸ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1
2
3
4
5
6
7
8
9
10

C.4.1.5.15 Socioeconomics and Environmental Justice

None.

C.4.1.5.16 Cumulative Impact Considerations

None.

Tribal Perspectives on the Significance of the Amargosa Valley SEZ

The lands under consideration in the Amargosa Valley SEZ region were traditionally occupied, used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. Tribal representatives involved in Amargosa Valley field consultation summarized here are from the Timbisha Shoshone Tribe, representing the cultural interests of the Western Shoshone, and the Pahrump Paiute Tribe, representing the cultural interests of the Southern Paiutes. These Numic-speaking people have gone on record in past projects and stipulate here again that they are the American Indian people responsible for the cultural resources (natural and man-made) in this study area because their ancestors were placed here by the Creator. According to their traditions, they always have lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

Western Shoshone and Southern Paiute Tribal representatives maintain that, in order to understand native people’s connections to the SEZ, it must be placed in context with neighboring places and their associated cultural resources. Thus, the significance of the Amargosa Valley SEZ is expressed in terms of the connections between it and places of importance in the surrounding region.

The Amargosa River has been identified by Tribal representatives as being one of most important features in the SEZ region. The river water is an essential life-giving resource for those in the desert. The Amargosa River is connected to Black Mountain, a powerful ceremonial volcanic mountain located to the north of the SEZ region. The river begins at the top of Black Mountain, and the water flows through the volcanic canyons of Thirsty Canyon and through the Amargosa Valley before reaching Death Valley. The power from the mountain follows the flow of water down the mountain and, like the water, flows into Death Valley.

Geologic resources of the Amargosa Valley SEZ region are complex in composition and cultural meanings. These connections have been formed over millions of years, and Numic-speaking peoples have interacted with this landscape for up to 15,000 years. Geologic resources include a range of culturally significant features such as minerals used as paint sources, salts used in curing, quartz deposits used to make tools, volcanic basalt boulders used to hold the prayers of travelers, mountain tops used for vision questing, and fossil evidence of rivers used as mnemonic devices for teaching about the past. All these geologic resources are alive according to the shared epistemology of these Numic-speaking peoples. The Creator made geologic resources alive by placing *Puha* (or energy) in them when the Earth was formed.

The Amargosa Valley SEZ region contains many important geologic features associated with Numic songs, stories, and ceremonies like Eagle Mountain, Devil’s Hole Canyon, Fortymile Canyon, the Bare Mountains, and the Amargosa River. One important feature three miles southeast of the SEZ is Big Dune. Tribal representatives stated during ethnographic interviews that Big Dune is featured in traditional stories and songs about this part of Numic territory.

11

Tribal Perspectives on the Significance of the Amargosa Valley SEZ (Cont.)

Eagle Mountain is another important geologic feature located in the Amargosa Valley SEZ region. Southern Paiute and Western Shoshone representatives identified it as being a culturally important place linked to Creation stories and songs.

Western Shoshone and Southern Paiute representatives documented archaeological materials such as pieces of worked obsidian and white chert throughout the Amargosa Valley SEZ region. These artifacts were heavily concentrated on the surface along the Amargosa River bed. Much of the material was heavily weathered with a deep patina, which suggests that it may be thousands of years old. Tribal representatives believe that the artifacts found in the study area serve as physical reminders and connect them to their ancestors who lived on and used this land. Tribal representatives also noted that these artifacts were purposely left in the Amargosa Valley SEZ study area as ritually deposited items. The artifacts are associated with prayer and need to be left in place.

The presence of culturally significant plants and animals contributes to the overall meaning of the Amargosa Valley SEZ study area to Indian people. Numerous species of traditional use plants and animals were identified such as Indian tea, creosote, desert tortoise, and mountain sheep. During multiple field visits, Native American representatives identified 15 traditional use plants and 41 traditionally important animals within the proposed project boundary.

According to Southern Paiute beliefs, Eagle Mountain is located along the Salt Song Trail, an important Southern Paiute spiritual trail. The Salt Songs are performed during the Cry Ceremony, which is conducted to guide the soul of a deceased person to the afterlife (Stoffle et al. 2000a). The location of the spirit person traveling the trail to the afterlife is marked at the end of each set of songs. The living people singing the songs know the spirit person's progress and the song notifies the living that journey to the afterlife has been successful (Stoffle et al. 1997).

1
2

1 **C.4.2 Dry Lake**
2
3

4 **C.4.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

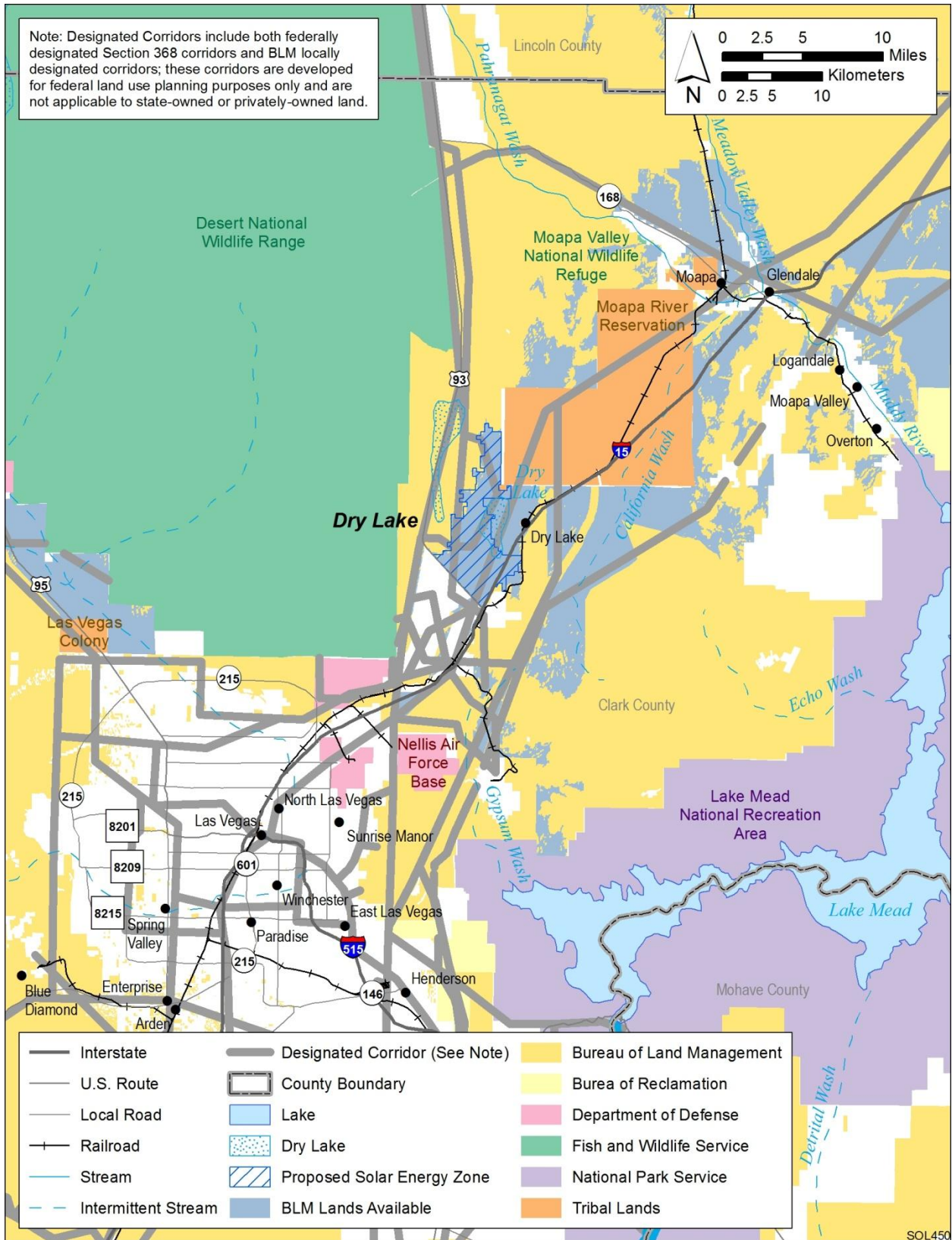
7 The proposed Dry Lake solar energy zone (SEZ), as presented in the Draft Solar PEIS,
8 had a total area of 15,649 acres (63 km²). It is located in Clark County in southern Nevada
9 (Figure C.4.2-1). The towns of Moapa and Overton are about 18 mi (29 km) northeast of, and
10 23 mi (37 km) east of, the SEZ, respectively.
11

12 The Draft Solar PEIS identified three designated transmission corridors that are heavily
13 developed with natural gas, petroleum product, and electric transmission lines (including a
14 500-kV transmission line) that pass through the proposed SEZ. These corridors could limit
15 development in the SEZ because solar facilities cannot be constructed under transmission lines.
16 The discussion of impacts of solar energy development in the SEZ in the Draft Solar PEIS
17 acknowledged that the presence of these corridors would reduce the amount of land available for
18 solar power production, and that, conversely, full development of solar facilities within the SEZ
19 would limit use of the transmission corridors.
20

21 The Draft Solar PEIS identified the 500-kV transmission line passing through the SEZ as
22 the nearest point for connection of the SEZ to the grid. The actual location of connection to the
23 transmission grid could be different than that assumed in the Draft Solar PEIS. Details on the
24 updated transmission impact assessment for SEZs to be included in the Final Solar PEIS are
25 provided in Section C.7.1 of this appendix. Analysis of transmission lines and/or access roads
26 will be completed as necessary as part of the project-specific environmental reviews (see
27 Section 2.2.2.2.2 of this Supplement).
28

29 Potential adverse impacts identified in the Draft Solar PEIS included the following:
30

- 31 • Solar development could sever existing roads that cross the SEZ, making it
32 difficult to access public lands within the SEZ that are not developed or those
33 that are outside of the SEZ.
34
- 35 • Wilderness characteristics in up to 3% of the Arrow Canyon and 13% of the
36 Muddy Mountains Wilderness Areas (WAs) could be adversely affected.
37
- 38 • Recreational use would be eliminated from portions of the SEZ that would be
39 developed for solar energy production. Because the SEZ sits astride numerous
40 roads and trails, construction of the solar energy facilities could sever access
41 to undeveloped lands.
42
- 43 • Nellis Air Force Base expressed concern for solar energy facilities that might
44 affect approach and departure from runways on the base. The Nevada Test
45 and Training Range (NTTR) indicated that structures taller than 50 ft (15 m)



2 **FIGURE C.4.2-1 Proposed Dry Lake SEZ as Presented in the Draft Solar PEIS**

- 1 may present unacceptable electromagnetic compatibility concerns for the
2 NTTR test mission.
- 3
- 4 • Groundwater use would deplete the aquifer to the extent that wet-cooling and
5 dry-cooling options would not be feasible.
 - 6
 - 7 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
8 erosion by wind and runoff, sedimentation, and soil contamination) could
9 occur.
 - 10
 - 11 • Clearing of a large portion of the proposed SEZ could primarily affect
12 creosote-white bursage desert scrub and may adversely affect desert dry
13 washes, dry wash woodland, desert chenopod scrub, and wetland habitats,
14 depending on the amount of habitat disturbed. The establishment of noxious
15 weeds could result in habitat degradation. Deposition of fugitive dust could
16 cause reduced productivity or changes in plant community structure
 - 17
 - 18 • Potentially suitable habitat for 13 special status species and more than
19 90 wildlife species occurs in the affected area of the proposed SEZ; less than
20 1.0% of the potentially suitable habitat for any of these species occurs in the
21 region that would be directly affected by development.
 - 22
 - 23 • If aquatic biota exist within dry lake wetlands and unnamed washes, they
24 could be affected by the direct removal of these surface water features within
25 the construction footprint, a decline in habitat quantity and quality due to
26 water withdrawals and changes in drainage patterns, as well as increased
27 sediment and contaminant inputs associated with ground disturbance and
28 construction activities.
 - 29
 - 30 • Temporary exceedances of ambient air quality standards for particulate matter
31 at the SEZ boundaries are possible during construction. These high
32 concentrations, however, would be limited to the immediate area surrounding
33 the SEZ boundary. Modeling indicates that emissions from construction
34 activities could exceed Class I Prevention of Significant Deterioration (PSD)
35 PM₁₀ (particulate matter with an aerodynamic diameter of 10 µm or less)
36 increments at the nearest Class I area (Grand Canyon National Park), but the
37 potential impacts would be moderate and temporary.
 - 38
 - 39 • Strong visual contrasts could be observed by visitors to the Desert National
40 Wildlife Range, the Old Spanish National Historic Trail, Arrow Canyon WA,
41 and travelers on Interstate 15 (I-15) and U.S. 93. Moderate visual contrasts
42 could be observed by visitors to the Muddy Mountains WA, Muddy
43 Mountains Special Recreation Management Area (SRMA), and the Nellis
44 Dunes SRMA.
 - 45

- 1 • Few, if any, impacts on significant paleontological resources are likely to
2 occur in 90% of the proposed Dry Lake SEZ. The potential for impacts on
3 significant paleontological resources in the remaining 10% of the SEZ is
4 unknown. Direct impacts on significant cultural resources could occur in the
5 SEZ; dune areas have potential to contain significant sites within the valley
6 floors suitable for solar development. Direct impacts on the Old Spanish
7 Trail/Mormon Road site within the SEZ are possible. It is likely that plant and
8 animal species of cultural importance to the Southern Paiute are present
9 within the SEZ. The culturally important Salt Song Trail approaches or passes
10 through the SEZ and could experience visual and noise impacts by
11 development of solar energy facilities.
12
- 13 • Minority and low-income populations occur within a 50-mi (80-km) radius of
14 the proposed SEZ boundary; thus adverse impacts of solar development could
15 disproportionately affect minority and low-income populations.
16
17

18 **C.4.2.2 Summary of Comments Received**

19

20 Many of the comments received on the proposed Dry Lake SEZ were in favor of
21 identifying the area as an SEZ with proper siting and design (The Wilderness Society et al.;¹⁹
22 The Nature Conservancy). For example, The Wilderness Society et al. and the Nevada
23 Wilderness Project recommended excluding the dry lake, playa, and washes to avoid impacts
24 on wildlife and special status species habitat, and removing the portion of the SEZ that is
25 southeast of I-15 to avoid impacts on the Old Spanish National Historic Trail. The Cultural
26 Resources Preservation Coalition and Partnership for the National Trails System also
27 recommended adjusting the SEZ boundary to reduce impacts on the National Historic Trail.
28 The U.S. Department of Defense (DoD) expressed concerns regarding impacts on use of the
29 area for emergency aircraft bailout purposes.
30

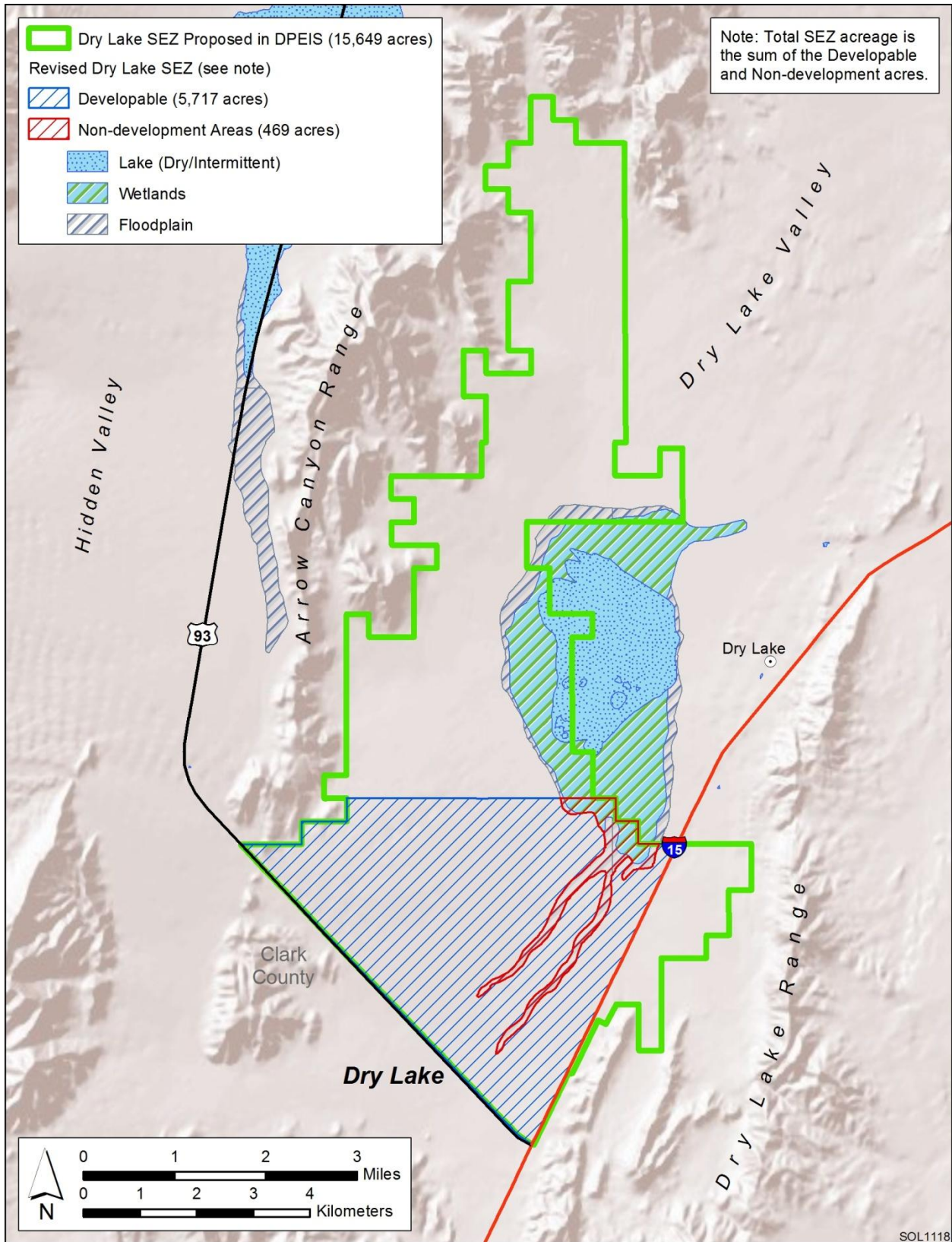
31 The U.S. Fish and Wildlife Service (USFWS) identified the entire SEZ as an area of
32 concern for desert tortoise recovery. Western Watersheds Project recommended that the Dry
33 Lake SEZ be eliminated to avoid impacts on desert tortoise habitat.
34
35

36 **C.4.2.3 Changes to the SEZ**

37

38 The proposed Dry Lake SEZ has been reconfigured to include only the southernmost area
39 that is northwest of I-15 (see Figure C.4.2-3). Excluding the northern portion of the SEZ will
40 mitigate some potential impacts from development in the SEZ, including impacts on desert
41 tortoise and other wildlife and potential impacts on military operations. The remaining area is

¹⁹ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club-Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.



1

2 **FIGURE C.4.2-2 Proposed Dry Lake SEZ as Described in this Supplement**

1 6,186 acres (25 km²). In addition, 469 acres (1.9 km²) of floodplain and wetland non-
2 development areas within the remaining SEZ boundaries were identified. The remaining
3 developable area within the SEZ is 5,717 acres (23 km²).
4

5 The lands eliminated from the proposed Dry Lake SEZ will be retained as solar right-of-
6 way variance areas, because the BLM expects that individual projects could be sited in this area
7 to avoid and/or minimize impacts. Any solar development within this area in the future would
8 require appropriate environmental analysis.
9

10 **C.4.2.4 Wilderness Character Status of SEZ**

11

12
13 A recently maintained inventory of wilderness characteristics was used to determine
14 whether public lands within the Dry Lake SEZ have wilderness characteristics. The finding of
15 this inventory was that these lands do not contain wilderness characteristics.
16

17 **C.4.2.5 Additional Data Collection Recommended**

18

19 **C.4.2.5.1 Lands and Realty**

20

21 None.
22

23 **C.4.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

24

25 None.
26

27 **C.4.2.5.3 Rangeland Resources**

28

29 *Livestock Grazing.* None.
30

31 *Wild Horses and Burros.* None.
32

33 **C.4.2.5.4 Recreation**

34

35 None.
36
37
38
39
40
41
42
43
44
45

1 **C.4.2.5.5 Military and Civilian Aviation**
2

3 The DoD has expressed continued concern regarding the potential impact of solar
4 development in this SEZ on military operations. The U.S. Department of the Interior Bureau of
5 Land Management (BLM) will continue to consult with the DoD regarding potential issues with
6 military operations.
7

8
9 **C.4.2.5.6 Geologic Setting and Soil Resources**
10

11 None.
12

13
14 **C.4.2.5.7 Minerals**
15

16 Additional information on leasable and strategic minerals in the vicinity of the proposed
17 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
18 on a proposed 20-year withdrawal of SEZ lands.
19

20
21 **C.4.2.5.8 Water Resources**
22

23 The following additional data and actions would help further characterize potential
24 impacts on water resources for the proposed Dry Lake SEZ. A more detailed discussion of each
25 of these activities is included in the water resources action plan provided in Section C.7.2 of this
26 appendix.
27

- 28 • Prepare a planning-level water resources inventory of the Garnet Valley basin.
- 29
- 30 • Identify additional ephemeral stream channels and alluvial fan features for
31 non-development areas through consultation with Nevada BLM, Nevada
32 Division of Water Resources, U.S. Environmental Protection Agency, and
33 U.S. Army Corps of Engineers (USACE) with a focus on:
 - 34 – Ephemeral stream channels/unnamed washes located throughout the SEZ
35 (drainage from the Las Vegas Range, the Arrow Canyon Range, and the
36 Dry Lake Range toward Dry Lake), and
 - 37 – Alluvial fan features in the northwestern portion of the SEZ (adjacent to
38 the Arrow Canyon Range).
- 39
- 40 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
41 water determinations for the SEZ. Water features to be considered include:
 - 42 – Unnamed washes.
- 43
- 44 • Perform field surveys and hydrologic analyses to support jurisdictional water
45 determinations, if USACE consultation suggests field surveys are needed.
46 Tasks may include:

- 1 – Surveying any unnamed washes identified previously for surface
- 2 elevations, high water marks, and sediment conditions.
- 3
- 4 • Describe the formation of a stakeholder committee to conduct long-term
- 5 monitoring of water resources. This activity would entail:
- 6 – Identifying key stakeholder agencies,
- 7 – Discussing general features of a monitoring program, and
- 8 – Working with the U.S. Geological Survey to develop groundwater
- 9 monitoring well design and numerical groundwater models.
- 10
- 11 • Perform groundwater modeling analyses for the Garnet Valley basin to
- 12 estimate potential impacts of full build-out groundwater pumping scenarios
- 13 (according to estimated, technology-specific water requirements). Tasks
- 14 include:
- 15 – Develop a superposition-type groundwater model for the Garnet Valley
- 16 basin, and
- 17 – Assess the potential for drawdown impacts on water levels in the basin,
- 18 other groundwater uses, the carbonate aquifer system, and surface water-
- 19 groundwater connectivity.
- 20

21

22 **C.4.2.5.9 Ecological Resources**

23

24

25 ***Vegetation and Plant Communities.*** The following additional data-gathering actions

26 would help further characterize potential impacts on vegetation and plant communities for the

27 proposed Dry Lake SEZ:

- 28
- 29 • Identify and map the location and areal extent of desert dry washes, dry wash
- 30 woodland, desert chenopod scrub, and wetland habitats within the SEZ.
- 31 Identify and map the location and areal extent of these habitats, as well as
- 32 playa and mesquite communities, outside the SEZ that may be affected by
- 33 hydrologic changes, including groundwater elevations, and changes in water,
- 34 sediment, and contaminant inputs associated with runoff. Such efforts could
- 35 help determine habitat characteristics, including water source, hydrologic
- 36 regime, and dominant plant species.
- 37
- 38 • Identify and map the location of cactus, including cholla and others, and
- 39 Yucca species within the SEZ.
- 40

41

42 ***Wildlife.*** The following additional data-gathering actions would help further characterize

43 potential impacts on wildlife resources for the SEZ:

- 44
- 45 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
- 46 SEZ as a movement/migratory corridor or as important habitat for mule deer.

- 1 • Identify and map the location and areal extent of wash and playa habitats
2 within the SEZ. These areas are important habitat for a number of wildlife
3 species.
4
5

6 ***Aquatic Biota.*** Investigations recommended under the water resources action plan
7 (Section C.4.2.5.8) would be useful in characterizing and protecting habitat available to aquatic
8 biota. Washes and wetlands in the SEZ are typically dry and contain water only for brief periods.
9 They may or may not contain aquatic biota; therefore, preliminary evaluations of these surface
10 water features could be conducted to determine the potential for aquatic communities to be
11 present.
12
13

14 ***Special Status Species.*** The following additional data-gathering actions would be useful
15 in further characterizing and protecting habitat available to special status species:
16

- 17 • Conduct pre-disturbance surveys within the SEZ to determine the presence
18 and abundance of those special status species that are (1) federally listed,
19 proposed for listing, or candidates for listing under the Endangered Species
20 Act; (2) protected by the state of Nevada;²⁰ or (3) designated as sensitive by
21 the Nevada BLM State Office. These species are listed in Table C.4.2-1.
22 Surveys should focus on areas identified as potentially suitable, and the
23 suitability of these habitats to support these special status species should be
24 determined in the field. All field-determined suitable habitats for special status
25 species should be mapped. Target species and survey protocols should be
26 developed in coordination with the U.S. Fish and Wildlife Service (USFWS)
27 and Nevada Department of Wildlife (NDOW).
28

29 The Draft Solar PEIS presents a table of special status species for which
30 potential impacts need to be evaluated prior to development in the proposed
31 Dry Lake SEZ. The list of species presented in Table 11.3.12.1-1 of the Draft
32 Solar PEIS includes rare species (ranked in the State of Nevada as S1 or S2 or
33 listed as a species of concern by the USFWS). On the basis of design features
34 presented in the Draft Solar PEIS, the potential for impacts on these additional
35 species will also need to be addressed before development could occur in the
36 SEZ.
37
38
39

²⁰ State-protected species for the state of Nevada are those protected under *Nevada Revised Statutes* (NRS) 501.110 (animals) or NRS 527 (plants).

1 **TABLE C.4.2-1 Special Status Species That May Occur in the Vicinity of the Proposed Dry**
 2 **Lake SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Plants</i>			
Halfring milkvetch	<i>Astragalus mohavensis</i> var. <i>hemigyris</i>	BLM-S	Endemic to Nevada on carbonate gravels and derivative soils on terraced hills and ledges, open slopes, and along washes within the creosote-bursage, blackbrush, and mixed-shrub habitat communities. Elevation ranges between 3,000 and 5,600 ft. ^d Nearest recorded occurrence is 15 mi ^e northwest of the SEZ in the Desert N WR. About 422,200 acres ^f of potentially suitable habitat occurs in the SEZ region.
Las Vegas bearpoppy ^g	<i>Arctomecon californica</i>	NV-P	Open, dry, spongy or powdery, often dissected or hummocked soils with high gypsum content, typically with well-developed soil crust, in areas of generally low relief on all aspects and slopes, with a sparse cover of other gypsum-tolerant species. Elevation ranges between 1,050 and 3,650 ft. Nearest recorded occurrence is 5 mi south of the SEZ. About 65,400 acres of potentially suitable habitat occurs in the SEZ region.
Las Vegas buckwheat	<i>Eriogonum corymbosum</i> var. <i>nilesii</i>	ESA-C; BLM-S	Restricted to southern Nevada in the vicinity of Las Vegas on or near gypsum soils, in washes, drainages, or in areas of generally low relief. Elevation ranges between 1,900 and 3,850 ft. Nearest recorded occurrence is 12 mi southwest of the SEZ. About 63,000 acres of potentially suitable habitat occurs in the SEZ region.
Parish's phacelia	<i>Phacelia parishii</i>	BLM-S	Aquatic habitats and wetlands in moist to superficially dry, open, flat, mostly barren, salt-crust silty-clay soils on valley bottoms, lake deposits, playa edges in proximity to seepage areas surrounded by saltbush scrub vegetation. Elevation ranges from 2,200 to 5,950 ft. Nearest recorded occurrence is 19 mi southwest of the SEZ. About 81,700 acres of potentially suitable habitat occurs in the SEZ region.
Rock phacelia	<i>Phacelia petrosa</i>	BLM-S	Dry limestone and volcanic talus slopes of foothills, washes, and gravelly canyon bottoms on substrates derived from calcareous material. Inhabits mixed desert scrub, creosotebush, and blackbrush at elevations between 2,500 and 5,800 ft. Nearest recorded occurrence is 9 mi west of the SEZ in the Desert NWR. About 4,242,700 acres of potentially suitable habitat occurs in the SEZ region.
Rosy two-tone beard-tongue	<i>Penstemon bicolor</i> ssp. <i>roseus</i>	BLM-S	Calcareous, granitic, or volcanic soils in washes, roadsides, scree at outcrop bases, rock crevices, or similar places receiving runoff, within creosote-bursage, blackbrush, and mixed-shrub. Elevation ranges between 1,800 and 4,850 ft. Known to occur on the SEZ and throughout the affected area. About 524,100 acres of potentially suitable habitat occurs in the SEZ region.
Rough dwarf greasebush	<i>Glossopetalon pungens</i> var. <i>pungens</i>	BLM-S;	Endemic to the Spring and Sheep ranges in southern Nevada, where the species is known from seven occurrences in the crevices of carbonate cliffs and outcrops, generally avoiding southerly exposures, within pinyon-juniper, mountain mahogany, and montane conifer communities. Elevation ranges from 4,400 to 7,800 ft. Nearest recorded occurrence is 17 mi west of the SEZ in the DNWR. About 606,000 acres of potentially suitable habitat occurs in the SEZ region.

3

TABLE C.4.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Plants (Cont.)</i>			
Sheep fleabane	<i>Erigeron ovinus</i>	BLM-S	Endemic to Mount Irish and the Sheep and Groom ranges in southern Nevada, where the species is known from fewer than 15 occurrences in crevices of carbonate cliffs and ridgeline outcrops within pinyon-juniper and montane conifer woodland. Elevation ranges from 3,600 to 8,400 ft. Nearest recorded occurrence is 17 mi northwest of the SEZ in the Desert NWR. About 576,650 acres of potentially suitable habitat occurs in the SEZ region.
Sheep Mountain milkvetch	<i>Astragalus amphioxys</i> var. <i>musimonum</i>	BLM-S	Restricted to the foothills of the Sheep Mountains in southern Nevada (historically occurred in Arizona). Occurs in carbonate alluvial gravels, particularly along drainages, roadsides, and in other microsites with enhanced runoff, at elevations between 4,400 and 6,000 ft. Nearest recorded occurrence is 6 mi northwest of the SEZ in the Desert NWR. About 3,884,600 acres of potentially suitable habitat occurs in the SEZ region.
Silverleaf sunray	<i>Enceliopsis argophylla</i>	BLM-S	Nearly entirely confined to Clark County, Nevada, in dry, open, relatively barren areas on gypsum badlands, volcanic gravels, or loose sands, within creosote-bursage habitat. Elevation ranges from 1,200 to 2,400 ft. Nearest recorded occurrence is 15 mi east of the SEZ. About 89,100 acres of potentially suitable habitat occurs in the SEZ region.
Sticky buckwheat	<i>Eriogonum viscidulum</i>	NV-P	Known only from Clark County, Nevada, and Mohave County, Arizona, on deep, loose sandy soils in washes, flats, roadsides, steep aeolian slopes, and stabilized dunes. Elevation ranges from 1,200 to 2,200 ft. Nearest recorded occurrence is 21 mi northeast of the SEZ. About 65,000 acres of potentially suitable habitat occurs in the SEZ region.
Threecorner milkvetch	<i>Astragalus geyeri</i> var. <i>triquetrus</i>	NV-P	Known only from Clark County, Nevada, and Mohave County, Arizona on open, deep sandy soils, desert washes, or dunes, generally stabilized by vegetation and/or a gravel veneer. Elevations range from 1,500 to 2,500 ft. Nearest recorded occurrence is about 1 mi east of the SEZ. About 105,700 acres of potentially suitable habitat occurs in the SEZ region.
White bearpoppy	<i>Arctomecon merriamii</i>	BLM-S	Endemic to the Mojave Desert of California and Nevada in barren gravelly areas, rocky slopes, and limestone outcrops at elevations between 2,000 and 5,900 ft. Nearest recorded occurrence is 19 mi southwest of the SEZ. About 358,000 acres of potentially suitable habitat occurs in the SEZ region.
Yellow two-tone beard-tongue	<i>Penstemon bicolor</i> ssp. <i>bicolor</i>	BLM-S	Endemic to Clark County, Nevada, on mostly BLM lands in the vicinity of Las Vegas on calcareous or carbonate soils in washes, roadsides, rock crevices, or outcrops at elevations between 2,500 and 5,500 ft. Nearest recorded occurrence is from a dry lake approximately 2 mi west of the SEZ. About 524,100 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.4.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Invertebrates			
Mojave gypsum bee	<i>Andrena balsamorhizae</i>	BLM-S	Endemic to Nevada on gypsum soils associated with habitats of its single larval host plant, silverleaf sunray. Such habitats include warm desert shrub communities on dry slopes and sandy washes. Nearest recorded occurrence is 8 mi south of the SEZ. About 3,819,500 acres of potentially suitable habitat occurs in the SEZ region.
Mojave poppy bee	<i>Perdita meconis</i>	BLM-S	Known only from Clark County, Nevada where the species is dependent on poppy plants (genus <i>Arctomecon</i>). in roadsides, washes, and barren desert areas on gypsum soils. Nearest recorded occurrence is in the vicinity of Lake Mead, approximately 17 mi south of the SEZ. About 418,000 acres of potentially suitable habitat occurs in the SEZ region.
Reptiles			
Desert tortoise	<i>Gopherus agassizii</i>	ESA-T; NV-P	Desert creosotebush communities on firm soils for digging burrows along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Known to occur on the SEZ and throughout the affected area. About 2,762,500 acres of potentially suitable habitat occurs in the SEZ region.
Gila monster	<i>Heloderma suspectum</i>	BLM-S; NV-P	Rocky, deeply incised areas of desert scrub, thorn scrub, desert riparian, oak woodland, and semidesert grassland. Occurs in lower mountain slopes, rocky bajadas, canyon bottoms, and arroyos at elevations below 3,950 ft. Known to occur in Clark County, Nevada. About 3,175,900 acres of potentially suitable habitat occurs in the SEZ region.
Birds			
American peregrine falcon	<i>Falco peregrinus</i>	BLM-S; NV-P	Year-round resident in open habitats, including deserts, shrublands, and woodlands associated with high, near vertical cliffs and bluffs above 200 ft. When not breeding, activity is concentrated in areas with ample prey, such as farmlands, marshes, lakes, rivers, and urban areas. Nearest recorded occurrences are from the metropolitan area of Las Vegas, Nevada, approximately 22 mi southwest of the SEZ. About 4,171,400 acres of potentially suitable habitat occurs in the SEZ region.
Crissal thrasher	<i>Toxostoma crissale</i>	BLM-S	Year-round resident in project area. Nests in dense thickets of mesquite or low trees in desert riparian and desert wash habitats. Also occurs in washes within pinyon-juniper habitats. Known to occur in Clark County, Nevada. About 81,000 acres of potentially suitable habitat occurs in the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in project area in grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodland. Known to occur in Clark County, Nevada. About 417,500 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.4.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
LeConte's thrasher	<i>Toxostoma lecontei</i>	BLM-S; NV-P	Year-round resident in project area in saltbush-cholla scrub communities in desert flats, dunes, or alluvial fans. Known to occur in Clark County, Nevada. About 3,817,950 acres of potentially suitable habitat occurs in the SEZ region.
Phainopepla	<i>Phainopepla nitens</i>	BLM-S; NV-P	Year-round resident in project area in desert scrub, mesquite, pinyon-juniper woodland, desert riparian areas and orchards. Nests in trees or shrubs. Nearest recorded occurrences are from the Meadow Valley Wash and Muddy River systems, approximately 20 mi east of the SEZ. About 1,038,500 acres of potentially suitable habitat occurs in the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, and the like). Known to occur in Clark County, Nevada. About 4,034,600 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Big free-tailed bat	<i>Nyctinomops macrotis</i>	BLM-S	Roosts in rock crevices on cliff faces or in buildings. Forages primarily in coniferous forests and arid shrublands to feed on moths. Known to occur in Clark County, Nevada. About 4,048,200 acres of potentially suitable habitat occurs in the SEZ region.
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	BLM-S	Forages in desert grassland, old field, savanna, shrubland, and woodland habitats as well as urban areas. Roosts in old buildings, caves, mines, and hollow trees. Known to occur in Clark County, Nevada. About 3,722,850 acres of potentially suitable habitat occurs in the SEZ region.
Pallid bat	<i>Antrozous pallidus</i>	BLM-S; NV-P	Low-elevation desert communities, including grasslands, shrublands, and woodlands. Roosts in caves, crevices, and mines. Nearest recorded occurrences are from the Desert NWR, approximately 10 mi west of the SEZ. About 3,706,300 acres of potentially suitable habitat occurs in the SEZ region.
Silver-haired bat	<i>Lasionycteris noctivagans</i>	BLM-S	High-elevation (1,600 to 8,500 ft) forested areas of aspen, cottonwood, white fir, pinyon-juniper, subalpine fir, willow, and spruce. Roosts in tree foliage, cavities, under loose bark, caves, mines, and under rock ledges. May also forage in arid shrublands. Rarely hibernates in caves. Nearest recorded occurrences are from the Muddy River, approximately 15 mi northeast of the SEZ. About 3,586,800 acres of potentially suitable habitat occurs in the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S; NV-P	Near forests and shrubland habitats throughout the SEZ region. Roosts and hibernates in caves and rock crevices. Nearest recorded occurrences are from the vicinity of Las Vegas, approximately 16 mi southwest of the SEZ. About 4,404,950 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.4.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals (Cont.)</i>			
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S; NV-P	Near forests and shrubland habitats below 9,000 ft elevation throughout the SEZ region. Roosts in caves, mines, and buildings for day roosting. Nearest recorded occurrences are from the Desert NWR, approximately 10 mi west of the SEZ. About 3,861,200 acres of potentially suitable habitat occurs in the SEZ region.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Woodland and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Nearest recorded occurrences are from the Desert NWR, approximately 10 mi west of the SEZ. About 4,325,600 acres of potentially suitable habitat occurs in the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA and (2) Nevada BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-T = listed as threatened under the ESA; NV-P = protected in the state of Nevada under NRS 501.110 (animals) or NRS 527 (plants).
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis (SWReGAP) land cover types (USGS 20005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or observed in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

- Identify and map the location and areal extent of ephemeral wetland habitats, including desert wash and playa habitats within the SEZ. Habitat characteristics (including water source, hydrologic regime, and dominant plant species, both within the wetland boundaries and in adjacent non-wetland habitats) should be determined. Species potentially associated with these habitats include the halfring milkvetch, Las Vegas buckwheat, Parish's phacelia, rosy two-tone beardtongue, sticky buckwheat, threecorner milkvetch, and yellow two-tone beardtongue.

C.4.2.5.10 Air Quality and Climate

None.

1 **C.4.2.5.11 Visual Resources**
2

3 Visual resources will be re-evaluated for the Final Solar PEIS based on the revisions to
4 boundaries described in Section C.4.2.3 of this Supplement. A summary of the Draft Solar PEIS
5 visual contrast analysis for the proposed Dry Lake SEZ is provided in Table C.4.2-2. This table
6 includes only those resources that would be subject to moderate or strong visual contrast. The
7 Draft Solar PEIS visual impact analysis predicted these levels of visual contrast from solar
8 energy development in the Dry Lake SEZ for the following sensitive visual resource areas
9 (SVRAs) and sensitive viewing locations (SVLs):

- 10
- 11 • Desert National Wildlife Refuge (NWR)
 - 12
 - 13 • Old Spanish National Historic Trail
 - 14
 - 15 • Arrow Canyon WA
 - 16
 - 17 • Muddy Mountains WA
 - 18
 - 19 • Muddy Mountains SRMA
 - 20
 - 21 • Nellis Dunes SRMA
 - 22
 - 23 • I-15
 - 24
 - 25 • U.S. 93.
 - 26

27 The following steps could be taken to better understand potential impacts on these
28 SVRAs and SVLs from solar development in the Dry Lake SEZ:

- 29
- 30 • Identify key observation points (KOPs) within these areas through working
31 with the management agency or other local stakeholders.
 - 32
 - 33 • Conduct viewshed analyses from the KOPs to determine how much of the
34 SEZ would be in view from each KOP.
 - 35
 - 36 • As deemed necessary, based on viewshed analysis results, prepare wireframe
37 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
38 depicting the 80% development scenario to better estimate potential impacts.
 - 39

40 This additional analysis may help judge potential visual contrast more accurately for most
41 KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
42 superimposition of the wireframe models onto the photos might be required or desired.
43
44

TABLE C.4.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Dry Lake SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
NWR	Desert NWR	1,626,903 acres	2.3 mi west of the SEZ	51,276 acres	3.2	Because of the close proximity to the SEZ and the elevated viewpoints in the NWR, strong visual contrasts could be observed. Areas with potential visibility of solar facilities include the eastern slopes of mountains and ridges of the Las Vegas Range, primarily within 10 mi of the SEZ, but extending for some areas to beyond 15 mi into the NWR, along the peaks of the Sheep Range.
National Historic Trail	Old Spanish Trail ^g	1,200 mi	Passes within 1.3 mi on the southeast side of the SEZ	23 mi	1.9	Because of the close proximity to the SEZ and the elevated viewpoints, strong visual contrasts could be observed. About 8.8 mi of the trail located within the viewshed are high potential segments.
WAs	Arrow Canyon	27,521 acres	2.5 mi north of the SEZ	1,485 acres	5.4	Moderate or even strong levels of visual contrast would be expected for high-elevation viewpoints, with weak levels of visual contrast expected for most lower elevation viewpoints. Areas with potential views of SEZ extend to 9.1 mi from the northern boundary of the SEZ.

TABLE C.4.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WAs (Cont.)	Muddy Mountains	44,522 acres	6.6 mi southeast of the SEZ	5,798 acres	13.0	Moderate levels of visual contrast would be expected for high-elevation viewpoints, with weak levels of visual contrast expected for most lower-elevation viewpoints. The SEZ would be visible from scattered areas throughout the mountains in the western half.
SRMAs	Muddy Mountains	128,493 acres	4.5 mi southeast of the SEZ	25,741 acres	20.0	Moderate levels of visual contrast would be expected for high-elevation viewpoints, with weak levels of visual contrast expected for most lower-elevation. The visible area extends from point of closest approach to 12 mi into the SRMA from the southeast boundary of the SEZ.
	Nellis Dunes	8,921 acres	4.3 mi south of the SEZ	448 acres	5.0	Because of the elevated viewpoints in the SRMA, moderate visual contrasts could be observed. Areas with view to SEZ are located near northern boundary of the SRMA.
Other Areas of Interest (non-management areas)	I-15 ^h	124 mi	3.7 mi passes along and through the southeastern-most portion of the SEZ	38 mi	30.6	Facilities could be in view from about 38 mi of the roadway, but contrast levels would generally be minimal or weak for I-15 except where the highway passes through the Dry Lake Range and especially the SEZ itself; in these locations contrast levels would likely be strong.

TABLE C.4.2-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (Cont.)	U.S. 93 ⁱ	1,311 mi	4.5 mi of U.S. 93 pass along the SEZ's southwestern boundary	13 mi	1.0	Northbound travelers would first see solar facilities at the I-15 interchange, with strong visual contrasts visible for several minutes until views of the SEZ would be screened by the Arrow Canyon Range. After that point, expected contrast levels would drop to minimal levels. Southbound travelers would see minimal contrast until they passed the Arrow Canyon Range, and they would likely see strong contrasts thereafter until they reached I-15.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percentage of total acreage/mileage visible within 25 mi (40 km) of the SEZ.

^f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

^g Total length of Old Spanish Trail (not just West Branch): BLM (2011a).

^h Mileage of I-15 through Nevada only: AARoads' Interstate Guide (2007).

ⁱ Total mileage of U.S. 93: DOT (2011a).

1 **C.4.2.5.12 Acoustic Environment**

2
3 None.

4
5
6 **C.4.2.5.13 Paleontological Resources**

7
8 The BLM Regional Paleontologist will be contacted to determine whether additional
9 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
10 Nevada. A preliminary paleontological survey could be conducted to determine the PFYC of the
11 SEZ, in order to update the temporary assignment of PFYC Class 2 (90%) and Class 3b (10%)
12 used in the Draft Solar PEIS.

13
14
15 **C.4.2.5.14 Cultural Resources and Native American Concerns**

16
17 Approximately 60.2% of the original proposed Dry Lake SEZ footprint has been
18 surveyed for cultural resources, identifying 22 sites within the SEZ. One site is listed in the
19 *National Register of Historic Places* (NRHP), 5 have been determined eligible for listing, and the
20 remaining 15 sites are either not eligible or have not been evaluated for listing in the NRHP. For
21 the revised footprint, approximately 47.9% has been surveyed (2,743 acres [11.1 km²]), and only
22 6 sites have been recorded in this portion of the SEZ. One of these sites is identified as the Old
23 Spanish Trail/Mormon Road, an eligible site located in the southeastern portion of the SEZ. The
24 eligibility status of the other five sites is unknown at this time. At least 229 sites have been
25 recorded within 5 mi (8 km) of the original SEZ footprint. As with other SEZs, dune areas and
26 areas along washes and dry lakes have the highest potential for containing significant
27 archaeological resources within the SEZ. Several culturally important areas have also been
28 identified near the SEZ, including specific valleys, trails, and water sources. The destruction or
29 degradation of important plant and water resources and the destruction of habitat or impediments
30 to the movement of culturally important wildlife are also potential impacts of concern within the
31 SEZ.

32
33 The following additional data collection efforts could reduce the uncertainty about
34 potential impacts:

- 35
36 • Conduct a Class I literature file search to better understand (1) the site
37 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
38 through existing ethnographic reports, and (3) overall cultural sensitivity of
39 the landscape.
- 40
41 • Verify that the surveys that have been conducted in the SEZ meet current
42 survey standards. No Class II surveys are currently being recommended.
- 43
44 • Prepare a cultural sensitivity map based on the results of the Class I review.
- 45

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

- Identify high-potential segments of the Old Spanish National Historic Trail and watershed analyses from key points along the trail. High-potential segments of the trail have been identified just east of the SEZ; however, it is also reported that a portion of the trail may go through the SEZ.
- Continue with government-to-government consultation as described in Section 2.4.3, including follow-up to recent ethnographic studies with Tribes not included in the original studies to determine whether those Tribes have similar concerns. The Dry Lake SEZ falls in the traditional use area of primarily the Southern Paiute. Potential topics presented in the Final Solar PEIS to be discussed during consultation include the Salt Song Trail and other trail systems, mountain springs, mineral resources, burial sites, ceremonial areas, the Moapa Valley, and plant and animal resources. The agencies value the information shared by the Tribes during the ethnographic study and will consider their input in striving to minimize the impacts of solar development in the SEZ. The completed ethnographic study will be available in its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>). A summary of the contents of that report is also provided in the following text box.

Tribal Perspectives on the Significance of the Dry Lake SEZ

The lands under consideration in the Dry Lake SEZ study area were traditionally occupied, used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. The Tribe specifically involved in the field consultation for this SEZ study area is the Moapa Band of Paiute Indians, who represent the cultural interests of Southern Paiute peoples. These Numic-speaking peoples have gone on record in past projects and continue to stipulate here that they are the American Indian people responsible for the cultural resources (natural and man-made) in this SEZ study area because their ancestors were placed here by the Creator. Since time immemorial, they have lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation. The involved American Indian Tribal government and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

The larger SEZ study area extends beyond the boundaries of the proposed SEZ because cultural resources extend into the surrounding landscape. Southern Paiute Tribal representatives maintain that, in order to understand Southern Paiute connections to the SEZ, they must be placed in context with neighboring places and their associated cultural resources found in the SEZ study region.

Rain and snow runoff from the surrounding mountains also flows into the SEZ study area. It is important from a Southern Paiute perspective to understand the hydrological system in this region. The flow of *Puha* (energy or power) follows the flow of water across a given landscape and connects places, people, and other elements. As water drains from the mountains, the water and the *Puha* flow into the valley, connecting these sources to the rest of the watershed, including the Colorado River, the Muddy River, and the Virgin River. Water also holds immense importance in its power to connect near and distant elements. Dry lakes embody this phenomenon by connecting to other dry lakes and all water in the area underground. Water on and below the surface connects water resources in the mountains to the rain. The importance of the water is also highlighted in Tribal representatives' concerns regarding the potential consequences of overdrawing groundwater.

21

Tribal Perspectives on the Significance of the Dry Lake SEZ (Cont.)

The northern portion of the SEZ study region and the Arrow Canyon Range (to the north of the SEZ) are directly connected to the Cry Ceremony and the associated Salt Song Trail. When a Southern Paiute person passes away, the Cry Ceremony is performed and specially trained singers perform the Salt Song. This song and associated spiritual trail carry the soul of the deceased along a thousand mile journey through traditional Southern Paiute territory and neighboring Hualapai territory. During this journey, the deceased transitions from this world into the spiritual world, or afterlife.

The Arrow Canyon Range is associated with Southern Paiute songs, stories, and ceremonies. One story describes how *Shin-au-av* (Coyote) formed the area with a shot of his arrow. Another story links the Arrow Canyon Range to a Creation Being, Potato Woman. Potato Woman is responsible for the creations of a variety of Nah'-gah (Mountain Sheep, *Ovis spp.*) that live exclusively in the Arrow Canyon Range. The Nah'gah, in turn, have and continue to bring songs, stories, and medicine to Indian people. Impacts on the Arrow Canyon Range directly affect the health of Potato Woman and the creation of the Nah'-gah. Areas within the Arrow Canyon Range were used for round dances and balancing ceremonies. In 1890, Southern Paiute people went to the Arrow Canyon Range to perform the Ghost Dance in order to restore balance to the world.

The Arrow Canyon Range was the center of a large traditional district composed of what are now the Moapa and Pahrangat Southern Paiutes prior to colonial disruption (Stoffle and Dobyns 1983). Full-time agricultural settlements were located within the large hydrological system beginning northeast of Pahrangat Valley and continuing down along the Muddy, Virgin, and Colorado Rivers. Arrow Canyon Valley was used for hunting, gathering, and traveling between these agricultural settlements. These continual use patterns account for scattered archaeological remains in the area of the Arrow Canyon Range (Stoffle and Dobyns 1983).

During multiple field visits, Native American representatives identified 15 traditional use plants within the Dry Lake SEZ study area. These included Anderson's wolfberry, Banana yucca, Beavertail Cactus, California barrel cactus, Creosote bush, Desert globemallow, desert trumpet, Golden cholla, Hedgehog cactus, Honey mesquite, Indian tea, Mojave yucca, Nevada Indian tea, Spiny chorianthe, and western wheatgrass. Thirty-four traditional use animals were also identified which included among others Black-tailed jack rabbit, bobcat, cougar, Desert cottontail, Coyote, Kangaroo rat, Grey fox, and a variety of birds. One animal that drew particular attention was the mountain sheep, described in stories and songs associated with the region.

Traditionally, Southern Paiute people were agriculturalists who built complex irrigation systems and tended to numerous plant species. Southern Paiute farmers often grew and managed crops that were generally not recognized as crops by Euro-Americans. For example, Southern Paiutes planted and managed mesquite trees. The trees were often planted in riverine oases throughout Southern Paiute territory. In the Dry Lake Valley SEZ study area, multiple large stands of sweet mesquite were noted by Tribal representatives. They believed that these orchards of mesquite trees were planted and maintained by Southern Paiute people in the past and that this area is an important cultural feature.

C.4.2.5.15 Socioeconomics and Environmental Justice

None.

C.4.2.5.16 Cumulative Impact Considerations

None.

1
2
3
4
5
6
7
8
9
10
11

1 **C.4.3 Dry Lake Valley North**

2
3
4 **C.4.3.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

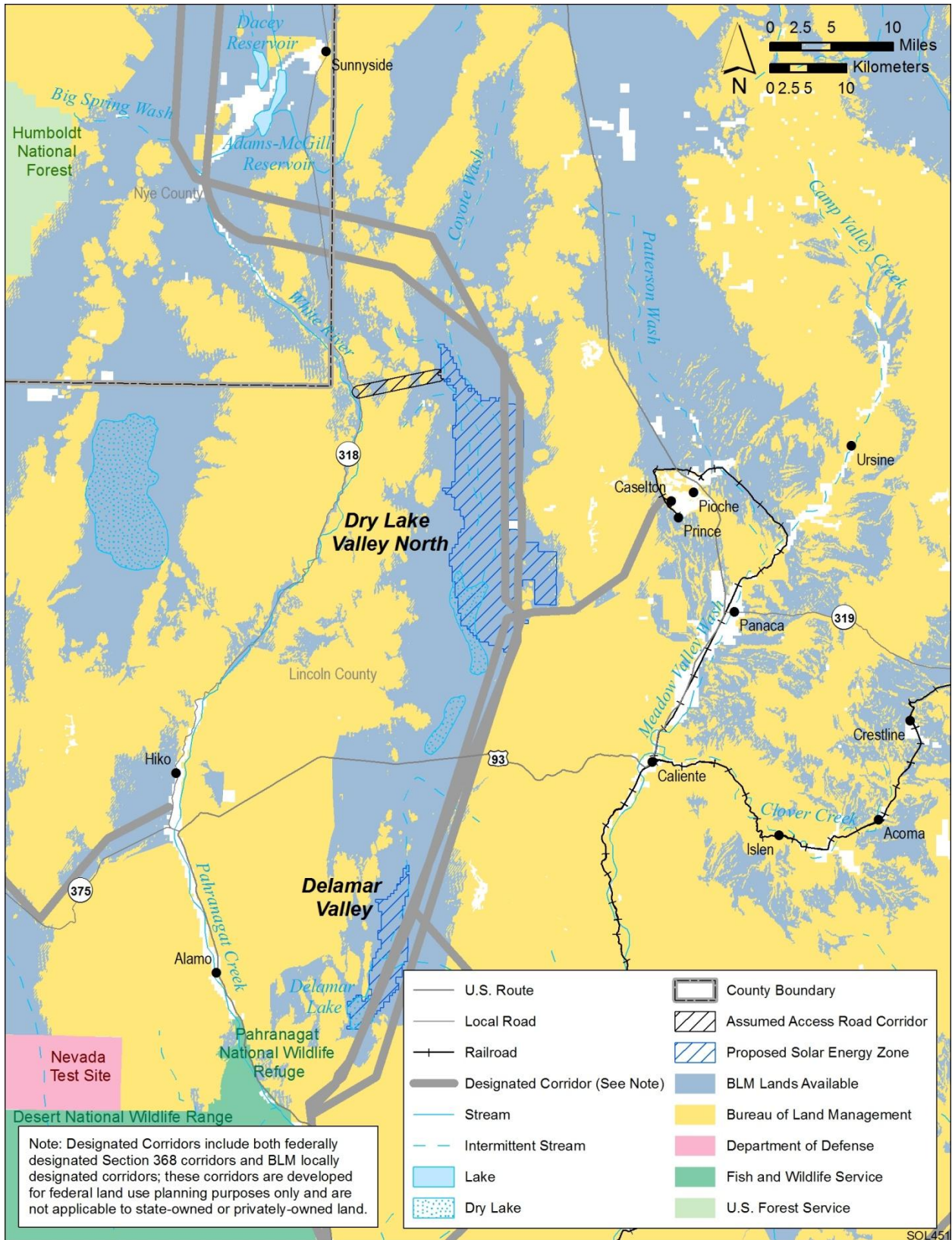
7 The proposed Dry Lake Valley North solar energy zone (SEZ), as presented in the Draft
8 Solar PEIS, had a total area of 76,874 acres (311km²). It is located in Lincoln County in
9 southeastern Nevada (Figure C.4.3-1). The towns of Pioche and Caliente are about 15 mi
10 (24 km) east of, and 15 mi (24 km) southeast of, the SEZ, respectively.
11

12 There are three designated transmission corridors in the proposed SEZ that could limit
13 development in the SEZ because solar facilities cannot be constructed under transmission lines.
14 The discussion of impacts of solar energy development in the SEZ in the Draft Solar PEIS
15 acknowledged that the presence of these corridors would reduce the amount of land available for
16 solar power production, and that, conversely, full development of solar facilities within the SEZ
17 would limit use of transmission corridors.
18

19 The Draft Solar PEIS identified a 69-kV transmission line that passes through the
20 southeast corner of the proposed SEZ as the nearest point for connection of the SEZ to the grid.
21 The actual location of connection to the transmission grid could be different than that assumed in
22 the Draft Solar PEIS. Details on the updated transmission impact assessment for SEZs to be
23 included in the Final Solar PEIS are provided in Section C.7.1 of this appendix. The Draft Solar
24 PEIS also identified State Route 318, located about 7 mi (11 km) to the west of the SEZ, as the
25 nearest major road, and assumed that a new access road would be constructed from the proposed
26 SEZ to State Route 318 to support development. As for a new transmission line, the location of a
27 new access road that could be constructed in the future may be different from that assumed in the
28 Draft Solar PEIS. Analysis of transmission lines and/or access roads will be completed, as
29 necessary, as part of the project-specific environmental reviews (see Section 2.2.2.2.2 of this
30 Supplement).
31

32 Potential adverse impacts identified in the Draft Solar PEIS included the following:
33

- 34 • Because of the extended length of the SEZ, east–west travel across the valley
35 could be cut off, requiring extensive detours for public land users.
36
- 37 • There would be a small adverse impact on wilderness characteristics in the
38 Weepah Spring and Big Rocks Wilderness Areas (WAs). Silver State Off-
39 Highway Vehicle Trail/Byway users seeking a scenic drive experience would
40 be adversely affected.
41
- 42 • The Simpson grazing allotment would be closed, 65% of the Ely Springs
43 Cattle allotment would be lost, and all of the winter range for the permittees in
44 the Dry Lake Valley and Thorley areas of use in the Wilson Creek and
45 Simpson grazing allotments would be lost. A total of 12,163 animal
46



1

2 **FIGURE C.4.3-1 Proposed Dry Lake Valley North SEZ as Presented in the Draft Solar PEIS**

1 unit months would be lost and operations of six permittees would suffer major
2 impacts.

- 3
- 4 • A portion of the Silver King herd management area (HMA) occurs in the
5 affected area of the proposed SEZ; about 5.4% of the HMA would be directly
6 affected by development.
- 7
- 8 • There are potential impacts on two low-level military training routes (MTRs)
9 and the Nevada Test and Training Range (NTTR). The U.S. Department of
10 Defense (DoD) indicated strong concerns over development in this SEZ since
11 there may be adverse impacts on military training and testing activities.
- 12
- 13 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
14 erosion by wind and runoff, sedimentation, and soil contamination) could
15 occur. Portions of the dry lake may not be suitable for construction.
- 16
- 17 • Existing oil and gas leases represent a prior existing right that could affect
18 solar energy development of the SEZ.
- 19
- 20 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
21 wet-cooling options would not be feasible.
- 22
- 23 • Clearing of a large portion of the proposed SEZ could primarily affect mixed
24 salt desertscrub, and may adversely affect dry wash, playa, greasewood flat,
25 and wetland habitats, depending on the amount of habitat disturbed. The
26 establishment of noxious weeds could result in habitat degradation.
27 Deposition of fugitive dust could cause reduced productivity or changes in
28 plant community structure
- 29
- 30 • Potentially suitable habitat for 22 special status species and more than
31 90 wildlife species occurs in the affected area of the proposed SEZ; 8.4% or
32 less (4.0% or less for most wildlife species) of the potentially suitable habitat
33 for any of these species occurs in the region that would be directly affected by
34 development.
- 35
- 36 • If aquatic biota exist within the Coyote Wash, unnamed ephemeral braided
37 washes, and dry lake with associated wetlands, they could be affected by the
38 direct removal of these surface water features within the construction
39 footprint, a decline in habitat quantity and quality due to water withdrawals
40 and changes in drainage patterns, as well as increased sediment and
41 contaminant inputs associated with ground disturbance and construction
42 activities.
- 43
- 44 • Temporary exceedances of ambient air quality standards for particulate matter
45 at the SEZ boundaries are possible during construction. These high

1 concentrations, however, would be limited to the immediate area surrounding
2 the SEZ boundary.

- 3
- 4 • Strong visual contrasts could be observed by visitors to the Chief Mountain
5 Special Recreation Management Area (SRMA) and travelers on the Silver
6 State Trail. Weak to strong visual contrasts could be observed by visitors to
7 Big Rocks and Weepah Spring WAs. Moderate visual contrasts could be
8 observed by travelers on U.S. 93.
- 9
- 10 • Few, if any, impacts on significant paleontological resources are likely to
11 occur in 91% of the proposed SEZ. The potential for impacts on significant
12 paleontological resources in the remaining 9% of the SEZ is unknown. Direct
13 impacts on significant cultural resources could occur in the SEZ; there is a
14 high potential for prehistoric sites, especially in the dry lake and dune areas at
15 the southern end of the SEZ.
- 16
- 17 • Low-income populations occur within a 50-mi (80-km) radius of the proposed
18 SEZ boundary; thus adverse impacts of solar development could
19 disproportionately affect low-income populations.
- 20

21

22 **C.4.3.2 Summary of Comments Received**

23

24 Many of the comments received on the proposed Dry Lake Valley North SEZ were in
25 favor of identifying the area as an SEZ with proper siting and design. The Wilderness
26 Society et al.²¹ and Nevada Wilderness Project recommended boundary adjustments to avoid
27 important wildlife and special status species habitat. Other groups and individual members of the
28 public were in favor of identifying the area as an SEZ, with boundary adjustments due to impacts
29 on grazing (N-4 State Grazing Board, Lincoln County Board of Commissioners). The Lincoln
30 County Board of Commissioners specifically requested that the area of the SEZ be limited to no
31 more than 10,000 acres (40 km²), stating that existing and planned transmission could
32 accommodate only the corresponding amount of power generated. The DoD and Western
33 Watersheds Project requested that the SEZ be eliminated because of conflicts with military
34 operations and training and lack of sufficient groundwater resources.

35

36 The Southern Nevada Water Authority expressed concern for its groundwater
37 development project ROWs and other areas identified for future ROWs that are located within
38 the SEZ. Other comments requested changes to the transmission line and access road analysis.

39

40

41

²¹ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club-Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 **C.4.3.3 Changes to the SEZ**

2
3 The proposed Dry Lake Valley North SEZ has been reconfigured to eliminate
4 48,148 acres (195 km²), mainly the northern portion of the SEZ (see Figure C.4.3-2). Excluding
5 the northern portion of the SEZ will mitigate some potential impacts from development in the
6 SEZ, including impacts on sage-grouse and other wildlife, impacts on grazing, and impacts on
7 military operations. In addition, about 3,657 acres (15 km²) of wetland and dry lake non-
8 development areas within the SEZ boundaries were identified. The remaining developable area
9 within the SEZ is 25,069 acres (101.5 km²).

10
11 The lands eliminated from the proposed Dry Lake Valley North SEZ will be retained as
12 solar right-of-way variance areas, because the BLM expects that individual projects could be
13 sited in this area to avoid and/or minimize impacts. Any solar development within this area in the
14 future would require appropriate environmental analysis.

15
16
17 **C.4.3.4 Wilderness Character Status of SEZ**

18
19 A recently maintained inventory of wilderness characteristics was used to determine
20 whether public lands within the Dry Lake Valley North SEZ have wilderness characteristics. The
21 finding of this inventory was that these lands do not contain wilderness characteristics.

22
23
24 **C.4.3.5 Additional Data Collection Recommended**

25
26
27 **C.4.3.5.1 Lands and Realty**

28 None.

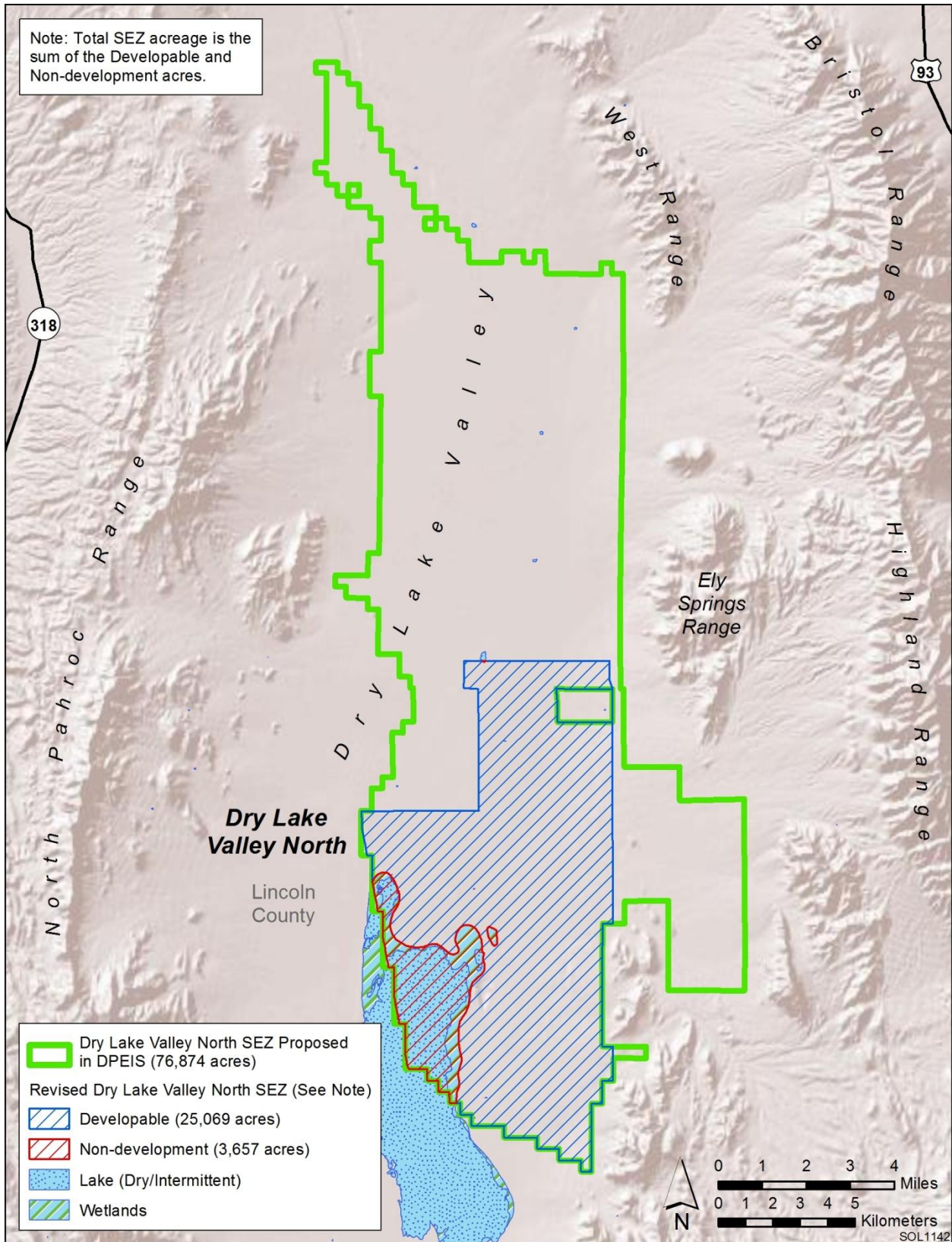
29
30
31
32 **C.4.3.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

33 None.

34
35
36
37 **C.4.3.5.3 Rangeland Resources**

38
39
40 **Livestock Grazing.** The impact on grazing will be re-evaluated based on the revised
41 boundaries.

42
43
44 **Wild Horses and Burros.** The potential for impacts on the HMA will likely be reduced
45 as a result of the boundary revisions to the SEZ. Pre-disturbance surveys could be conducted
46 within the SEZ to determine the use of the remaining SEZ area by wild horses and whether the



1

2 **FIGURE C.4.3-2 Proposed Dry Lake Valley North SEZ as Described in this Supplement**

1 area of the HMA not affected by proposed solar development could sustain the wild horses
2 present within the HMA.

3 4 5 **C.4.3.5.4 Recreation**

6
7 The impacts on recreational use of the Silver State Trail and off-highway vehicle racing
8 will be re-evaluated based on the revised boundaries.

9 10 11 **C.4.3.5.5 Military and Civilian Aviation**

12
13 The DoD has expressed continued concern regarding the potential impact of solar
14 development in this SEZ on military operations. The U.S. Department of the Interior Bureau of
15 Land Management (BLM) will continue to consult with the DoD regarding potential issues with
16 military operations.

17 18 19 **C.4.3.5.6 Geologic Setting and Soil Resources**

20
21 None.

22 23 24 **C.4.3.5.7 Minerals**

25
26 Additional information on leasable and strategic minerals in the vicinity of the proposed
27 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
28 on a proposed 20-year withdrawal of SEZ lands.

29 30 31 **C.4.3.5.8 Water Resources**

32
33 The following additional data and actions would help further characterize potential
34 impacts on water resources for the proposed Dry Lake Valley North SEZ. A more detailed
35 discussion of each of these activities is included in the water resources action plan provided in
36 Section C.7.2 of this appendix.

- 37
38
- 39 • Prepare a planning-level water resources inventory of the Dry Lake Valley basin.
 - 40
 - 41 • Identify additional ephemeral stream channels and alluvial fan features for
 - 42 non-development areas through consultation with Nevada BLM, Nevada
 - 43 Division of Water Resources (NDWR), U.S. Environmental Protection
 - 44 Agency, and U.S. Army Corps of Engineers (USACE) with a focus on:
 - 45 – Dry Lake,
 - 46 – Coyote Wash and its tributaries,

- 1 – Ephemeral stream channels/unnamed washes located throughout the SEZ
2 (drainage from Ely Springs Range, Robber Roost Hills, Highland Range,
3 Black Canyon Range, the Bluffs, Chief Range and Burnt Springs Range
4 toward Dry Lake), and
5 – Alluvial fan features in the southeastern portion of the SEZ.
6
7 • Perform field surveys and hydrologic analyses to support jurisdictional water
8 determinations and floodplain identifications, if USACE consultation suggests
9 field surveys are needed. Tasks may include:
10 – Surveying Dry Lake and ephemeral channels identified previously for
11 surface elevations, high water marks, and sediment conditions; and
12 – Conducting hydrologic rainfall-runoff-routing analyses to identify
13 100 year floodplain areas.
14
15 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
16 water determinations for the SEZ. Water features to be considered include:
17 – Dry Lake and
18 – Ephemeral stream channels within the SEZ.
19
20 • Identify 100-year floodplain non-development areas for the SEZ. This task
21 would require coordination with the Federal Emergency Management Agency
22 and the following agencies:
23 – NDWR (Floodplain Management Program) and
24 – Lincoln County.
25
26 • Describe the formation of a stakeholder committee to conduct long-term
27 monitoring of water resources. This activity would entail:
28 – Identifying key stakeholder agencies,
29 – Discussing general features of a monitoring program, and
30 – Working with the U.S. Geological Survey to develop groundwater
31 monitoring well design and numerical groundwater models.
32
33 • Perform groundwater modeling analyses for the Dry Lake Valley basin to
34 estimate potential impacts of full build-out on groundwater pumping scenarios
35 (according to estimated, technology-specific water requirements): Tasks
36 include:
37 – Develop a superposition-type groundwater model for the Dry Lake Valley
38 basin; and
39 – Assess the potential for drawdown impacts on water levels in the basin,
40 other groundwater users, the carbonate aquifer system, and surface water-
41 groundwater connectivity.
42
43
44

1 **C.4.3.5.9 Ecological Resources**
2
3

4 **Vegetation and Plant Communities.** The following additional data-gathering action
5 would help further characterize potential impacts on vegetation and plant communities for the
6 proposed Dry Lake Valley North SEZ:
7

- 8 • Identify and map the location and areal extent of desert dry washes, playa,
9 greasewood flat, and wetland habitats within the SEZ. Identify and map the
10 location and areal extent of these habitats, as well as riparian communities,
11 outside the SEZ that could be impacted by hydrologic changes, including
12 groundwater elevations, and changes in water, sediment, and contaminant
13 inputs associated with runoff. Such efforts could help determine habitat
14 characteristics, including water source, hydrologic regime, and dominant plant
15 species.
16
17

18 **Wildlife.** The following additional data-gathering actions would help further characterize
19 potential impacts on wildlife resources for the SEZ:
20

- 21 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
22 SEZ as a movement/migratory corridor or as important habitat for elk, mule
23 deer, and pronghorn.
24
25 • Identify and map the location and areal extent of wash and playa habitats
26 within the SEZ. These areas are important habitat for a number of wildlife
27 species.
28
29

30 **Aquatic Biota.** Investigations recommended under the water resources action plan
31 (Section C.4.3.5.8) would be useful in characterizing and protecting habitat available to aquatic
32 biota. Washes and wetlands in the SEZ are typically dry and contain water only for brief periods
33 following runoff from adjacent mountains. They may or may not contain aquatic biota; therefore,
34 preliminary evaluations of these surface water features could be conducted to determine the
35 potential for aquatic communities to be present.
36
37

38 **Special Status Species.** The following additional data-gathering actions would be useful
39 in further characterizing and protecting habitat available to special status species:
40

- 41 • Conduct pre-disturbance surveys within the SEZ to determine the presence
42 and abundance of those special status species that are (1) federally listed,
43 proposed for listing, or candidates for listing under the Endangered Species
44 Act; (2) protected by the state of Nevada²²; or (3) designated as sensitive by

²² State-protected species for the state of Nevada are those protected under *Nevada Revised Statutes* (NRS) 501.110 (animals) or NRS 527 (plants).

1 the Nevada BLM State Office. These species are listed in Table C.4.3-1.
2 Surveys should focus on areas identified as potentially suitable, and the
3 suitability of these habitats to support these special status species should be
4 determined in the field. All field-determined suitable habitats for special status
5 species should be mapped. Target species and survey protocols should be
6 developed in coordination with the U.S. Fish and Wildlife Service (USFWS)
7 and Nevada Department of Wildlife (NDOW).
8

9 The Draft Solar PEIS presents a table of special status species for which
10 potential impacts need to be evaluated prior to development in the
11 proposed Dry Lake Valley North SEZ. The list of species presented in
12 Table 11.4.12.1-1 of the Draft Solar PEIS also includes rare species (ranked in
13 the State of Nevada as S1 or S2 or listed as a species of concern by the
14 USFWS). On the basis of design features presented in the Draft Solar PEIS,
15 the potential for impacts on these additional species will also need to be
16 addressed before development could occur in the SEZ.
17

- 18 • Identify and map the location and areal extent of desert playa and wash
19 habitats within the area of direct effects, including habitat characteristics
20 (such as water source, hydrologic regime, and dominant plant species) both
21 within the habitat boundaries and in adjacent habitats. Species potentially
22 associated with these habitats include Blaine fishhook cactus, Needle
23 Mountains milkvetch, western snowy plover, Desert Valley kangaroo mouse,
24 and Pahranaagat Valley montane vole.
25

26 **C.4.3.5.10 Air Quality and Climate**

27 None.
28

29 **C.4.3.5.11 Visual Resources**

30
31
32 Visual resources will be re-evaluated for the Final Solar PEIS based on the revisions to
33 boundaries described in Section C.4.3.3 of this Supplement. A summary of the Draft Solar PEIS
34 visual contrast analysis for the Dry Lake Valley North SEZ is provided in Table C.4.3-2. This
35 table includes only the resources that would be subject to moderate or strong visual contrast. The
36 Draft Solar PEIS visual impact analysis predicted these levels of visual contrast from solar
37 energy development in the Dry Lake Valley North SEZ for the following sensitive visual
38 resource areas (SVRAs) and sensitive viewing locations (SVLs):
39
40

- 41 • Big Rocks WA
- 42 • Weepah Springs WA
- 43 • Chief Mountain SRMA
- 44
- 45
- 46

TABLE C.4.3-1 Special Status Species That May Occur near the Proposed Dry Lake Valley North SEZ^a

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Plants</i>			
Blaine fishhook cactus^d	<i>Sclerocactus blaneii</i>	BLM-S; NV-P	Endemic to southeastern Nevada and southwestern Utah on alkaline substrates and volcanic gravels in valley bottoms. Elevation ranges between 5,100 and 5,300 ft. ^e There are only three known occurrences of this species. One of these occurrences is located in the Dry Lake Valley. About 20,150 acres ^f of potentially suitable habitat occurs within the SEZ region.
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	BLM-S	Endemic to Nevada on public and private lands in Esmeralda, Lander, Lincoln, and Nye Counties in open areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand, carbonate, or basaltic gravels, or shale outcrops, generally barren and lacking competition. Frequently in small washes or other moisture-accumulating microsites at elevations between 4,700 and 7,100 ft. Known to occur on the SEZ. About 413,100 acres of potentially suitable habitat occurs within the SEZ region.
Long-calyx milkvetch	<i>Astragalus oophorus</i> var. <i>lonchocalyx</i>	BLM-S	Regionally endemic to the Great Basin in western Utah and eastern Nevada in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft. Nearest recorded occurrence is 8 mi ^g east of the SEZ. About 4,351,850 acres of potentially suitable habitat occurs within the SEZ region.
Needle Mountains milkvetch	<i>Astragalus eurylobus</i>	BLM-S	Gravel washes and sandy soils in alkaline desert and arid grasslands at elevations between 4,250 and 6,250 ft. Nearest recorded occurrence is 15 mi southeast of the SEZ. About 39,650 acres of potentially suitable habitat occurs within the SEZ region.
Pioche blazingstar	<i>Mentzelia argillicola</i>	BLM-S	Endemic to Nevada on dry, soft, silty clay soils on knolls and slopes with sparse vegetation consisting mainly of sagebrush. Nearest recorded occurrence is from Patterson Wash, approximately 12 mi east of the SEZ. About 2,869,000 acres of potentially suitable habitat occurs within the SEZ region.
Tiehm blazingstar	<i>Mentzelia tiehmii</i>	BLM-S	Endemic to Nevada on hilltops of white soil, sparsely vegetated white calcareous knolls and bluffs with scattered perennials. Nearest recorded occurrence is from the White River, approximately 7 mi west of the SEZ. About 2,326,100 acres of potentially suitable habitat occurs within the SEZ region.
<i>Birds</i>			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in grasslands, sagebrush and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands. Nests in tall trees or on rock outcrops along cliff faces. Known to occur in Lincoln County, Nevada. About 2,071,600 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.4.3-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Prairie falcon	<i>Falco mexicanus</i>	BLM-S	Year-round resident in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Typically nests in well-sheltered ledges of rocky cliffs and outcrops. Known to occur in Lincoln County, Nevada. About 1,690,150 acres of potentially suitable habitat occurs within the SEZ region.
Swainson's hawk	<i>Buteo swainsoni</i>	BLM-S; NV-P	Summer breeding resident in the SEZ region in savannas, open pine-oak woodlands, grasslands, and cultivated lands. Nests in solitary trees, bushes, or small groves. Known to occur in Lincoln County, Nev. About 2,114,200 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Summer breeding resident in open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports. Nests in burrows constructed by mammals (especially prairie dogs and badgers). Known to occur in Lincoln County, Nevada. About 3,159,500 acres of potentially suitable habitat occurs within the SEZ region.
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	BLM-S; NV-P	Summer breeding resident on alkali flats around reservoirs and sandy shorelines. Nearest recorded occurrence is from the Adams-McGill Reservoir, approximately 23 mi northwest of the SEZ. About 66,000 acres of potentially suitable habitat occurs within the SEZ region.
Mammals			
Desert Valley kangaroo mouse	<i>Microdipodops megacephalus albiventer</i>	BLM-S; NV-P	Endemic to central Nevada in desert areas at playa margins and in dune habitats. Known to occur on the SEZ in association with the dry lake along the southwestern portion of the SEZ. About 1,257,700 acres of potentially suitable habitat occurs within the SEZ region.
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S; NV-P	Year-round resident in a wide range of habitats including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. Known to occur in Lincoln County, Nevada. About 4,645,300 acres of potentially suitable habitat occurs within the SEZ region.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM-S	Visually open, steep rocky terrain in mountainous habitats of the eastern Mojave and Sonoran Deserts. Rarely uses desert lowlands, but may use them as corridors for travel between mountain ranges. Known to occur in Lincoln County, Nevada. About 1,771,100 acres of potentially suitable habitat occurs within the SEZ region.
Pahranagat Valley montane vole	<i>Microtus montanus fucosus</i>	BLM-S; NV-P	Endemic to Lincoln County, Nevada, where it is restricted to springs in the Pahranagat Valley. Within that area, isolated populations utilize mesic montane and desert riparian patches. Nearest recorded occurrence is from Pahranagat Creek, approximately 27 mi southwest of the SEZ. About 23,900 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.4.3-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals (Cont.)</i>			
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-S; NV-P	Sagebrush-shrubland habitats throughout the SEZ region. Prefers loose soils to dig burrows. Nearest recorded occurrence is from BLM-administered lands approximately 20 mi northwest of the SEZ. About 1,325,950 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S; NV-P	Year-round resident in forests and shrubland habitats. Uses caves and rock crevices for day roosting and winter hibernation. Nearest recorded occurrence is from the vicinity of Panaca, Nevada, approximately 13 mi east of the SEZ. About 3,952,400 acres of potentially suitable habitat occurs within the SEZ region.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Year-round resident in a variety of woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Known to occur in Lincoln County, Nevada. About 5,016,400 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, (2) species protected by the state of Nevada, and (3) Nevada BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; NV-P = protected in the state of Nevada under NRS 501.110 (animals) or NRS 527 (plants).

^c For plant and invertebrate species, potentially suitable habitat was determined by using California Regional Gap Analysis Project (CAREGAP) and Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005, 2010). For reptile, bird, and mammal species, potentially suitable habitat was determined using CAREGAP and SWReGAP habitat suitability models as well as CAREGAP and SWReGAP land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, defined as the area within 50 mi (80 km) of the SEZ center.

^d Species in bold text have been recorded or have designated critical habitat in the affected area.

^e To convert ft to m, multiply by 0.3048.

^f To convert acres to km², multiply by 0.004047.

^g To convert mi to km, multiply by 1.609.

- Silver State Trail Scenic Highway
- U.S. 93.

The following steps could be taken to better understand potential impacts on these SVRAs and SVLs from solar development in the Dry Lake Valley North SEZ:

- Identify key observation points (KOPs) within these areas through working with the management agency or other local stakeholders.

TABLE C.4.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Dry Lake Valley North SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WAs	Big Rocks	12,929 acres	8.2 mi southwest of the SEZ	1,590 acres	12.3	Weak to strong visual contrasts could be observed; visible area of the WA extends from approximately 9.1 to 12 mi from the southwestern boundary of the SEZ.
	Weepah Spring	51,309 acres	8.4 mi at the west of the SEZ	13,600 acres	26.5	Visual contrasts associated with solar facilities would depend on the numbers, types, sizes and locations and other visibility factors. Very weak to strong visual contrasts could be observed by WA visitors. Visible area of the WA extends to approximately 15 mi from the western boundary of the SEZ.
Scenic Highway	U.S. 93	149 mi	8.1 mi east and south of the SEZ	10 mi	6.7	Moderate visual contrasts could be observed within the SEZ by travelers on U.S. 93. There would be a full view from U.S. 93 in both directions.
	Silver State Trail ^g	260 mi	Less than 3 mi from the SEZ	100 mi	38.5	Strong visual contrasts could be observed by travelers because of the close proximity of the byway to the SEZ and the elevated viewpoints from some locations. Minimal to weak contrasts are anticipated at the longest distances.

TABLE C.4.3-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
SRMA	Chief Mountain	111,151 acres	Adjacent to portions of the southeast boundary of the SEZ	39,076 acres	35.2	Strong visual contrasts could be observed. The actual contrast levels experienced would depend on project location, the types of solar facilities and their designs, and other visibility factors. The visible area of the SRMA extends from point of closest approach to 10 mi into the SRMA from the southeast boundary of the SEZ.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these acreages/mileages, as well as the percentage of total acreage/mileage visible within 25 mi (40 km) of the SEZ.

^f The assessment of impacts is based the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

^g Length of Silver State Trail: Nevada Commission on Tourism (2011).

- 1 • Conduct viewshed analyses from the KOPs to determine how much of the
2 SEZ would be in view from each KOP.
- 3
- 4 • As deemed necessary, based on viewshed analysis results, prepare wireframe
5 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
6 depicting the 80% development scenario to better estimate potential impacts.
7

8 This additional analysis may help judge potential visual contrast more accurately for
9 most KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
10 superimposition of the wireframe models onto the photos might be required or desired.
11

12 **C.4.3.5.12 Acoustic Environment**

13 None.
14

15 **C.4.3.5.13 Paleontological Resources**

16 The BLM Regional Paleontologist will be contacted to determine whether additional
17 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
18 Nevada. A preliminary paleontological survey could be conducted to determine the PFYC) of the
19 SEZ, in order to update the temporary assignment of PFYC Class 3b used in the Draft Solar
20 PEIS.
21

22 **C.4.3.5.14 Cultural Resources and Native American Concerns**

23 Approximately 2.8% of the original proposed Dry Lake Valley North SEZ footprint has
24 been surveyed for cultural resources, identifying 53 sites within the SEZ. Four of the 53 sites
25 are potentially eligible for listing in the *National Register of Historic Places* (NRHP), and
26 either the remaining 51 sites are not eligible for listing in the NRHP or their eligibility has not
27 been determined. For the revised footprint, approximately 3% has been surveyed (880 acres
28 [3.6 km²]), and 21 sites have been recorded. The four sites that are potentially eligible are still
29 in the revised SEZ footprint. These four sites are prehistoric, temporary camps associated with
30 the resource procurement and processing potential of the dry lake. At least 153 sites have been
31 recorded within 5 mi (8 km) of the original SEZ footprint. As with other SEZs, dune areas
32 and areas along washes and dry lakes have the highest potential for containing significant
33 archaeological resources within the SEZ. Several culturally important areas have also been
34 identified near the SEZ, including specific mountain ranges and peaks, valleys, trails, and
35 water sources. The destruction or degradation of important plant and water resources, and the
36 destruction of habitat or impediments to the movement of culturally important wildlife, are also
37 potential impacts of concern within the SEZ.
38

39 The following additional data collection efforts could reduce the uncertainty about
40 potential impacts on cultural resources:
41
42
43
44
45
46

- 1 • Conduct Class I literature file search to better understand (1) the site
2 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
3 through existing ethnographic reports, and (3) overall cultural sensitivity of
4 the landscape.
5
- 6 • Conduct a Class II reconnaissance level stratified random sample survey of
7 the SEZ to obtain a 10% sample (roughly 1,992 acres [8 km²]).²³ If the
8 approximately 880 acres (3.6 km²) previously surveyed meets current survey
9 standards, then approximately 1,112 acres (4.5 km²) of survey could satisfy a
10 10% sample. Areas of interest, such as dune areas and along washes and the
11 dry lake, as determined through a Class I review, should also be identified
12 prior to establishing the survey design and sampling strategy. If appropriate,
13 some subsurface testing of dune areas should be considered in the sampling
14 strategy as well.
15
- 16 • Prepare a cultural sensitivity map based on results of the Class I survey and
17 Class I review.
18
- 19 • Continue government-to-government consultation as described in
20 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
21 not included in the original studies to determine whether those Tribes have
22 similar concerns. The Dry Lake Valley North SEZ falls in the traditional use
23 area of primarily the Southern Paiute, but also the Western Shoshone.
24 Potential topics presented in the Draft Solar PEIS to be discussed during
25 consultation include Meadow Valley Wash and surrounding mountains, trail
26 systems, mountain springs and other water sources, mineral resources, burial
27 sites, ceremonial areas, rock art areas, and plant and animal resources.
28
29

30 **C.4.3.5.15 Socioeconomics and Environmental Justice**

31 None.
32
33

34 **C.4.3.5.16 Cumulative Impact Considerations**

35 None.
36
37
38
39

²³ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1 **C.4.4 Gold Point**

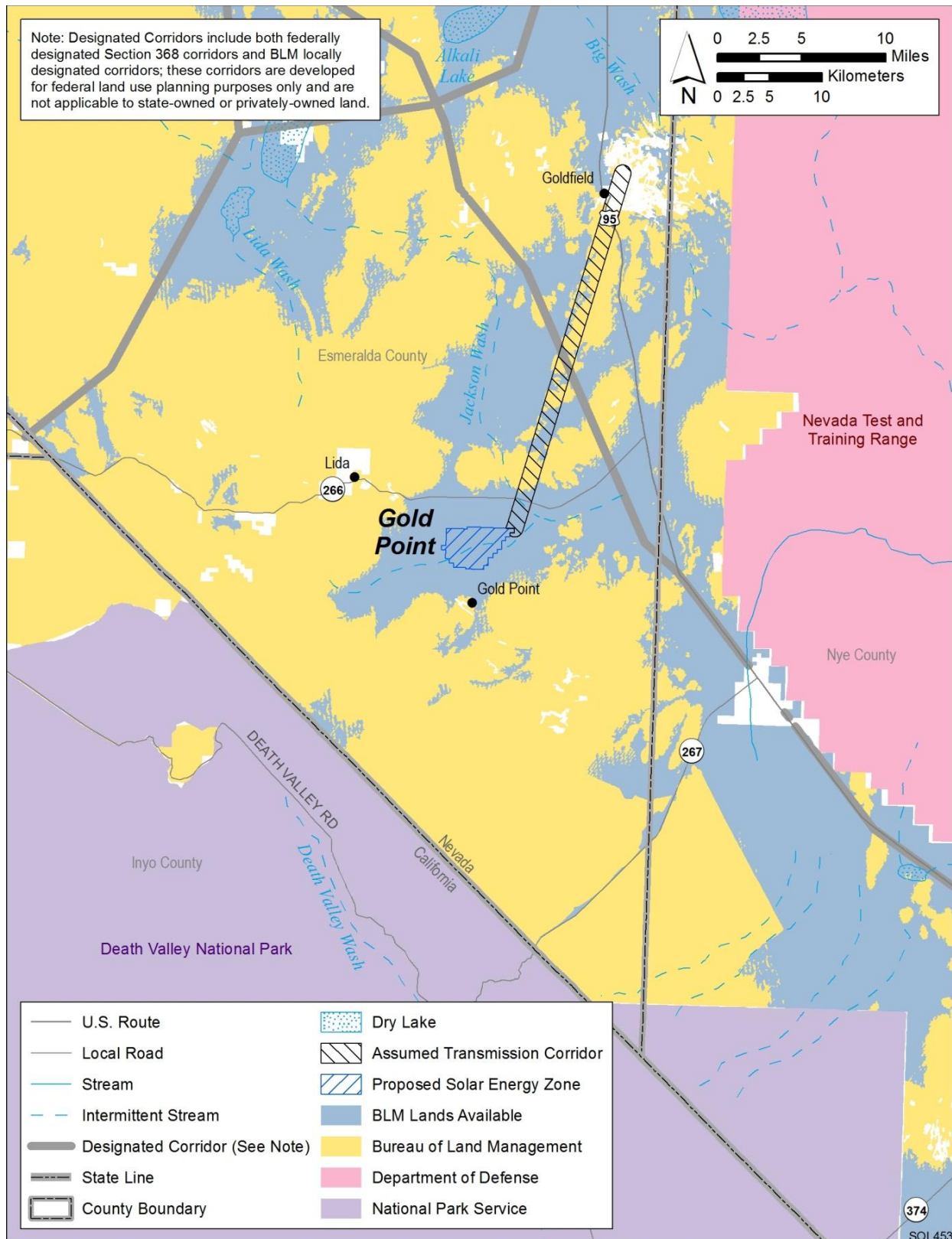
2
3
4 **C.4.4.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Gold Point solar energy zone (SEZ), as presented in the Draft Solar PEIS,
8 had a total area of 4,810 acres (19 km²). It is located in Esmeralda County in southwestern
9 Nevada (Figure C.4.4-1). The nearest residences are in Gold Point, a well-preserved ghost town
10 and point of interest for tourists about 2 mi (3.2 km) south of the SEZ. The town is located on
11 U.S. Department of the Interior Bureau of Land Management (BLM)-administered lands; it
12 thrived in the early 1900s, but most of the town was abandoned in the 1940s when mining
13 operations ceased. The town currently has only a few occupied residences
14

15 The Draft Solar PEIS identified a 120-kV transmission line 22 mi (35 km) west of the
16 SEZ as the nearest point for connection of the SEZ to the grid. Updated data indicates that a
17 345-kV proposed line adjacent to the SEZ has become operational. Details on the revised
18 transmission impact assessment to be included in the Final Solar PEIS are provided in
19 Section C.7.1 of this appendix. Analysis of transmission lines and/or access roads will be
20 completed, as necessary, as part of the project-specific environmental reviews (see
21 Section 2.2.2.2.2 of this Supplement).
22

23 Potential adverse impacts identified in the Draft Solar PEIS included the following:
24

- 25 • New transmission lines could cause visual impacts on specially designated
26 areas.
- 27
- 28 • Light from solar facilities could adversely affect night sky viewing
29 opportunities from Death Valley National Park and BLM Wilderness Study
30 Areas (WSAs).
- 31
- 32 • Wild horse and burros would incur small direct and indirect impacts from
33 the construction of the assumed transmission line in the Goldfield Herd
34 Management Area.
- 35
- 36 • Development could encroach into military training route airspace that crosses
37 the SEZ; structures higher than 50 ft (15 m) above ground level may present
38 unacceptable electromagnetic compatibility concerns for the Nevada Test and
39 Training Range test mission.
- 40
- 41 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
42 erosion and deposition by wind and runoff, sedimentation, and soil
43 contamination) could occur.
44



1

2 **FIGURE C.4.4-1 Proposed Gold Point SEZ as Presented in the Draft Solar PEIS (Note: Assumed**

3 **transmission corridor from the Draft Solar PEIS is no longer applicable.)**

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

- Groundwater use would deplete the aquifer to the extent that, at a minimum, wet-cooling options would not be feasible.
- Clearing of a large portion of the proposed SEZ could adversely affect dry wash, playa, greasewood flat, and riparian habitats, depending on the amount of available habitat disturbed. The establishment of noxious weeds could result in habitat degradation. Deposition of fugitive dust could cause reduced productivity or changes in plant community structure.
- Potentially suitable habitat for 21 special status species and more than 125 wildlife species occurs in the affected area of the proposed SEZ. For most of these species, less than 1% of the potentially suitable habitat in the region occurs in the area that would be directly affected by development.
- If aquatic biota are present in intermittent or ephemeral streams in the SEZ, they could be affected by the direct removal of these surface water features within the construction footprint. If present, aquatic biota in surface water features could also be affected by a decline in habitat quantity and quality due to water withdrawals and changes in drainage patterns, as well as increased sediment and contaminant inputs associated with ground disturbance and construction activities.
- Temporary exceedances of ambient air quality standards for particulate matter at the SEZ boundaries are possible during construction. These high concentrations, however, would be limited to the immediate area surrounding the SEZ boundary.
- Although the SEZ is in an area of low scenic quality, moderate visual contrasts could be observed by visitors to the Queer Mountain WSA and viewers on Magruder Mountain. Strong visual contrasts would be expected for nearby viewpoints on State Route 266 and within the community of Gold Point.
- During operations, noise levels at the nearest residences would be higher than the U.S. Environmental Protection Agency (EPA) guideline level if concentrating solar power facilities with energy storage technologies (which could extend the daily operational time by 6 hours or more) or dish engine facilities were used at the SEZ.
- The potential for impacts on significant paleontological and cultural resources is unknown. It is possible that there will be Native American concerns about the potential visual and other effects of solar development on specific resources within the SEZ, including culturally important landscapes.

1 **C.4.4.2 Summary of Comments Received**
2

3 Some of the comments received on the proposed Gold Point SEZ were in support of
4 identifying the area as an SEZ, while others were in favor of eliminating it. Residents of the town
5 of Gold Point wanted the SEZ eliminated because of impacts on the town and its residents. The
6 Nature Conservancy and Western Watersheds recommended eliminating the SEZ due to pristine
7 conditions and lack of water (or alternatively, reducing its size to include only the degraded area
8 near U.S. 95 and State Route 266). The Nature Conservancy also recommended eliminating the
9 SEZ because the area is remote and ecologically intact and contains pronghorn and sage grouse
10 habitat.

11
12 Other environmental groups supported designation of the area as an SEZ but requested
13 that the proposed transmission line run along existing highways to avoid fragmentation and
14 impacts on recreation, and suggested that the BLM may need to scale back the peak construction
15 year and full build-out scenarios, given limited water availability (The Wilderness Society,²⁴
16 Center for Biological Diversity, Defenders of Wildlife, Sierra Club—Toiyabe Chapter, National
17 Parks Conservation Association, and Natural Resources Defense Council). The Wilderness
18 Society et al. also suggested that the project design take into consideration access to forage and
19 water for antelope, particularly during dry periods.

20
21 The U.S. Department of Defense (DoD) reiterated concerns over encroachment into
22 military training route airspace and structures higher than 50 ft (15 m) that were expressed
23 during scoping for the Draft Solar PEIS. Esmeralda County commented that the Draft Solar PEIS
24 did not include input from the county, and it provided recommended alternate locations for
25 renewable energy development. The Nevada Wilderness Project requested that the BLM include
26 a study of the flood potential of the unnamed wash that bisects the SEZ for the Final Solar PEIS.

27
28
29 **C.4.4.3 Changes to the SEZ**
30

31 No boundary revisions were identified for the proposed SEZ. However, areas specified
32 for non-development under SEZ-specific design features were mapped, where data were
33 available. For the proposed Gold Point SEZ, 214 acres (0.87 km²) of a significant unnamed
34 intermittent stream passing east–west through the center of the SEZ were identified as non-
35 development areas (Figure C.4.4-2). The remaining developable area within the SEZ is
36 4,596 acres (18.6 km²).
37

²⁴ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club-Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

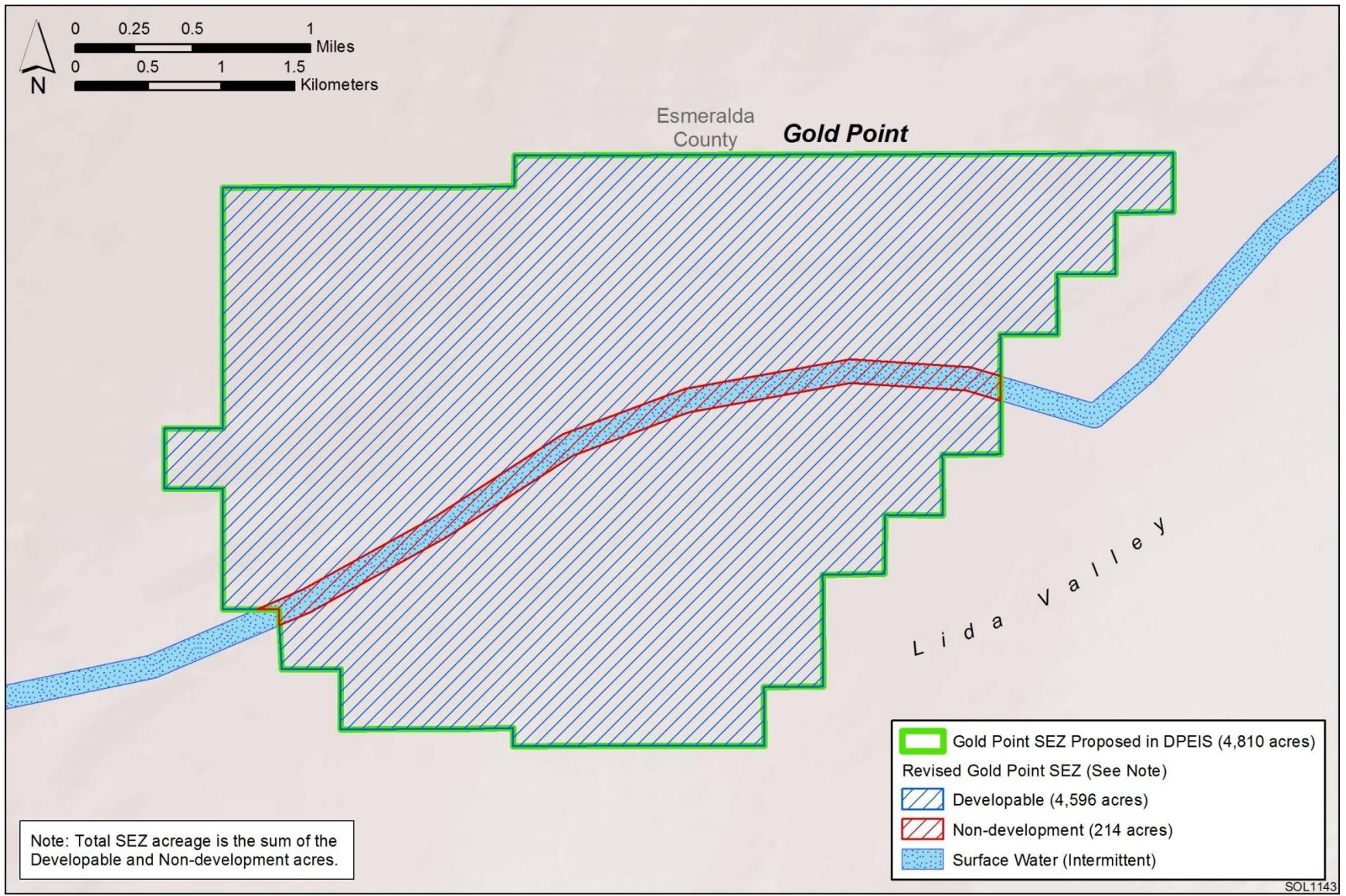


FIGURE C.4.4-2 Proposed Gold Point SEZ as Described in this Supplement

1 **C.4.4.4 Wilderness Character Status of SEZ**

2
3 A recently maintained inventory of wilderness characteristics was used to determine
4 whether public lands within the Gold Point SEZ have wilderness characteristics. The finding of
5 this inventory was that these lands do not contain wilderness characteristics.
6

7
8 **C.4.4.5 Additional Data Collection Recommended**

9
10
11 **C.4.4.5.1 Lands and Realty**

12
13 None.
14

15
16 **C.4.4.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

17
18 None.
19

20
21 **C.4.4.5.3 Rangeland Resources**

22
23
24 *Livestock Grazing.* None.
25

26
27 *Wild Horses and Burros.* None.
28

29
30 **C.4.4.5.4 Recreation**

31
32 None.
33

34
35 **C.4.4.5.5 Military and Civilian Aviation**

36
37 The DoD has expressed continued concern regarding the potential impact of solar
38 development in this SEZ on military operations. The BLM will continue to consult with the
39 DoD regarding potential issues with military operations.
40

41
42 **C.4.4.5.6 Geologic Setting and Soil Resources**

43
44 None.
45
46

1 **C.4.4.5.7 Minerals**
2

3 Additional information on leasable and strategic minerals in the vicinity of the proposed
4 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
5 on a proposed 20-year withdrawal of SEZ lands.
6

7
8 **C.4.4.5.8 Water Resources**
9

10 The following additional data and actions would help further characterize potential
11 impacts on water resources for the proposed Gold Point SEZ. A more detailed discussion of each
12 of these activities is included in the water resources action plan provided in Section C.7.2 of this
13 appendix.
14

- 15 • Prepare a planning-level water resources inventory of the Lida Valley Basin.
- 16
- 17 • Identify additional ephemeral stream channels and alluvial fan features for
18 non-development areas through consultation with BLM Nevada, Nevada
19 Division of Water Resources (NDWR), the EPA, and U.S. Army Corps of
20 Engineers (USACE) with a focus on:
 - 21 – Tributaries to the unnamed intermittent stream non-development area, and
 - 22 – Alluvial fan base features located in the northwestern portion of the SEZ.
- 23
- 24 • Perform field surveys and hydrologic analyses to support jurisdictional water
25 determinations and floodplain identifications. Tasks include:
 - 26 – Surveying tributaries of the unnamed intermittent stream and the alluvial
27 fan base in the northwestern portion of SEZ for surface elevations, high
28 water marks, sediment conditions, and
 - 29 – Conducting hydrologic rainfall-runoff-routing analyses to identify
30 100-year floodplain areas.
- 31
- 32 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
33 water determinations for the SEZ. Water features to be considered include:
 - 34 – The unnamed intermittent stream.
- 35
- 36 • Identify 100-year floodplain non-development areas (if they exist) for the
37 unnamed intermittent stream. This task would require coordination with the
38 Federal Emergency Management Agency and the following agencies:
 - 39 – NDWR (Floodplain Management Program), and
 - 40 – Esmeralda County.
- 41
- 42 • Describe the formation of a stakeholder committee to conduct long-term
43 monitoring of water resources. This activity would entail:
 - 44 – Identifying key stakeholder agencies,
 - 45 – Discussing general features of a monitoring program, and
 - 46 – Working with the U.S. Geological Survey to develop groundwater
47 monitoring well design and numerical groundwater models.
- 48

1 **C.4.4.5.9 Ecological Resources**
2
3

4 **Vegetation and Plant Communities.** The following additional data-gathering action
5 would help further characterize potential impacts on vegetation and plant communities for the
6 proposed Gold Point SEZ:
7

- 8 • Identify and map the location and areal extent of desert riparian, desert dry
9 wash, greasewood flat, and playa habitats within the SEZ. Identify and map
10 the location and areal extent of these habitats outside the SEZ that may be
11 affected by hydrologic changes, including groundwater elevations, and
12 changes in water, sediment, and contaminant inputs associated with runoff.
13 Such efforts could help determine habitat characteristics, including water
14 source, hydrologic regime, and dominant plant species.
15

16
17 **Wildlife.** The following additional data-gathering actions would help further characterize
18 potential impacts on wildlife resources for the SEZ:
19

- 20 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
21 SEZ as a movement/migratory corridor or as important habitat for mule deer.
22
23 • Identify and map the location and areal extent of wash and playa habitat
24 within the SEZ. These areas are important habitat for a number of wildlife
25 species.
26

27
28 **Aquatic Biota.** Investigations recommended under the water resources action plan
29 (Section C.4.4.5.8) would be useful in characterizing and protecting habitat available to aquatic
30 biota. Most washes and dry lakes in the SEZ are typically dry and contain water only for brief
31 periods following precipitation. They may or may not contain aquatic biota; therefore,
32 preliminary evaluations of these surface water features could be conducted to determine the
33 potential for aquatic communities to be present. Any aquatic biota found in these features would
34 likely be desiccation-adapted aquatic invertebrates typical of the region. The primary value of
35 these features may be to nonaquatic animals that consume aquatic biota within the SEZ.
36
37

38 **Special Status Species.** The following additional data-gathering actions would be useful
39 in further characterizing and protecting habitat available to special status species:
40

- 41 • Conduct pre-disturbance surveys within the SEZ to determine the presence
42 and abundance of those special status species that are (1) federally listed,
43 proposed for listing, or candidates for listing under the Endangered Species
44 Act (ESA); (2) protected by the State of Nevada; or (3) designated as sensitive
45 by the Nevada BLM State Office. These species are listed in Table C.4.4-1.
46 Surveys should focus on areas identified as potentially suitable, and the

1 **TABLE C.4.4-1 Special Status Species That May Occur in the Vicinity of the Proposed Gold**
 2 **Point SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	BLM-S	Endemic to Nevada in Esmeralda, Lander, Lincoln, and Nye Counties in open areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand, carbonate or basaltic gravels, or shale outcrops, generally barren and lacking competition. Frequently occurs in small washes or other moisture-accumulating microsites at elevations between 4,700 and 7,100 ft. ^d Nearest recorded occurrence is 30 mi ^e northeast of the SEZ. About 37,900 acres ^f of potentially suitable habitat occurs in the SEZ region.
Holmgren lupine	<i>Lupinus holmgrenianus</i>	BLM-S	Inhabits dry desert slopes, washes, and valleys on volcanic substrates, in association with sagebrush and pinyon-juniper woodland. Elevation ranges between 4,600 and 8,200 ft. Nearest recorded occurrence is 9 mi west of the SEZ. About 119,700 acres of potentially suitable habitat occurs in the SEZ region.
Tonopah pincushion cactus	<i>Sclerocactus nyensis</i>	BLM-S; NV-P	Endemic to Esmeralda and Nye Counties, Nevada, on dry rocky soils and low outcrops of rhyolite, tuff, and possibly other rock types, on gentle slopes in open areas or under shrubs in the upper salt desert and lower sagebrush zones. Elevation ranges between 5,700 and 5,800 ft. Known to occur in Esmeralda County, Nevada. About 2,370,300 acres of potentially suitable habitat occurs in the SEZ region.
Birds			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in project area in grasslands, sagebrush and saltbrush habitats, as well as the periphery of pinyon-juniper woodlands throughout the project area. Known to occur in Esmeralda County, Nevada. About 790,000 acres of potentially suitable habitat occurs in the SEZ region.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	ESA-C; BLM-S	Plains, foothills, and mountain valleys dominated by sagebrush. Lek sites are located in relatively open areas surrounded by sagebrush or in areas where sagebrush density is low. Nesting usually occurs on the ground where sagebrush density is higher. Some populations may travel up to 60 mi between summer and winter habitats. Known to occur in Esmeralda County, Nevada. About 312,800 acres of potentially suitable habitat occurs in the SEZ region.
Prairie falcon	<i>Falco mexicanus</i>	BLM-S	Year-round resident in the project area, primarily in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Nests in well-sheltered ledges of rocky cliffs and outcrops. Known to occur in Esmeralda County, Nevada. About 2,387,300 acres of potentially suitable habitat occurs in the SEZ region.
Swainson's hawk	<i>Buteo swainsoni</i>	BLM-S; NV-P	Summer breeding resident in the SEZ region. Savanna, open pine-oak woodlands, grasslands, and cultivated lands. Nests typically in solitary trees, bushes, or small groves; sometimes nests near urban areas. Known to occur in Esmeralda County, Nevada. About 735,600 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.4.4-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Esmeralda County, Nevada. About 3,082,700 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	BLM-S; NV-P	Year-round resident in project area. Forages in desert grassland, old fields, savanna, shrubland, and woodland habitats as well as urban areas. Roosts in old buildings, caves, mines, and hollow trees. Nearest recorded occurrence is 15 mi west of the SEZ. About 2,651,850 acres of potentially suitable habitat occurs in the SEZ region.
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S; NV-P	Year-round resident in project area. Wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. Known to occur in Esmeralda County, Nevada. About 3,051,200 acres of potentially suitable habitat occurs in the SEZ region.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM-S	Visually open, steep rocky terrain in mountainous habitats of the eastern Mojave and Sonoran Deserts in California. Rarely uses desert lowlands but may use them as corridors for travel between mountain ranges. Known to occur in Esmeralda County, Nevada. About 941,500 acres of potentially suitable habitat occurs in the SEZ region.
Pale kangaroo mouse	<i>Microdipodops pallidus</i>	NV-P	Known from southwestern Nevada and southeastern California. Inhabits fine sands in alkali sink and desertscrub dominated by shadscale (<i>Atriplex confertifolia</i>) or big sagebrush (<i>Artemisia tridentata</i>). Often burrows in areas of soft, windblown sand piled at the bases of shrubs. Known to occur in Esmeralda County, Nevada. About 1,251,250 acres of potentially suitable habitat occurs in the SEZ region.
Pallid bat	<i>Antrozous pallidus</i>	BLM-S; NV-P	Year-round resident in project area. Low-elevation desert communities, including grasslands, shrublands, and woodlands. Day roosts in caves, crevices, and mines. Nearest recorded occurrence is 15 mi west of the SEZ. About 2,616,400 acres of potentially suitable habitat occurs in the SEZ region.
Silver-haired bat	<i>Lasionycteris noctivagans</i>	BLM-S	Year-round resident in project area. Primarily high-elevation (1,600 to 8,500 ft) forested areas comprising aspen, cottonwood, white fir, pinyon-juniper, subalpine fir, willow, and spruce communities. Roost and nursery sites occur in tree foliage, cavities, or under loose bark. Rarely hibernates in caves. Nearest recorded occurrence is 15 mi west of the SEZ. About 2,609,400 acres of potentially suitable habitat occurs in the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S; NV-P	Year-round resident in project area. Near forests and shrubland habitats throughout the SEZ region. Uses caves and rock crevices for day roosting and winter hibernation. Nearest recorded occurrence is 15 mi west of the SEZ. About 2,605,300 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.4.4-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals (Cont.)</i>			
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S; NV-P	Year-round resident in project area. Near forests and shrubland habitats below 9,000-ft elevation throughout the SEZ region. Roosts and hibernates in caves, mines, and buildings. Nearest recorded occurrence is 8 mi west of the SEZ. About 2,347,800 acres of potentially suitable habitat occurs in the SEZ region.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Year-round resident in project area. Variety of woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Nearest recorded occurrence is 9 mi south of the SEZ. About 3,374,000 acres of potentially suitable habitat occurs in the SEZ region.

- ^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Nevada BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.
- ^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; NV-P = protected in the state of Nevada under *Nevada Revised Statutes* (NRS) 501.110 (animals) or NRS 527 (plants).
- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

suitability of these habitats to support these special status species should be determined in the field. All field-determined suitable habitats for special status species should be mapped. Target species and survey protocols should be developed in coordination with the U.S. Fish and Wildlife Service and Nevada Department of Wildlife.

The Draft Solar PEIS presented a table of special status species for which potential impacts need to be evaluated prior to development in the proposed Gold Point SEZ. The list of species presented in Table 11.6.12.1-1 of the Draft Solar PEIS also includes species listed by the State of Nevada and species ranked by the State of Nevada as S1 or S2 or species of concern. Based on the design features presented in the Draft Solar PEIS, the potential for impacts on these additional species will also need to be addressed before development could occur in the SEZ.

- Identify and map the location and areal extent of ephemeral wetland habitats, including desert wash and playa habitats within the SEZ, including habitat

1 characteristics (such as water source, hydrologic regime, and dominant plant
2 species), both within the wetland boundaries and in adjacent non-wetland
3 habitats. A species potentially associated with these habitats includes the
4 Eastwood milkweed.
5
6

7 **C.4.4.5.10 Air Quality and Climate**

8 None.
9
10

11 **C.4.4.5.11 Visual Resources**

12 A summary of the Draft Solar PEIS visual contrast analysis for the proposed Gold Point
13 SEZ is provided in Table C.4.4-2. This table includes only the resources that would be subject to
14 moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these
15 levels of visual contrast from solar energy development in the Gold Point SEZ for the following
16 sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):
17
18

- 19 • Queer Mountain WSA
- 20 • Magruder Mountain
- 21 • State Route 266
- 22 • Community of Gold Point.
23
24
25
26
27

28 The following steps could be taken to better understand potential impacts on these
29 SVRAs and SVLs from solar development in the Gold Point SEZ:
30

- 31 • Key observation points (KOPs) within these areas should be identified
32 through working with the management agency or other local stakeholders.
33
- 34 • Viewshed analyses from the KOPs should be conducted to determine how
35 much of the SEZ would be in view from each KOP.
36
- 37 • As deemed necessary, based on viewshed analysis results, wireframe Google
38 Earth™ visualizations of hypothetical solar facilities in the SEZ depicting the
39 80% development scenario could be prepared to better estimate potential
40 impacts.
41

42 This additional analysis may help judge potential visual contrast more accurately for most
43 KOPs. For KOPs of particularly high sensitivity (e.g., the WSA), a site visit with photography
44 and superimposition of the wireframe models onto the photos might be required or desired.
45
46

TABLE C.4.4-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Gold Point SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
WSAs	Queer Mountain	85,294 acres	7.0 mi south of the SEZ	1,276 acres	1.5	Moderate levels of visual contrast would be expected for some high-elevation viewpoints in the WSA, with weaker contrasts expected for lower elevation viewpoints in the WSA. Visible area of the WSA is about 8.7 to 12 mi from the southern boundary of the SEZ.
Other Areas of Interest (non-management areas)	Magruder Mountain	NA ^e	8 mi west of the SEZ	NA	NA	Because of the close proximity and elevated viewpoints on Magruder Mountain, moderate visual contrasts could be observed by viewers on the mountain. The mountain is a sacred site to the Timbisha Shoshone; the summit is about 4,000 ft higher than the SEZ.
	State Route 266	40 mi	Within the SEZ viewshed at distances from 2 to 9.5 mi	18 mi	45.0	Because State Route 266 passes within 2 mi of the SEZ, strong visual contrasts would be expected for nearby viewpoints on this highway. Moderate to weak levels of visual contrasts would be expected for viewpoints on State Route 266 farther from the SEZ.

TABLE C.4.4-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas) (Cont.)	Gold Point	NA ^e	2 mi south of the SEZ	NA	NA	Strong visual contrasts would be expected for viewpoints within the community of Gold Point. Located less than 2 mi directly south of the SEZ. A detailed future site-specific NEPA analysis would be required to determine visibility precisely.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances are based on the Draft PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

^e NA = data not available.

1 **C.4.4.5.12 Acoustic Environment**

2
3 None.

4
5
6 **C.4.4.5.13 Paleontological Resources**

7
8 The BLM Regional Paleontologist will be contacted to determine whether additional
9 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
10 Nevada. A preliminary paleontological survey could be conducted to determine the PFYC of the
11 SEZ, in order to update the temporary assignment of PFYC Class 2 used in the Draft Solar PEIS.
12

13
14 **C.4.4.5.14 Cultural Resources and Native American Concerns**

15
16 None of the proposed Gold Point SEZ has been surveyed for cultural resources; thus,
17 absent specific information, impacts are unknown but possible. The SEZ is near the mining town
18 of Gold Point, and historic resources pertaining to this mining area are possible in the SEZ. The
19 cultural landscape of the SEZ is marked by Lida Valley, located between Mount Jackson,
20 Jackson Ridge, Magruder Mountain, and Slate Ridge. Traditionally, camps would have been
21 located near springs in the foothills, and the valley would have been used as a travel corridor.
22 Many of these areas closest to the SEZ have been incorporated into the recently established
23 Timbisha Shoshone Reservation in Lida. Magruder Mountain is reported to have cultural
24 significance for the Timbisha, where the practice of selective burning encouraged the growth of
25 particular plants. Other nearby resources include rockshelters, lithic scatters, and a historic
26 Native American meeting place and ritual area. Potential impacts could include visual and
27 auditory impacts on sacred sites as well as on the historic town site of Gold Point. The
28 destruction or degradation of important plant resources, and the destruction of habitat or
29 impediments to the movement of culturally important wildlife, are also potential impacts of
30 concern within the SEZ.
31

32 The following additional data collection efforts could reduce the uncertainty about
33 potential impacts on cultural resources:

- 34
- 35 • Conduct a Class I literature file search to better understand (1) the site
36 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
37 through existing ethnographic reports, and (3) overall cultural sensitivity of
38 the landscape.
 - 39 • Conduct a Class II reconnaissance level stratified random sample survey of
40 the SEZ to obtain a 10% sample (roughly 481 acres [1.95 km²]).²⁵ Areas of
41 interest, such as historic resources pertaining to mining, as determined through
42 a Class I review, should also be identified prior to establishing the survey
43

²⁵ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

design and sampling strategy. If appropriate, some subsurface testing of dune areas should be considered in the sampling strategy as well.

- Prepare a cultural sensitivity map based on results of the Class II survey and Class I review.
- Continue with government-to-government consultation as described in Section 2.4.3, including follow-up to recent ethnographic studies with Tribes not included in the original studies to determine whether those Tribes have similar concerns. The Gold Point SEZ falls in the traditional use area of primarily the Western Shoshone and the Owens Valley branch of the Northern Paiute. The Timbisha Shoshone are the closest Western Shoshone with lands in Lida, Nevada, approximately 6 mi (9.7 km) from the Gold Point SEZ. Potential topics presented in the Draft Solar PEIS and/or in an ethnographic study with the Timbisha Shoshone Tribe to be discussed during consultation include Magruder Mountain, Mount Jackson, Stonewall Mountain, Pigeon Spring, The Doctor Rock, Lida Valley, spiritual trails, rock art sites, ceremonial areas and healing places, places of historic encounters, and plant and animal resources. The agencies value the information shared by the Tribes during the ethnographic study and will consider their input in striving to minimize the impacts of solar development in the SEZ. The completed ethnographic study will be available in its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>). A summary of the contents of that report is also provided in the following text box.

Tribal Perspectives on the Significance of the Gold Point SEZ

The lands under consideration in the Draft Solar PEIS for the Gold Point SEZ region were traditionally occupied and used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. Tribal representatives from the Timbisha Shoshone Tribe were involved in the Gold Point SEZ field consultations to represent the cultural interests of the Western Shoshone. These Numic-speaking people continue to stipulate that they are the American Indians responsible for the cultural resources (natural and man-made) in this study area because their ancestors were placed here by the Creator.

Traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in mythic times and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

Western Shoshone Tribal representatives maintain that, in order to understand Western Shoshone connections to the SEZ, it must be placed in context with neighboring places and their associated cultural resources. During the ethnographic field sessions, Tribal representatives identified the Gold Point SEZ as being part of a larger ceremonial landscape. Specific geographic locations, even though located outside of the SEZ proper, contribute to the significance of the designated SEZ. Regional and world balancing ceremonies occurred at Pigeon Spring and possibly at Indian Spring. Other areas like Mount Jackson and Stonewall Mountain were identified places visited for power acquisition.

27

Tribal Perspectives on the Significance of the Gold Point SEZ (Cont.)

The Gold Point SEZ is located near mountains used in vision questing and ceremony. Timbisha representatives pointed out that the top of Mount Jackson contained ritually deposited items like arrowheads and pieces of pottery. Neighboring Magruder Mountain also was identified as a ceremonial area. It is the headwaters for the hydrological system that flows towards the Round Dance grounds at Pigeon Spring.

Western Shoshone cultural ties to this landscape are confirmed by the presence of a doctor rock, numerous ceremonial-use places, and sacred mountains. The Doctor Rock and the neighboring volcanic knoll were features of particular interest to the Timbisha Tribal representatives.

The Doctor Rock was formed when the Red Volcano erupted and unleashed materials in the form of volcanic bombs. This event likely occurred several thousand years ago. Places like these are considered sacred and powerful locations because they are formed directly from volcanic activity.

Western Shoshone medicine men, or puha'gants, healed and rebalanced an ill individual using the Doctor Rock. The puha'gant used his or her Puha (or energy) and the Puha of the rock and the volcano to aid in the curing ceremonies.

Places that contain the presence of volcanic activity are considered sacred and powerful locations. Western Shoshone people believe that volcanic events are moments when Puha deep inside the Earth is brought to the surface as a way for the land to renew itself or to be reborn. Volcanism is also a way for Puha to be distributed across a landscape.

The Gold Point SEZ region includes volcanic features such as Mount Jackson and Mount Jackson Ridge to the north, Magruder Mountains to the west, and Mount Dunfee to the southeast. It is located in a complex hydrological system that connects the local high volcanic mountains with the northern end of Death Valley. Tribal representatives identified trails along this hydrological system that connect Death Valley to ceremonial areas in the region.

Western Shoshone representatives noted that water is an important feature within the Gold Point SEZ region. Stonewall Mountain, a powerful volcano, serves as the headwaters of the Lida Valley hydrological system. This hydrological system flows through the region and ultimately into Death Valley.

During multiple field visits, Native American representatives identified 21 traditional use plants within the proposed project boundary. The presence of traditionally important animals in an area also contributes to the overall cultural importance of the area to Indian people.

Shoshone villages were located throughout the Lida Valley, particularly near Lida Spring and along the southeastern flank of Magruder Mountain. These communities were agricultural centers that supported people who traveled into the area for ceremony. Lida has been a well-documented place associated with Indian activity. In the 1930s, Julian Steward (1938) described the area as a hub that connected places such as Fish Lake Valley, Gold Mountain, Stonewall Valley, and Clayton Valley. Contemporary ethnographic studies link the Lida community with Tule Canyon and Pigeon Spring. The people of Lida frequently traveled the 10-mi (16-km) trail between these places for economic and ceremonial purposes.

1
2
3
4
5
6
7

C.4.4.5.15 Socioeconomics and Environmental Justice

None.

1 **C.4.4.5.16 Cumulative Impact Considerations**

2

3 None.

4

1 **C.4.5 Millers**

2
3
4 **C.4.5.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

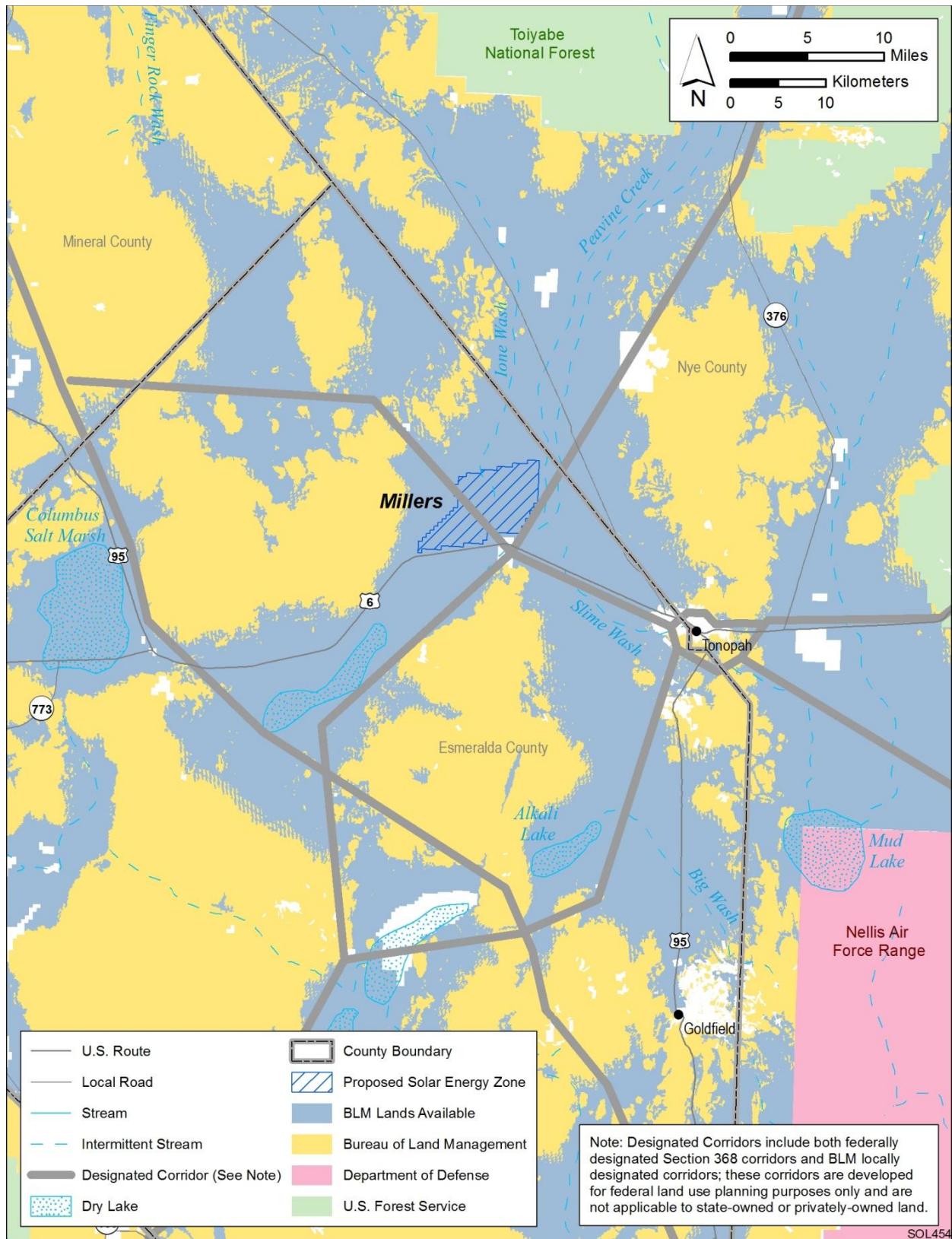
7 The proposed Millers solar energy zone (SEZ), as presented in the Draft Solar PEIS, had
8 a total area of 16,787 acres (68 km²). It is located in Esmeralda County in southern Nevada
9 (Figure C.4.5-1). The nearest town is Tonopah, Nevada, about 15 mi (24 km) west in Nye
10 County, with a population of approximately 1,500.

11
12 A U.S. Department of the Interior Bureau of Land Management (BLM)-designated
13 transmission corridor is located within the SEZ and could limit development in the SEZ because
14 solar facilities cannot be constructed under transmission lines. The discussion of impacts of solar
15 energy development in the SEZ in the Draft Solar PEIS acknowledged that the presence of the
16 corridor would reduce the amount of land available for solar power production, and that,
17 conversely, full development of solar facilities within the SEZ would limit use of the
18 transmission corridor.

19
20 The Draft Solar PEIS identified a 120-kV transmission line that passes through the SEZ
21 as the nearest point for connection of the SEZ to the grid. The actual location of connection to
22 the transmission grid could be different than that assumed in the Draft Solar PEIS. Details on the
23 updated transmission impact assessment for SEZs to be included in the Final Solar PEIS are
24 provided in Section C.7.1 of this appendix. Analysis of transmission lines and/or access roads
25 will be completed, as necessary, as part of the project-specific environmental reviews (see
26 Section 2.2.2.2.2 of this Supplement).

27
28 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 29
- 30 • Grazing on about 4% of the Monte Cristo allotment would be closed.
 - 31
 - 32 • A portion of an existing route of a competitive off-highway vehicle race
33 course that passes through the SEZ would be closed.
 - 34
 - 35 • Development could encroach into military training route airspace that crosses
36 the SEZ. Structures higher than 50 ft (15 m) above ground level may present
37 unacceptable electromagnetic compatibility concerns for the Nevada Test and
38 Training Range test mission.
 - 39
 - 40 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
41 erosion and deposition by wind and runoff, sedimentation, and soil
42 contamination), as well as potential impacts on Crescent Dunes, could occur.
43 Portions of the dry lake may not be a suitable location for construction.
 - 44
 - 45 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
46 wet-cooling options would not be feasible.



1

2 **FIGURE C.4.5-1 Proposed Millers SEZ as Presented in the Draft Solar PEIS**

- 1 • Clearing of a large portion of the proposed SEZ could adversely affect playa
2 wetlands, other playa, Ione Wash scrub communities, dry washes, and
3 greasewood flats habitats, depending on the amount of available habitat
4 disturbed. The establishment of noxious weeds could result in habitat
5 degradation. Deposition of fugitive dust could cause reduced productivity or
6 changes in plant community structure.
7
- 8 • Candelaria blazingstar (*Mentzelia candelariae*), a plant species on the Nevada
9 Natural Heritage Program (NNHP) watch list, may occur within the SEZ and
10 may be directly affected by solar project development. Potentially suitable
11 habitat for 19 special status species and more than 125 wildlife species occurs
12 in the affected area of the proposed SEZ; no more than 1.6% of the potentially
13 suitable habitat for any of these species occurs in the region that would be
14 directly affected by development.
15
- 16 • If aquatic biota are present in intermittent or ephemeral streams in the SEZ,
17 they could be affected by the direct removal of these surface water features
18 within the construction footprint. If present, aquatic biota in surface water
19 features could also be affected by a decline in habitat quantity and quality due
20 to water withdrawals and changes in drainage patterns, as well as increased
21 sediment and contaminant inputs associated with ground disturbance and
22 construction activities.
23
- 24 • Temporary exceedances of ambient air quality standards for particulate
25 matter at the SEZ boundaries are possible during construction. These high
26 concentrations, however, would be limited to the immediate area surrounding
27 the SEZ boundary.
28
- 29 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
30 could be observed by residents nearest to the SEZ. Weak to strong visual
31 contrasts could be observed within the SEZ by travelers on U.S. 6.
32
- 33 • The potential for impacts on significant paleontological and cultural resources
34 is unknown, but potentially high. It is possible that there will be Native
35 American concerns over potential visual, acoustic, and other effects of solar
36 energy development within the SEZ, including culturally important
37 landscapes.
38
- 39 • Users of U.S. 95 could experience traffic congestion and slowdowns during
40 construction at the SEZ.
41
42
43

1 **C.4.5.2 Summary of Comments Received**
2

3 Many environmental groups providing comments on the Draft Solar PEIS did not identify
4 major conflicts for the Millers SEZ (The Wilderness Society et al.,²⁶ Center for Biological
5 Diversity, Defenders of Wildlife, Sierra Club—Toiyabe Chapter, National Parks Conservation
6 Association, and Natural Resources Defense Council). The Nevada Wilderness Project requested
7 that nearby sand dunes and vegetation communities be avoided and suggested that the BLM may
8 need to scale back the peak construction year and full build-out scenarios, given limited water
9 availability. The Wilderness Society suggested that the BLM include analysis of potential
10 impacts associated with sand dunes and vegetation communities in the Final Solar PEIS, as well
11 as measures to avoid, minimize, or mitigate such impacts.
12

13 The U.S. Department of Defense (DoD) reiterated concerns over encroachment into
14 military training route (MTR) airspace and structures higher than 50 ft (15 m) that were
15 expressed during scoping for the Draft Solar PEIS. The Nevada Department of Wildlife
16 recommended that the Final Solar PEIS include distribution, population size and health, and
17 habitat analysis for kangaroo mice. Esmeralda County commented that the Draft Solar PEIS
18 did not include input from the county, and it provided recommended alternate locations for
19 renewable energy development.
20

21 **C.4.5.3 Changes to the SEZ**
22

23 No boundary revisions were identified for the proposed SEZ. However, areas specified
24 for non-development under SEZ-specific design features were mapped, where data were
25 available. For the proposed Millers SEZ, Ione Wash and a small wetland area in the southern
26 portion of the SEZ, totaling 253 acres (1.0 km²), were identified as non-development areas
27 (Figure C.4.5-2). The remaining developable area within the SEZ is 16,534 acres (66.9 km²).
28
29

30 **C.4.5.4 Wilderness Character Status of SEZ**
31

32 A recently maintained inventory of wilderness characteristics was used to determine
33 whether public lands within the Millers SEZ have wilderness characteristics. The finding of this
34 inventory was that these lands do not contain wilderness characteristics.
35
36
37

²⁶ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club-Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

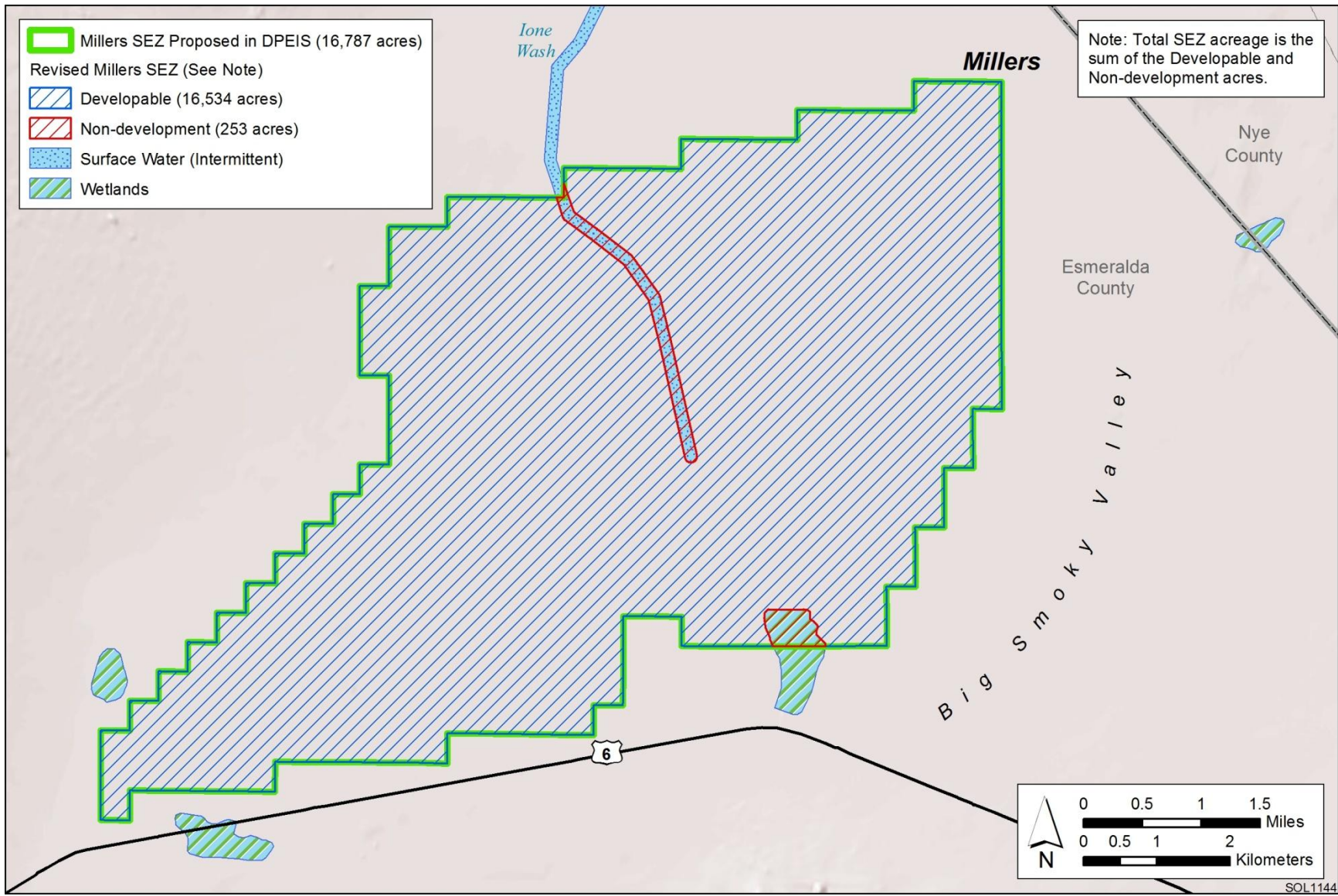


FIGURE C.4.5-2 Proposed Millers SEZ as Described in this Supplement

1 **C.4.5.5 Additional Data Collection Recommended**

2
3
4 **C.4.5.5.1 Lands and Realty**

5
6 None.

7
8
9 **C.4.5.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

10
11 None.

12
13
14 **C.4.5.5.3 Rangeland Resources**

15
16
17 *Livestock Grazing.* None.

18
19
20 *Wild Horses and Burros.* None.

21
22
23 **C.4.5.5.4 Recreation**

24
25 None.

26
27
28 **C.4.5.5.5 Military and Civilian Aviation**

29
30 The DoD has expressed continued concern regarding the potential impact of solar
31 development in this SEZ on military operations The BLM will continue to consult with the DoD
32 regarding potential issues with military operations.

33
34
35 **C.4.5.5.6 Geologic Setting and Soil Resources**

36
37 None.

38
39
40 **C.4.5.5.7 Minerals**

41
42 Additional information on leasable and strategic minerals in the vicinity of the SEZ will
43 be provided in the Final Solar PEIS to inform the Department of the Interior's decision on a
44 proposed 20-year withdrawal of SEZ lands.

1 **C.4.5.5.8 Water Resources**

2
3 The following additional data and actions would help further characterize potential
4 impacts on water resources for the proposed Millers SEZ. A more detailed discussion of each of
5 these activities is included in the water resources action plan provided in Section C.7.2 of this
6 appendix.
7

- 8 • Prepare a planning-level water resources inventory of the Tonopah Flat
9 portion of the Big Smoky Valley.
- 10
11 • Identify additional ephemeral stream channels and alluvial fan features for
12 non-development areas through consultation with BLM Nevada, Nevada
13 Division of Water Resources (NDWR), U.S. Environmental Protection
14 Agency, and U.S. Army Corps of Engineers (USACE) with a focus on:
 - 15 – Tributaries to Ione Wash,
 - 16 – Alluvial fan base features located adjacent to Ione Wash, and
 - 17 – Ephemeral stream channels located along the eastern edge of the SEZ
18 (e.g., tributaries of Peavine Creek, an intermittent stream just east of the
19 SEZ).
- 20
21 • Perform field surveys and hydrologic analyses to support jurisdictional water
22 determinations and floodplain identifications. Tasks include:
 - 23 – Surveying Ione Wash (and adjacent alluvial fan base), Peavine Creek,
24 and tributaries of these streams for surface elevations, high water marks,
25 sediment conditions; and
 - 26 – Conducting hydrologic rainfall-runoff-routing analyses to identify
27 100-year floodplain areas.
- 28
29 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
30 water determinations for the SEZ. Water features to be considered include:
 - 31 – Ione Wash, and
 - 32 – Peavine Creek (portion adjacent to the SEZ and tributaries within the
33 SEZ).
- 34
35 • Identify 100-year floodplain non-development areas (if they exist) for Ione
36 Wash and Peavine Creek (channel is outside of the SEZ, but its potential
37 floodplain may be inside the SEZ). This task would require coordination with
38 the Federal Emergency Management Agency and the following agencies:
 - 39 – NDWR (Floodplain Management Program), and
 - 40 – Esmeralda County.
- 41
42 • Describe the formation of a stakeholder committee to conduct long-term
43 monitoring of water resources. This activity would entail:
 - 44 – Identifying key stakeholder agencies,
 - 45 – Discussing general features of a monitoring program, and
 - 46 – Working with the U.S. Geological Survey to develop groundwater
47 monitoring well design and numerical groundwater models.
- 48

1 **C.4.5.5.9 Ecological Resources**
2
3

4 **Vegetation and Plant Communities.** The following additional data-gathering actions
5 would help further characterize potential impacts on vegetation and plant communities for the
6 proposed Millers SEZ:
7

- 8 • Identify and map the location and areal extent of desert dry wash, greasewood
9 flat, wetland, and playa habitats, and Ione Wash shrub communities within the
10 SEZ. Identify and map the location and areal extent of these habitats outside
11 the SEZ that may be affected by hydrologic changes, including groundwater
12 elevations, and changes in water, sediment, and contaminant inputs associated
13 with runoff. Such efforts could help determine habitat characteristics,
14 including water source, hydrologic regime, and dominant plant species.
15
- 16 • Survey for candelaria blazing star, a plant species on the NNHP watch list
17 during a period when it is flowering and easily documented. If individuals are
18 located, individuals or populations could be avoided through fencing and
19 flagging of the area, including an appropriate buffer area.
20
21

22 **Wildlife.** The following additional data-gathering actions would help further characterize
23 potential impacts on wildlife resources for the SEZ:
24

- 25 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
26 SEZ as a movement/migratory corridor or as important habitat for the mule
27 deer.
28
- 29 • Identify and map the location and areal extent of wash and playa habitats
30 within the SEZ. These areas are important habitat for a number of wildlife
31 species.
32
33

34 **Aquatic Biota.** Investigations recommended under the water resources action plan
35 (Section C.4.5.5.8) would be useful in characterizing the habitat available to aquatic biota.
36 Most washes and dry lakes in the Millers SEZ are typically dry and contain water only for
37 brief periods following precipitation. They may or may not contain aquatic biota; therefore,
38 preliminary evaluations of these surface water features could be conducted to determine the
39 potential for aquatic communities to be present. Any aquatic biota found in these features would
40 likely be desiccation adapted aquatic invertebrates typical of the region. The primary value of
41 these features may be to nonaquatic animals that consume aquatic biota within the SEZ.
42
43

44 **Special Status Species.** The following additional data-gathering actions would be useful
45 in further characterizing and protecting habitat available to special status species:
46

- 1 • Conduct pre-disturbance surveys within the SEZ to determine the presence
2 and abundance of those special status species that are (1) federally listed,
3 proposed for listing, or candidates for listing under the Endangered Species
4 Act (ESA); (2) protected by the State of Nevada; or (3) designated as sensitive
5 by the Nevada BLM State Office. These species are listed in Table C.4.5-1.
6 Surveys should focus on areas identified as potentially suitable, and the
7 suitability of these habitats to support these special status species should be
8 determined in the field. All field-determined suitable habitats for special status
9 species should be mapped. Target species and survey protocols should be
10 developed in coordination with the U.S. Fish and Wildlife Service and
11 NDOW.
12

13 The Draft Solar PEIS presents a table of special status species for which
14 potential impacts need to be evaluated prior to development in the proposed
15 Millers SEZ. The list of species presented in Table 11.7.12.1-1 of the Draft
16 Solar PEIS also includes species listed by the State of Nevada and species
17 ranked by the State of Nevada as S1 or S2 or species of concern. Based on the
18 design features presented in the Draft Solar PEIS, the potential for impacts on
19 these additional species will also need to be addressed before development
20 could occur in the SEZ.
21

- 22 • Identify and map the location and areal extent of ephemeral wetland habitats,
23 including desert wash and playa habitats within the SEZ, including habitat
24 characteristics (such as water source, hydrologic regime, and dominant plant
25 species), both within the wetland boundaries and in adjacent non-wetland
26 habitats. A species potentially associated with these habitats includes the
27 Eastwood milkweed.
28
29

30 **C.4.5.5.10 Air Quality and Climate**

31 None.
32
33
34

35 **C.4.5.5.11 Visual Resources**

36
37 As indicated in the Draft Solar PEIS, no federal, state, or BLM-designated sensitive
38 visual resources areas (SVRAs) are located within a visible distance of 25 mi (40 km) from the
39 proposed Millers SEZ. However, sensitive viewing locations (SVLs) are situated along the
40 alignment of U.S. 6. Weak to strong visual contrasts from solar energy development within the
41 SEZ would be expected for travelers along this roadway. A summary of the Draft Solar PEIS
42 visual contrast analysis for the Millers SEZ is provided in Table C.4.5-2. The table includes only
43 those resources that would be subject to moderate visual contrast.
44
45

1 **TABLE C.4.5-1 Special Status Species That May Occur in the Vicinity of the Proposed**
 2 **Millers SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	BLM-S	Endemic to Nevada from public and private lands in Esmeralda, Lander, Lincoln, and Nye Counties in open areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand, carbonate or basaltic gravels, or shale outcrops, generally barren and lacking competition. Frequently in small washes or other moisture-accumulating microsites at elevations between 4,700 and 7,100 ft. ^d Nearest recorded occurrence is 12 mi ^e southeast of the SEZ. About 379,398 acres ^f of potentially suitable habitat occurs within the SEZ region.
Nevada dune beardtongue	<i>Penstemon arenarius</i>	BLM-S	Endemic to western Nevada on sand dunes or deep sand occurring on deep, loose, sandy soils of valley bottoms, aeolian deposits, and dune skirts, often in alkaline areas, sometimes on road banks and other recovering disturbances crossing such soils in shadscale communities. Nearest recorded occurrence is along Peavine Creek, approximately 17 mi northeast of the SEZ. About 97,638 acres of potentially suitable habitat occurs within the SEZ region.
Sanicle biscuitroot	<i>Cymopterus ripleyi</i> var. <i>saniculoides</i>	BLM-S	Endemic to Nevada on loose, sandy to gravelly, often somewhat alkaline soils on volcanic tuff deposits and mixed valley alluvium within blackbrush, mixed-shrub, sagebrush, and lower pinyon-juniper communities. Elevation ranges between 3,150 and 6,700 ft. Nearest recorded occurrence is 12 mi northeast of the SEZ. About 4,039,523 acres of potentially suitable habitat occurs within the SEZ region.
Toquima milkvetch	<i>Astragalus toquimanus</i>	BLM-S	Endemic to Nevada on dry, stiff, sandy to gravelly, basic or calcareous soils along gentle slopes or flats at elevations between 6,500 and 7,500 ft. Nearest recorded occurrence is 21 mi east of the SEZ. About 1,156,759 acres of potentially suitable habitat occurs within the SEZ region.
Invertebrates			
Crescent Dunes aegialian scarab beetle	<i>Aegialia crescenta</i>	ESA-UR; BLM-S	Sand dune obligate species endemic to Nevada on the Crescent Dunes and possibly also to the San Antonio and Game Range Dunes. Nearest recorded occurrence is from the Crescent Dunes Special Recreation Management Area (SRMA), about 6 mi east of the SEZ. About 2,281 acres of potentially suitable habitat occurs within the SEZ region.
Crescent Dunes serican scarab beetle	<i>Serica ammomenisco</i>	ESA-UR; BLM-S	Sand dune obligate species endemic to Nevada on the Crescent Dunes. Nearest recorded occurrence is from the Crescent Dunes SRMA, approximately 6 mi east of the SEZ. About 2,281 acres of potentially suitable habitat occurs within the SEZ region.

3

TABLE C.4.5-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds			
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S; NV-P	Year-round resident in the SEZ region. Grasslands, sagebrush, and saltbrush habitats, as well as the periphery of pinyon-juniper woodland. Nests in tall trees or on rock outcrops along cliff faces. Known to occur in Esmeralda County, Nevada. About 1,403,676 acres of potentially suitable habitat occurs within the SEZ region.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	ESA-C; BLM-S	Plains, foothills, and mountain valleys dominated by sagebrush. Lek sites are located in relatively open areas surrounded by sagebrush or in areas where sagebrush density is low. Nesting usually occurs on the ground where sagebrush density is higher. Some populations may travel up to 60 mi between summer and winter habitats. Known to occur in Esmeralda County, Nevada. About 1,264,279 acres of potentially suitable habitat occurs within the SEZ region.
Prairie falcon	<i>Falco mexicanus</i>	BLM-S	Year-round resident in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Nests in well-sheltered ledges of rocky cliffs and outcrops. Known to occur in Esmeralda County, Nevada. About 3,612,314 acres of potentially suitable habitat occurs within the SEZ region.
Swainson's hawk	<i>Buteo swainsoni</i>	BLM-S; NV-P	Summer breeding resident in the SEZ region. Savanna, open pine-oak woodlands, grasslands, and cultivated lands. Nests in solitary trees, bushes, or small groves. Known to occur in Esmeralda County, Nevada. About 847,596 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cucularia hypugaea</i>	BLM-S	Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Esmeralda County, Nevada. About 4,035,785 acres of potentially suitable habitat occurs within the SEZ region.
Mammals			
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S; NV-P	Summer or year-round resident in wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. Known to occur in Esmeralda County, Nevada. About 4,549,929 acres of potentially suitable habitat occurs within the SEZ region.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM-S	Open, steep rocky terrain in mountainous habitats of the eastern Mojave and Sonoran Deserts in California. Uses desert lowland as corridors for travel between mountain ranges. Known to occur in Esmeralda County, Nevada. About 1,866,606 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.4.5-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Mammals (Cont.)			
Spotted bat	<i>Euderma maculatum</i>	BLM-S; NV-P	Summer or year-round resident near forests and shrubland habitats. Roosts and hibernates in caves and rock crevices. Nearest recorded occurrence is 30 mi south of the SEZ. About 3,863,972 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S; NV-P	Summer or year-round resident near forests and shrubland habitats below 9,000-ft elevation. Roosts and hibernates in caves, mines, and buildings. Nearest recorded occurrence is 7 mi south of the SEZ. About 3,580,069 acres of potentially suitable habitat occurs within the SEZ region.
Western small-footed bat^g	<i>Myotis ciliolabrum</i>	BLM-S	Summer or year-round resident in woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Nearest recorded occurrence is 4 mi north of the SEZ. About 4,949,592 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Arizona BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-UR = under review for listing under the ESA; NV-P = protected in the state of Nevada under *Nevada Revised Statutes* (NRS) 501.110 (animals) or NRS 527 (plants).

^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

^g Species in bold text have been recorded or have designated critical habitat within 5 mi (8 km) of the SEZ boundary.

1
2
3

TABLE C.4.5-2 Summary of Potential Visual Impacts on SVLs within the 25-mi (40 km) Viewshed of the Proposed Millers SEZ

Management Area Category	SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,c,d} of SVL	Distance from SEZ at Point of Closest Approach ^e	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas)	U.S. 6 ^b	3,652 mi	Passes within 0.2 mi of the southern boundary of the SEZ	31 mi	0.8	Depending on project location within the SEZ, the types of solar facilities and their designs, and other visibility factors, weak to strong visual contrasts could be observed within the SEZ by travelers on U.S. 6. Also known as the Grand Army of the Republic Highway, U.S. 6 is the second longest highway in the United States.

^a To convert mi to km, multiply by 1.609.

^b Length of U.S. 6: DOT (2011b).

^c To convert acres to km², multiply by 0.004047.

^d Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^e Distances are based on the Draft Solar PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

1 The following steps could be taken to better understand potential impacts on SVLs from
2 solar development in the Millers SEZ:

- 3
- 4 • Key observation points (KOPs) within these areas should be identified
5 through working with the management agency or other local stakeholders.
6
- 7 • Viewshed analyses from the KOPs should be conducted to determine how
8 much of the SEZ would be in view from each KOP.
9
- 10 • As deemed necessary, based on viewshed analysis results, wireframe Google
11 Earth™ visualizations of hypothetical solar facilities in the SEZ depicting the
12 80% development scenario could be prepared to better estimate potential
13 impacts.
14

15 This additional analysis may be sufficient to judge potential visual contrast more
16 accurately for most KOPs. For KOPs of particularly high sensitivity (e.g., U.S. 6), a site visit
17 with photography and superimposition of the wireframe models onto the photos might be
18 required or desired.
19

20

21 **C.4.5.5.12 Acoustic Environment**

22 None.
23
24
25

26 **C.4.5.5.13 Paleontological Resources**

27
28 The BLM Regional Paleontologist will be contacted to determine whether additional
29 information is available regarding Potential Fossil Yield Classification (PFYC) identifications in
30 Nevada. A preliminary paleontological survey could be conducted to determine the PFYC of the
31 SEZ, in order to update the temporary assignments of PFYC Class 3b (94%) and Class 2 (6%)
32 used in the Draft Solar PEIS.
33
34

35 **C.4.5.5.14 Cultural Resources and Native American Concerns**

36
37 Approximately 4% of the proposed Millers SEZ has been surveyed (approximately
38 671 acres [2.7 km²] out of 4 survey projects), and cultural resource impacts are likely. Thirty
39 sites have been recorded in the SEZ, but none have been evaluated for eligibility for listing in the
40 *National Register of Historic Places*. More than 100 sites have been recorded within 5 mi (8 km)
41 of the SEZ, with at least 16 of these sites designated as potentially eligible (not all have been
42 evaluated). Significant prehistoric resources, including Paleoindian sites, are likely to be located
43 in dune areas and around margins of the Pleistocene lake, Lake Tonopah, within the Millers SEZ.
44 Additional historic period sites are anticipated within the SEZ associated with the potentially
45 eligible Millers town site adjacent to the SEZ.
46

1 The destruction or degradation of important plant resources, such as rice grass fields,
2 sage brush in washes, wolfberries, and other medicinal, ceremonial, and food plants (per a
3 comment from Duckwater Shoshone) and the destruction of habitat or impediments to the
4 movement of culturally important wildlife, are also potential impacts of concern within the SEZ.
5

6 The following additional data collection efforts could reduce the uncertainty about
7 potential impacts on cultural resources:
8

- 9 • Conduct a Class I literature file search to better understand (1) the site
10 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
11 through existing ethnographic reports, and (3) overall cultural sensitivity of
12 the landscape.
13
- 14 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain
15 a 10% sample (roughly 1,678 acres [6.8 km²]).²⁷ If the roughly 671 acres
16 (2.7 km²) previously surveyed meets current survey standards, then
17 approximately 1,007 acres (4.1 km²) of survey could satisfy a 10% sample.
18 Areas of interest, as determined through a Class I review, should also be
19 identified prior to establishing the survey design and sampling strategy, such
20 as dune areas and the shoreline of Lake Tonopah. Subsurface testing of dune
21 areas should be a component of the sampling strategy as well.
22
- 23 • Prepare a cultural sensitivity map based on results of the Class II survey and
24 Class I review.
25
- 26 • Continue with government-to-government consultation as described in
27 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
28 not included in the original studies to determine whether those Tribes have
29 similar concerns. The Millers SEZ falls in the traditional use area of primarily
30 the Western Shoshone and the Northern Paiute. Potential topics to be
31 discussed during consultation include Big Smoky Valley, sites and landscapes
32 around Lake Tonopah, “cumulative effects to the places that gives songs to
33 the Tribes” (per a comment from Duckwater Shoshone), and plant and animal
34 resources, such as those listed above. The agencies value the information
35 shared by the Tribes during the ethnographic study and will consider their
36 input in striving to minimize the impacts of solar development in the SEZ.
37 The completed ethnographic study will be available in its entirety on the Solar
38 PEIS Web site (<http://solareis.anl.gov>). A summary of the contents of that
39 report is also provided in the following text box.
40
41

²⁷ The BLM plans to conduct a Class II survey of 5% of this SEZ prior to the Final Solar PEIS. Additional areas could be surveyed as funding becomes available.

Tribal Perspectives on the Significance of Millers SEZ

The lands under consideration in the Millers SEZ study area related to the Draft Solar PEIS were traditionally occupied and used, aboriginally owned, and historically related to the Numic speaking peoples of the Great Basin. People specifically involved in the Draft Solar PEIS field consultations summarized here are from the Timbisha Shoshone Tribe and Duckwater Shoshone Tribe and are representing the cultural interests of the Western Shoshone people.

Numic-speaking peoples have and continue to stipulate that they are the American Indian peoples responsible for the cultural resources (natural and man-made) in this study area because their ancestors were placed here by the Creator and subsequently, they have lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation. Throughout traditional Numic territory, there are thousands of places connected through songs, oral history, human relations, ceremony, and trails (physical and spiritual). These connections create synergistic relationships between people and place.

These Numic-speaking peoples further stipulate that, because they have lived in these lands since the end of the Pleistocene and throughout the Holocene (or approximately 15,000 years), they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices persisted unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in mythic times and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

The Millers Solar SEZ region is located southwest of Big Smoky Valley, which has been culturally central to the lives of Western Shoshone people for thousands of years. They consider Big Smoky Valley to be a Landscape of Origin. Such an area is rare in traditional American Indian lands. Big Smoky Valley is thus especially important in the past, present, and future of American Indian culture.

The Millers SEZ study area extends well beyond the boundaries of the SEZ proper because of the existence of cultural resources in the surrounding landscape. The Millers SEZ study area includes plant and animal communities, geological features, water sources, storied lands, historic events and the trails that would have connected these features.

Lone Mountain to the south of the SEZ was also identified by Western Shoshone consultants as a vision questing location. The vision questing site would have been located on the triangular ridges half way up the mountain. It was noted that vision questing sites were not always at the top of the hill or mountain.

Geologically, the presence of the sand dunes and mountains makes the Millers SEZ region significant. Within Indian culture, powerful places are recognized by their topographic uniqueness. It is in these places that power, or Puha to Numic-speaking people, concentrates. These places of power are often in the form of hot springs, dramatic peaks, canyon constriction, and rivers and sand dunes (Stoffle et al. 2000). Crescent Dunes offers a unique topographic break in the otherwise flat expanse of the Big Smoky Valley. The panoramic views from the top of the dune as well as the acoustic nature (also known as singing sand dunes) of the Crescent Dunes make these dunes a unique place of Puha. The views and acoustics have their own powers that in turn contribute to the power of a place as well as facilitate the performance of ceremonies. (Stoffle et al. 2000). This geological feature has spiritual importance and is connected to the Millers SEZ study area through proximity and trails. The surrounding mountains, as previously discussed, also can power, water sources, mineral resources, and Mythic Time stories. Both mountains and sand dunes were destinations for ceremonial activities.

Tribal Perspectives on the Significance of Millers SEZ (Cont.)

Ecologically, the Millers SEZ study area contains a wide variety of traditional medicinal, ceremonial, and edible plants. The eastern portion of the Millers SEZ region features massive fields of Indian ricegrass, or waii (*Achnatherum hymenoides*), a traditional food of great importance. The western portions of the SEZ region are dominated by Anderson wolfberry (*Lycium* sp.), which is a sweet berry used fresh or dried and often pounded into meat to preserve it.

During multiple field visits, Native American representatives identified 22 traditional use plants within the Millers SEZ study area. These included the medicinal plants rabbitbrush and indigo bush. Tribal representatives identified 35 animals in the Millers SEZ study area. They commented multiple times on the fact that there were Big Horn Sheep trails all though this area. Another animal that drew a large amount of interest from Tribal consultants was the Desert Horned Lizard, or Mon-tah-gay. In Western Shoshone culture, the Mon-tah-gay is associated with medicine and healing.

Historically, in the late 1800s to early 1900s, Western Shoshone people gathered at places in areas like Big Smoky Valley and held annual or seasonal festivals known as big times or fandangos. These events served both social and ceremonial purposes. In addition, Shoshone people discussed how places in Big Smoky Valley, such as the location known as Darrough’s Hot Spring, were used for the Ghost Dance and associated activities. This area is located approximately 12 mi (19 km) northwest of Round Mountain in Smoky Valley.

1
2
3
4
5
6
7
8
9
10
11
12

C.4.5.5.15 Socioeconomics and Environmental Justice

None.

C.4.5.5.16 Cumulative Impact Considerations

None.

1 **C.5 NEW MEXICO PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.5.1 Afton**

5
6
7 **C.5.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Afton solar energy zone (SEZ), as presented in the Draft Solar PEIS, had a
11 total area of 77,623 acres (314 km²). It is located in Doña Ana County in southern New Mexico
12 (Figure C.5.1-1). The towns of Las Cruces, Mesilla, Mesquite, University Park, and Vado are
13 all within a 5-mi (8-km) radius of the SEZ. Las Cruces is the largest, with a population of
14 approximately 90,000.
15

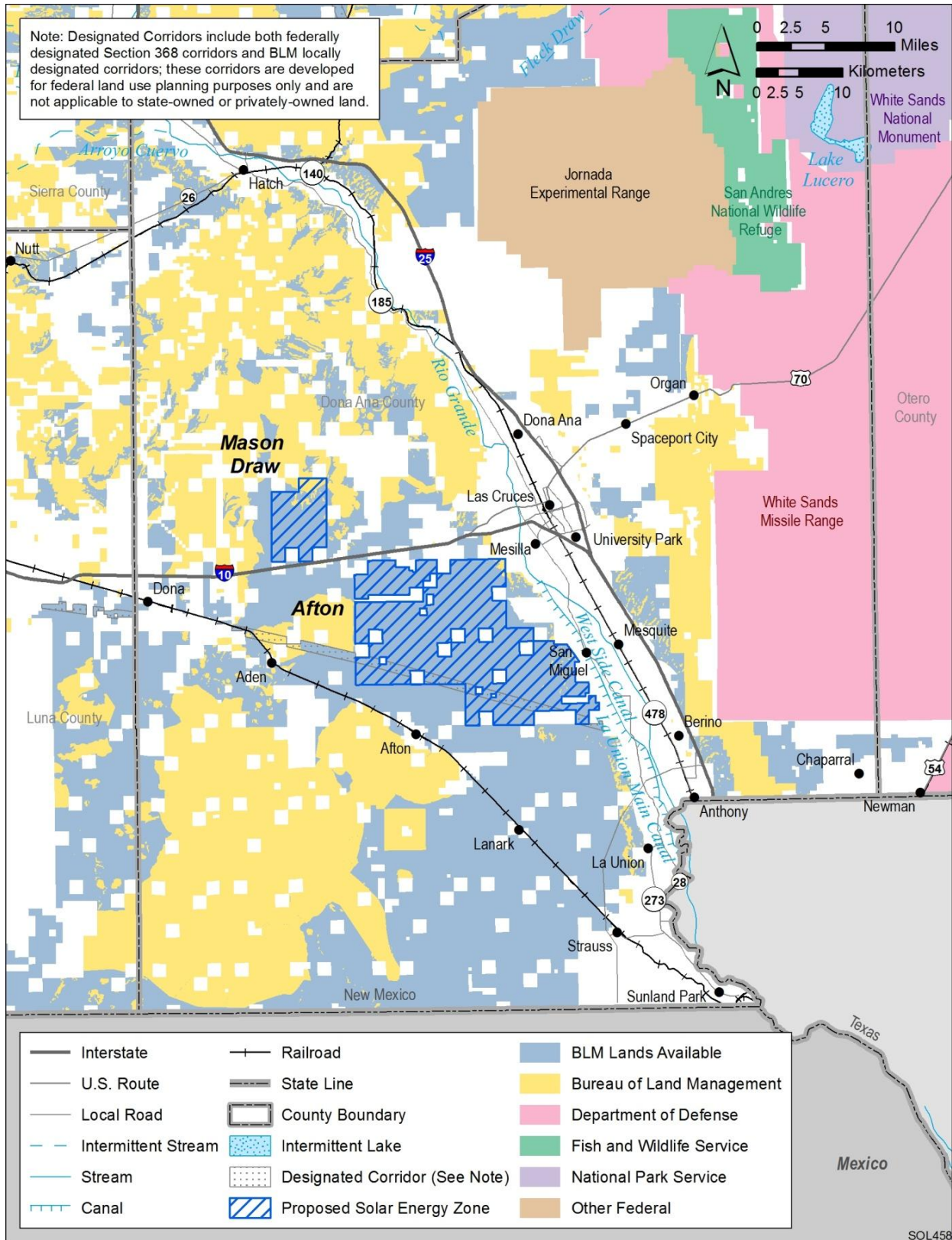
16 A designated Section 368 energy corridor occupies about 5,216 acres (21 km²) of the
17 southern portion of the SEZ and would limit development in the SEZ because solar facilities
18 cannot be constructed under transmission lines or over pipelines.²⁸ This corridor is already
19 heavily used and may need additional capacity in the future. The Draft Solar PEIS discussion of
20 impacts of solar energy development in the SEZ acknowledged that solar facility development
21 on both sides of the corridor would limit the ability to add future corridor capacity.
22

23 The Draft Solar PEIS identified a 345-kV transmission line that passes through the
24 proposed SEZ as the nearest point for connection of the SEZ to the grid. The actual location of
25 connection to the transmission grid could be different than that assumed in the Draft Solar PEIS.
26 Details on the updated transmission impact assessment for SEZs to be included in the Final Solar
27 PEIS are provided in Section C.7.1 of this appendix. Analysis of transmission lines and/or access
28 roads will be completed, as necessary, as part of the project-specific environmental reviews (see
29 Section 2.2.2.2.2 of this Supplement).
30

31 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 32
- 33 • Wilderness characteristics in the Aden Lava Flow, Organ Mountains,
34 Organ Needles, Pena Blanca, Robledo Mountains, and West Potrillo
35 Mountains/Mt. Riley Wilderness Study Areas (WSAs) would be adversely
36 affected.
37
38

²⁸ Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the U.S. Department of the Interior Bureau of Land Management (BLM), U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense (DoD) prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.



1

2 **FIGURE C.5.1-1 Proposed Afton SEZ as Presented in the Draft Solar PEIS**

- 1 • Scenic values and recreational use in the Organ/Franklin Special Recreation
2 Management Area (SRMA)/Area of Environmental Concern (ACEC),
3 Robledo Mountains ACEC, Prehistoric Trackways National Monument,
4 Mesilla Plaza, El Camino Real National Scenic Byway, and El Camino Real
5 de Tierra Adentro National Historic Trail would be adversely affected.
6
- 7 • Grazing permits for the Black Mesa, Home Ranch, and Little Black
8 Mountains allotments would be cancelled and permittees would be displaced.
9 Grazing permits for the Aden Hills, Corralitos Ranch, and La Mesa allotments
10 would be reduced. A total of 5,481 animal unit months would be lost.
11
- 12 • Recreational resources and use in 6 WSAs within 25 mi (40 km) would be
13 adversely affected.
14
- 15 • Because the SEZ is within 3 mi (5 km) of the Las Cruces Airport, Federal
16 Aviation Administration regulations will have to provide necessary safety
17 requirements.
18
- 19 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
20 erosion by wind and runoff, sedimentation, and soil contamination) could
21 occur.
22
- 23 • Groundwater use would deplete the aquifer to the extent that neither wet-
24 cooling nor dry-cooling options would be feasible (effectively limiting the
25 available technologies to either dish engine or photovoltaic [PV]).
26
- 27 • Clearing of a large portion of the proposed SEZ could primarily affect
28 stabilized coppice dune and sand flat scrub and may adversely affect desert
29 dry wash, playa, wetland, riparian, and cliff sand dune habitats, depending on
30 the amount of habitat disturbed. The establishment of noxious weeds could
31 result in habitat degradation.
32
- 33 • Potentially suitable habitat for 35 special status species and more than
34 100 wildlife species occurs in the affected area of the proposed SEZ; 5.6% or
35 less of the potentially suitable habitat for any of these species occurs in the
36 region that would be directly affected by development.
37
- 38 • If aquatic biota are present in intermittent wetlands and ephemeral streams in
39 the SEZ, they could be affected by the direct removal of these surface water
40 features within the construction footprint. If present, aquatic biota could also
41 be affected by a decline in habitat quantity and quality due to water
42 withdrawals and changes in drainage patterns, as well as increased sediment
43 and contaminant inputs associated with ground disturbance and construction
44 activities.
45

- 1 • Temporary exceedances of ambient air quality standards for particulate matter
2 at the SEZ boundaries are possible during construction. These high
3 concentrations, however, would be limited to the immediate area surrounding
4 the SEZ boundary.
5
- 6 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
7 could be observed by visitors to the Aden Lava Flow WSA, Robledo
8 Mountains, Aden Hills SRMA, the El Camino Real de Tierra Adentro
9 National Historic Trail, and the El Camino Real National Scenic Byway, and
10 for some viewpoints on Interstates 10 and 25 (I-10 and I-25). Moderate to
11 strong visual contrasts could be observed by visitors to Prehistoric Trackways
12 National Monument, Organ Mountains WSA, Organ Needles WSA, Pena
13 Blanca WSA, West Potrillo Mountains/Mt. Riley WSA, Doña Ana Mountains
14 SRMA, Organ/Franklin Mountains SRMA, Doña Ana Mountains ACEC,
15 Organ/Franklin Mountains ACEC, Robledo Mountains ACEC, Mesilla Plaza
16 National Historic Landmark, and Kilbourne Hole National Natural Landmark,
17 for some viewpoints on U.S. 70, and for the towns of Las Cruces, University
18 Park, Mesilla, San Miguel, La Mesa, Mesquite, Vado, Berino, Doña Ana, and
19 Anthony. Moderate visual contrast would be expected for some viewpoints on
20 the Butterfield Trail.
21
- 22 • During construction, noise levels at the nearest residences would be higher
23 than the U.S. Environmental Protection Agency (EPA) guidance levels.
24 During operations, it was estimated that noise levels at the nearest residences
25 would be equal to or above EPA guidance levels if concentrating solar power
26 facilities with energy storage technologies (which could extend the daily
27 operational time by 6 hours or more) or dish engine technology were used at
28 the SEZ.
29
- 30 • The potential for impacts on significant paleontological resources is high,
31 especially in the eastern portions of the SEZ along the edge of the mesa.
32
- 33 • Direct impacts on significant cultural resources could occur, especially in the
34 dune areas and areas close to the Mesilla Valley. Views from the Florida and
35 Potrillo Mountains may be of cultural importance to some Chiricahua groups.
36
- 37 • Minority populations occur within a 50-mi (80-km) radius of the proposed
38 SEZ boundary; thus adverse impacts of solar development could
39 disproportionately affect minority populations.
40
41

42 **C.5.1.2 Summary of Comments Received**

43

44 Most of the comments received on the proposed Afton SEZ were in favor of identifying
45 the area as an SEZ, but with required mitigation measures to protect sensitive plants, National

1 Historic Trails, and cultural resources (The Wilderness Society et al.,²⁹ Mesilla Valley Audubon
2 Society, Cultural Resource Preservation Coalition, and Audubon New Mexico). These groups
3 generally supported designation of the SEZ because of its proximity to existing roads and
4 transmission lines. The Nature Conservancy, however, recommended that boundaries of the SEZ
5 be modified to remove the Kenzin Conservation Area and protect its grasslands.
6

7 The New Mexico Department of Agriculture had concerns that the impacts on ranching
8 presented in the Draft Solar PEIS underestimated the true impacts on grazing allotments and
9 suggested that mitigation of and/or compensation to affected ranching operations should be
10 mandatory. The New Mexico Department of Game and Fish (NMDGF) supported designation of
11 the area as an SEZ and agreed with the SEZ-specific design features in the Draft Solar PEIS,
12 including specifying only PV technology and avoiding impacts on special habitat types.
13

14 The Partnership for the National Trails System recommended the removal of the Afton
15 SEZ because of the potential impacts on El Camino Real de Tierra Adentro National Historic
16 Trail, El Camino Real Scenic Byway, Butterfield Scenic Byway, and SRMAs. Full Circle
17 Heritage Services believed that a more assertive effort should be made to consult with the Tribes.
18 The Wilderness Society and others recommended stricter mitigation measures for water
19 resources, including monitoring standards of water quality and groundwater levels.
20

21 **C.5.1.3 Changes to the SEZ**

22

23 The proposed Afton SEZ has been significantly reconfigured to eliminate 46,917 acres
24 (190 km²) of land. Lands that have been eliminated are at the north, northeast, southeast, and
25 southwest boundaries (see Figure C.5.1-2). The rationale for the changes was to focus potential
26 solar development in the area along the existing Section 368 corridor, where development
27 already exists. In addition, 742 acres (3 km²) of floodplain and intermittent and dry lake
28 non-development areas within the remaining SEZ boundaries were identified. The remaining
29 developable area within the SEZ is 29,964 acres (121.2 km²).
30

31 To reduce the visual resource impacts of solar development within the proposed SEZ,
32 SEZ-specific visual resource mitigation requirements have been developed. However, most of
33 the areas of the SEZ that were labeled to meet Visual Resource Management (VRM) Class II- or
34 VRM Class III-consistent objectives in the Draft Solar PEIS have been eliminated from the SEZ.
35

36 On the basis of the water impact analysis provided in the Draft Solar PEIS, development
37 within the remaining areas of the SEZ may need to be restricted to photovoltaic technology or a
38 technology with equivalent or lower water use. Updated analyses taking the revised SEZ
39 boundaries into consideration will be included in the Final Solar PEIS.
40

²⁹ The Wilderness Society, New Mexico Wilderness Alliance, Defenders of Wildlife, Audubon New Mexico, Gila Resources Information Project, Gila Conservation Coalition, Western Environmental Law Center, Southwest Environmental Law Center, Upper Gila Watershed Alliance, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed New Mexico SEZs. Those comments are attributed to The Wilderness Society et al.

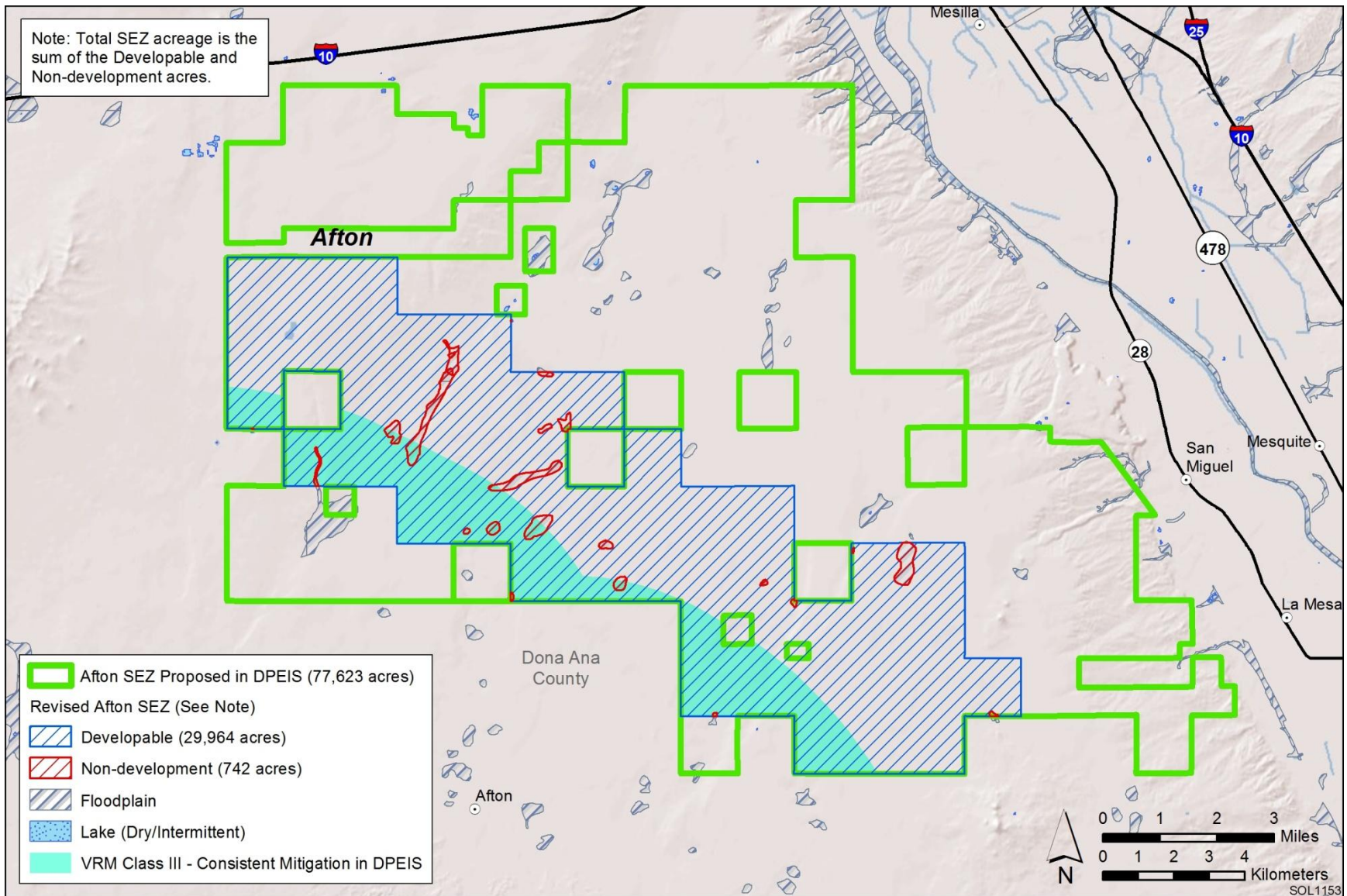


FIGURE C.5.1-2 Proposed Afton SEZ as Described in this Supplement

1 The lands eliminated from the proposed Afton SEZ will be retained as solar right-of-way
2 variance lands, because the BLM expects that individual projects could be sited in this area to
3 avoid and/or minimize impacts. Any solar development within this area in the future would
4 require appropriate environmental analysis.
5

6 7 **C.5.1.4 Wilderness Character Status of SEZ** 8

9 A recently maintained inventory of wilderness characteristics was used to determine
10 whether public lands within the Afton SEZ have wilderness characteristics. The finding of this
11 inventory was that these lands do not contain wilderness characteristics.
12

13 14 **C.5.1.5 Additional Data Collection Recommended** 15

16 17 **C.5.1.5.1 Lands and Realty** 18

19 None.
20

21 22 **C.5.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics** 23

24 None.
25

26 27 **C.5.1.5.3 Rangeland Resources** 28

29
30 ***Livestock Grazing.*** The potential impact on grazing allotments will be re-evaluated
31 based on the revised boundaries.
32

33
34 ***Wild Horses and Burros.*** None.
35

36 37 **C.5.1.5.4 Recreation** 38

39 None.
40

41 42 **C.5.1.5.5 Military and Civilian Aviation** 43

44 The potential for impact on the Las Cruces International Airport will be re-evaluated
45 based on the revised boundaries of the proposed Afton SEZ.
46

1 **C.5.1.5.6 Geologic Setting and Soil Resources**

2
3 None.

4
5
6 **C.5.1.5.7 Minerals**

7
8 Additional information on leasable and strategic minerals in the vicinity of the proposed
9 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
10 on a proposed 20-year withdrawal of SEZ lands.

11
12
13 **C.5.1.5.8 Water Resources**

14
15 The following additional data and actions would help further characterize potential
16 impacts on water resources for the proposed Afton SEZ. A more detailed discussion of each of
17 these activities is included in the water resources action plan provided in Section C.7.2 of this
18 appendix.

- 19
20 • Prepare a planning-level water resources inventory of the Mesilla Basin.
- 21
22 • Identify additional ephemeral stream channels and wetland features for non-
23 development areas through consultation with the New Mexico Water Quality
24 Control Commission (Watershed Protection Section), EPA, and U.S. Army
25 Corps of Engineers (USACE) with a focus on:
26 – Tributaries to the Rio Grande (eastern edge of SEZ), and
27 – Ephemeral stream channels and wetlands located in the north and western
28 portions of the SEZ (region approximately follows County Road B-006
29 from southwest to northeast).
- 30
31 • Perform field surveys and hydrologic analyses to support jurisdictional water
32 determinations and floodplain identifications. Tasks include:
33 – Surveying select stream channels and alluvial fan features for elevations,
34 high water marks, sediment conditions, and
35 – Conducting hydrologic rainfall-runoff-routing analyses to identify
36 100-year floodplain areas.
- 37
38 • Coordinate with the USACE (Albuquerque District) regarding jurisdictional
39 water determinations for the SEZ. Water features to be considered include:
40 – Tributaries to the Rio Grande (eastern edge of SEZ), and
41 – Ephemeral stream channels and wetlands located in the north and western
42 portions of the SEZ (region approximately follows County Road B-006
43 from southwest to northeast)
- 44
45 • Describe the formation of a stakeholder committee to conduct long-term
46 monitoring of water resources. This activity would entail:

- 1 – Identifying key stakeholder agencies,
- 2 – Discussing general features of a monitoring program, and
- 3 – Working with the U.S. Geological Survey (USGS) to develop
- 4 groundwater monitoring well design and numerical groundwater models.
- 5 (Groundwater monitoring should coordinate with the current USGS
- 6 Mesilla Basin Monitoring Program [USGS 2011].)
- 7
- 8 • Develop a superposition groundwater model for the Mesilla Basin in order to
- 9 estimate potential impacts of full build-out groundwater pumping scenarios
- 10 (according to estimated, technology-specific water requirements). This
- 11 activity would entail:
- 12 – Assessing the potential for drawdown impacts on the Rio Grande, other
- 13 groundwater uses, and surface water-groundwater connectivity, and
- 14 – Using the USGS Mesilla Basin groundwater monitoring well program to
- 15 support model development and calibration.
- 16
- 17

18 **C.5.1.5.9 Ecological Resources**

19

20

21 ***Vegetation and Plant Communities.*** The following additional data-gathering actions

22 would help further characterize potential impacts on vegetation and plant communities for the

23 proposed Afton SEZ:

24

- 25 • Identify and map the location and areal extent of desert dry wash, playa,
- 26 wetland, and riparian habitats within the SEZ. Identify and map the location
- 27 and areal extent of these habitats outside the SEZ that may be affected by
- 28 hydrologic changes, including groundwater elevations and changes in water,
- 29 sediment, and contaminant inputs associated with runoff. Such efforts could
- 30 help determine habitat characteristics, including water source, hydrologic
- 31 regime, and dominant plant species.
- 32
- 33 • Identify and map the location and areal extent of cliffs, sand dunes, and sand
- 34 transport systems within the SEZ.
- 35
- 36 • Identify and map the location of all yucca, agave, and ocotillo cacti and other
- 37 succulent plant species.
- 38

39

40 ***Wildlife.*** The following additional data-gathering actions would help further characterize

41 potential impacts on wildlife resources for the SEZ:

42

- 43 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
- 44 SEZ as a movement/migratory corridor or as important habitat for mule deer.
- 45

- 1 • Identify and map the location and areal extent of dry lake and floodplain
2 habitat within the SEZ. These areas are important habitat for a number of
3 wildlife species.
4

5
6 ***Aquatic Biota.*** Investigations recommended under the water resources action plan
7 (Section C.5.1.5.8) would be useful in characterizing and protecting habitat available to aquatic
8 biota. Water may be temporarily present in the intermittent and ephemeral wetlands, pools, and
9 streams located in the Afton SEZ. Therefore, seasonal aquatic invertebrate communities may be
10 present. Wetlands, streams, and pools could be surveyed for aquatic biota.
11

12
13 ***Special Status Species.*** The following additional data-gathering actions would be useful
14 in further characterizing and protecting habitat available to special status species:
15

- 16 • Conduct pre-disturbance surveys within the SEZ to determine the presence
17 and abundance of those special status species that are (1) federally listed,
18 proposed for listing, or candidates for listing under the Endangered Species
19 Act (ESA); or (2) listed by the State of New Mexico as threatened or
20 endangered; or (3) designated as sensitive by the New Mexico BLM State
21 Office. These species are listed in Table C.5.1-1. Surveys should focus on
22 areas identified as potentially suitable, and the suitability of these habitats to
23 support these special status species should be determined in the field. All
24 field-determined suitable habitats for special status species should be mapped.
25 Target species and survey protocols should be developed in coordination with
26 the U.S. Fish and Wildlife Service (USFWS) and NMDGF.
27

28 The Draft Solar PEIS presents a table of Special Status Species for which
29 potential impacts need to be evaluated prior to development in the proposed
30 Afton SEZ. The list of species presented in Table 12.1.12.1-1 of the Draft
31 Solar PEIS also includes species listed by the State of New Mexico and
32 species ranked by the State of New Mexico as S1 or S2, or species of concern.
33 On the basis of design features presented in the Draft Solar PEIS, the potential
34 for impacts on these additional species will also need to be addressed before
35 development could occur in the SEZ.
36

- 37 • Identify and map the location and areal extent of rocky slopes, cliffs, and
38 outcrops within the SEZ. The suitability of these habitats for special status
39 species should be determined. Species potentially associated with these
40 habitats include the Marble Canyon rockcress, New Mexico rock daisy,
41 Sneed's pincushion cactus, American peregrine falcon, fringed myotis, long-
42 legged myotis, Townsend's big-eared bat, and western small-footed myotis.
43
- 44 • Identify and map the location and areal extent of desert grassland habitat
45 within the SEZ. The suitability of this habitat for special status species should
46 be determined. Species potentially associated with desert grassland habitat

1 **TABLE C.5.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Afton SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Plants</i>			
Arizona coralroot	<i>Hexalectris spicata</i> var. <i>arizonica</i>	BLM-S; NM-E	Oak and pinyon-juniper woodland communities in areas of heavy leaf litter. Known to occur in Doña Ana County, New Mexico. About 47,500 acres ^d of potentially suitable habitat occurs in the SEZ region.
Desert night-blooming cereus	<i>Peniocereus greggii</i> var. <i>greggii</i>	BLM-S; NM-E	Sandy to silty gravelly soils in desert grassland communities, gravelly flats, and washes. Nearest recorded occurrence is 6 mi ^e north of the SEZ. About 1,052,000 acres of potentially suitable habitat occurs in the SEZ region.
Gramma grass cactus	<i>Sclerocactus papyracanthus</i>	BLM-S	Pinyon-juniper woodlands and desert grasslands on sandy soils at elevations between 4,900 and 7,200 ft. ^f Nearest recorded occurrence is 29 mi northeast of the SEZ. About 1,037,800 acres of potentially suitable habitat occurs in the SEZ region.
Marble Canyon rockcress	<i>Sibara grisea</i>	BLM-S	Rock crevices and the bases of limestone cliffs in chaparral and pinyon-juniper woodland communities at elevations between 4,500 and 6,000 ft. Known to occur in Doña Ana County, New Mexico. About 82,700 acres of potentially suitable habitat occurs in the SEZ region.
New Mexico rock daisy	<i>Perityle staurophylla</i> var. <i>staurophylla</i>	BLM-S	Endemic to south-central New Mexico in crevices of limestone cliffs and boulders at elevations between 4,900 and 7,000 ft. Known to occur in Doña Ana County, New Mexico. About 4,400 acres of potentially suitable habitat occurs in the SEZ region.
Sand prickly-pear cactus^g	<i>Opuntia arenaria</i>	NM-E	Sandy areas, particularly semi-stabilized sand dunes among open Chihuahuan desertscrub, often associated with sparse cover of grasses at elevations between 3,800 and 4,300 ft. Known to occur on the SEZ and in other portions of the affected area. About 913,000 acres of potentially suitable habitat occurs in the SEZ region.
Sandhill goosefoot	<i>Chenopodium cycloides</i>	BLM-S	Open sandy areas, frequently along the edges of sand dunes. Known to occur in Doña Ana County, New Mexico. About 1,009,000 acres of potentially suitable habitat occurs in the SEZ region.
Sneed's pincushion cactus	<i>Escobaria sneedii</i> var. <i>sneedii</i>	ESA-E; NM-E	Limestone cracks of broken terrain on steep slopes and on limestone edges and rocky slopes in mountainous regions at elevations between 4,000 and 6,000 ft. Nearest recorded occurrences are approximately 10 mi southeast of the SEZ. About 4,500 acres of potentially suitable habitat occurs in the SEZ region.
Villard pincushion cactus	<i>Escobaria villardii</i>	BLM-S; NM-E	Franklin and Sacramento Mountains in Otero and Doña Ana Counties, New Mexico, on loamy soils of desert grassland on broad limestone benches at elevations between 4,500 and 6,500 ft. Known to occur in Doña Ana County, New Mexico. About 1,038,000 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.5.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Invertebrates			
Anthony blister beetle	<i>Lytta mirifica</i>	BLM-S	On flowering plants, often in agricultural areas where the species may be a pest of certain crops. Known to occur in Doña Ana County, New Mexico. About 138,500 acres of potentially suitable habitat occurs in the SEZ region.
Reptiles			
Texas horned lizard	<i>Phrynosoma cornutum</i>	BLM-S	Flat, open, generally dry habitats with little plant cover, except for bunchgrass, cactus, and desertscrub in areas of sandy or gravelly soil. Nearest quad-level occurrence intersects the affected area within 5 mi north of the SEZ. About 3,844,800 acres of potentially suitable habitat occurs in the SEZ region.
Birds			
American peregrine falcon	<i>Falco peregrinus anatum</i>	BLM-S; NM-T	Year-round resident in the SEZ region. Open habitats, including deserts, shrublands, and woodlands that are associated with high, near-vertical cliffs and bluffs above 200 ft. When not breeding, activity is concentrated in areas with ample prey, such as farmlands, marshes, lakes, rivers, and urban areas. Known to occur in Doña Ana County, New Mexico. About 1,997,000 acres of potentially suitable habitat occurs in the SEZ region.
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM-S; NM-T	Winter resident in the SEZ region. Large bodies of water or free-flowing rivers with abundant fish and waterfowl prey. Wintering areas are associated with open water. May occasionally forage in arid shrubland habitats. Known to occur in Doña Ana County, New Mexico. About 1,277,000 acres of potentially suitable habitat occurs in the SEZ region.
Bell's vireo	<i>Vireo bellii</i>	NM-T	Summer breeding resident in the SEZ region. Dense shrublands or woodlands along lower elevation riparian areas among willows, scrub oak, and mesquite. May potentially nest in any successional stage with dense understory vegetation. Known to occur in Doña Ana County, New Mexico. About 386,000 acres of potentially suitable habitat occurs in the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	Winter resident in grasslands, sagebrush and saltbrush habitats, and the periphery of pinyon-juniper woodlands. Known to occur in Doña Ana County, New Mexico. About 131,300 acres of potentially suitable habitat occurs in the SEZ region.
Gray vireo	<i>Vireo vicinior</i>	NM-T	Summer breeding resident in the SEZ region. Semiarid, shrubby habitats, especially mesquite and brushy pinyon-juniper woodlands; also chaparral, desertscrub, thorn scrub, oak-juniper woodland, pinyon-juniper, mesquite, and dry chaparral. Nests in shrubs or trees. Known to occur in Doña Ana County, New Mexico. About 549,500 acres of potentially suitable habitat occurs in the SEZ region.
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	ESA-E; NM-E	Year-round resident in the SEZ region. Open rangeland and savanna, semiarid grasslands with scattered trees, mesquite, and yucca. Nests in old stick nests of other raptors or ravens that are located in trees or shrubs in desert grassland. Nearest occurrences are 9 mi west of the SEZ. About 2,138,000 acres of potentially suitable habitat occurs in the SEZ region.

TABLE C.5.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Birds (Cont.)			
Western burrowing owl	<i>Athene cunicularia</i>	BLM-S	Year-round resident in the SEZ region. Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Known to occur in Doña Ana County, New Mexico. About 3,800,000 acres of potentially suitable habitat occurs in the SEZ region.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	ESA-C	May occur as a summer resident in the SEZ region. Riparian obligate, usually found in large tracts of cottonwood/willow habitats with dense sub-canopies. Known to occur in Doña Ana County, New Mexico. About 9,300 acres of potentially suitable habitat occurs in the SEZ region.
Mammals			
Desert bighorn sheep	<i>Ovis canadensis mexicana</i>	NM-T	Visually open, steep rocky terrain in mountainous habitats in desert regions. Rarely uses desert lowlands, but may use them as corridors for travel between mountain ranges. Known to occur in Doña Ana County, New Mexico. About 208,500 acres of potentially suitable habitat occurs in the SEZ region.
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S	Wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. May be a summer or year-round resident in project area. Nearest quad-level occurrence intersects the affected area about 5 mi north of the SEZ. About 3,040,800 acres of potentially suitable habitat occurs in the SEZ region.
Long-legged myotis	<i>Myotis volans</i>	BLM-S	Primarily in montane coniferous forests; also riparian and desert habitats. Hibernates in caves and mines. Roosts in abandoned buildings, rock crevices, and under the bark of trees. Known to occur in Doña Ana County, New Mexico. About 2,705,000 acres of potentially suitable habitat occurs in the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Near forests and shrubland habitats below 9,000-ft elevation. Roosts and hibernates in caves, mines, and buildings. May be a summer or year-round resident in the project area. Nearest quad-level occurrence intersects the affected area about 5 mi north of the SEZ. About 2,627,600 acres of potentially suitable habitat occurs in the SEZ region.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM-S	Variety of woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. May be a summer or year-round resident in the project area. Known to occur in Doña Ana County, New Mexico. About 3,805,400 acres of potentially suitable habitat occurs in the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Arizona BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-E = listed as endangered under the ESA; NM-E = listed as endangered by the State of New Mexico; NM-T = listed at threatened by the State of New Mexico.

Footnotes continued on next page.

TABLE C.5.1-1 (Cont.)

- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert acres to km², multiply by 0.004047.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert ft to m, multiply by 0.3048.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

include the desert night-blooming cereus, grama grass cactus, Villard pincushion cactus, and northern aplomado falcon.

- Identify and map the location and areal extent of woodland habitat within the SEZ. The suitability of this habitat for special status species should be determined. Species potentially associated with woodland habitat include the Arizona coralroot grama-grass cactus, Marble Canyon rockcress, American peregrine falcon, Bell’s vireo, ferruginous hawk, gray vireo, fringed myotis, and long-legged myotis.
- Identify and map the location and areal extent of riparian habitat within the SEZ. The suitability of this habitat for special status species should be determined. Species potentially associated with riparian habitat include the bald eagle, Bell’s vireo, western yellow-billed cuckoo, and long-legged myotis.
- Identify and map the location and areal extent of sand dune habitat and associated sand transport systems within the SEZ. The suitability of this habitat for special status species should be determined. Species potentially associated with sand dune habitat include the sand prickly-pear cactus and sandhill goosefoot.

C.5.1.5.10 Air Quality and Climate

None.

C.5.1.5.11 Visual Resources

Visual resources will be reevaluated for the Final Solar PEIS based on the revisions to boundaries and proposed technology restrictions described in Section C.5.1.3 of this Supplement. A summary of the Draft Solar PEIS visual contrast analysis for the proposed Afton SEZ is

1 provided in Table C.5.1-2. This table includes only the resources that would be subject to
2 moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these
3 levels of visual contrast from solar energy development in the Afton SEZ for the following
4 sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):
5

- 6 • Prehistoric Trackways
- 7
- 8 • Aden Lava Flow WS
- 9
- 10 • Organ Mountains, Organ Needles, Pena Blanca, Robledo Mountains, and
- 11 West Potrillo Mountains/Mount Riley WSAs
- 12
- 13 • Aden Hills Off-Highway Vehicle SRMA
- 14
- 15 • Doña Ana Mountain SRMA
- 16
- 17 • Organ/Franklin Mountains Recreation Management Zone SRMA
- 18
- 19 • Doña Ana Mountain ACEC
- 20
- 21 • Organ/Franklin Mountain ACEC
- 22
- 23 • Robledo Mountain ACEC
- 24
- 25 • Mesilla Plaza, a National Historic Landmark
- 26
- 27 • El Camino Real de Tierra Adentro National Historic Trail
- 28
- 29 • El Camino Real Scenic Byway
- 30
- 31 • Kilbourne Hole National Natural Landmark
- 32
- 33 • Butterfield Trail
- 34
- 35 • I-25
- 36
- 37 • I-10
- 38
- 39 • U.S. 70
- 40
- 41 • The towns of Las Cruces, University Park, Mesilla, Doña Ana, San Miguel,
- 42 La Mesa, Mesquite, Vado, and Berino.
- 43
- 44

1 **TABLE C.5.1-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed**
 2 **Afton SEZ**

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
National Monument	Prehistoric Trackways	5,255 acres	6.2 mi north of the SEZ	3,007 acres	57.2	Most higher elevation viewpoints would have generally open views of solar developments; for these viewpoints, this would likely result in strong visual contrast levels from solar facilities. Lower elevation views may be partially screened by landforms, and partial visibility of the SEZ, combined with lower viewing angles, would result in lower levels of visual contrast at most viewpoints. The visible area of the monument extends to 9.6 mi from the point of closest approach at the northern boundary of the SEZ.
WSAs	Aden Lava Flow	25,978 acres	1.4 mi south of the SEZ	25,570 acres	98.4	Since the WSA is close to the proposed SEZ and is very flat, there is generally little screening by topography between the WSA and SEZ, and thus locations would have open views of the SEZ. Although the vertical angle of view is low, the SEZ is so large, it would stretch across much of the horizon, resulting in strong visual contrast for most locations. The visible area of the WSA extends from the point of closest approach to 8.9 mi from the southern boundary of the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WSAs	Organ Mountains	7,186 acres	15 mi northeast of the SEZ	3,861 acres	53.7	Higher elevation viewpoints on the western side of the Organ Mountains would have elevated and open views of solar developments that would occupy most of the horizontal field of view, resulting in moderate to strong visual contrast levels. Lower elevation views may be partially screened by landforms, and partial visibility of the SEZ, combined with long distance and low viewing angles, would result in lower levels of visual contrast at most viewpoints. The visible area extends to about 18 mi from the point of closest approach at the northeast boundary of the SEZ.
	Organ Needles	5,936 acres	13 mi northeast of the SEZ	2,349 acres	39.6	Higher elevation viewpoints on the western side of the Organ Mountains would have elevated and open views of solar developments. Because of the SEZ's large size, it would occupy most of the horizontal field of view, resulting in moderate to strong visual contrast levels from solar facilities. Lower elevation views may be partially screened by landforms, and partial visibility of the SEZ, combined with long distance and low viewing angles, would result in lower levels of visual contrast at most, but not all, viewpoints. The visible area extends to about 17 mi from the northeastern boundary of the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WSAs (Cont.)	Pena Blanca	4,648 acres	13 mi east of the SEZ	3,738 acres	80.4	Higher elevation viewpoints on the western side of the Organ Mountains would have elevated and open views of solar developments. Because of the SEZ's large size, it would occupy most of the horizontal field of view, resulting in moderate to strong visual contrast levels from solar facilities. Lower elevation views could be partially screened by landforms, but most viewpoints would have open views of the SEZ, and despite the low viewing angles, would likely be subject to moderate to strong visual contrasts from solar facilities. The visible area of the WSA extends about 15 mi from the northeastern boundary of the SEZ.
	Robledo Mountains	13,049 acres	8.3 mi north of the SEZ	2,622 acres	20.1	Viewpoints on the peaks and south-facing slopes would have elevated and open views of solar developments. Because of the SEZ's large size, it would occupy most of the horizontal field of view. Solar facilities would be likely to present strong visual contrast levels to viewers. Areas within the WSA also could have views of solar facilities within the Mason Draw SEZ, which could increase the perceived visual contrast associated with solar energy

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
WSAs (Cont.)	Robledo Mountains (Cont.)					development in the landscape setting. The visible area extends to about 14 mi from the northern boundary of the SEZ.
	West Potrillo Mountains/Mt. Riley	159,323 acres	5.7 mi southwest of the SEZ	52,951 acres	33.2	Higher elevation viewpoints in the northeastern portion of the WSA would have open views of solar developments. Because of the SEZ's large size, it would occupy most of the horizontal field of view; solar facilities would be likely to present moderate to strong visual contrast levels. Some areas could have views of solar facilities within the Mason Draw SEZ, which could increase the perceived visual contrast associated with solar energy development. The visible area of the WSA extends to about 23 mi from the western boundary of the SEZ.
SRMAs	Aden Hills Off-Highway Vehicle Area	8,054 acres	4.6 mi from the SEZ	7,681 acres	95.4	Solar facilities would be so visually prominent that they would be expected to dominate views from the SRMA to the east and would contrast very strongly with the surroundings, as seen from most of the SRMA. A portion of the SRMA within the viewshed extends to beyond 4.6 mi from the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
SRMAs (Cont.)	Doña Ana Mountain	8,345 acres	10 mi northeast of the SEZ	5,380 acres	64.5	For lower elevation viewpoints, the vertical angle of view is so low that it would be expected to reduce the visual contrast associated with solar facilities. Although the SRMA is close enough to the SEZ, the SEZ would stretch across most of the southern horizon, and moderate visual contrast would be expected. Because of the slightly higher vertical viewing angles, visual contrast levels would likely be greater for higher elevation viewpoints in the SRMA, even if they might be farther from the SEZ. The visible area extends from the point of closest approach to 16 mi within the SRMA.
	Organ/Franklin Mountains RMZ	60,793 acres	6.1 mi east of the SEZ	43,319 acres	71.3	Most of the area would have open views of solar developments; solar facilities would likely present strong visual contrast levels to viewers within the mountains. At some of the more distant viewpoints, moderate levels of visual contrast would be expected, primarily because the SEZ would occupy a smaller portion of the horizontal field of view. The visible area extends from the point of closest approach to 15 mi within the SRMA.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
ACECs Designated for Outstanding Scenic Values	Doña Ana Mountain	1,427 acres	13 mi north of the SEZ	747 acres	52.3	For lower elevation viewpoints, the vertical angle of view is so low that it would be expected to reduce the visual contrast associated with solar facilities. Although the SRMA is close enough to the SEZ, the SEZ would stretch across most of the southern horizon, and moderate visual contrast would be expected. Because of the slightly higher vertical viewing angles, visual contrast levels would likely be greater for higher elevation viewpoints, even if they might be farther from the SEZ. The visible area of the ACEC extends approximately 15 mi from the northern boundary of the SEZ.
	Organ/Franklin Mountains	58,512 acres	6.1 mi east of the SEZ	41,101 acres	70.2	Most of the area would have open views of solar developments; solar facilities would likely present strong visual contrast levels to viewers. At some of the more distant viewpoints, moderate levels of visual contrast would be expected, primarily because the SEZ would occupy a smaller portion of the horizontal field of view. The visible area of the ACEC extends to more than 18 mi from the eastern boundary of the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
ACECs Designated for Outstanding Scenic Values (Cont.)	Robledo Mountains	8,659 acres	8.5 mi north of the SEZ	1,976 acres	22.8	Viewpoints on the peaks and south-facing slopes of the mountains would have elevated and open views of solar development. Because of the SEZ's large size, it would occupy most of the horizontal field of view; solar facilities would likely present strong visual contrast levels to viewers. Some areas also could have views of solar facilities within the Mason Draw SEZ, which could increase the perceived visual contrast. The visible area of the ACEC extends to about 14 mi from the northern boundary of the SEZ.
National Historic Landmark	Mesilla Plaza	NA ^g	Selected viewpoint is about 2.7 mi northeast of the northeast corner of the SEZ	NA	NA	Solar facilities would be expected to create moderate to strong visual contrasts, with stronger contrast levels expected if multiple power tower receivers were visible above West Mesa. The Plaza is located within the town of Mesilla.
National Historic Trail	El Camino Real de Tierra Adentro	404 mi	Passes within 3.2 mi east of the SEZ	41.9 mi	10.4	Because of the open views of the SEZ along the rim of West Mesa, and the elevated position of the SEZ with respect to the trail, strong visual contrasts would be expected for some viewpoints on the trail. The distance to the SEZ ranges from the point of closest approach to 20 mi north of the northern boundary of the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
National Natural Landmark	Kilbourne Hole ^h	1,088 acres	9.3 mi south-southwest of the SEZ	NA ^g	NA	Solar facilities would occupy most of the horizontal field of view looking north and northeast. Depending on solar facility location, the types of solar facilities and their designs, and other visibility factors, moderate to strong visual contrasts would be expected at locations along the top of the ridge around the north side of Kilbourne Hole. Contrast at locations along the ridge on the east, west, and south sides of the crater would generally be lower, due in part to increased distance to the SEZ but primarily because of partial or full screening of the SEZ. Views of the SEZ from inside the Kilbourne Hole crater would be completely screened by the crater walls. There is a ridge around nearly the entire crater, and the SEZ would be visible from the ridgeline and north-facing slopes of most of the ridge; a trail runs along the top of the ridge.
Scenic Byway	El Camino Real	299 mi	Passes within 3.2 mi east of the SEZ	52.4 mi	17.5	Because of the open views of the SEZ along the rim of West Mesa and the elevated position of the SEZ with respect to the byway, strong visual contrasts would be expected for some viewpoints. The distance between the byway and SEZ ranges from the point of closest approach to more than 24 mi south of the southeastern boundary of the SEZ.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas)	I-25 ⁱ	1,063 mi	NA ^g	23 mi	2.2	Depending on the location, type, and height of solar facility components in the eastern part of the SEZ, visual contrast levels could be strong if multiple power towers were visible along the rim of West Mesa, with substantially lower levels of contrast expected if only lower height facilities were located along the eastern side of the SEZ. Solar facilities within the SEZ could be in view from I-25 for about 20 minutes driving time at highway speeds. Facilities could be in view from about 23 mi of the roadway, from beyond Radium Springs to I-25's southern terminus in Las Cruces. Southbound travelers would see very little at first, but as they approached Doña Ana, potential visibility of solar facilities in the SEZ would increase, reaching maximum levels of visual contrast at the I-25/I-10 interchange, where I-25 ends.
	I-10 ^j	2,460 mi	NA ^g	81 mi	3.3	Northbound travelers could first see solar facilities outside of El Paso, with a gradual increase in contrast levels as I-10 passes north up the Mesilla Valley, and reaching maximum levels of visual contrast near the Las Cruces Municipal Airport. At some viewpoints,

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^d of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (Cont.)	I-10 ^j (Cont.)					depending on the location, type, and height of solar facility components, visual contrast levels could be strong. Solar facilities could be in view from I-10 for about 65 to 70 minutes driving time at highway speeds.
	U.S. 70 ^k	2,385 mi	NA	22 mi	0.9	Contrast levels would continue to slowly increase, but would likely remain at moderate levels until U.S. 70 began to climb the western slope of West Mesa. At that point, the slope in front of the vehicle would cut off views of solar facilities. Solar facilities would come back into view as U.S. 70 crested the slope of West Mesa, very near to the junction of U.S. 70 and I-10. At this location, with open and near-level views of the SEZ less than 2 mi away, expected visual contrasts would be moderate to strong.
	Las Cruces ^l	83 acres	7 mi	NA	NA	Moderate to strong visual contrast levels could be experienced in some portions.
	University Park ^l	1,005 acres	7 mi	NA ^g	NA	Moderate to strong visual contrast levels could be experienced.
	Mesilla ^l	3,430 acres	7 mi	NA	NA	Strong visual contrast levels could be experienced.

TABLE C.5.1-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi ^e	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes ^f
Other Areas of Interest (non-management areas) (Cont.)	Doña Ana ¹	467 acres	9.2 mi	NA	NA	Weak to moderate visual contrast levels could be experienced.
	San Miguel	NA	0.8 mi	NA	NA	Strong visual contrast levels could be experienced.
	La Mesa	NA	1.2 mi	NA	NA	Strong visual contrast levels could be experienced.
	Mesquite ¹	531 acres	3.1 mi	NA ^g	NA	Strong visual contrast levels could be experienced.
	Vado ¹	1,894 acres	3.4 mi	NA ^g	NA	Strong visual contrast levels could be experienced.
	Berino	NA	6.0 mi	NA	NA	Moderate to strong visual contrast levels could be experienced.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances at the point of closest approach are based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries would result in changes to these calculations.

^e The total acreage/mileage visible within 25 mi (40 km) of the SEZ is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries will result in changes to these acreages/mileages, as well as the percentage of total acreage/mileage visible within 25 mi (40 km) of the SEZ. The correct values will be given in the Final PEIS.

^f The assessment of impacts is based on the Draft Solar PEIS analysis dated December 2010. Subsequent alterations to the SEZ boundaries may result in reduced impacts in some of the SVRAs/SVLs due to the reduction in the overall footprint of the SEZ.

Footnotes continued on next page.

TABLE C.5.1-2 (Cont.)

- ^g NA = data not available.
- ^h Approximate acreage of Kilbourne: BLM (2011b).
- ⁱ Length of I-25: AARoads' Interstate Guide (2006a).
- ^j Length of I-10: AARoads' Interstate Guide (2006b).
- ^k Length of U.S. 70: US-Highways.com. (2010).
- ^l Acreage of New Mexico towns/cities: U.S. Bureau of the Census (2011b).

1 The following steps could be taken to better understand potential impacts on these
2 SVRAs and SVLs from solar development in the Afton SEZ:

- 3
- 4 • Identify key observation points (KOPs) within these areas through working
5 with the management agency or other local stakeholders.
- 6
- 7 • Conduct viewshed analyses from the KOPs to determine how much of the
8 SEZ would be in view from each KOP.
- 9
- 10 • As deemed necessary, based on viewshed analysis results, prepare wireframe
11 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
12 depicting the 80% development scenario to better estimate potential impacts.
- 13

14 This additional analysis may help judge potential visual contrast more accurately for most
15 KOP. For KOPs of particularly high sensitivity, a site visit with photography and
16 superimposition of the wireframe models onto the photos might be required or desired.

17
18 Additional required mitigation measures to address potential visual resource impacts are
19 given in Section C.7.3 of this appendix.

20 21 22 **C.5.1.5.12 Acoustic Environment**

23
24 None.

25 26 27 **C.5.1.5.13 Paleontological Resources**

28
29 The Afton SEZ is located in an area with a Potential Fossil Yield Classification (PFYC)
30 that has been predominantly determined to be Class 4/5. Therefore, the potential for impacts on
31 paleontological resources is high. A paleontological survey should be conducted to determine
32 whether paleontological materials are present in the SEZ.

33
34 The BLM Regional Paleontologist will be contacted to determine whether additional
35 information is available regarding PFYC identifications in New Mexico.

36 37 38 **C.5.1.5.14 Cultural Resources and Native American Concerns**

39
40 Approximately 6% of the revised proposed Afton SEZ footprint has been surveyed
41 (approximately 1,840 acres [7.4 km²]). At least 58 sites have been recorded within the SEZ.
42 At least two of the sites are eligible for listing in the *National Register of Historic Places*, but
43 many are undetermined. The densest concentration of sites is in the southwestern portion of
44 the SEZ. Dune areas and areas near the Mesilla Valley are of potential concern for impacts on
45 cultural resources, as are a number of nearby ACECs designated to protect cultural values.
46 Approximately 330 sites have been recorded within 5 mi (8 km) of the SEZ, including several

1 sites with structural remains. The El Camino Real de Tierra Adentro National Historic Trail and
2 the Butterfield Trail are both relatively close to the SEZ and could be affected visually. There
3 may potentially be visual impacts on the Mesilla Plaza National Historic Landmark as well. The
4 destruction or degradation of important plant resources, and the destruction of habitat or
5 impediments to the movement of culturally important wildlife are also potential impacts of
6 concern within the SEZ.

7
8 The following additional data collection efforts would reduce the uncertainty about
9 potential impacts on cultural resources:

- 10 • Conduct a Class I literature file search to better understand (1) the site
11 distribution pattern in the vicinity of the SEZ, (2) trail networks through
12 existing ethnographic reports, and (3) overall cultural sensitivity of the
13 landscape.
14
- 15 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
16 10% sample (approximately 3,071 acres [12.4 km²]). If the approximately
17 1,840 acres (7.4 km²) previously surveyed meets current survey standards,
18 then approximately 1,231 acres (5.0 km²) of survey could satisfy a 10%
19 sample. Areas of interest, as determined through a Class I review, should also
20 be identified prior to establishing the survey design and sampling strategy,
21 such as any dune areas in the SEZ. Subsurface testing of any dune areas
22 should be a component of the sampling strategy.
23
- 24 • Prepare a cultural sensitivity map based on results of the Class II survey and
25 Class I review.
26
- 27 • Identify any high potential segments of the El Camino Real de Tierra Adentro
28 National Historic Trail and conduct viewshed analyses from key points along
29 those portions of the trail.
30
- 31 • Conduct a viewshed analysis from Mesilla Plaza, a National Historic
32 Landmark.
33
- 34 • Identify key points within nearby ACECs (Los Tules, Organ/Franklin
35 Mountains, Robledo Mountain, Doña Ana Mountain, and San Diego
36 Mountain) and Special Management Areas (Butterfield Trail) and conduct
37 viewshed analyses to determine visual impacts on these resource areas
38 designated for cultural values.
39
- 40 • Continue with government-to-government consultation as described in
41 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
42 not included in the original studies to determine whether those Tribes have
43 similar concerns. The Afton SEZ falls in the traditional use area of primarily
44 the Chiricahua Apache, but also the Manso and the Piro Pueblo. Descendants
45 of the latter two groups are found among members of the Ysleta del Sur
46

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

Pueblo and in the Tortuga Community in Las Cruces. Potential topics to be discussed during consultation include Potrillo and Florida Mountains, Salinas Peak, the above-mentioned ACECs, trail systems, mountain springs, habitation sites as places of cultural importance, burial sites, rock art, ceremonial areas, water resources, and plant and animal resources.

C.5.1.5.15 Socioeconomics and Environmental Justice

None.

C.5.1.5.16 Cumulative Impact Considerations

None.

1 **C.6 UTAH PROPOSED SOLAR ENERGY ZONES**

2
3
4 **C.6.1 Escalante Valley**

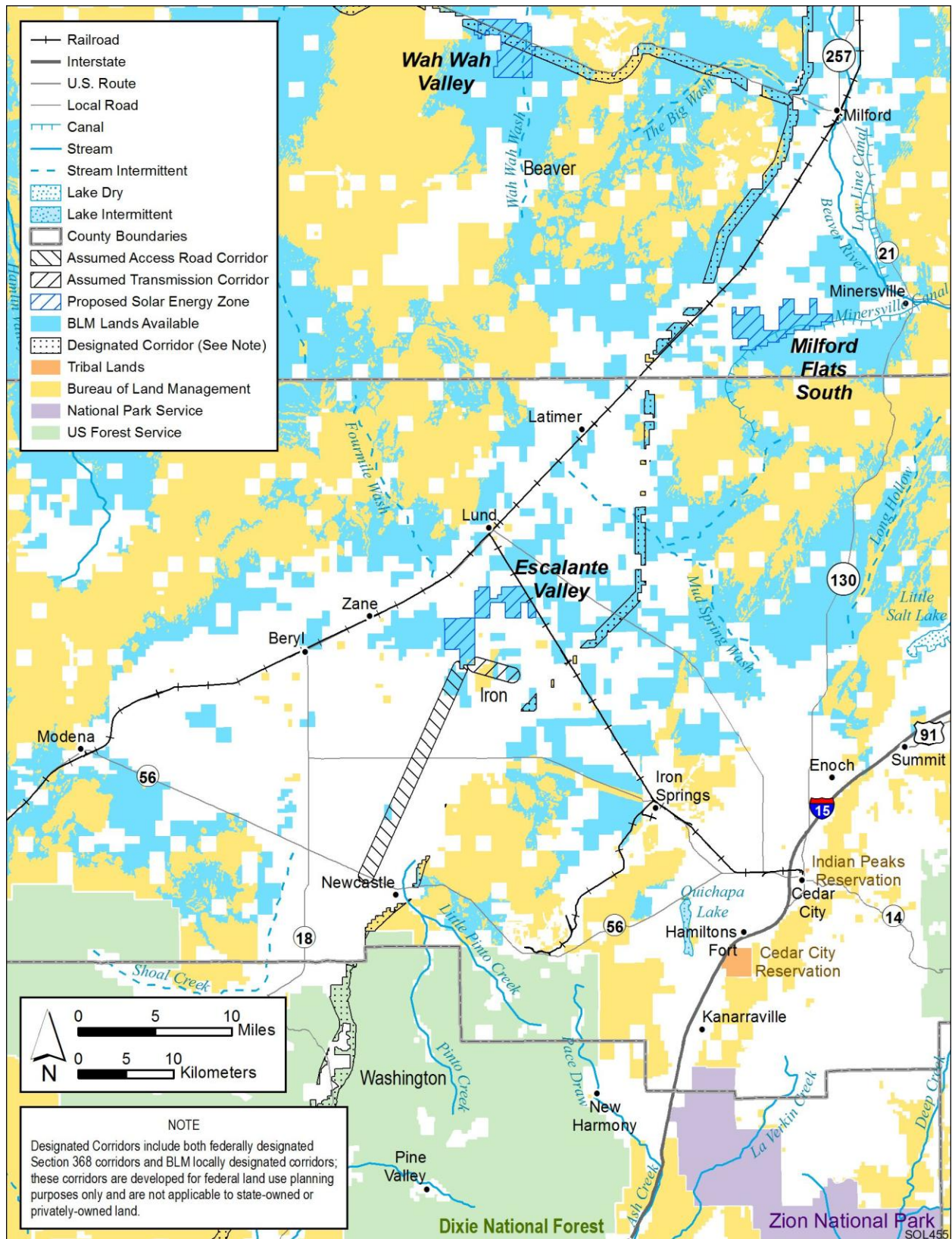
5
6
7 **C.6.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Escalante Valley solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 6,614 acres (27 km²). It is located in Iron County in southwestern Utah
12 (Figure C.6.1-1). The towns of Lund and Zane are about 4 mi (6 km) north of, and 5 mi (8 km)
13 west of, the SEZ, respectively.
14

15 The Draft Solar PEIS identified a 138-kV transmission line that ends about 3 mi (5 km)
16 from the southeastern area of the southernmost part of the SEZ as the nearest point of connection
17 of the SEZ to the grid. The location of new transmission that could be constructed for this SEZ in
18 the future may be different from that assumed in the Draft Solar PEIS. Details on the updated
19 transmission impact assessment to be included in the Final Solar PEIS are provided in
20 Section C.7.1 of this appendix. The Draft Solar PEIS also identified State Route 56, located
21 about 15 mi (24 km) to the southeast of the SEZ, as the nearest major road, and assumed that a
22 new access road would be constructed from the proposed SEZ to State Route 56 to support
23 development. As for a new transmission line, the location of a new access road that could be
24 constructed in the future may be different from that assumed in the Draft Solar PEIS. Analysis of
25 transmission lines and/or access roads will be completed, as necessary, as part of the project-
26 specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
27

28 Potential adverse impacts identified in the Draft Solar PEIS included the following:

- 29
- 30 • There could be a 20% reduction in the Butte grazing allotment that could have
31 potential adverse economic impacts on two permittees.
32
 - 33 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
34 erosion by wind and runoff, sedimentation, and soil contamination) could
35 occur.
36
 - 37 • Existing oil and gas leases represent a prior existing right that could affect
38 solar energy development of the SEZ.
39
 - 40 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
41 wet-cooling options would not be feasible.
42
 - 43 • Clearing of a large portion of the proposed SEZ could adversely affect dry
44 wash and dry lake habitats, and playa and sand dune and sand transport areas,
45 depending on the amount of habitat disturbed. The establishment of noxious
46 weeds could result in habitat degradation. Deposition of fugitive dust could
47 cause reduced productivity or changes in plant community structure.



1

2 **FIGURE C.6.1-1 Proposed Escalante Valley SEZ as Presented in the Draft Solar PEIS**

- 1 • Potentially suitable habitat for 18 special status species and more than
2 70 wildlife species occurs in the affected area of the proposed SEZ; less than
3 1.1% of the potentially suitable habitat for any of these species occurs in the
4 region that would be directly affected by development.
5
- 6 • If aquatic biota are present, they could be affected by the direct removal of
7 surface water features within the construction footprint. If present, aquatic
8 biota could also be affected by a decline in habitat quantity and quality due to
9 water withdrawals and changes in drainage patterns, as well as increased
10 sediment and contaminant inputs associated with ground disturbance and
11 construction activities.
12
- 13 • Temporary exceedances of ambient air quality standards for particulate matter
14 at the SEZ boundaries are possible during construction. These high
15 concentrations, however, would be limited to the immediate area surrounding
16 the SEZ boundary.
17
- 18 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
19 could be observed by residents nearest to the SEZ.
20
- 21 • During operations, noise levels at the nearest residences could be about equal
22 to the Iron County regulation level if concentrating solar power facilities with
23 energy storage technologies (which could extend the daily operational time by
24 6 hours or more) were used at the SEZ.
25
- 26 • Few, if any, impacts on significant paleontological resources are likely to
27 occur. The proposed SEZ has a high potential for containing archaeological
28 sites in the dune area in the southwest portion of the SEZ.
29
- 30 • Low-income populations occur within a 50-mi (80-km) radius of the proposed
31 SEZ boundary; thus adverse impacts of solar development could
32 disproportionately affect low-income populations.
33
34

35 **C.6.1.2 Summary of Comments Received**

36
37 Most of the comments received on the proposed Escalante Valley SEZ were in favor of
38 identifying the area as an SEZ (HEAL Utah, The Wilderness Society et al.³⁰). The Wilderness
39 Society et al. proposed adjusting the boundary adjacent to the dry lakebed in the southwest
40 portion of the SEZ with a buffer to protect the area and using existing access roads rather than
41 constructing a new road from State Route 56.

³⁰ The Wilderness Society, Wild Utah Project, Southern Utah Wilderness Alliance, Grand Canyon Trust, Center for Native Ecosystems, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Utah SEZs. Those comments are attributed to The Wilderness Society et al.

1 The Western Watersheds Project suggested that the U.S. Department of the Interior
2 Bureau of Land Management (BLM) include the retirement of grazing allotments as a mitigation
3 measure. There were concerns over vegetation removal and soil disturbance within the Escalante
4 Valley SEZ, and stringent guidelines and mitigation measures to preserve native vegetation and
5 soils were recommended to alleviate impacts (Wilderness Society et al.).
6

7 The Western Watersheds Project recommended that cumulative impact analysis include
8 an analysis of the proposed new road construction, and new transmission lines and upgrades,
9 particularly for species such as the greater sage-grouse, western burrowing owl, ferruginous
10 hawk, pygmy rabbit, bald eagle, and Utah prairie dog. The Western Watersheds Project also
11 recommended that the BLM perform cultural resource surveys and Native American consultation
12 prior to defining the SEZ, to ensure that the SEZ is an area with low resource conflicts.
13
14

15 **C.6.1.3 Changes to the SEZ**

16
17 No boundary revisions were identified for the proposed SEZ. However, areas specified
18 for non-development under SEZ-specific design features were mapped, where data were
19 available. For the proposed Escalante Valley SEZ, 12 acres (0.05 km²) of dry lake area and
20 69 acres (0.28 km²) of dune area were identified as non-development areas (see Figure C.6.1-2).
21 The remaining developable area within the SEZ is 6,533 acres (26.4 km²).
22
23

24 **C.6.1.4 Wilderness Character Status of SEZ**

25
26 A recently maintained inventory of wilderness characteristics was used to determine
27 whether public lands within the Escalante Valley SEZ have wilderness characteristics. The
28 finding of this inventory was that these lands do not contain wilderness characteristics
29
30

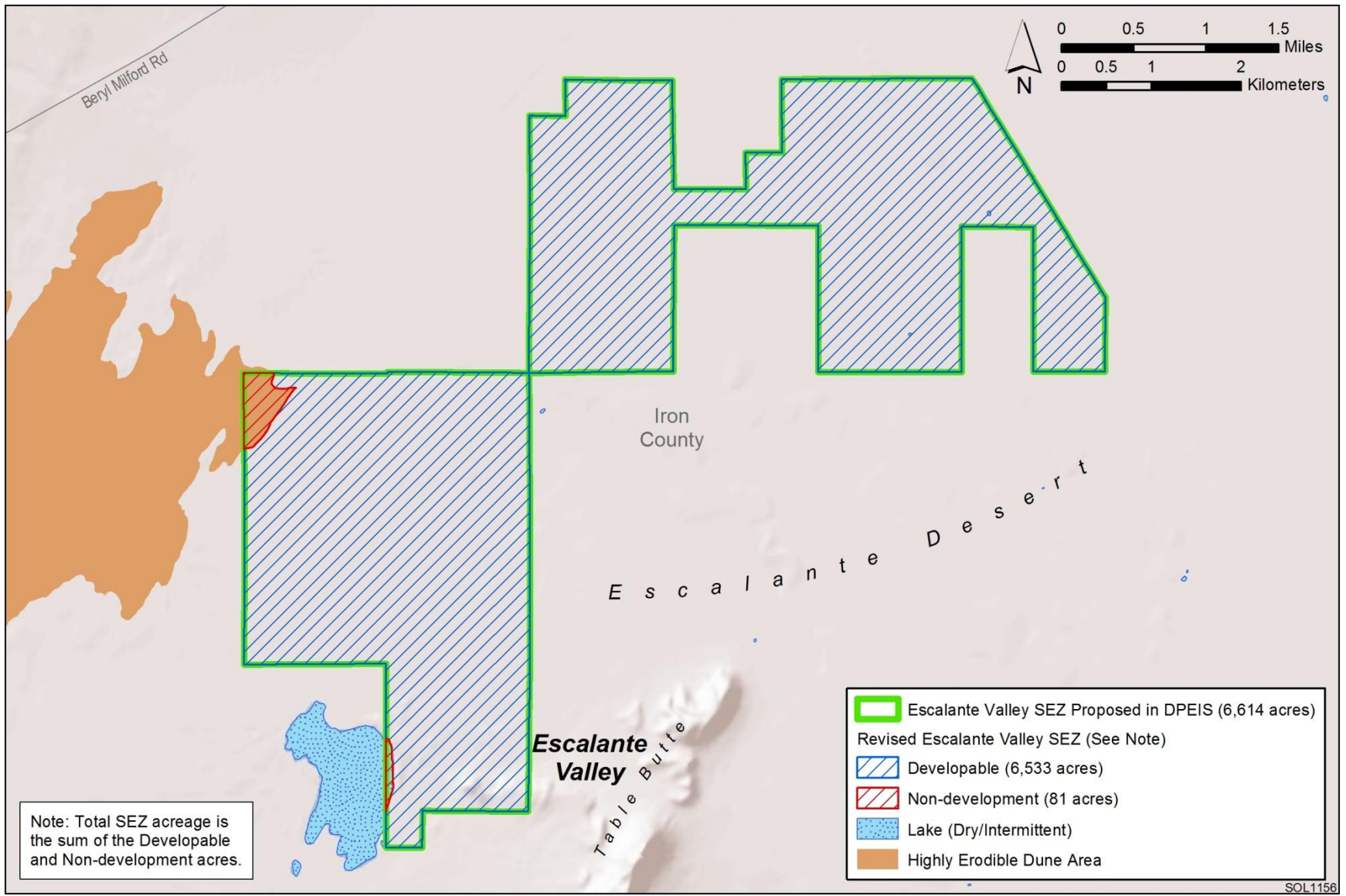
31 **C.6.1.5 Additional Data Collection Recommended**

32 33 34 **C.6.1.5.1 Lands and Realty**

35
36 None.
37
38

39 **C.6.1.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

40
41 None.
42



SOL1156

FIGURE C.6.1-2 Proposed Escalante Valley SEZ as Described in this Supplement

1 **C.6.1.5.3 Rangeland Resources**

2
3
4 *Livestock Grazing.* The potential impact on the Butte grazing allotment needs to be
5 reviewed with BLM field office staff.
6

7
8 *Wild Horses and Burros.* None.
9

10
11 **C.6.1.5.4 Recreation**

12
13 None.
14

15
16 **C.6.1.5.5 Military and Civilian Aviation**

17
18 None.
19

20
21 **C.6.1.5.6 Geologic Setting and Soil Resources**

22
23 None.
24

25
26 **C.6.1.5.7 Minerals**

27
28 Additional information on leasable and strategic minerals in the vicinity of the proposed
29 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior’s decision
30 on a proposed 20-year withdrawal of SEZ lands.
31

32
33 **C.6.1.5.8 Water Resources**

34
35 The following additional data and actions would help further characterize potential
36 impacts on water resources for the proposed Escalante Valley SEZ. A more detailed discussion
37 of each of these activities is included in the water resources action plan provided in Section C.7.2
38 of this appendix.
39

- 40 • Prepare a planning-level water resources inventory of the Beryl-Enterprise
41 Basin.
42
43 • Identify additional dry lakes, ephemeral stream channels, and alluvial
44 fan features for non-development areas through consultation with BLM
45 Utah, Utah Division of Water Resources, Utah Division of Water Rights,

1 U.S. Environmental Protection Agency, and U.S. Army Corps of Engineers
2 (USACE) with a focus on:

- 3 – Dick Palmer Wash,
- 4 – Unnamed washes in the southwestern portion of the SEZ, and
- 5 – The dry lakebed to the west of Table Butte.

- 6
- 7 • Perform field surveys and hydrologic analyses to support jurisdictional water
8 determinations and floodplain identifications. Tasks include:
 - 9 – Surveying Dick Palmer Wash and unnamed washes for surface elevations,
10 high water marks, and sediment conditions; and
 - 11 – Conducting hydrologic rainfall-runoff-routing analyses to identify
12 100-year floodplain areas.
- 13
- 14 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
15 water determinations for the SEZ. Water features that need to be considered
16 include:
 - 17 – Dick Palmer Wash, and
 - 18 – The unnamed washes.
- 19
- 20 • Identify 100-year floodplain non-development areas (if they exist) for the dry
21 lake, Dick Palmer Wash, and unnamed washes identified during field survey.
22 This task would require coordination with the Federal Emergency
23 Management Agency and the following agencies:
 - 24 – Utah Department of Public Safety, and
 - 25 – Utah Geological Survey.
- 26
- 27 • Describe the formation of a stakeholder committee to conduct long-term
28 monitoring of water resources. This activity would entail:
 - 29 – Identifying key stakeholder agencies,
 - 30 – Discussing general features of a monitoring program, and
 - 31 – Working with the U.S. Geological Survey to develop groundwater
32 monitoring well design and numerical groundwater models.
- 33
- 34 • Develop a simple, numerical groundwater model for the Beryl-Enterprise
35 Basin to evaluate the potential impacts of full build-out. This activity would
36 entail:
 - 37 – Assessing the potential for drawdown impacts on the basin, which is
38 already in overdraft, including the potential for land subsidence.
- 39

40

41 **C.6.1.5.9 Ecological Resources**

42

43

44 ***Vegetation and Plant Communities.*** The following additional data-gathering actions
45 would help further characterize potential impacts on vegetation and plant communities for the
46 proposed Escalante Valley SEZ:

- 1 • Identify and map the location and areal extent of desert riparian, desert dry
2 wash, greasewood flat, dry lake, and playa habitats within the SEZ. Identify
3 and map the location and areal extent of these habitats outside the SEZ that
4 may be affected by hydrologic changes, including groundwater elevations,
5 and changes in water, sediment, and contaminant inputs associated with
6 runoff. Such efforts could determine habitat characteristics, including water
7 source, hydrologic regime, and dominant plant species.
8
- 9 • Identify and map the location and areal extent of sand dunes and sand
10 transport systems within the SEZ.
11
12

13 **Wildlife.** The following additional data-gathering actions would help further characterize
14 potential impacts on wildlife resources for the SEZ:
15

- 16 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
17 SEZ as a movement/migratory corridor or as important habitat for mule deer
18 and pronghorn.
19
- 20 • Identify and map the location and areal extent of wash, playa, and sand dune
21 and sand transport habitat within the SEZ. These areas are important habitat
22 for a number of wildlife species.
23
24

25 **Aquatic Biota.** Investigations recommended under the water resources action plan
26 (Section C.6.1.5.8) would be useful in characterizing and protecting habitat available to aquatic
27 biota. Washes and dry lakes in the Escalante Valley SEZ are typically dry and are likely to
28 contain water only for brief periods following precipitation. They may or may not contain
29 aquatic biota; therefore, preliminary evaluations of these surface water features could be
30 conducted to determine the potential for aquatic communities to be present. Any aquatic biota
31 found in these features would likely be desiccation adapted aquatic invertebrates typical of the
32 region. The primary value of these features may be to nonaquatic animals that consume aquatic
33 biota within the SEZ.
34
35

36 **Special Status Species.** The following additional data-gathering actions would be useful
37 in further characterizing and protecting habitat available to special status species:
38

- 39 • Conduct pre-disturbance surveys within the SEZ to determine the presence
40 and abundance of those special status species that are (1) federally listed,
41 proposed for listing, or candidates for listing under the Endangered Species
42 Act (ESA); or (2) designated as sensitive by the Utah BLM State Office.
43 These species are listed in Table C.6.1-1. Surveys should focus on areas
44 identified as potentially suitable, and the suitability of these habitats to support
45 these special status species should be determined in the field. All field-
46 determined suitable habitats for special status species should be mapped.

1 **TABLE C.6.1-1 Special Status Species That May Occur in the Vicinity of the Proposed Escalante**
 2 **Valley SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Compact cat's-eye	<i>Cryptantha compacta</i>	BLM-S	Salt desert shrub and mixed shrub communities at elevations between 5,000 and 8,400 ft. ^d Known from southwestern Millard County and northwestern Beaver County, Utah, and eastern Nevada. Nearest recorded occurrence is 50 mi ^e northwest of the SEZ. About 2,161,906 acres ^f of potentially suitable habitat occurs within the SEZ region.
Jone's globemallow	<i>Sphaeralcea caespitosa</i>	BLM-S	Known from at least four occurrences in western Utah and six occurrences in eastern Nevada on federal and state lands on dolomite calcareous soils in association with mixed shrub, pinyon-juniper, and grassland communities at elevations between 5,000 and 6,500 ft. Nearest recorded occurrence is 38 mi north of the SEZ. About 4,150,988 acres of potentially suitable habitat occurs within the SEZ region.
Long-calyx milkvetch	<i>Astragalus oophorus lonchocalyx</i>	BLM-S	Endemic to the Great Basin in western Utah and eastern Nevada in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft. Nearest recorded occurrences are 30 mi west of the SEZ. About 4,065,963 acres of potentially suitable habitat occurs within the SEZ region.
Money wild buckwheat	<i>Eriogonum nummulare</i>	BLM-S	Western Utah and eastern Nevada on gravelly washes, flats, and slopes in saltbush and sagebrush communities and pinyon-juniper woodlands. Nearest recorded occurrence is 30 mi west of the SEZ. About 3,659,646 acres of potentially suitable habitat occurs within the SEZ region.
Nevada willowherb	<i>Epilobium nevadense</i>	BLM-S	Known from western Utah in Iron, Millard, and Washington Counties, as well as Lincoln County, Nevada, in pinyon-juniper woodlands and oak/mountain mahogany communities, on talus slopes and rocky limestone outcrops. Elevation ranges between 5,000 and 8,800 ft. Nearest recorded occurrence is in the Dixie National Forest, approximately 30 mi southwest of the SEZ. About 2,058,301 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM-S	Known as a winter resident throughout the SEZ region, most commonly along large bodies of water where fish and waterfowl prey are available. Wintering areas are associated with open water. May occasionally forage in arid shrubland habitats. Nearest recorded occurrences are from Fourmile and Mud Spring Washes 10 mi north and northeast of the SEZ. About 2,830,633 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk ^g	<i>Buteo regalis</i>	BLM-S	Known as a winter resident throughout the SEZ region. Grasslands, shrublands, agricultural lands, and the periphery of pinyon-juniper forests throughout the SEZ region. Quad-level occurrences intersect the affected area. About 1,712,600 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.6.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds (Cont.)</i>			
Greater sage-grouse	<i>Centrocercus urophasianus</i>	ESA-C	A year-round resident in the SEZ region. Plains, foothills, and mountain valleys dominated by sagebrush throughout the SEZ region. Lek sites are located in relatively open areas surrounded by sagebrush or in areas where sagebrush density is low. Nesting usually occurs on the ground where sagebrush density is higher. Quad-level occurrences intersect the affected area east of the SEZ. Crucial brooding habitat for the species exists within 10 mi east of the SEZ. About 1,591,858 acres of potentially suitable habitat occurs within the SEZ region.
Long-billed curlew	<i>Numenius americanus</i>	BLM-S	Summer resident and migrant throughout the SEZ region in short-grass grasslands near standing water. Species is likely to be transient only in the vicinity of the SEZ. Nearest recorded occurrences are from the Beaver River, approximately 30 mi northeast of the SEZ. About 237,630 acres of potentially suitable habitat occurs within the SEZ region.
Northern goshawk	<i>Accipiter gentilis</i>	BLM-S	A year-round resident in the SEZ region. Mature mountain forest and riparian zone habitats throughout the SEZ region. Nests in trees in mature deciduous, coniferous, and mixed forests. Forages in both heavily forested and relatively open shrubland habitats. Nearest recorded occurrences are approximately 25 mi southeast of the SEZ. About 591,239 acres of potentially suitable habitat occurs within the SEZ region.
Short-eared owl	<i>Asio flammeus</i>	BLM-S	A winter resident in the SEZ region. Grasslands, shrublands, and other open habitats throughout the SEZ region. Nearest recorded occurrences are within 10 mi northwest of the SEZ. About 3,990,928 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	A year-round resident in the SEZ region. Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Nearest recorded occurrences are about 5 mi from the SEZ. About 2,108,869 acres of potentially suitable habitat occurs within the SEZ region.
<i>Mammals</i>			
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S	Wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roost sites have been reported in buildings and caves. Nearest recorded occurrences are 30 mi south of the SEZ. About 4,742,697 acres of potentially suitable habitat occurs within the SEZ region.
Kit fox	<i>Vulpes macrotis</i>	BLM-S	Open prairie, plains, and desert habitats where it inhabits burrows and preys on rodents, rabbits, hares, and small birds. Nearest recorded occurrences are approximately 35 mi northwest of the SEZ. About 1,889,326 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.6.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals</i>			
<i>(Cont.)</i>			
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-S	Sagebrush-shrubland habitats throughout the SEZ region. Prefers loose soils to dig burrows. Nearest recorded occurrences are about 5 mi from the SEZ. About 1,016,858 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S	Near forests and shrubland habitats throughout the SEZ region. Uses caves and rock crevices for day roosting and winter hibernation. Nearest recorded occurrences are 25 mi southeast of the SEZ. About 3,580,326 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Near forests and shrubland habitats below 9,000-ft elevation throughout the SEZ region. The species may use caves, mines, and buildings for day roosting and winter hibernation. Nearest recorded occurrences are about 10 mi north of the SEZ. About 3,197,836 acres of potentially suitable habitat occurs within the SEZ region.
Utah prairie dog	<i>Cynomys parvidens</i>	ESA-T	Endemic to southwestern Utah in grasslands in level mountain valleys and areas with deep, well-drained soils. Colonies reside in underground burrow systems, which are dynamic in size and location. Nearest recorded occurrences are about 5 mi north of the SEZ. Potentially suitable habitat occurs along Fourmile Wash about 3 mi north of the SEZ. About 573,137 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Utah BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-T = listed as threatened under the ESA.

^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3

1 Target species and survey protocols should be developed in coordination with
2 the U.S. Fish and Wildlife Service and Arizona Game and Fish Department.

3
4 The Draft Solar PEIS presents a table of special status species for which
5 potential impacts need to be evaluated prior to development in the proposed
6 Escalante SEZ. The list of species presented in Table 13.1.12.1-1 of the Draft
7 Solar PEIS also includes species listed by the State of Utah and species ranked
8 by the State of Utah as S1 or S2 or species of concern. On the basis of design
9 features presented in the Draft Solar PEIS, the potential for impacts on these
10 additional species will also need to be addressed before development could
11 occur in the SEZ.

- 12
13 • Identify and map the location and areal extent of woodland habitats within the
14 SEZ. Woodland habitats that may occur in the area of direct effects include
15 pinyon-juniper and oak/mahogany woodlands. The suitability of these
16 woodland habitats for special status species should be determined. Species
17 potentially associated with these habitats include the Nevada willowherb and
18 northern goshawk (nesting habitat).

19 20 21 **C.6.1.5.10 Air Quality and Climate**

22
23 None.

24 25 26 **C.6.1.5.11 Visual Resources**

27
28 As indicated in the Draft Solar PEIS, the Escalante Valley SEZ is located within
29 proximity of two sensitive visual resource areas (SVRAs), as well as several sensitive viewing
30 locations (SVLs), such as towns and roadways. The SVRAs include the Old Spanish National
31 Historic Trail and the Three Peaks Special Recreation Management Area (SRMA). Each of these
32 areas would be subject to weak levels of visual contrast; higher contrast levels may be
33 experienced in the peaks and northwest slopes of the Three Peaks SRMA.

34
35 The following steps could be taken to better understand potential impacts on these
36 SVRAs and SVLs from solar development in the Escalante Valley SEZ:

- 37
38 • Identify key observation points (KOPs) within these areas through working
39 with the management agency or other local stakeholders.
- 40
41 • Conduct viewshed analyses from the KOPs to determine how much of the
42 SEZ would be in view from each KOP.
- 43
44 • As deemed necessary, based on viewshed analysis results, prepare wireframe
45 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
46 depicting the 80% development scenario to better estimate potential impacts.

1 This additional analysis may help judge potential visual contrast more accurately for
2 KOPs in these areas.

3 4 5 **C.6.1.5.12 Acoustic Environment**

6
7 None.

8 9 10 **C.6.1.5.13 Paleontological Resources**

11 The Escalante Valley SEZ is located in an area where the Potential Fossil Yield
12 Classification of the SEZ has been determined to be Class 2. Therefore, the potential for impacts
13 on paleontological resources is low. No additional data collection is needed at this time, although
14 verification of this classification is recommended at a project-specific level.
15
16

17 18 **C.6.1.5.14 Cultural Resources and Native American Concerns**

19
20 Less than 4% of the proposed Escalante Valley SEZ has been surveyed (approximately
21 256 acres [1.0 km²] out of 2 block survey projects and 8 linear surveys that cross into the
22 SEZ).³¹ At least five sites, possibly seven, have been recorded within the SEZ. Two of the sites
23 are eligible for listing in the *National Register of Historic Places*. Cultural resource impacts are
24 most likely in the southern and western portions of the SEZ, especially in the dune areas. No
25 sites have been recorded in the northern and eastern portions. Approximately 60 sites have been
26 recorded within 5 mi (8 km) of the SEZ. Significant prehistoric resources, including Paleoindian
27 sites, are likely to be located in dune areas and around margins of the playa within the Escalante
28 Valley SEZ. The Dominguez Escalante Trail and the Old Spanish National Historic Trail are
29 both relatively close to the SEZ, within 6 mi (9.7 km). The destruction or degradation of
30 important plant resources, and the destruction of habitat or impediments to the movement of
31 culturally important wildlife, are also potential impacts of concern within the SEZ.
32

33 The following additional data collection efforts could reduce the uncertainty about
34 potential impacts on cultural resources:
35

- 36 • Conduct a Class I literature file search to better understand (1) the site
37 distribution pattern in the vicinity of the SEZ, (2) trail networks through
38 existing ethnographic reports, and (3) overall cultural sensitivity of the
39 landscape. The Class I search will also help to resolve the discrepancy
40 between BLM and Utah State Historic Preservation Office data sets for this
41 SEZ.
- 42 • Conduct a Class II Stratified Random Sample Survey of SEZ to obtain a 10%
43 sample (roughly 661 acres [2.7 km²]). If the roughly 256 acres (1.0 km²)
44

³¹ New information not presented in the Draft Solar PEIS.

1 previously surveyed meets current survey standards, then approximately
2 405 acres (1.6 km²) of survey could satisfy a 10% sample. Areas of interest,
3 as determined through a Class I review, should also be identified prior to
4 establishing the survey design and sampling strategy, such as the dune areas
5 and playa margin in the southwest portion of the SEZ. Subsurface testing of
6 dune areas should be a component of the sampling strategy as well.

- 7
- 8 • Prepare a cultural sensitivity map based on results of the Class II survey and
9 Class I review.
- 10
- 11 • Identify high potential segments of the Old Spanish National Historic Trail
12 and viewshed analyses from key points along the trail. The closest point is
13 within 6 mi (9.7 km), but is obscured from view at that location by Table
14 Butte. Dominguez-Escalante Trail is not a National Historic Trail, but it is a
15 very important historic trail that should potentially be investigated further.
- 16
- 17 • Continue with government-to-government consultation as described in
18 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
19 not included in the original studies to determine whether those Tribes have
20 similar concerns. The Escalante Valley SEZ falls in the traditional use area of
21 primarily the Southern Paiute, but also the Western Shoshone and Ute.
22 Potential topics presented in the Draft Solar PEIS and/or in an ethnographic
23 study with the Paiute Indian Tribe of Utah, representing the Southern Paiute,
24 to be discussed during consultation include Table Butte, Parowan Gap, Doctor
25 Rock, spiritual trail systems, mountain springs and other water sources,
26 volcanic hot springs, habitation sites as places of cultural importance, clay and
27 rock resources, burial sites, rock art, ceremonial areas and healing places, and
28 plant and animal resources. The agencies value the information shared by the
29 Tribes during the ethnographic study and will consider their input in striving
30 to minimize the impacts of solar development in the SEZ. The completed
31 ethnographic study will be available in its entirety on the Solar PEIS Web site
32 (<http://solareis.anl.gov>). A summary of the contents of that report is also
33 provided in the following text box.
- 34
- 35

Tribal Perspectives on the Significance of Escalante Valley SEZ

The Escalante Valley SEZ region was traditionally occupied, used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. The Paiute Indian Tribe of Utah (PITU) field consultations, summarized here, represent the cultural interests of the Southern Paiute peoples. These Numic-speaking peoples have gone on record in past projects and stipulate here again that they are the American Indian people responsible for the cultural resources (natural and man-made) in this study area. Their ancestors were placed here by the Creator and have subsequently lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation.

PITU has participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

36

Tribal Perspectives on the Significance of Escalante Valley SEZ (Cont.)

The area under discussion extends beyond the boundaries of the SEZ because Southern Paiute Tribal representatives maintain that, in order to understand Southern Paiute connections to the SEZ, it must be placed in context with neighboring places and their associated cultural resources.

The SEZ region includes plant communities located directly in the SEZ boundary, geological features and water sources located just outside the SEZ boundaries, and trail systems that people used from neighboring or distance communities that pass through the SEZ study area to reach nearby medicine and ceremonial areas.

The Escalante Valley SEZ region is in an active geothermal and volcanic area. Places that contain the presence of volcanic activity are considered sacred and powerful. Southern Paiute people believe that volcanic events are moments when Puha (power or energy) deep inside the earth is brought to the surface as a way for the land to renew itself and to distribute Puha across the landscape. For millennia, Indian people have traveled places of volcanic activity like Thermo Hot Springs (32 mi [51 km] northeast) to engage in a variety of ceremonial activities. These activities include the curing of individuals using both the sulfuric muds and the mineralized, hot water. Other Indian peoples came to the hot spring to purify themselves before going to distant destinations where special activities such as vision quests or ceremonial balancing activities would occur. Trails from many directions came to the hot spring, bringing people on pilgrimage between the hot springs and distant destinations.

The Indian Tribal representatives interviewed at the Escalante SEZ study area indicated that this place is especially important because of Sulphur Spring (5 mi [8 km] north), the traditional spring near Lund that served as both a stopping place for people seeking healing in the nearby hills and a community location. Sulphur Spring was a central place for travelers going back and forth across the Escalante Desert. Because of its regional centrality and because it had a permanent Indian community before the arrival of non-native people, Sulphur Spring was a place of social and ceremonial gathering.

The Doctor Rock (28 mi [45 km] northwest) was identified by Tribal representatives as a key cultural feature in the Escalante Valley SEZ study area. They described this as a traditional area used by Southern Paiute *Puha'gants* (shaman) to tend to people who are ill and in need of rebalancing and healing. The *Puha'gants* would conduct complex healing ceremonies that could only be performed in a place of Puha, such as a doctor rock. Similar to the Shoshone Doctor Rock located near the Gold Point SEZ and the town of Lida, Nevada, the Southern Paiute Doctor Rock draws its power from the volcanic flows above and below ground. People traveling here from the east would pass through Parowan Gap (36 mi [58 km] east). A Southern Paiute Creation story explains the existence of the Parowan Gap in the middle of the volcanic ridge and the presence of thousands of rock peckings and rock paintings (called *tumpituxwinap* in Southern Paiute, meaning storied rocks).

Table Butte (4 mi [6 km] south) represents a major cultural feature the Escalante Valley SEZ region. Table Butte represents a powerful place in Southern Paiute epistemology because of its station in the Escalante Valley. It is a place of great contrast as a unique, isolated highpoint in the wide low valley. The butte gains additional power due to its hydrological role as a shedding point for water. Power is closely associated with water and its flow (Stoffle et al. 2001); thus, Table Butte represents an important element in shaping the movement of power in the immediate area.

Viewscapes are necessary for certain types of ceremonial activities. Viewscapes are essential for vision questing at the top of Mountain Spring Peak (16 mi [26 km] northwest) and Table Butte. The viewscape from the Doctor Rock has been a critical component of doctoring occurring in this area. From the Doctor Rock, a person has a view of Table Butte and the SEZ study area. Viewscapes such as this are important for ceremonial activity because they allow the *Puha'gant* to pray to nearby features and draw upon their power as he or she performs a given ceremony. These views need to be unobstructed; otherwise, there is a risk of disrupting the flow of Puha and the prayers and causing the ceremony to fail.

Tribal Perspectives on the Significance of Escalante Valley SEZ (Cont.)

During multiple field visits, Native American representatives identified 16 traditional use plants and 27 traditional use animals within the Escalante Valley SEZ study area. The presence of these plants and animals both physically and spiritually add to the study area’s overall cultural importance because they are associated with medicine, ceremony, and Creation. Animals play an important role in Creation and Origin stories and are viewed by Southern Paiute people as Creator beings. These animals include the coyote, cottontail rabbit, deer, red-tailed hawks, and rattlesnakes.

1
2
3
4
5
6
7
8
9
10
11

C.6.1.5.15 Socioeconomics and Environmental Justice

None.

C.6.1.5.16 Cumulative Impact Considerations

None.

1 **C.6.2 Milford Flats South**
2
3

4 **C.6.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Milford Flats South solar energy zone (SEZ), as presented in the Draft
8 Solar PEIS, had a total area of 6,480 acres (26 km²). It is located in Beaver County in
9 southwestern Utah (Figure C.6.2-1). The towns of Minersville and Milford are about 5 mi (8 km)
10 east of, and 13 mi (21 km) north–northeast of, the SEZ respectively
11

12 The Draft Solar PEIS identified a 345-kV transmission line that runs north to south about
13 19 mi (31 km) southeast of the eastern boundary of the SEZ as the nearest point of connection of
14 the SEZ to the grid. The location of new transmission that could be constructed for this SEZ in
15 the future may be different from that assumed in the Draft Solar PEIS. Details on the updated
16 transmission impact assessment to be included in the Final Solar PEIS are provided in
17 Section C.7.1 of this appendix. The Draft Solar PEIS also identified State Route 21/130, located
18 about 5 mi (8 km) to the east of the SEZ, as the nearest major road, and assumed that a new
19 access road would be constructed from the proposed SEZ to State Route 21/130 to support
20 development. As for a new transmission line, the location of a new access road that could be
21 constructed in the future may be different from that assumed in the Draft Solar PEIS. Analysis of
22 transmission lines and/or access roads will be completed, as necessary, as part of the project-
23 specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
24

25 Potential adverse impacts identified in the Draft Solar PEIS included the following:
26

- 27 • Solar development would require coordination with existing rights-of way for
28 two energy pipelines, one power line, two roads, and one telecommunications
29 line crossing the SEZ.
30
- 31 • There could be a 10 to 13% reduction in two grazing allotments that could
32 have potential adverse economic impacts on six permittees.
33
- 34 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
35 erosion and deposition by wind and runoff, sedimentation, and soil
36 contamination) could occur.
37
- 38 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
39 wet-cooling options would not be feasible.
40
- 41 • Clearing of a large portion of the proposed SEZ could primarily affect salt
42 deserts scrub, big sagebrush shrubland, semidesert shrub steppe, and
43 greasewood flats and may adversely affect dry washes, depending on the
44 amount of available habitat disturbed. The establishment of noxious weeds
45 could result in habitat degradation. Deposition of fugitive dust could cause
46 reduced productivity or changes in plant community structure.
47

- 1 • Potentially suitable habitat for 20 special status species and more than
2 70 wildlife species occurs in the affected area of the proposed SEZ; less than
3 1.0% of the potentially suitable habitat for any of these species occurs in the
4 region that would be directly affected by development. Development within
5 Minersville Canal could adversely affect amphibians, birds, and mammals.
6
- 7 • If aquatic biota are present, they could be affected by the direct removal of
8 surface water features within the construction footprint. If present, aquatic
9 biota could also be affected by a decline in habitat quantity and quality due to
10 water withdrawals, changes in drainage patterns, as well as increased sediment
11 and contaminant inputs associated with ground disturbance and construction
12 activities.
13
- 14 • Temporary exceedance of ambient air quality standards for particulate
15 matter at the SEZ boundaries is possible during construction. These high
16 concentrations, however, would be limited to the immediate area surrounding
17 the SEZ boundary.
18
- 19 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
20 could be observed by residents nearest to the SEZ. Travelers on State
21 Routes 21 and 129 might observe moderate levels of visual contrast associated
22 with solar development within the SEZ.
23
- 24 • During operations, noise levels at the nearest residences could be about equal
25 to the Iron County regulation level if concentrating solar power facilities with
26 energy storage technologies (which could extend the daily operational time by
27 6 hours or more) were used at the SEZ.
28
- 29 • Few, if any, impacts on significant paleontological resources are likely to
30 occur.
31
- 32 • Low-income populations occur within a 50-mi (80-km) radius of the proposed
33 SEZ boundary; thus adverse impacts of solar development could
34 disproportionately affect low-income populations.
35
36

37 **C.6.2.2 Summary of Comments Received**

38
39 Most of the comments received on the proposed Milford Flats South SEZ were in favor
40 of identifying the area as an SEZ and cited that the region is already fragmented and has low
41 habitat value for many species (The Wilderness Society et al.,³² Sierra Club, Wild Utah, HEAL

³² The Wilderness Society, Wild Utah Project, Southern Utah Wilderness Alliance, Grand Canyon Trust, Center for Native Ecosystems, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Utah SEZs. Those comments are attributed to The Wilderness Society et al.

1 Utah, and others). The National Park Service (NPS) was concerned that development of the SEZ
2 would have a 12% impact on Utah prairie dog habitat, which is a substantial portion of this
3 species' available and potentially suitable habitat in the Utah West Desert. The NPS recommends
4 that additional analysis of the impacts on the Utah prairie dog be provided in the Final Solar
5 PEIS for the proposed Utah SEZs, including cumulative impact analysis. The NPS also
6 recommended that additional analysis be provided in the Final Solar PEIS for impacts on the
7 greater sage-grouse for the proposed SEZs in Utah, and that analysis regarding effectiveness of
8 design features that avoid lek and nesting habitat should be conducted for each SEZ. The
9 U.S. Fish and Wildlife Service (USFWS) commented that the assumed transmission corridor
10 would cross greater sage-grouse brood-rearing habitat for the Black Mountains-Mineral East leks
11 and is also part of the Bald Hills Bird Habitat Conservation Area. The USFWS recommended
12 that the PEIS use the existing designated transmission corridor adjacent to and on the west side
13 of the SEZ.
14

15 The Wilderness Society et al. indicated that the Utah Division of Wildlife Resources
16 (UDWR) quad-level occurrences for greater sage-grouse intersect the SEZ itself, not just the
17 affected area. The Wilderness Society et al. suggested use of a different transmission line and
18 access road route than were assumed in the Draft Solar PEIS to minimize surface disturbance.
19 The Wilderness Society et al. is also concerned with the fragile soil and potential for fugitive
20 dust generation at the proposed Milford Flats South SEZ. The Western Watersheds Projects
21 requested that the cumulative impacts assessment include analysis of the impacts of expected
22 new road construction, and new transmission lines and upgrades on the greater sage-grouse,
23 western burrowing owl, ferruginous hawk, pygmy rabbit, bald eagle, and Utah prairie dog.
24
25

26 **C.6.2.3 Changes to the SEZ**

27

28 No boundary revisions were identified for the proposed SEZ. However, areas specified
29 for non-development under SEZ-specific design features were mapped, where data were
30 available. For the proposed Milford Flats South SEZ, 228 acres (0.9 km²) composing the
31 Minersville Canal were identified as a non-development area (see Figure C.6.2-2). The
32 remaining developable area within the SEZ is 6,252 acres (25.3 km²).
33
34

35 **C.6.2.4 Wilderness Character Status of SEZ**

36

37 A recently maintained inventory of wilderness characteristics was used to determine
38 whether public lands within the Milford Flats South SEZ have wilderness characteristics. The
39 finding of this inventory was that these lands do not contain wilderness characteristics.
40
41

42 **C.6.2.5 Additional Data Collection Recommended**

43
44

45 **C.6.2.5.1 Lands and Realty**

46

47 None.

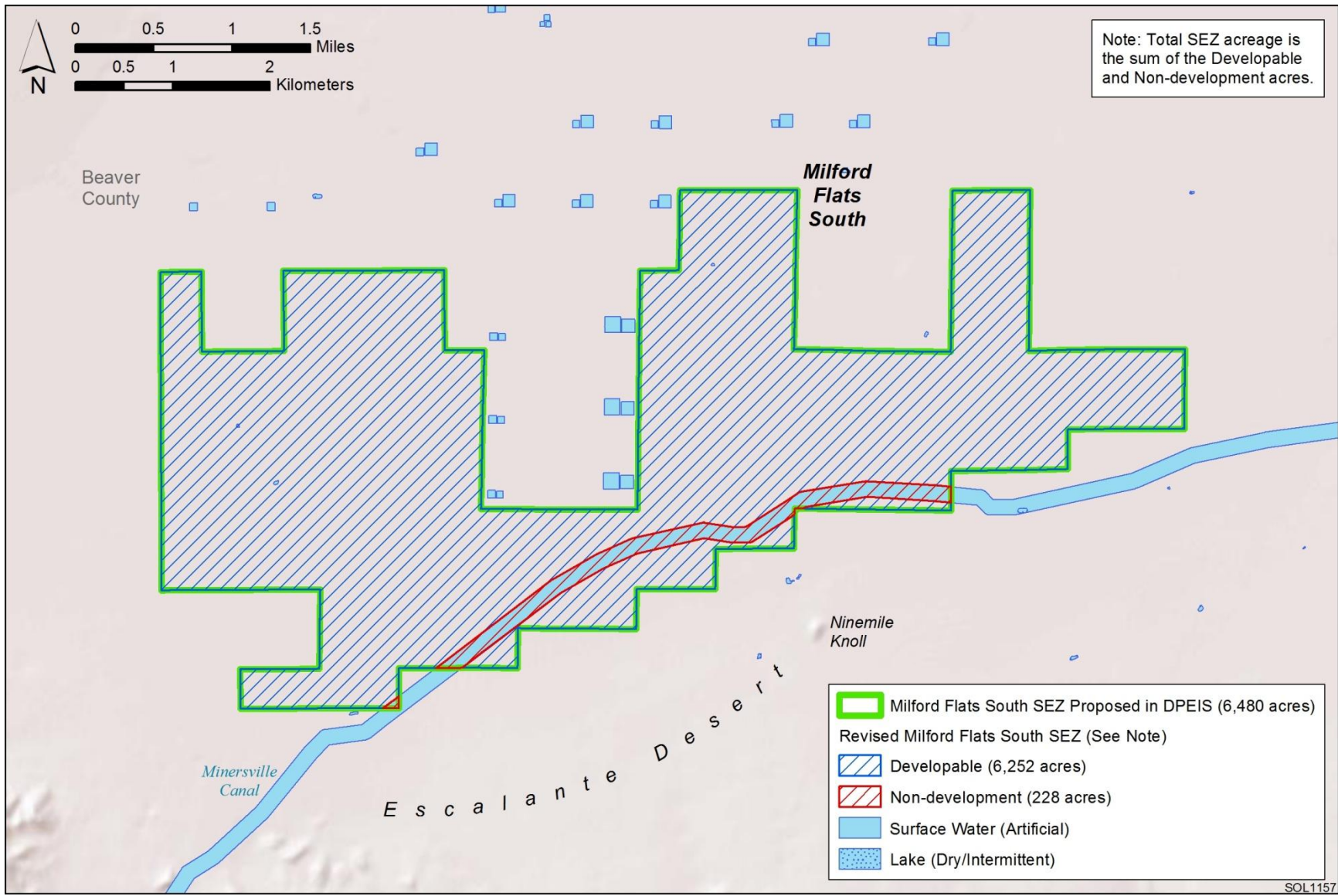


FIGURE C.6.2-2 Proposed Milford Flats South SEZ as Described in this Supplement

1 **C.6.2.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

2
3 None.

4
5
6 **C.6.2.5.3 Rangeland Resources**

7
8
9 *Livestock Grazing.* None.

10
11
12 *Wild Horses and Burros.* None.

13
14
15 **C.6.2.5.4 Recreation**

16
17 The status of off-highway vehicle use designations in the area will be reviewed with
18 U.S. Department of the Interior Bureau of Land Management (BLM) field office staff.

19
20
21 **C.6.2.5.5 Military and Civilian Aviation**

22
23 None.

24
25
26 **C.6.2.5.6 Geologic Setting and Soil Resources**

27
28 None.

29
30
31 **C.6.2.5.7 Minerals**

32
33
34 Additional information on leasable and strategic minerals in the vicinity of the proposed
35 SEZ will be provided in the Final PEIS to inform the Department of the Interior's decision on a
36 proposed 20-year withdrawal of SEZ lands.

37
38
39 **C.6.2.5.8 Water Resources**

40
41 The following additional data and actions would help further characterize potential
42 impacts on water resources for the proposed Milford Flats South SEZ. A more detailed
43 discussion of each of these activities is included in the water resources action plan provided
44 in Section C.7.2 of this appendix.

- 45
46
 - Prepare a planning-level water resources inventory of the Milford area basin.

- 1 • Identify additional dry lakes, ephemeral stream channels and alluvial fan
2 features for non-development areas through consultation with BLM Utah,
3 Utah Division of Water Resources, Utah Division of Water Rights Stream
4 Alteration Program, U.S. Environmental Protection Agency, and U.S. Army
5 Corps of Engineers (USACE) with a focus on:
6 – Unnamed washes throughout the SEZ draining north and northwest off of
7 the Black Mountains, and
8 – The agricultural ditches in the southern portion of the SEZ.
9
- 10 • Perform field surveys and hydrologic analyses to support jurisdictional water
11 determinations and floodplain identifications. Tasks include:
12 – Surveying unnamed washes for surface elevations, high water marks, and
13 sediment conditions, and
14 – Conducting hydrologic rainfall-runoff-routing analyses to identify
15 100-year floodplain areas.
16
- 17 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
18 water determinations for the SEZ. Water features to be considered include:
19 – Unnamed washes.
20
- 21 • Identify 100-year floodplain non-development areas (if they exist) for
22 unnamed washes identified during the field survey. This task would require
23 coordination with the Federal Emergency Management Agency and the
24 following agencies:
25 – Utah Department of Public Safety, and
26 – Utah Geological Survey.
27
- 28 • Describe the formation of a stakeholder committee to conduct long-term
29 monitoring of water resources. This activity would entail:
30 – Identifying key stakeholder agencies,
31 – Discussing general features of a monitoring program, and
32 – Working with the U.S. Geological Survey to develop groundwater
33 monitoring well design and numerical groundwater models.
34
- 35 • Develop a simple, numerical groundwater model for the Milford area basin to
36 evaluate the potential impacts of full build-out. This activity would entail:
37 – Assessing the potential for drawdown impacts on the basin, which is
38 already in overdraft, including the potential for land subsidence.
39
40

41 **C.6.2.5.9 Ecological Resources**

42
43

44 ***Vegetation and Plant Communities.*** The following additional data-gathering action
45 would help further characterize potential impacts on wildlife resources for the SEZ:
46

- 1 • Identify and map the location and areal extent of dry wash and greasewood
2 flat habitats within the SEZ. Identify and map the location and areal extent of
3 these habitats, as well as playa and riparian habitats, outside the SEZ that may
4 be affected by hydrologic changes, including groundwater elevations and
5 changes in water, sediment, and contaminant inputs associated with runoff.
6 Such efforts could help determine habitat characteristics, including water
7 source, hydrologic regime, and dominant plant species.
8
9

10 **Wildlife.** The following additional data-gathering actions would help further characterize
11 potential impacts on wildlife resources for the SEZ:
12

- 13 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
14 SEZ as a movement/migratory corridor or as important habitat for mule deer
15 and pronghorn.
16
17 • Identify and map the location and areal extent of playa habitat within the SEZ.
18 Wildlife surveys should be conducted along Minersville Canal in order to
19 confirm that the non-development area identified for this feature is adequate
20 to protect amphibian, bird, and mammal species. These areas provide
21 important habitat for a number of wildlife species.
22
23

24 **Aquatic Biota.** Investigations recommended under the water resources action plan
25 (Section C.6.2.5.8) would be useful in characterizing and protecting habitat available to aquatic
26 biota. Washes in the Milford Flats South SEZ are typically dry. These surface water features may
27 or may not contain aquatic biota; therefore, preliminary evaluations of these features could be
28 conducted to determine the potential for aquatic communities to be present.
29
30

31 **Special Status Species.** The following additional data-gathering actions would be useful
32 in further characterizing and protecting habitat available to special status species:
33

- 34 • Conduct pre-disturbance surveys within the SEZ to determine the presence
35 and abundance of those special status species that are (1) federally listed,
36 proposed for listing, or candidates for listing under the Endangered Species
37 Act (ESA); or (2) designated as sensitive by the Utah BLM State Office.
38 These species are listed in Table C.6.2-1. Surveys should focus on areas
39 identified as potentially suitable, and the suitability of these habitats to support
40 these special status species should be determined in the field. All field-
41 determined suitable habitats for special status species should be mapped.
42 Target species and survey protocols should be developed in coordination with
43 the USFWS and UDWR.
44

45 The Draft Solar PEIS presents a table of special status species for which
46 potential impacts need to be evaluated prior to development in the proposed

1 **TABLE C.6.2-1 Special Status Species That May Occur in the Vicinity of the Proposed Milford**
 2 **Flats South SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Compact cat's-eye	<i>Cryptantha compacta</i>	BLM-S	Salt desert shrub and mixed shrub communities at elevations between 5,000 and 8,400 ft. ^d Known from southwestern Millard County and northwestern Beaver County, Utah, and eastern Nevada. Nearest recorded occurrence is 45 mi ^e northwest of the SEZ. About 2,430,377 acres ^f of potentially suitable habitat occurs within the SEZ region.
Jone's globemallow	<i>Sphaeralcea caespitosa</i>	BLM-S	Known from at least four occurrences in western Utah and six occurrences in eastern Nevada on federal and state lands on dolomite calcareous soils in association with mixed shrub, pinyon-juniper, and grassland communities at elevations between 5,000 and 6,500 ft. Nearest recorded occurrence is 27 mi northwest of the SEZ. About 4,077,164 acres of potentially suitable habitat occurs within the SEZ region.
Long-calyx milkvetch	<i>Astragalus oophorus lonchocalyx</i>	BLM-S	Endemic to the Great Basin in western Utah and eastern Nevada in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft. Nearest recorded occurrences are 12 mi east of the SEZ. About 3,961,336 acres of potentially suitable habitat occurs within the SEZ region.
Money wild buckwheat	<i>Eriogonum nummulare</i>	BLM-S	Western Utah and eastern Nevada on gravelly washes, flats, and slopes in saltbush and sagebrush communities and pinyon-juniper woodlands. Nearest recorded occurrence is 40 mi northwest of the SEZ. About 3,468,227 acres of potentially suitable habitat occurs within the SEZ region.
Birds			
American white pelican	<i>Pelecanus erythrorhynchos</i>	BLM-S	May occur as a summer resident and migrant in large reservoirs within the SEZ region. Species is likely to be a transient only in the vicinity of the SEZ. Nearest recorded occurrence is from the Minersville Reservoir, approximately 11 mi east of the SEZ. About 81,437 acres of potentially suitable habitat occurs within the SEZ region.
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM-S	Known as a winter resident throughout the SEZ region, most commonly along large bodies of water where fish and waterfowl prey are available. Wintering areas are associated with open water. May occasionally forage in arid shrubland habitats. Nearest recorded occurrences are from the Beaver River within 10 mi east of the SEZ. About 2,540,607 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk^g	<i>Buteo regalis</i>	BLM-S	A year-round resident in the SEZ affected area. Grasslands, shrublands, agricultural lands, and the periphery of pinyon-juniper forests throughout the SEZ region. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 1,761,837 acres of potentially suitable habitat occurs within the SEZ region.

3

TABLE C.6.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds (Cont.)</i>			
Greater sage-grouse	<i>Centrocercus urophasianus</i>	ESA-C; BLM-S	A year-round resident in the SEZ region. Plains, foothills, and mountain valleys dominated by sagebrush throughout the SEZ region. Lek sites are located in relatively open areas surrounded by sagebrush or in areas where sagebrush density is low. Nesting usually occurs on the ground where sagebrush density is higher. Quad-level occurrences intersect the affected area east of the SEZ. Crucial brooding habitat for the species exists about 1 mi south of the SEZ and intersects the transmission corridor. About 1,646,504 acres of potentially suitable habitat occurs within the SEZ region.
Long-billed Curlew	<i>Numenius americanus</i>	BLM-S	Summer resident and migrant throughout the SEZ region in short-grass grasslands near standing water. Species is likely to be transient only in the vicinity of the SEZ. Nearest recorded occurrences are from the Beaver River, approximately 10 mi east of the SEZ. About 285,000 acres of potentially suitable habitat occurs within the SEZ region.
Northern Goshawk	<i>Accipiter gentilis</i>	BLM-S	A year-round resident in the SEZ region. Mature mountain forest and riparian zone habitats throughout the SEZ region. Nests in trees in mature deciduous, coniferous, and mixed forests. Forages in both heavily forested and relatively open shrubland habitats. Nearest recorded occurrences are approximately 18 mi southeast of the SEZ. About 704,300 acres of potentially suitable habitat occurs within the SEZ region.
Short-eared owl	<i>Asio flammeus</i>	BLM-S	A year-round resident in portions of the SEZ region, although only winter (nonbreeding) habitat is expected to occur in the affected area. Grasslands, shrublands, and other open habitats throughout the SEZ region. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 3,938,700 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	A year-round resident in the SEZ region. Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Quad-level occurrences intersect the SEZ and other portions of the affected area. About 2,432,600 acres of potentially suitable habitat occurs within the SEZ region.
<i>Mammals</i>			
Dark kangaroo mouse	<i>Microdiposops megacephalus</i>	BLM-S	Occurs in the Great Basin region in sagebrush-dominated areas with sandy soils. Nocturnally active during warm weather, the species remains in underground burrows during the day and cold winter months. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 620,100 acres of potentially suitable habitat occurs within the SEZ region.
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S	Wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roost sites have been reported in buildings and caves. Nearest recorded occurrences are 40 mi southeast of the SEZ. About 4,555,400 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.6.2-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals (Cont.)</i>			
Kit fox	<i>Vulpes macrotis</i>	BLM-S	Open prairie, plains, and desert habitats where it inhabits burrows and preys on rodents, rabbits, hares, and small birds. Quad-level occurrences intersect the affected area north of the SEZ. About 1,960,500 acres of potentially suitable habitat occurs within the SEZ region.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-S	Sagebrush-shrubland habitats throughout the SEZ region. Prefers loose soils to dig burrows. Nearest recorded occurrences are about 10 mi southeast of the SEZ. About 967,900 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S	Near forests and shrubland habitats throughout the SEZ region. Uses caves and rock crevices for day roosting and winter hibernation. Nearest recorded occurrences are 15 mi north of the SEZ. About 3,269,200 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Near forests and shrubland habitats below 9,000-ft elevation throughout the SEZ region. The species may use caves, mines, and buildings for day roosting and winter hibernation. Quad-level occurrences intersect the affected area north of the SEZ. About 3,111,000 acres of potentially suitable habitat occurs within the SEZ region.
Utah prairie dog	<i>Cynomys parvidens</i>	ESA-T	Endemic to southwestern Utah in grasslands in level mountain valleys and areas with deep, well-drained soils. Colonies reside in underground burrow systems, which are dynamic in size and location. Quad-level occurrences intersect the affected area south of the SEZ. Colonies are known to occur outside of the affected area within 10 mi south of the SEZ. About 825,000 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Utah BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-T = listed as threatened under the ESA.

^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

^d To convert ft to m, multiply by 0.3048.

^e To convert mi to km, multiply by 1.609.

^f To convert acres to km², multiply by 0.004047.

^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2

1 Milford Flats South SEZ. The list of species presented in Table 13.2.12.1-1
2 of the Draft Solar PEIS also includes species listed by the State of Utah and
3 species ranked S1 or S2 or as species of concern by the State of Utah. Based
4 on the design features presented in the Draft Solar PEIS, the potential for
5 impacts on these additional species will also need to be addressed before
6 development could occur in the SEZ.

- 7
- 8 • Identify and map the location and areal extent of woodland habitats within the
9 SEZ. Woodland habitats that may occur in the area of direct effects include
10 pinyon-juniper and oak/mahogany woodlands. The suitability of these
11 woodland habitats for special status species should be determined. Species
12 potentially associated with these habitats include the ferruginous hawk
13 (nesting) and northern goshawk (nesting).
- 14
- 15 • Identify and map the location and areal extent of rocky cliffs and outcrops
16 within the area of direct effects (particularly within the assumed transmission
17 corridor). These habitats may be potential roost sites for special status bat
18 species, including the fringed myotis, spotted bat, and Townsend's big-eared
19 bat.
- 20

21

22 **C.6.2.5.10 Air Quality and Climate**

23 None.

24

25

26

27 **C.6.2.5.11 Visual Resources**

28 A summary of the Draft Solar PEIS visual contrast analysis for the proposed Milford
29 Flats South SEZ is provided in Table C.6.2-2. This table includes only the resources that would
30 be subject to moderate visual contrast. As indicated in the Draft Solar PEIS, solar development
31 within the Milford Flats South SEZ is unlikely to cause even moderate visual impacts on highly
32 sensitive visual resource areas (SVRAs), the closest of which is more than 25 mi (40 km) from
33 the SEZ. The closest community is about 5 mi (8 km) from the SEZ and is likely to experience
34 weak visual contrasts from solar development within the SEZ. The Milford Flats South SEZ is
35 located within proximity of sensitive viewing locations (SVLs) along State Routes 21 and 129.
36 Moderate levels of visual contrast associated with solar development within the SEZ may be
37 observed by travelers on these routes.

38

39

40 The following steps may be taken to better understand potential impacts on these SVLs
41 from solar development in the Milford Flats South SEZ:

- 42
- 43 • Identify key observation points (KOPs) within these areas through working
44 with the management agency or other local stakeholders.
- 45
- 46

TABLE C.6.2-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Milford Flats South SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^a of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^c	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas)	State Route 21	NA ^b	5 mi from the SEZ	NA	NA	Travelers on State Route 21 might observe moderate levels of visual contrast associated with solar development within the SEZ.
	State Route 129	NA	3.2 mi from the SEZ	NA	NA	Travelers on State Route 129 might observe moderate levels of visual contrast associated with solar development within the SEZ.

^a To convert mi to km, multiply by 1.609.

^b NA = data not available.

^c Distances are based on the Draft Solar PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

- 1 • Conduct viewshed analyses from the KOPs to determine how much of the
2 SEZ would be in view from each KOP.
3
4 • As deemed necessary, based on viewshed analysis results, prepare wireframe
5 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
6 depicting the 80% development scenario to better estimate potential impacts.
7

8 This additional analysis may help judge potential visual contrast more accurately for
9 most KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
10 superimposition of the wireframe models onto the photos might be required or desired.
11

12 13 **C.6.2.5.12 Acoustic Environment**

14 None.
15

16 17 18 **C.6.2.5.13 Paleontological Resources**

19
20 The Milford Flats South SEZ is located in an area where the Potential Fossil Yield
21 Classification of the SEZ has been determined to be Class 2. Therefore, the potential for impacts
22 on paleontological resources is low. No additional data collection is needed at this time, although
23 verification of this classification is recommended at a project-specific level.
24

25 26 **C.6.2.5.14 Cultural Resources and Native American Concerns**

27
28 Less than 2% of the proposed Milford Flats South SEZ has been surveyed (approximately
29 123 acres [0.5 km²] out of 9 linear surveys that cross into the SEZ³³). No sites have been
30 recorded within the SEZ. Although a 1935 Bell System Telephone Line is eligible for listing in
31 the *National Register of Historic Places* and may go through the SEZ, the line has been
32 previously mitigated through documentation. Approximately 100 sites have been recorded within
33 5 mi (8 km) of the SEZ, mostly in higher elevations or along long, linear survey corridors; the
34 sites recorded closest to the SEZ (on the valley floor within 2 mi [3 km]) have been determined
35 not eligible for listing in the NRHP. The low density of sites recorded in basin interiors in this
36 region suggests the potential for significant sites within the SEZ is low (Dalley 2009). The
37 destruction or degradation of important plant resources, and the destruction of habitat or
38 impediments to the movement of culturally important wildlife, are also potential impacts of
39 concern within the SEZ.
40

41 The following additional data collection efforts could reduce the uncertainty about
42 potential impacts on cultural resources:
43

³³ New information not provided in the Draft Solar PEIS.

- 1 • Conduct a Class I literature file search to better understand (1) the site
2 distribution pattern in the vicinity of the SEZ, (2) trail networks through
3 existing ethnographic reports, and (3) overall cultural sensitivity of the
4 landscape.
5
- 6 • Conduct a Class II Stratified Random Sample Survey of the SEZ to obtain a
7 10% sample (roughly 648 acres [2.6 km²]). If the roughly 123 acres (0.5 km²)
8 previously surveyed meets current survey standards, then approximately
9 525 acres (2.1 km²) of survey could satisfy a 10% sample. Areas of interest,
10 as determined through a Class I review, should also be identified prior to
11 establishing the survey design and sampling strategy.
12
- 13 • Prepare a cultural sensitivity map based on results of the Class II survey and
14 Class I review.
15
- 16 • Continue with government-to-government consultation as described in
17 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
18 not included in the original studies to determine whether those Tribes have
19 similar concerns. The Milford Flats South SEZ falls in the traditional use area
20 of primarily the Southern Paiute, but also the Western Shoshone and Ute.
21 Potential topics to be discussed during consultation include trail systems,
22 mountain springs, habitation sites as places of cultural importance, clay and
23 rock resources, burial sites, rock art, ceremonial areas, and plant and animal
24 resources. The agencies value the information shared by the Tribes during the
25 ethnographic study and will consider their input in striving to minimize the
26 impacts of solar development in the SEZ. The completed ethnographic study
27 will be available in its entirety on the Solar PEIS Web (<http://solareis.anl.gov>).
28 A summary of the contents of that report is also provided in the following text
29 box.
30
31

Tribal Perspectives on the Significance of Milford Flats South SEZ

The Milford Flats South SEZ region was traditionally occupied, used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. The Paiute Indian Tribe of Utah (PITU) field consultations summarized here represent the cultural interests of the Southern Paiute peoples. Numic-speaking peoples have gone on record in past projects and stipulate here again that they are the American Indian people responsible for the cultural resources (natural and man-made) in this study area. Their ancestors were placed here by the Creator and they have subsequently lived in these lands, maintaining and protecting these places, plants, animals, water sources, and other cultural signs of their occupation. Southern Paiute people have a deeply rooted spiritual connection to the land that weaves stories and songs into the landscape, connecting all elements of the universe.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene, a period of approximately 15,000 years, they deeply understand dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically

Tribal Perspectives on the Significance of Milford Flats South SEZ (Cont.)

influenced by these natural shifts, but certain religious and ceremonial practices continued unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in mythic times and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

Southern Paiute Tribal representatives maintain that, in order to understand Southern Paiute connections to the SEZ, they must be placed in context with neighboring places and their associated cultural resources found in the larger SEZ region surrounding it. During the ethnographic field sessions, Tribal representatives identified the Milford Flats South SEZ study area as being part of a large regional ceremonial landscape that contains many traditional use features like hot springs, volcanic places, and important plants and animals.

The Milford Flats South SEZ region is in an active geothermal and volcanic area. Places that contain the presence of volcanic activity are considered sacred and powerful locations. Southern Paiute people believe that volcanic events are moments when *Puha* (power or energy) deep inside the Earth is brought to the surface as a way for the land to renew itself or be reborn. Volcanism is also a way for *Puha* to be distributed across a landscape.

According to interviews with Indian Tribal representatives, the outstanding feature of the Milford Flats South SEZ study area is the Thermo Hot Spring. These hot springs are located approximately 4 mi (6 km) west of the Milford Flats South SEZ boundary.

For millennia, Indian people have traveled to this special hot spring to engage in a variety of ceremonial activities. These activities include the curing of individuals using both the sulfuric muds and the mineralized, hot waters. Other Indian peoples came to the hot spring to purify themselves before going to distant destinations where special activities such as vision quests or ceremonial balancing activities would occur. The hot springs were also visited so Indian people could acquire songs *Puha* needed to help their communities when they returned. Trails from many directions come to the hot spring, bringing people on pilgrimage between the hot spring and distant destinations. Offerings would have been made to the hot spring and along the trails while the pilgrims were traveling. The trail system was so well developed that it led the first European travelers (those on the Dominguez-Escalante Expedition in 1776) to this special destination.

The viewscape at the Thermo Hot Springs provides a clear panorama of neighboring volcanic hills and the surrounding mountain ranges. Numic-speaking peoples believe that viewscales are critical components of ceremonial activity because they allow a person to send prayers to important cultural landmarks.

Traditional trails in the SEZ region connect ceremonial areas like Parowan Gap and Thermo Hot Springs. Parowan Gap is located some 32 mi (51 km) south of the SEZ boundary. Parowan Gap is associated with a Southern Paiute Creation story that explains the existence of the gap in the middle of the volcanic ridge and the presence of thousands of rock peckings and rock paintings (called *tumpituxwinap* in Southern Paiute, meaning storied rocks). This area has a clear viewscape of the Escalante Desert.

During PITU's field visit, representatives identified 19 traditional-use plants and 28 traditional-use animals within this SEZ study area. Identified plants include those used for ceremonial, medicine, food, and utilitarian functions. The presence of animals in an area contributes to the overall cultural importance of an area to Indian people. In Southern Paiute culture, animals factor significantly in songs, stories, and ceremonies. Animals were also important food sources, and their fur, bones, and feathers were used in the construction of various cultural items and tools. One animal that had specially meaning for this site was the mountain sheep. Mountain sheep are believed to be spiritual animals and are spirit helpers to shaman.

1
2
3
4
5
6
7
8
9
10

C.6.2.5.15 Socioeconomics and Environmental Justice

None.

C.6.2.5.16 Cumulative Impact Considerations

None.

1 **C.6.3 Wah Wah Valley**
2
3

4 **C.6.3.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed Wah Wah Valley solar energy zone (SEZ), as presented in the Draft Solar
8 PEIS, had a total area of 6,097 acres (25 km²). It is located in Beaver County in southwestern
9 Utah (Figure C.6.3-1). The town of Milford is located about 23 mi (37 km) east of the SEZ.
10

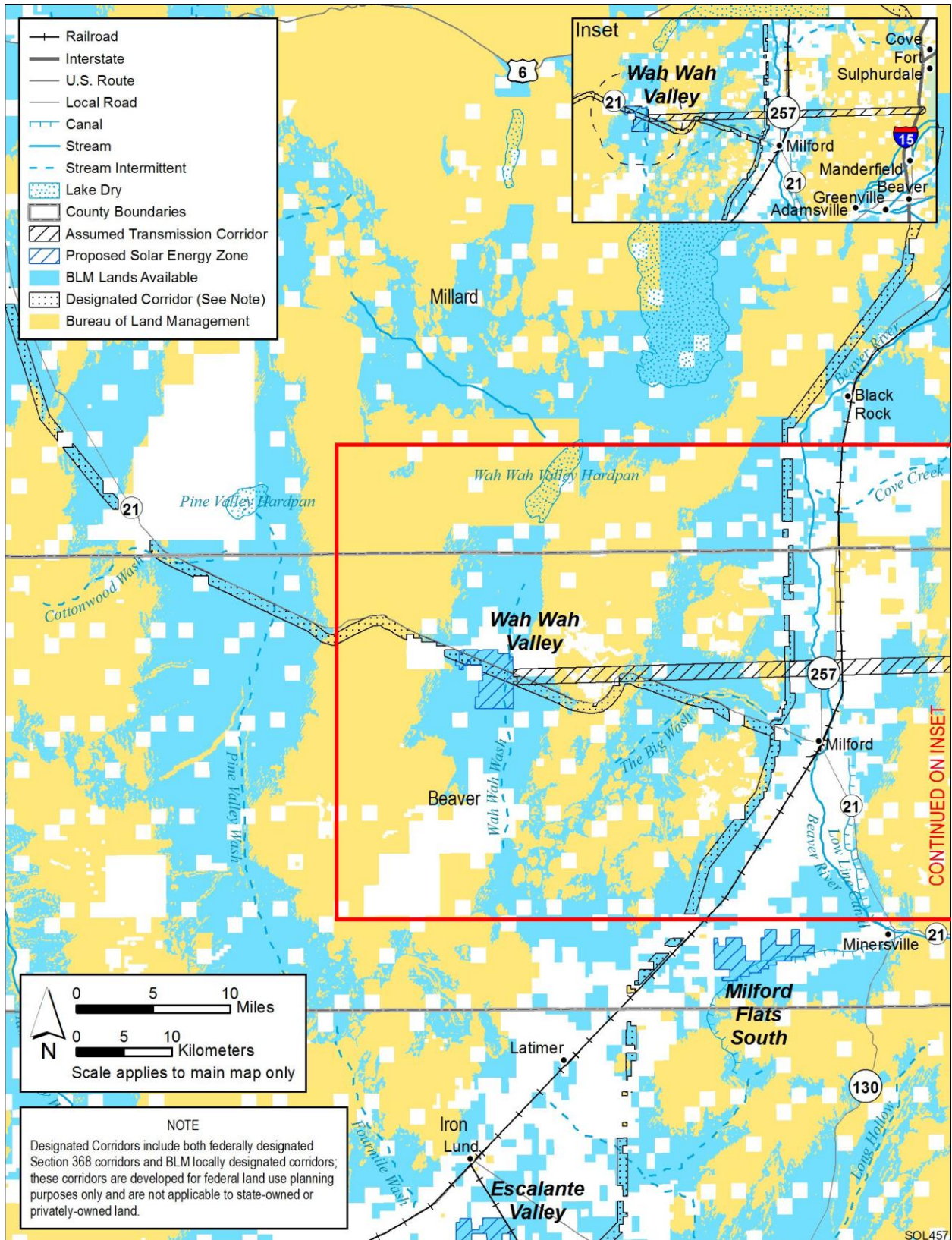
11 A designated Section 368 designated energy corridor on U.S. Department of the Interior
12 Bureau of Land Management (BLM) lands runs east–west through the site along State Route 21
13 and would limit development in the SEZ because solar facilities cannot be constructed under
14 transmission lines or over pipelines.³⁴ The Draft Solar PEIS discussion of impacts of solar
15 energy development in the SEZ acknowledged that solar facility development on both sides of
16 the corridor would limit the ability to add future corridor capacity.
17

18 The Draft Solar PEIS identified a 130-kV transmission line about 42 mi (68 km) east of
19 the SEZ as the nearest point of connection of the SEZ to the grid. The location of new
20 transmission that could be constructed for this SEZ in the future may be different from that
21 assumed in the Draft Solar PEIS. Details on the updated transmission impact assessment to be
22 included in the Final Solar PEIS are provided in Section C.7.1 of this appendix. Analysis of
23 transmission lines and/or access roads will be completed as necessary as part of the project-
24 specific environmental reviews (see Section 2.2.2.2.2 of this Supplement).
25

26 Potential adverse impacts identified in the Draft Solar PEIS included the following:
27

- 28 • There would be varying degrees of adverse impact on wilderness values in
29 one Wilderness Study Area (WSA) and two wilderness inventory units.
30
- 31 • Less than 3% of one grazing allotment could be removed from grazing with
32 small potential impact on one permittee.
33
- 34 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
35 erosion and deposition by wind and runoff, sedimentation, and soil
36 contamination) could occur.
37

³⁴ Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the BLM, U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense (DoD) prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.



1

2 **FIGURE C.6.3-1 Proposed Wah Wah Valley SEZ as Presented in the Draft Solar PEIS**

- 1 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
2 wet-cooling options would not be feasible.
3
- 4 • Clearing of a large portion of the proposed SEZ could primarily affect
5 semidesert shrub steppe and mixed salt desertscrub, and may adversely affect
6 dry wash, greasewood flat, and playa habitats, depending on the amount of
7 available habitat disturbed. The establishment of noxious weeds could result
8 in habitat degradation. Deposition of fugitive dust could cause reduced
9 productivity or changes in plant community structure.
10
- 11 • Potentially suitable habitat for 22 special status species and more than
12 70 wildlife species occurs in the affected area of the proposed SEZ; less than
13 1.0% of the potentially suitable habitat for any of these species occurs in the
14 region that would be directly affected by development.
15
- 16 • If aquatic biota are present, they could be affected by the direct removal of
17 surface water features within the construction footprint. If present, aquatic
18 biota could also be affected by a decline in habitat quantity and quality due
19 to water withdrawals, and changes in drainage patterns, as well as increased
20 sediment and contaminant inputs associated with ground disturbance and
21 construction activities. Several springs can be found in the vicinity of the
22 proposed SEZ that also may contain aquatic biota, and they may be affected,
23 primarily by water withdrawal.
24
- 25 • Temporary exceedance of ambient air quality standards for particulate matter
26 at the SEZ boundaries and the nearest residences is possible during
27 construction. These high concentrations, however, would be limited to the
28 immediate area surrounding the SEZ boundary.
29
- 30 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
31 could be observed by residents nearest to the SEZ. Visitors to the Wah Wah
32 Mountains WSA would experience weak to moderate visual contrasts.
33 Travelers on State Route 21 could observe very strong levels of visual contrast
34 associated with solar development within the SEZ.
35
- 36 • During construction, noise levels at the nearest residence would be well above
37 the Iron County regulation levels and U.S. Environmental Protection Agency
38 (EPA) guideline levels. During operations, noise levels at the nearest
39 residence would be above both Iron County regulation levels and EPA
40 guideline levels if concentrating solar power facilities with energy storage
41 technologies (which could extend the daily operational time by 6 hours or
42 more) were used at the SEZ. If dish engine facilities were developed within
43 the SEZ, it was estimated that noise levels at the nearest residence would be
44 higher than the Iron County regulation levels and equivalent to the EPA
45 guideline levels.
46

- 1 • Few, if any, impacts on significant paleontological resources are likely to
2 occur.
- 3
- 4 • Low-income populations occur within a 50-mi (80-km) radius of the proposed
5 SEZ boundary; thus adverse impacts of solar development could
6 disproportionately affect low-income populations.
7

8

9 **C.6.3.2 Summary of Comments Received**

10
11 Many comments on the proposed Wah Wah Valley SEZ were opposed to identifying the
12 area as an SEZ in the applicable land use plan. Environmental groups cited the remoteness, lack
13 of water, impacts on special status species, including greater sage-grouse;, the need for long,
14 new transmission lines; and the lack of an underlying resource management plan framework
15 as reasons that the proposed SEZ should be eliminated or deprioritized (The Wilderness
16 Society et al.,³⁵ HEAL Utah, Western Watershed Project). The Wilderness Society et al.
17 recommended that the BLM not use the Section 368 corridor as the assumed location for
18 transmission to connect the SEZ to the grid. The Western Watersheds Project suggested that the
19 BLM perform cultural resource surveys and consultations prior to defining the SEZ.
20

21 The National Park Service (NPS) indicated that the SEZ contains a substantial portion of
22 the Utah prairie dog and greater-sage grouse habitat in the Utah West Desert and recommended
23 additional analysis and mitigation measures to be provided in the Final Solar PEIS. The Beaver
24 County Commission urged the BLM to look more closely into the impacts on grazing allotments
25 and strongly recommended appropriate and generous mediation standards to compensate the
26 animal unit month holder.
27

28

29 **C.6.3.3 Changes to the SEZ**

30
31 No boundary revisions were identified for the proposed SEZ. However, areas specified
32 for non-development under SEZ-specific design features were mapped, where data were
33 available. For the proposed Wah Wah Valley SEZ, 224 acres (0.91 km²) of the Wah Wah Wash
34 were identified as non-development areas (see Figure C.6.3-2). The remaining developable area
35 within the SEZ is 5,873 acres (23.8 km²).
36

37

38 **C.6.3.4 Wilderness Character Status of SEZ**

39
40 A recently maintained inventory of wilderness characteristics was used to determine
41 whether public lands within the Wah Wah Valley SEZ have wilderness characteristics. The
42 finding of this inventory was that these lands do not contain wilderness characteristics.

³⁵ The Wilderness Society, Wild Utah Project, Southern Utah Wilderness Alliance, Grand Canyon Trust, Center for Native Ecosystems, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Utah SEZs. Those comments are attributed to The Wilderness Society et al.

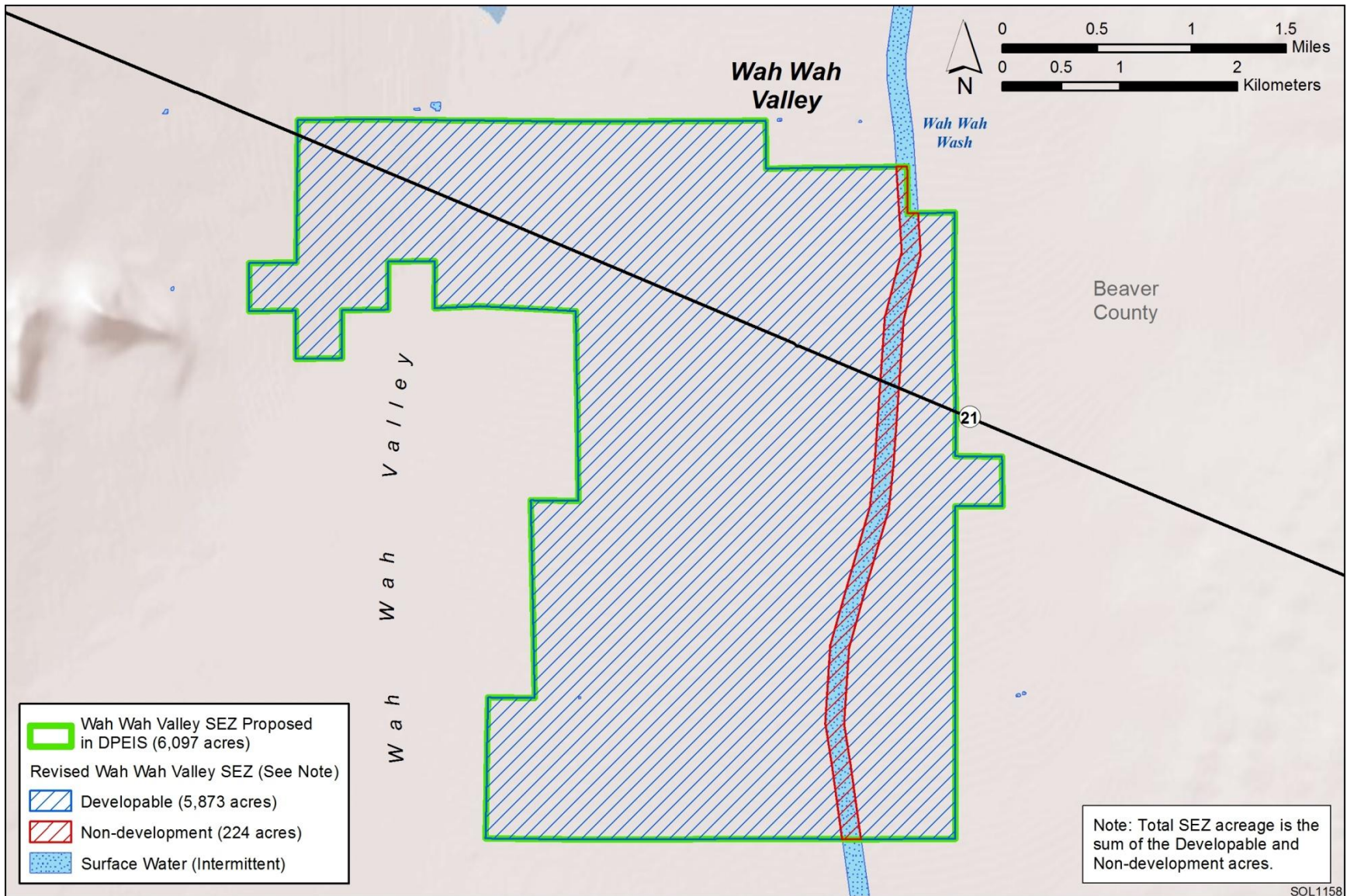


FIGURE C.6.3-2 Proposed Wah Wah Valley SEZ as Described in this Supplement

1 **C.6.3.5 Additional Data Collection Recommended**

2
3
4 **C.6.3.5.1 Lands and Realty**

5
6 None.

7
8
9 **C.6.3.5.2 Specially Designated Areas and Lands with Wilderness Characteristics**

10
11 None.

12
13
14 **C.6.3.5.3 Rangeland Resources**

15
16
17 *Livestock Grazing.* None.

18
19
20 *Wild Horses and Burros.* None.

21
22
23 **C.6.3.5.4 Recreation**

24
25 None.

26
27
28 **C.6.3.5.5 Military and Civilian Aviation**

29
30 None.

31
32
33 **C.6.3.5.6 Geologic Setting and Soil Resources**

34
35 None.

36
37
38 **C.6.3.5.7 Minerals**

39
40 Additional information on leasable and strategic minerals in the vicinity of the proposed
41 SEZ will be provided in the Final Solar PEIS to inform the Department of the Interior's decision
42 on a proposed 20-year withdrawal of SEZ lands.
43
44
45

1 **C.6.3.5.8 Water Resources**
2

3 The following additional data and actions would help further characterize potential
4 impacts on water resources for the proposed Wah Wah Valley SEZ. A more detailed discussion
5 of each of these activities is included in the water resources action plan provided in Section C.7.2
6 of this appendix.
7

- 8 • Prepare a planning-level water resources inventory of the Wah Wah Valley
9 Basin.
- 10
- 11 • Identify additional dry lakes, ephemeral stream channels, and alluvial fan
12 features for non-development areas through consultation with BLM Utah,
13 Utah Division of Water Resources, Utah Division of Water Rights Stream
14 Alteration Program, EPA, and U.S. Army Corps of Engineers (USACE) with
15 a focus on:
 - 16 – Wah Wah Wash, and
 - 17 – Other ephemeral washes that cross the SEZ from south to north.
- 18
- 19 • Perform field surveys and hydrologic analyses to support jurisdictional water
20 determinations and floodplain identifications. Tasks include:
 - 21 – Surveying Wah Wah Wash and tributaries for surface elevations, high
22 water marks, and sediment conditions, and
 - 23 – Conducting hydrologic rainfall-runoff-routing analyses to identify
24 100-year floodplain areas.
- 25
- 26 • Coordinate with the USACE (Sacramento District) regarding jurisdictional
27 water determinations for the SEZ. Water features to be considered include:
 - 28 – Wah Wah Wash, and
 - 29 – Other ephemeral washes that cross the SEZ from south to north.
- 30
- 31 • Identify 100-year floodplain non-development areas (if they exist) for Wah
32 Wah Wash. This task would require coordination with the Federal Emergency
33 Management Agency and the following agencies:
 - 34 – Utah Department of Public Safety, and
 - 35 – Utah Geological Survey.
- 36
- 37 • Describe the formation of a stakeholder committee to conduct long-term
38 monitoring of water resources. This activity would entail:
 - 39 – Identifying key stakeholder agencies,
 - 40 – Discussing general features of a monitoring program, and
 - 41 – Working with the U.S. Geological Survey to develop groundwater
42 monitoring well design and numerical groundwater models.
- 43
- 44
- 45

1 **C.6.3.5.9 Ecological Resources**
2
3

4 **Vegetation and Plant Communities.** The following additional data-gathering action
5 would help further characterize potential impacts on wildlife resources for the Wah Wah Valley
6 SEZ:
7

- 8 • Identify and map the location and areal extent of dry wash, playa, and
9 greasewood flat habitats within the SEZ. Identify and map the location and
10 areal extent of these habitats outside the SEZ that may be affected by
11 hydrologic changes, including groundwater elevations, and changes in water,
12 sediment, and contaminant inputs associated with runoff. Such efforts could
13 help determine habitat characteristics, including water source, hydrologic
14 regime, and dominant plant species.
15
16

17 **Wildlife.** The following additional data-gathering actions would help further characterize
18 potential impacts on wildlife resources for the SEZ:
19

- 20 • Conduct pre-disturbance surveys within the SEZ to determine the use of the
21 SEZ as a movement/migratory corridor or as important habitat for mule deer
22 and pronghorn.
23
24 • Identify and map the location and areal extent of wash and shrubland habitat
25 within the SEZ. These areas are important habitat for a number of wildlife
26 species.
27
28

29 **Aquatic Biota.** Investigations recommended under the water resources action plan
30 (Section C.6.3.5.8) would be useful in characterizing and protecting habitat available to aquatic
31 biota. Ephemeral surface water features within the Wah Wah Valley SEZ may or may not
32 contain aquatic biota; therefore, preliminary evaluations of these surface water features could be
33 conducted to determine the potential for aquatic communities to be present.
34
35

36 **Special Status Species.** The following additional data-gathering actions would be useful
37 in further characterizing and protecting habitat available to special status species.
38

- 39 • Conduct pre-disturbance surveys within the SEZ to determine the presence
40 and abundance of those special status species that are (1) federally listed,
41 proposed for listing, candidates for listing, or under review for listing under
42 the Endangered Species Act (ESA); or (2) designated as sensitive by the Utah
43 BLM State Office. These species are listed in Table C.6.3-1. Surveys should
44 focus on areas identified as potentially suitable, and the suitability of these
45 habitats to support these special status species should be determined in the
46 field. All field-determined suitable habitats for special status species should be
47 mapped. Target species and survey protocols should be developed in
48 coordination with the U.S. Fish and Wildlife Service (USFWS) and Utah
49 Department of Wildlife Resources (UDWR).

1 **TABLE C.6.3-1 Special Status Species That May Occur in the Vicinity of the Proposed Wah Wah**
 2 **Valley SEZ^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
Plants			
Compact cat's-eye	<i>Cryptantha compacta</i>	BLM-S	Salt desert shrub and mixed shrub communities at elevations between 5,000 and 8,400 ft. ^d Known from southwestern Millard County and northwestern Beaver County, Utah, and eastern Nevada. Nearest recorded occurrence is 25 mi ^e northwest of the SEZ. About 2,866,813 acres ^f of potentially suitable habitat occurs within the SEZ region.
Frisco buckwheat	<i>Eriogonum soredium</i>	ESA-UR; BLM-S	Endemic to a small area in the San Francisco Mountains in Beaver County, Utah, on white limestone outcrops associated with pinyon-juniper communities. Elevation ranges between 6,600 and 7,300 ft. Known to occur in the San Francisco Mountains approximately 7 mi northeast of the SEZ. About 37,100 acres of potentially suitable habitat occurs within the SEZ region.
Frisco clover	<i>Trifolium friscanum</i>	ESA-UR; BLM-S	Endemic to four mountain ranges in Beaver and Millard Counties, Utah, on volcanic gravels and limestone substrates in association with pinyon-juniper woodlands at elevations between 6,900 and 7,300 ft. Nearest recorded occurrence is 8 mi northeast of the SEZ. About 1,505,400 acres of potentially suitable habitat occurs within the SEZ region.
Jone's globemallow	<i>Sphaeralcea caespitosa</i>	BLM-S	Known from at least four occurrences in western Utah and six occurrences in eastern Nevada on federal and state lands on dolomite calcareous soils in association with mixed shrub, pinyon-juniper, and grassland communities at elevations between 5,000 and 6,500 ft. Nearest recorded occurrence is 7 mi west of the SEZ. About 4,471,200 acres of potentially suitable habitat occurs within the SEZ region.
Long-calyx milkvetch	<i>Astragalus oophorus lonchocalyx</i>	BLM-S	Endemic to the Great Basin in western Utah and eastern Nevada in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft. Nearest recorded occurrence is 12 mi northeast of the SEZ. About 4,351,100 acres of potentially suitable habitat occurs within the SEZ region.
Money wild buckwheat	<i>Eriogonum nummulare</i>	BLM-S	Western Utah and eastern Nevada on gravelly washes, flats, and slopes in saltbush and sagebrush communities and pinyon-juniper woodlands. Nearest recorded occurrence is 20 mi north of the SEZ. About 3,760,200 acres of potentially suitable habitat occurs within the SEZ region.
Ostler's ivesia	<i>Ivesia shockleyi ostleri</i>	BLM-S	Endemic to the Wah Wah Mountains and Needle Range of western Beaver County, Utah, in pinyon-juniper and ponderosa pine forests in crevices of quartzite outcrops at elevations between 6,500 and 8,000 ft. Nearest recorded occurrence is 15 mi southwest of the SEZ. About 1,507,100 acres of potentially suitable habitat occurs within the SEZ region.
Ostler's pepper-grass	<i>Lepidium ostleri</i>	ESA-UR; BLM-S	Endemic to a small area in the San Francisco Mountains in Beaver County, Utah, on limestone outcrops within pinyon-juniper communities at elevations between 5,800 and 6,800 ft. Nearest recorded occurrence is within 7 mi northeast of the SEZ.

TABLE C.6.3-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Birds</i>			
Bald eagle^g	<i>Haliaeetus leucocephalus</i>	BLM-S	A winter resident throughout the SEZ region, most commonly along large bodies of water where fish and waterfowl prey are available. Wintering areas are associated with open water. May occasionally forage in arid shrubland habitats. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 2,666,800 acres of potentially suitable habitat occurs within the SEZ region.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-S	A year-round resident in the SEZ region. Grasslands, shrublands, agricultural lands, and the periphery of pinyon-juniper forests throughout the SEZ region. Nests are generally constructed in trees and exposed rock outcrops along cliffs, buttes, and creek banks. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 1,749,900 acres of potentially suitable habitat occurs within the SEZ region.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	ESA-C; BLM-S	A year-round resident in the SEZ region. Plains, foothills, and mountain valleys dominated by sagebrush throughout the SEZ region. Lek sites are located in relatively open areas surrounded by sagebrush or in areas where sagebrush density is low. Nesting usually occurs on the ground where sagebrush density is higher. Quad-level occurrences intersect the affected area south of the SEZ. Crucial brooding habitat for the species exists about 22 mi east of the SEZ and intersects the transmission corridor. About 1,608,000 acres of potentially suitable habitat occurs within the SEZ region.
Long-billed curlew	<i>Numenius americanus</i>	BLM-S	Summer resident and migrant throughout the SEZ region in short-grass grasslands near standing water. Species is likely to be transient only in the vicinity of the SEZ. Quad-level occurrences intersect the affected area within the transmission corridor approximately 20 mi east of the SEZ. About 331,700 acres of potentially suitable habitat occurs within the SEZ region.
Northern goshawk	<i>Accipiter gentilis</i>	BLM-S	A year-round resident in the SEZ region. Mature mountain forest and riparian zone habitats throughout the SEZ region. Nests in trees in mature deciduous, coniferous, and mixed forests. Forages in both heavily forested and relatively open shrubland habitats. Quad-level occurrences intersect the affected area north of the SEZ. About 245,300 acres of potentially suitable habitat occurs within the SEZ region.
Short-eared owl	<i>Asio flammeus</i>	BLM-S	Year-round resident within the SEZ region. Inhabits grasslands, shrublands, and other open habitats throughout the SEZ region. Nomadic, often selecting unique breeding sites each year, depending on local rodent densities. Nests on the ground near shrubs. Quad-level occurrences intersect the affected area east and west of the SEZ. About 4,138,850 acres of potentially suitable habitat occurs within the SEZ region.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BLM-S	A year-round resident in the SEZ region. Open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports throughout the SEZ region. Nests in burrows constructed by mammals (prairie dog, badger, etc.). Quad-level occurrences intersect the SEZ and other portions of the affected area. About 3,037,300 acres of potentially suitable habitat occurs within the SEZ region.

TABLE C.6.3-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c
<i>Mammals</i>			
Dark kangaroo mouse	<i>Microdiposops megacephalus</i>	BLM-S	Sagebrush-dominated areas with sandy soils in Great Basin region. Nocturnally active during warm weather, the species remains in underground burrows during the day and cold winter months. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 1,060,500 acres of potentially suitable habitat occurs within the SEZ region.
Fringed myotis	<i>Myotis thysanodes</i>	BLM-S	Wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roost sites have been reported in buildings and caves. Quad-level occurrences intersect the affected area within the transmission corridor approximately 40 mi east of the SEZ. About 4,433,300 acres of potentially suitable habitat occurs within the SEZ region.
Kit fox	<i>Vulpes macrotis</i>	BLM-S	Open prairie, plains, and desert habitats where it inhabits burrows and preys on rodents, rabbits, hares, and small birds. Quad-level occurrences intersect the SEZ and other portions of the affected area. About 2,641,200 acres of potentially suitable habitat occurs within the SEZ region.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-S	Sagebrush-shrubland habitats throughout the SEZ region. Prefers loose soils to dig burrows. Quad-level occurrences intersect the affected area within the transmission corridor approximately 10 mi east of the SEZ. About 930,850 acres of potentially suitable habitat occurs within the SEZ region.
Spotted bat	<i>Euderma maculatum</i>	BLM-S	Near forests and shrubland habitats throughout the SEZ region. Uses caves and rock crevices for day roosting and winter hibernation. Quad-level occurrences intersect the affected area within the transmission corridor approximately 10 mi east of the SEZ. About 3,404,900 acres of potentially suitable habitat occurs within the SEZ region.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM-S	Near forests and shrubland habitats below 9,000-ft elevation throughout the SEZ region. The species may use caves, mines, and buildings for day roosting and winter hibernation. Quad-level occurrences intersect the affected area east of the SEZ. About 3,283,500 acres of potentially suitable habitat occurs within the SEZ region.
Utah prairie dog	<i>Cynomys parvidens</i>	ESA-T	Endemic to southwestern Utah in grasslands in level mountain valleys and areas with deep, well-drained soils. Colonies reside in underground burrow systems, which are dynamic in size and location. Nearest quad-level occurrences are 20 mi south of the SEZ; colonies are known to occur outside of the affected area within 18 mi south of the SEZ. About 641,400 acres of potentially suitable habitat occurs within the SEZ region.

^a The listings for (1) federally listed, proposed for listing, or candidates for listing under the ESA, and (2) Utah BLM State Office sensitive species have been updated since the release of the Draft Solar PEIS.

^b BLM-S = listed as a sensitive species by the BLM; ESA-C = candidate for listing under the ESA; ESA-T = listed as threatened under the ESA; ESA-UR = under review for listing under the ESA.

Footnotes continued on next page.

TABLE C.6.3-1 (Cont.)

- ^c For plant species, potentially suitable habitat was determined by using Southwest Regional Gap Analysis Project (SWReGAP) land cover types (USGS 2005). For terrestrial vertebrate species, potentially suitable habitat was determined by using SWReGAP habitat suitability and land cover models. Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d To convert ft to m, multiply by 0.3048.
- ^e To convert mi to km, multiply by 1.609.
- ^f To convert acres to km², multiply by 0.004047.
- ^g Species in bold text have been recorded or have designated critical habitat in the affected area.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

The Draft Solar PEIS presents a table of special status species for which potential impacts need to be evaluated prior to development in the proposed Wah Wah Valley SEZ. The list of species presented in Table 13.3.12.1-1 of the Draft also includes species listed by the State of Utah and species ranked by the State of Utah as S1 or S2 or as species of concern. On the basis of design features presented in the Draft Solar PEIS, the potential for impacts on these additional species will also need to be addressed before development could occur in the SEZ.

- Identify and map the location and areal extent of rocky cliffs and outcrops within the SEZ. The suitability of these habitats for special status species should be determined. Species potentially associated with these habitats include Frisco buckwheat, Ostler’s pepper-grass, ferruginous hawk (nesting), fringed myotis (roosting), spotted bat (roosting), and Townsend’s big-eared bat (roosting).
- Identify and map the location and areal extent of woodland habitats within the SEZ. Woodland habitats that may occur in the area of direct effects include pinyon-juniper and oak/mahogany woodlands. The suitability of these woodland habitats for special status species should be determined. Species potentially associated with these habitats include Frisco clover, Ostler’s ivesia, ferruginous hawk (nesting), and northern goshawk (nesting).

C.6.3.5.10 Air Quality and Climate

None.

C.6.3.5.11 Visual Resources

A summary of the Draft Solar PEIS visual contrast analysis for the Wah Wah Valley SEZ is provided in Table C.6.3-2. This table includes only the resources that would be subject to

TABLE C.6.3-2 Summary of Potential Visual Impacts on SVRAs and SVLs within the 25-mi (40-km) Viewshed of the Proposed Wah Wah Valley SEZ

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
WSA	Wah Wah Mountains	49,406 acres	5 mi northwest of the SEZ	3,777 acres	7.6	Potential visual contrast expected would be highly dependent on viewer locations, as well as on the numbers, types, sizes, and locations of solar facilities and other project- and site-specific factors. Solar facilities would be expected to create weak to moderate visual contrasts; the highest levels of visual contrast would be expected for viewing locations at higher elevations in the far southern portion of the WSA, with less visibility and lower contrast levels expected at the more distant locations in the SEZ viewshed farther north and at lower elevations: The visible area of the WSA extends from the point of closest approach to approximately 10.3 mi.

TABLE C.6.3-2 (Cont.)

Management Area Category	SVRA/SVL within 25 mi ^a of SEZ	Total Acreage/Mileage ^{a,b,c} of SVRA/SVL	Distance from SEZ at Point of Closest Approach ^d	Total Acreage/Mileage Visible within 25 mi	Percentage of Total Acreage/Mileage Visible within 25 mi	Notes
Other Areas of Interest (non-management areas)	State Route 21 ^e	107 mi	3.8 mi of the route passes through the northern half of the SEZ from east-southeast to west-northwest	16 mi	15.0	Very strong visual contrasts could be observed within and near the SEZ by travelers as they approached and passed through the SEZ on State Route 21. Contrast levels would gradually rise, and strong levels of visual contrast would be expected. Travelers would have a brief exposure of the proposed solar facilities.

^a To convert mi to km, multiply by 1.609.

^b To convert acres to km², multiply by 0.004047.

^c Mileage (within all columns) is used only for trails or roads, unless otherwise specified.

^d Distances are based on the Draft Solar PEIS analysis dated December 2010; any alterations to the SEZ boundaries may result in changes to the distance at the point of closest approach.

^e Length of State Route 21: Utah DOT (2008).

1 moderate or strong visual contrast. The Draft Solar PEIS visual impact analysis predicted these
2 levels of visual contrast from solar energy development in the Wah Wah Valley SEZ for the
3 following sensitive visual resource areas (SVRAs) and sensitive viewing locations (SVLs):
4

- 5 • Wah Wah Mountains Wilderness Study Area (WSA)
- 6
- 7 • State Route 21.
- 8

9 A very small portion of the King Top WSA is within the viewshed of the SEZ, but it is
10 too far away for strong visual contrasts to be noted from solar development within the SEZ. The
11 closest community is more than 25 mi (40 km) from the SEZ, and, therefore is likely to have
12 minimal to no visual contrast within the landscape resulting from solar development within the
13 SEZ.
14

15 The following steps could be taken to better understand potential impacts on these
16 SVRAs and SVLs from solar development in the Wah Wah Valley SEZ:
17

- 18 • Identify key observation points (KOPs) within these areas through working
19 with the management agency or other local stakeholders.
- 20
- 21 • Conduct viewshed analyses from the KOPs to determine how much of the
22 SEZ would be in view from each KOP.
- 23
- 24 • As deemed necessary, based on viewshed analysis results, prepare wireframe
25 Google Earth™ visualizations of hypothetical solar facilities in the SEZ
26 depicting the 80% development scenario to better estimate potential impacts.
27

28 This additional analysis may help to judge potential visual contrast more accurately
29 for most KOPs. For KOPs of particularly high sensitivity, a site visit with photography and
30 superimposition of the wireframe models onto the photos might be required or desired.
31

32 **C.6.3.5.12 Acoustic Environment**

33
34 None.
35
36
37

38 **C.6.3.5.13 Paleontological Resources**

39
40 The Wah Wah Valley SEZ is located in an area where the Potential Fossil Yield
41 Classification (PFYC) of the SEZ has been determined to be Class 2. Therefore, the potential for
42 impacts on paleontological resources is low. No additional data collection is needed at this time,
43 although verification of this classification is recommended at a project-specific level.
44
45
46

1 **C.6.3.5.14 Cultural Resources and Native American Concerns**
2

3 Less than 1% of the proposed Wah Wah Valley SEZ has been surveyed (approximately
4 11 acres [0.04 km²]³⁶). One site has been recorded in the SEZ, and only four sites have been
5 recorded within 5 mi (8 km) of the SEZ. The low density of sites recorded in basin interiors in
6 this region suggests the potential for significant sites within the SEZ is low (Dalley 2009). One
7 potential cultural resource of interest that runs through the SEZ is a former power line that ran
8 from Milford to the Rocky Mountain Research Station Desert Experimental Range; the line was
9 noted in an initial site visit of the SEZ but has not been formally recorded. The destruction or
10 degradation of important plant resources and the destruction of habitat or impediments to the
11 movement of culturally important wildlife are also potential impacts of concern within the SEZ.
12

13 The following additional data collection efforts could reduce the uncertainty about
14 potential impacts:

- 15 • Conduct a Class I literature file search to better understand (1) the site
16 distribution pattern in the vicinity of the SEZ, (2) trail networks through
17 existing ethnographic reports, (3) overall cultural sensitivity of the landscape,
18 and (4) the historical background of the former power line and associated
19 research station.
20
- 21 • Conduct a Class II Stratified Random Sample Survey of SEZ to obtain a 10%
22 sample (roughly 610 acres [2.5 km²]). Areas of interest, as determined
23 through a Class I review, should also be identified prior to establishing the
24 survey design and sampling strategy.
25
- 26 • Prepare a cultural sensitivity map based on results of the Class II survey and
27 Class I review.
28
- 29 • Continue with government-to- government consultation as described in
30 Section 2.4.3, including follow-up to recent ethnographic studies with Tribes
31 not included in the original studies to determine whether those Tribes have
32 similar concerns, or if they would want to participate in a similar ethnographic
33 study (the Pahrump Paiute have indicated they would like to be included).
34 The Wah Wah Valley SEZ falls in the traditional use area of primarily the
35 Southern Paiute, but also the Western Shoshone and Ute. Potential topics to
36 be discussed during consultation include the Wah Wah Springs, Lake Sevier,
37 Lake Bonneville, Wallace’s Peak, the Wasatch Mountains, trail systems,
38 mountain springs, habitation sites as places of cultural importance, clay and
39 rock resources, burial sites, rock art, ceremonial areas, and plant and animal
40 resources. The agencies value the information shared by the Tribes during
41 the ethnographic study and will consider their input in striving to minimize
42 the impacts of solar development in the SEZ. The completed ethnographic
43

³⁶ New information not provided in the Draft Solar PEIS.

1
2
3
4
5

study will be available in its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>). A summary of the contents of that report is also provided in the following text box.

Wah Wah Valley SEZ Study Area Summary

The Wah Wah Valley SEZ study area and its surrounding landscape were traditionally occupied and used, aboriginality owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. The field consultations summarized here are from members of the Paiute Indian Tribe of Utah and members of the Confederated Tribes of the Goshute Reservation. These Numic-speaking peoples have stated on record in past projects and stipulate here again, that they are the American Indian people responsible for the cultural resources in this SEZ study area because their ancestors were placed here by the Creator. They have continued to live in these lands, maintaining and protecting these places, associated natural resources, and cultural signs of their occupation.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene; they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices continued unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the natural and culture resources that exist in these lands.

During the ethnographic field sessions, Tribal representatives identified the Wah Wah Valley SEZ study area as being part of a large ceremonial landscape that contains many traditional use features such as the Wah Wah Springs, volcanic places, and important plants and animals, as detailed below:

- Sources for water—Wah Wah Springs, Lake Sevier, and Lake Bonneville
- Evidence of previous Indian use—extensive Indian ricegrass (waii) field remnants of farming and lithics at Wah Wah Springs
- Sources for plants—ceremonial, medicinal, and utilitarian plants, food staples (waii)
- Sources for animals—birds of prey, game birds, migratory birds, predatory and game mammals, small mammals, lizards, snakes, spiritual animals, and pronghorn antelope
- Geologic features—Wah Wah Mountains and Wallace’s Peak used for vision questing
- Indian history—Lake Sevier farming, travelers along the Old Spanish Trail 1829–1849, Mormon expansion 1850s, cattle and sheep ranching 1870s, mining and boom towns 1871–1910, railroads 1880.

Tribal representatives noted that the Wah Wah Valley SEZ study area has always been a part of the greater Lake Sevier region. Lake Sevier (located about 20 mi [32 km] northeast of the SEZ) receives most of its replenishing water today from Sevier River. The river begins in a meadow high in the Wasatch Mountains. The Sevier River flows from its headwaters and then drains into Lake Sevier. For thousands of years, Lake Sevier also was filled with water from the south that largely emanated from the high mountain ranges that topographically define Wah Wah Valley.

Tribal representatives identified the Wah Wah Springs Complex (located 2 mi [3 km] west of the SEZ) as an important water source in the SEZ study area. Their importance has increased with the depletion of Lake Sevier and the Wah Wah Valley Playa. Because of this, the springs are currently the primary water sources in the valley. These springs are seen as both a culturally important life force and a spiritual place.

6

Wah Wah Valley SEZ Study Area Summary (Cont.)

Since the end of the Pleistocene, Indian people have lived and thrived in the abundant lake, river, and riparian habitats of the Wah Wah Valley SEZ study area. Prior to the arrival of Euro-Americans, the area was a shared borderland between Southern Paiutes and Goshutes. Southern Paiutes and Goshutes shared farming areas and social relations along both sides of the Sevier River.

Indian people noted that the SEZ study area contains a wide variety of traditional use plants. In the mountains, areas were identified as rich pine nut harvesting areas. The lowland areas contained expansive fields of Indian ricegrass (*Achnatherum hymenoides*), also known as *waii*, which is a culturally central food. The term field is used by Indian representatives to indicate that they perceive these types of plants like traditional crops, in that Indian people actively managed and cared for these wild resources.

The abundant plant communities in the Wah Wah Valley SEZ study area support extensive herds of antelope, which were the focus of large-scale communal hunts that involved different Indian communities. Antelope shamans were important in these organized hunts because they were specialized in spiritually and physically interacting with the antelope to draw upon the antelope’s Puha (power or energy) and to select ones for the communal hunts. The purpose of these interactions was to assure that the animals were treated with respect and protected.

Volcanic places, such as Wallace’s Peak (located about 2.5 mi [4 km] west of the SEZ), are considered sacred locations used for vision questing and power acquisition. Numic-speaking people believe that volcanic events are moments when Puha deep inside the Earth is brought to the surface as a way for the land to renew itself as it moves across the landscape. Underground, Puha follows the flow of magma and distributes itself and connects volcanic places over vast distances.

Indian people continued to use these areas in traditional ways until Euro-Americans began settling along the front range of the Wasatch Mountains in about the mid-1800s. Soon the Indian irrigated farms along the Sevier River were lost, and eventually most major water sources would be taken by the non-Indian settlers. The encroachment period continued until the late 1800s when most aspects of traditional life were impossible to sustain. At this time, Indian people shifted to wage labor. They worked in many of the region’s mines, built and operated the railroads, and were ranch laborers. This shift is positively discussed and remembered today with a cultural interest in how previous generations adapted to new social, economic, and ecological conditions. The celebration of survival is offset by the sadness of having a well-adapted independent traditional lifeway replaced by wage labor in resource extraction activities.

1
2
3
4
5
6
7
8
9
10
11

C.6.3.5.15 Socioeconomics and Environmental Justice

None.

C.6.3.5.16 Cumulative Impact Considerations

None.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank.

1 **C.7 GENERAL ADDITIONAL ANALYSIS REQUIREMENTS FOR SEZS**

2
3
4 **C.7.1 Revised Transmission Analysis**

5
6
7 **C.7.1.1 General Information**

8
9 The Draft Solar Programmatic Environmental Impact Statement (Solar PEIS) included a
10 generic analysis of the environmental impacts of construction and operation of transmission lines
11 and substations (Section 5 of the Draft Solar PEIS); proposed design features to reduce or
12 eliminate impacts (Appendix A of the Draft Solar PEIS); a transmission constraints analysis to
13 determine whether additional corridor designation on U.S. Department of the Interior Bureau of
14 Land Management (BLM) lands would be needed to facilitate solar development (Appendix G of
15 the Draft Solar PEIS); and an analysis of the impacts of constructing transmission from the
16 individual proposed solar energy zones (SEZs) to the nearest existing transmission line based on
17 the assumption that existing lines could be upgraded (contained in individual SEZ sections in
18 Chapters 8 through 13 of the Draft Solar PEIS).

19
20 Commentors, including the U.S. Environmental Protection Agency, disagreed with the
21 simplifying assumptions used for the SEZs and stated that impacts from transmission were likely
22 to be substantially greater than those portrayed in the Draft Solar PEIS. Comments from industry
23 and environmental organizations noted that BLM policies should address cooperative
24 development, sharing of generation tie-lines, and transmission incentives that could facilitate
25 development within SEZs, and should be integrated with ongoing regional and state-level
26 transmission planning efforts. Some commentors also asked for a much more comprehensive
27 transmission analysis such as available capacity, costs associated with building or upgrading
28 infrastructure, and timing of new transmission.

29
30 Although the lead agencies (BLM and DOE) recognize that there are limitations in terms
31 of the accuracy of predicting whether new transmission will be needed to support development
32 within the proposed SEZs and where and when it will be built, they propose to conduct
33 additional analysis of transmission needs for inclusion in the Final Solar PEIS for those SEZs
34 being carried forward in the analysis (see Sections C.1 through C.6). This analysis is intended to
35 provide additional information to the agencies and their stakeholders regarding the nature of
36 transmission access issues associated with proposed SEZs and the extent of new transmission
37 development that might be needed to support solar energy generation within the SEZs.
38 Section C.7.1.2 of this appendix discusses the factors that can limit accurate prediction of
39 transmission needs for the SEZs. Section C.7.1.3 presents the proposed methods to be used for
40 additional SEZ-specific transmission analysis for the Final Solar PEIS. Section C.7.1.4 presents a
41 test case analysis for the proposed Brenda SEZ to demonstrate the types of additional
42 information that would be included in the Final Solar PEIS.

1 **C.7.1.2 Factors Limiting Predictability of Future Transmission Needs for the SEZs**
2 **Assessed in the Solar PEIS**
3

4 Due largely to federal government deregulation of the utility industry and the greater
5 roles regional transmission organizations (RTOs) and independent system operators (ISOs) play
6 in apportioning transmission capacity, there has been great uncertainty in the power generation
7 industry about how to finance new transmission infrastructure. It became unclear what benefits a
8 utility would derive from bankrolling transmission system upgrades, or how they would be
9 repaid for their investment. Consequently, there has been little investment in transmission over
10 the past 20 years. This situation has very slowly been resolved, with utilities increasingly gaining
11 the confidence to make investments in infrastructure.
12

13 Renewable energy developers, both wind and solar, have shown a strong preference to
14 locating their generation projects near existing transmission lines, especially lines with existing
15 capacity, and preferably very near an existing substation on a line with capacity. This strategy
16 minimizes the cost of connecting their projects to the transmission grid and avoids the need to
17 finance transmission system upgrades to create the needed capacity. However, this is not an
18 option for transmission projects in the SEZs that are not located near existing transmission lines
19 or near lines with existing capacity. The proposed additional transmission analysis that will be
20 conducted for SEZs, which is described in Section C.7.1.3, will assess the available capacity on
21 existing transmission lines near the proposed SEZs and estimate the costs and impacts of
22 upgrading existing lines and/or constructing completely new lines.
23

24 On the basis of approved solar projects to date, establishing transmission (either through
25 use and/or upgrade of existing lines or construction of new lines) generally precedes solar
26 development projects. Solar developers likely need to have signed Power Purchase Agreements
27 (PPAs) and a demonstrated ability to reach the potential purchasers in order to acquire financing.
28 However, arranging for the new and/or upgraded transmission line capacity needed and
29 financing it is an area in which solar developers may not be knowledgeable. If transmission
30 planning is not adequately factored into project planning, solar projects may be greatly delayed
31 or become infeasible.
32

33 The following factors limit the ability to identify specific transmission construction needs
34 to allow solar development in the proposed SEZs, and should be considered when interpreting
35 the results of the proposed transmission impact assessment (detailed further in Sections C.7.1.2
36 and C.7.1.3):
37

- 38 • Available transmission capacity in the six-state study area is limited. It is
39 likely that much of the solar generation produced in SEZs would need new or
40 upgraded transmission lines to move power to market. Determining exactly
41 where new transmission lines would be located is problematic, as discussed
42 below.
43
- 44 • By law, requests for capacity on the transmission system are analyzed on a
45 first-come, first-serve basis. The applicant who first encounters a shortage of
46 capacity to meet the planned project's needs must finance whatever system

1 upgrades are necessary in order to create the additional capacity needed.
2 Utilities maintain queues to keep track of who applied first; thus there is
3 incentive to make a request regardless of how viable a project might be.
4 Therefore, most utility queues include a number of unlikely projects, and there
5 is no easy way to separate out the truly viable projects from the placeholders.
6 The queues are thus a poor source of information about what projects might
7 be built and when.
8

- 9 • Some transmission projects are viewed as proprietary information by their
10 proponents for several reasons, including but certainly not limited to concerns
11 about competition for favorable rights-of-way (ROWs) or routes, cost or
12 funding considerations, or a desire to preserve a competitive advantage. If
13 such projects are not publicly known, that information cannot be used to help
14 efficiently plan transmission for the SEZs.
15
- 16 • The order in which projects proceed, and their relative timing, can have a
17 large impact on how the transmission system develops. A simple example
18 would be solar project development in a given SEZ. If many solar generation
19 projects were developed at the same time or close in time, it is reasonable to
20 assume that one or a few large transmission lines would be constructed to
21 carry the generation to market. If the same projects were developed singly
22 over a longer period of time, then one would predict that several smaller
23 transmission lines could result, since there is generally no financing
24 available for overbuilding a transmission line for potential (and uncertain)
25 future projects. In the proposed method for assessing new transmission
26 needs for SEZs, it has been assumed that all the SEZs would be built out to
27 capacity over a relatively short time period of 5 to 10 years, because
28 available data on the transmission system do not extend past the year 2020
29 (see Section C.7.1.3). However, it should be noted that larger lines are more
30 expensive, and if SEZs are not built out to capacity over the next 10 years or
31 so, construction of smaller transmission lines or upgrades of existing lines
32 may be more likely.
33
- 34 • The same list of projects will result in far different transmission development
35 depending on which project gets under way first. The first project may
36 partially negate the need for follow-on projects, or divert some customers.
37 Competing projects may continue up to the time that one goes forward: at that
38 time, the second project may be discontinued or may be combined with the
39 first project. The corresponding need for power flow on the transmission
40 system would also change, depending on the generation level of the first
41 project and where it would interconnect to the power system. This could cause
42 other proposed projects to become nonviable because of capacity changes on
43 the system. With all of the placeholder projects in utility queues and the
44 multitude of reasons project schedules either lag or accelerate, it is extremely
45 difficult to predict the capacity of new transmission development and where
46 and when it will occur.

- 1 • Solar developers will need to market the output of their projects to potential
2 purchasers. The PPAs would generally need to be in place in order to
3 determine to which load areas (i.e., population centers that could
4 accommodate the solar-generated electricity) the power would be transported.
5 The proposed SEZ-specific transmission analyses to be included in the Final
6 Solar PEIS may help developers initially identify the most likely load areas
7 for each SEZ and begin PPA negotiations with appropriate power companies.
8
- 9 • Several extremely long transmission line projects are proposed in the six-state
10 study area. Routing of these lines may or may not take into consideration the
11 locations of the proposed SEZs, and new transmission lines may be located
12 without regard for where the SEZs are located, as developers will want to
13 minimize the costs of constructing new or upgraded transmission systems.
14 However, such projects may be constructed within designated transmission
15 corridors, particularly corridors designated under Section 368 of the Energy
16 Policy Act of 2005,³⁷ because designated corridors have been through initial
17 environmental review to minimize siting issues. Many of the proposed SEZs
18 are located near Section 368 corridors. In addition, under the BLM's preferred
19 alternative, applications for solar projects in variance areas outside of SEZs
20 may be accepted, thus allowing some projects outside of SEZs to take
21 advantage of new transmission that may become available over the 20-year
22 study period.
23
24

25 **C.7.1.3 Proposed Methodology for SEZ-Specific Transmission Analyses for the** 26 **Final Solar PEIS** 27

28 To better quantify potential upper bound and mid-range impacts of bringing transmission
29 to the SEZs being carried forward for the Final Solar PEIS, a revised transmission analysis is
30 proposed. The overall scope and approach for this additional analysis has been guided by review
31 comments and programmatic oversight by the BLM, DOE, National Renewable Energy
32 Laboratory (NREL), Western Area Power Administration, and the Western Electricity
33 Coordinating Council (WECC), with a goal of developing reasonable estimates for transmission
34 requirements and impacts, while recognizing that full-scale engineering analyses are beyond the
35 scope of the Solar PEIS effort. The information generated by this analysis would include:
36

- 37 1. Identification and characterization of potential load areas to be served by the
38 SEZ under consideration.
39

³⁷ Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the BLM, DOE, U.S. Forest Service (USFS), and U.S. Department of Defense prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.

- 1 2. Characterization of transmission options for delivering power from the SEZ to
2 the potential load areas under both an upper bound analysis and a mid-range
3 analysis, and an estimation of the associated requirements in terms of
4 transmission line length, number of substations, total land use requirement,
5 voltage levels, wire sizes, and bundling configurations.
6
- 7 3. Identification of favorable and less-favorable transmission configurations in
8 terms of potential impacts, including land use requirements and cost.
9

10 To identify the potential load areas to be served by SEZs, a simple mathematical
11 algorithm will be applied to identify which load areas would be the most favorable in terms of
12 load requirements and distance from specific SEZs (see Section C.7.1.3.1 for a detailed
13 description of the methodology for load area identification). Because of the variable nature of
14 solar generation, the identified load areas will need to represent significantly greater load than is
15 expected to be delivered from a given SEZ (because no load area would depend entirely on solar
16 generation to meet its peak loads).
17

18 Using the information on potential load centers for an SEZ, an upper bound assessment
19 of transmission impacts for the SEZs will be conducted, assuming that new transmission lines
20 will be needed for all SEZ-generated electricity (this will be termed the “dedicated-line
21 transmission” analysis, or DLT analysis). The estimated generation capacity of SEZs will be
22 conservatively based on an assumed full build-out of each SEZ (i.e., 80% of acreage developed)
23 to be delivered to one or more load areas. It is projected that one to four favorable load areas for
24 each SEZ will be identified.
25

26 In addition to the upper bound analysis, an additional mid-range analysis will be
27 conducted for some of the SEZs being carried forward to provide a semi-quantitative analysis of
28 transmission needs using information about available capacity on existing lines and proposed
29 new lines as the basis for impact estimates (this will be termed the shared-line transmission
30 analysis, or SLT analysis). The SLT analysis will be conducted for all proposed SEZs in
31 Arizona, California, and Nevada that are being carried forward in the Final Solar PEIS (see
32 Sections C.1 through C.6). These analyses will support responses to specific comments about
33 opportunities to use existing and proposed new lines that were received on the Draft Solar PEIS.
34

- 35 • Specifically, the upper bound DLT analysis will estimate the number and size
36 of additional lines and substations required to move SEZ-generated electricity
37 to load center(s) in order to estimate the acres of land that would be disturbed.
38 The mid-range SLT analysis will estimate the number of line upgrades, new
39 transmission lines, and substations needed, assuming tie-in to the existing grid
40 where data indicate this would be likely. For both analyses, in order to
41 calculate the number of miles of new transmission construction and acres
42 disturbed, it will be assumed that new transmission construction will occur
43 parallel to existing ROWs and/or within or along designated corridors.
44
- 45 • The revised transmission analysis will also identify the transmission
46 stakeholders (e.g., regulators, planning groups, and councils) and transmission

1 planning process for each SEZ, and outline coordination policies that DOE
2 and the BLM may adopt to help bring transmission to SEZs. It will
3 acknowledge the requirements contained in the Memorandum of
4 Understanding regarding coordination in federal agency review of
5 transmission facilities on federal land (USDA et al. 2009).
6

- 7 • Transmission considerations will be an early and integral component of the
8 BLM's SEZ identification protocol (see Appendix D of this Supplement),
9 focusing on near-term transmission projects and coordination with
10 transmission analytical and planning efforts ongoing through other
11 organizations. Examples of such efforts include those being carried out by
12 WECC's Transmission Expansion Planning Policy Committee (TEPPC),
13 WECC's Technical Studies Subcommittee, the Western Governors'
14 Association State/Provincial Steering Committee transmission planning
15 groups, regional and subregional planning groups, utility-level planning
16 initiatives, and investigations by many other stakeholders.
17
18

19 **C.7.1.3.1 Methodology for Identifying Likely Load Areas**

20
21 The methodology for identifying likely load centers is designed to provide a logical
22 foundation and reproducible basis for associating SEZs with appropriate load areas. The goal is
23 to develop SEZ/Load-Area assignments for each SEZ. This task represents the first step in an
24 enhanced assessment of transmission requirements for SEZs. The SEZ/Load-Area assignments
25 will provide the basis for examining the transmission needs and impacts for all SEZs, including
26 those that can potentially take advantage of nearby transmission lines and/or substations with
27 available capacity, those existing lines that could be upgraded to carry more capacity, and those
28 that are likely to require new transmission capabilities.
29

30
31 **Background.** The approach is designed to provide realistic approximations but should
32 not be interpreted as predictive or definitive, in part, because the transmission development
33 process is complex and dynamic, and also because of limitations in scope. Many commercial
34 entities (utilities, independent transmission developers, etc.), public entities, and governmental
35 entities are involved in planning, financing, permitting, and constructing new transmission lines,
36 and this analysis is not intended to capture those multi-entity dynamics. Likewise, this analysis
37 does not represent a technically rigorous treatment of the load associations, as it does not employ
38 load flow analysis or optimization techniques that are used by industry to simulate grid flows and
39 optimize cost/pricing issues. Such rigorous analysis requires extensive modeling that is beyond
40 the scope of the Solar PEIS. Instead, the logic outlined in this algorithm represents an effort to
41 capture some of the important physical factors that determine logical load areas for prospective
42 generation sources. By including considerations for the factors discussed below, the algorithm
43 described is intended to produce realistic assessments of transmission requirements and
44 associated impacts. This information may provide insight and data for supplying study requests
45 to WECC for additional analysis by WECC's TEPPC Regional Transmission Expansion
46 Planning 10-year planning process, and for WECC's Technical Studies Subcommittee reliability

1 studies. In addition, this information may be used to augment the Western Renewable Energy
2 Zone initiative.

3
4
5 ***Basic Considerations and Overview.*** The following objectives and factors are
6 incorporated into the SEZ/Load-Area algorithm:

- 7
- 8 • Minimizing distances between each SEZ generation source and selected
9 load(s);
- 10
- 11 • Identifying existing transmission lines where available capacity may exist;
- 12
- 13 • Taking advantage of existing ROWs or planned corridors, even where little or
14 no excess capacity exists, and recognizing existing grid topology as it might
15 lead to shorter transmission distances (to provide a realistic estimate of the
16 routes that would likely be followed in constructing new transmission lines or
17 upgrading existing lines);
- 18
- 19 • Identifying adequate loads to absorb planned SEZ generating capacities;
- 20
- 21 • Limiting solar-generated assignments for any given load area to a reasonable
22 percentage of the total load for that area; and
- 23
- 24 • Allowing SEZs to serve out-of-state load areas.
- 25

26 These factors will be integrated into the algorithm for identifying load areas for each
27 SEZ. Collectively, they are intended to mimic some of the basic considerations that drive
28 transmission development, without requiring the rigor of detailed load flow analysis. These items
29 are discussed in greater detail in the following descriptions.

30
31 *Minimizing Distances between Generation Source and Designated Load(s).* Distance
32 minimization recognizes that transmission distance is one of the strongest factors affecting
33 transmission costs and line losses. Minimizing distance represents a fundamental objective in
34 most transmission planning efforts, although in some cases a power generator can afford to move
35 power greater distances if the sales price in the more-distant market is higher than that in closer
36 markets. However, in the methods used for SEZ transmission analyses, total incremental
37 transmission distance will be treated as a basic parameter to be minimized, subject to the
38 requirements for assembling a collection of loads that satisfy the other requirements.

39
40 *Recognizing Existing Transmission Lines Where/If Available Capacity Exists.* For
41 locations where reliable data sources (e.g., FERC 2011; WECC 2010, 2011a) indicate that load
42 carrying capacity might be available on existing transmission lines, the algorithm will treat that
43 resource as top priority. While excess capacity may be relatively rare for many pathways around
44 SEZs, in cases where it does exist and the capacity is in the direction of the load area where
45 power is needed, it represents the least-cost and least-impact alternative for delivering power
46 from SEZs to load areas. As such, it would be the first option chosen relative to other options for

1 expanding or constructing new lines and/or ROWs. It is important to recognize that proper
2 location of a solar resource has the potential to actually reduce congestion by locating the
3 resource between the point of congestion and load and/or sending power in the opposite direction
4 of existing congestion.
5

6 *Taking Advantage of Existing ROWs or Planned Corridors Even Where Little or No*
7 *Excess Capacity Exists.* The identification of load areas for each SEZ will also recognize that
8 existing lines provide favorable pathways even when excess capacity is limited. The incremental
9 costs and impacts for expanding existing lines/ROWs are typically much lower than developing
10 entirely new pathways. There are numerous alternatives for adding capacity along existing
11 transmission pathways: adding new circuits/conductors to spare positions on existing structures;
12 reconductoring the lines with high-temperature, low-sag conductors; making voltage upgrades;
13 and/or widening the ROW to accommodate new circuits/structures. These options, along with the
14 associated cost estimates, will be addressed in steps that follow after the initial sets of load areas
15 are identified for each SEZ.
16

17 *Recognizing Grid Topology as It Might Lead to Shorter Transmission Distances.*
18 “Incremental,” or new, transmission distances will be recognized in the analysis for
19 interconnected load areas. For example, if two load areas are reachable at different points along a
20 single transmission line, the selection logic will recognize that if both loads are to be connected,
21 the more-distant load area only incurs an incremental transmission enhancement distance to link
22 between the nearer load area and the more-distant load area. Recognizing interconnection
23 dependencies can alter the selection of the most favorable load areas to be served by a given
24 SEZ.
25

26 *Identifying Loads: (a) Identifying Adequate Loads To Absorb Planned SEZ Generating*
27 *Capacities.* For each SEZ, an adequate collection of load areas will need to be selected to absorb
28 the estimated solar-generating capacity at full build-out. In cases where surrounding load areas
29 represent small loads, this consideration will mean that multiple load areas will be identified
30 for a given SEZ. Limits that operators of individual load areas would place on the use of
31 renewable/solar power (see item (b) below) will also affect the number of load areas needed to
32 accommodate generation from each SEZ. With respect to the SEZ transmission analysis, a
33 simplifying assumption that no more than 20% of a load area’s power requirements could be
34 supplied from solar resources is made. In reality, the amount of solar power from an SEZ that
35 individual load areas will accept will vary based on the amount already supplied by other
36 renewable sources, and state and federal regulations and policies mandating the use of solar
37 power. *(b) Limiting Solar-Generated Load Assignments for any Given Load Area To Represent a*
38 *Reasonable Percentage of the Total Load for That Area.* For a given load area, only a portion of
39 total peak load will be “eligible” to be served from an SEZ. This consideration recognizes that
40 each load area would limit its exposure to variable loads as derived from solar generation
41 sources. Initially, the proposed fraction to be applied to each load area would equal the
42 Renewable Portfolio Standard (RPS) requirement (i.e., the fraction of electricity required to be
43 generated from renewable sources for the state where the load area is located). Peak load
44 estimates for load areas are expected to be approximated from a simple scalar based on
45 population.
46

1 *Allowing SEZs To Serve Out-of-State Load Areas.* The initial assumption in this analysis
2 will treat SEZs as able to serve both in-state and out-of-state loads. If interests or questions are
3 raised regarding sensitivities to this assumption, they can be addressed relatively easily with
4 additional case studies.
5
6

7 **Implementation.** The SEZ/Load-Area assignment algorithm will be solved by using a
8 simple mixed-integer linear programming (MILP) formulation. By defining the factors outlined
9 above, the MILP will identify the most effective collection of load areas for each SEZ. The
10 formulation will be flexible in terms of potential modifications or enhancements once initial test
11 cases are prepared and reviewed. In general, the algorithm will be formulated as a distance
12 minimization problem, subject to constraints to ensure that adequate loads are designated to
13 consume the solar-derived generation from a given SEZ.
14

15 Objective function: Minimize the sum of incremental transmission distances to all
16 designated load areas, subject to the following constraints:
17

- 18 • Sum of “eligible” load from all selected load areas must be \geq total SEZ
19 generating capacity.
- 20 • SEZ-eligible load for each load area = load area peak load \times RPS fraction
21 (for state of load area).
- 22 • Follow existing/planned ROWs/corridors to in-state and out-of-state load
23 areas.
- 24 • Use existing available capacity as possible (i.e., lowest incremental
25 distance/impact.
- 26 • For congested pathways, assume new capacity would need to be added.
- 27 • Use “incremental” distances to load areas located along ROWs/corridors that
28 serve other load areas.
29
- 30 • Use “incremental” distances to load areas located along ROWs/corridors that
31 serve other load areas.
32 • Use “incremental” distances to load areas located along ROWs/corridors that
33 serve other load areas.
34

35 In some cases, particularly for the smaller SEZs, the SEZ/Load-Area assignments may be
36 obvious upon initial inspection of the grid topography and magnitudes of capacity involved. In
37 such cases, it may not be necessary to actually construct or solve the MILP.
38

39 The end product of this process will be a list of logical load areas for each SEZ. These
40 lists will be used to assess the distances, upgrade requirements, and costs for:
41

- 42 • Transmission tie-lines to connect with the existing grid (and potential
43 transmission capacity on existing lines), and
44
- 45 • New transmission capabilities (on, or parallel to, existing/planned ROWs).
46

1 **C.7.1.3.2 Transmission Analysis Methodologies**
2

3 Subsequent to the identification of potential load areas as described in Section C.7.1.3.1,
4 the following additional assumptions, methods, and data sources are proposed for use in
5 identifying upgraded and/or new transmission facilities that would be needed for individual
6 SEZs, and for estimating the environmental impacts and costs of these upgraded or new
7 facilities.
8

9 The total load, in megawatts (MW) for each load area, will be roughly estimated by
10 assuming a population-to-power density (P-P-D) of 400 people per MW. Since population is the
11 most common parameter associated with a market area, the use of P-P-D is a convenient means
12 of calculating the equivalent MW load given the population. The resulting MW load usually
13 reflects the high side of the MW load estimate and, thus, supports analysis of upper bound
14 impacts.
15

16 The DLT analysis (see Section C.7.1.3 for definition) will assume that all SEZ-generated
17 power would require entirely new transmission lines. Where existing transmission lines are
18 present, it is assumed that the new dedicated lines would be constructed parallel to the existing
19 lines leading to the identified potential load areas and that they would require additional land for
20 ROWs. The new transmission lines are assumed to traverse the identified potential load areas in
21 sequence according to their linear distance from the center of the SEZ until the maximum
22 allowable MW output for the SEZ is fully distributed. The purpose of the DLT analysis is to
23 establish an approximate upper bound of potential impacts of transmission development
24 associated with solar development in the SEZ in terms of land disturbance and cost.
25

26 The SLT analysis will examine existing transmission lines with potential spare capacity
27 over a 10-year planning horizon, assuming that these lines could be used in transmitting
28 electricity generated at the SEZ to various load areas. To accomplish this, the analysis will
29 evaluate alternating current (AC) load flow data for the base year of 2011 through the tenth year
30 of the assumed planning horizon. The difference between the line rating (in MW) and the base
31 load flow (also in MW) is the allowable electrical capacity that could be used to transmit SEZ-
32 generated power. If there is insufficient capacity on the existing line, the analysis will examine
33 possible enhancements to existing transmission lines, as needed, to accommodate the full SEZ
34 output. Added investment is also required for a tie-line or tie-lines that would run from the SEZ
35 to the connecting point on the existing transmission line (note that larger SEZs may require more
36 than one tie-line).
37

38 Within each methodology (i.e., DLT and SLT analyses), the goal is to identify
39 transmission configurations that make efficient use of land and equipment investments, and
40 provide other qualitative advantages (e.g., transmission system flexibility and long-term
41 sustainability). Thus, the DLT analysis attempts to identify the best configuration for new
42 dedicated lines, and the SLT analysis attempts to identify the most favorable option that
43 recognizes the availability of existing transmission line capacity.
44

45 The planned data sources for the analyses include:
46

- 1 • Information about the proposed SEZs and potential generation levels as
2 presented in the Draft PEIS, associated spatial data (available at
3 <http://solareis.anl.gov/maps/index.cfm>), and revisions to the proposed SEZs
4 described in Sections C.1 through C.6.
5
6 • WECC systems map and load flow data from FERC for the years 2010, 2015,
7 and 2020 under peak summer demand (FERC 2011).
8
9 • WECC pathway reports for calibration adjustments to line capacity estimates:
10 for example, *10-Year Regional Transmission Plan*, *WECC Path Reports*,
11 *September 2011* (WECC 2011b).
12
13 • POWERmap data (Platts 2011): for load area identification and population
14 estimates.
15
16 • The Electric Power Research Institute (EPRI) *Transmission Line Reference*
17 *Book* (EPRI 2005).
18
19 • Various technical publications from the Institute of Electrical and Electronics
20 Engineers, EPRI, WECC, and other organizations.
21

22 Major assumptions to be employed in the analyses are as follows:
23

- 24 1. The study horizon will be assumed to be 10 years and cover the period 2011
25 to 2020. This assumption is constrained mainly by the available load flow data
26 and facility expansion information from FERC. FERC can provide load flow
27 data only extending up to 2020. Load growth and transmission line loadings
28 over this period of time will thus be included in the analysis.
29
30 2. Transmission lines that require new construction will be assumed to run
31 parallel to existing transmission routes.
32
33 3. A ROW requirement of 200 ft (61 m) for 500-kV transmission corridors and a
34 land requirement of 950 ft² (88.3 m²) per megavolt-ampere (MVA) for the
35 electric substations are assumed (Western 2009). These assumptions will be
36 further reviewed and revised as needed prior to the Final Solar PEIS.
37
38 4. The Brenda SEZ will have a maximum output of 770 MW, which will remain
39 constant over the planning horizon. (This is the assumption for the test case
40 presented in Section C.7.1.4; however, a revised assumption on the amount of
41 potential solar development at the Brenda SEZ now projects about 609 MW of
42 generation. While some of the results will change, the basic steps and general
43 findings are expected to remain the same as reported here.)
44
45 5. Other details: A present-worth method based on an opportunity cost of 3%
46 will be employed. Projections for annual load growth will be assumed to be

1 directly proportional to population growth. Cost of electric energy will be
2 assumed to be constant at about \$100/MWh. Only investment costs for the
3 transmission lines will be considered in this study. Maintenance cost will be
4 neglected for the time being to simplify the illustration of the analysis
5 procedure. These assumptions will be further reviewed and revised as needed
6 prior to the Final Solar PEIS.

- 7
- 8 6. As a simplifying approach to recognizing the variability characteristics of
9 solar generation, load areas are assumed to have a maximum supply of 20%
10 that is eligible to be served by solar power. Thus a load area with a total load
11 of 100 MW is assumed to represent only 20 MW of potential load for new
12 solar power generated in the SEZs. This consideration recognizes that each
13 load area would limit its exposure to variable generation as derived from solar
14 sources. As stated in Section C.7.1.3.1, the amount of solar power from an
15 SEZ that individual load areas will accept will vary based on the amount
16 already supplied by other renewable sources and on state and federal
17 regulations and policies mandating the use of solar power.
- 18
- 19 7. Transmission line expansion and reinforcements for 2011, 2015, and 2020 are
20 based on the “Planned Facilities Map” provided by WECC via FERC 715
21 filings.
- 22
- 23 8. Peak baseline power flows will be derived from the proportional relationship
24 between real power flows and the voltage angles. Power flow through a line
25 can be estimated by taking the difference between the voltage angle for the
26 sending and receiving terminals, and dividing by the line reactance (also
27 requires applying appropriate unit-conversion factors).
- 28
- 29 9. The thermal ratings of the lines as contained in FERC Form 715 for WECC
30 will be used to estimate spare capacity.
- 31

32 **C.7.1.4 Test Case Transmission Analysis for the Proposed Brenda SEZ**

33
34
35 The purpose of this test case is to demonstrate the effectiveness and usefulness of the
36 planned approach for conducting enhanced transmission assessments as described in
37 Section C.7.1.3 for proposed SEZs being carried forward to the Final Solar PEIS. The Brenda
38 SEZ, located in Arizona, was selected for this test case because it represents a nontrivial
39 combination of grid connection and delivery-to-load options that test the planned approach
40 (e.g., proximity to existing transmission lines and alternative loads). A paper containing the
41 details of the methods and assumptions used to conduct this test case analysis is available at the
42 Solar PEIS project Web site (<http://www.solareis.anl.gov>).

43
44 It is important to point out that the results presented in this test case are preliminary and
45 subject to refinement and validation via:
46

- 1 1. Utilizing WECC data sources and consulting with WECC, the California
2 Independent System Operator (CAL ISO), and other pertinent utilities on the
3 subjects of planned expansion facilities and spare transmission line capacities
4 over the study horizon;
- 5
- 6 2. Re-affirming the method used for quantifying the magnitude of “solar-
7 eligible” loads at identified load areas; and
8
- 9 3. Augmenting the transmission design assumptions using additional
10 transmission design reference materials (e.g., from EPRI, North American
11 Electric Reliability Corporation, and power engineering companies).
12

13 As stated in Section C.7.1.3, the assumed maximum output from the proposed Brenda
14 SEZ for the purposes of this test case analysis is 770 MW. For both the DLT analysis and the
15 SLT analysis, it is assumed that a 10-mi (16-km) tie-line from the proposed SEZ to a connection
16 point at the Salome Substation would need to be constructed. The primary candidates for Brenda
17 SEZ load areas are the major surrounding cities. The dispersal pattern of the load areas partly
18 determines the number of logical transmission schemes for the Brenda SEZ. The most likely
19 load area groupings for the SEZ are (1) Phoenix/Tucson; (2) Yuma, El Centro, San Diego;
20 (3) Las Vegas; and (4) Indio Coachella, Palm Springs, Hernet-San Jacinto, Riverside, and
21 Los Angeles. These groupings provide for linking loads along alternative routes from the Brenda
22 SEZ so that the SEZ’s output of 770 MW can be fully allocated.
23
24

25 ***Dedicated-Line Transmission Analysis.*** The DLT analysis approach assumes that the
26 Brenda SEZ will require all new construction for transmission lines (i.e., dedicated lines) and
27 substations. The new transmission lines(s) would directly convey the 770-MW output of the
28 Brenda SEZ to the prospective load areas for each possible transmission scheme. It also
29 assumes that all existing transmission lines in the WECC region are saturated and have little
30 or no available capacity to accommodate Brenda’s 770-MW output throughout the entire
31 10-year study horizon.
32

33 Table C.7-1 summarizes the distances to the various load areas over which new
34 transmission lines would need to be constructed by leg, as well as the assumed number of
35 substations that would be required. Table C.7-2 shows the net present value (NPV) of the various
36 transmission configurations and takes into account the cost of constructing the lines and the
37 projected revenue stream over the 10-year horizon. A positive NPV indicates that revenue more
38 than offsets investments. The estimated land use requirement for the various transmission
39 configurations is presented in Table C.7-3.
40

41 The results of this preliminary test case DLT analysis indicate that the most economically
42 attractive configuration (i.e., the configuration with the highest positive NPV) would be
43 Transmission Scheme 1, which treats Phoenix and Tucson as the primary markets. The second
44 most economic option is Scheme 2 which would primarily serve the San Diego Area. The
45 transmission scheme that identifies Las Vegas as the primary market falls short of fully
46

TABLE C.7-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to Load Areas for the Brenda SEZ

Transmission Scheme	City	Estimated MW for Solar Market ^a (based on population size)	Total Solar Market (MW)	Sequential Distance (mi) ^b	Total Distance (mi)	Line Voltage (MW)	Number of Substations
1	Phoenix	652	906	108	224	500	3
	Tucson	254		116			
2	Yuma	75	878	79	226	500	4
	El Centro	38		56			
	San Diego	765		91			
3	Las Vegas	467	467	188	188	500	2
4	Indio Coachella	26	2,934	131	262	500	2
	Palm Springs	22		18			
	Hemet-San Jacinto	65		27			
	Riverside	121		27			
	Los Angeles	2,699		59			

^a The estimated MW for solar market in each city is based on the 2010 population; 20% of the total estimated MW value is assumed as the maximum solar market.

^b To convert mi to km, multiply by 1.609.

TABLE C.7-2 Comparison of Potential Transmission Lines with Respect to Net Present Value

Transmission Scheme	City	Present Value Transmission Line Cost (million \$) ^a	Annual Sales Revenue (million \$) ^b	Present Worth Revenue (million \$) ^c	Net Present Value Revenue (million \$)
1	Phoenix, Tucson	784	134.9	1,152	368
2	Yuma, El Centro, San Diego	791	134.9	1,152	361
3	Las Vegas	658	81.8	699	41
4	Indio Coachella, Palm Springs, Hernet-San Jacinto, Riverside, Los Angeles	917	134.9	1,152	235

^a Assumes construction cost spike is at beginning of year 1; assumes a discount rate of 3%.

^b Assumes a revenue spike occurs at the end of each year; assumes a discount rate of 3%.

^c Assumes a discount rate of 3%.

TABLE C.7-3 Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements

Transmission Scheme	City	Total Distance (mi) ^a	Number of Substations	Land Use (mi ²) ^b		
				Transmission Line ^c	Substation ^d	Total
1	Phoenix, Tucson	224	3	8.4848	0.0289	8.51
2	Yuma, El Centro, San Diego	226	4	8.5606	0.0289	8.59
3	Las Vegas	188	2	7.1212	0.0175	7.14
4	Indio Coachella, Palm Springs, Hernet-San Jacinto, Riverside, Los Angeles	262	6	9.9242	0.0289	9.95

^a To convert mi to km, multiply by 1.609.

^b To convert mi² to km², multiply by 2.590.

^c Assumes a ROW width of 200 ft (61 m) for a 500-kV line.

^d Assumes a generic land use requirement for substations of about 950 ft/MVA (290 m/MVA). The size of each substation per scheme varies but has a sum total capacity limit of 770 MW × 1.1 (or about 847 MVA, assuming 1 MW = 1.1 MVA).

1 accommodating the maximum potential of the Brenda SEZ, and thus appears as the least
2 attractive configuration in terms of NPV. However, the Las Vegas transmission scheme has the
3 smallest impact in terms of amount of land disturbance. The worst transmission configuration in
4 terms of the amount of land disturbed and NPV is Scheme 4, which would deliver solar power
5 from the Brenda SEZ to Los Angeles.
6
7

8 ***Shared-Line Transmission Analysis.*** The SLT analysis provides a more detailed
9 analysis of transmission requirements by assessing the available capacity of existing lines
10 between the SEZ and the load centers and the need for new dedicated lines. This approach:
11

- 12 1. Takes into account the configuration and performance of the existing
13 transmission system and explores the possibility of using the existing spare
14 capacity (if there is any) to facilitate the conveyance of power from the SEZ to
15 the prospective load areas;
- 16 2. Maximizes the utilization of common resources (e.g., spinning reserves and
17 ancillary power reserves) within the context of a wider grid;
- 18 3. Accounts for the effects of future expansion plans of relevant utilities in the
19 WECC region; and
- 20 4. Takes advantage of connectivity between load areas and recognizes
21 cumulative solar-eligible demand requirements.
22

23
24
25
26 The SLT analysis makes use of AC load flow data to establish normal flow patterns
27 (i.e., magnitude and direction of power flows) on existing high-voltage lines surrounding the
28 SEZ. It then calculates the spare capacity of the existing high-voltage lines under peak load
29 conditions for 2011, 2015, and 2020. For the 10-year planning horizon, electrical growth for the
30 load areas is recognized, including its effects on the loading levels of the transmission lines.
31

32 Using this approach for the Brenda SEZ, only two transmission configurations emerged
33 as favorable; other configurations are possible but are clearly not optimal relative to the top two
34 configurations. The first transmission scheme analyzed Phoenix and San Diego as the primary
35 markets; the second analyzed Los Angeles as the primary market. Tables C.7-4 and C.7-5 show
36 the estimated spare capacity on existing lines for 2011, 2015, and 2020 for both of these
37 transmission schemes. For both transmission schemes and all three years, the estimated spare
38 capacity exceeds the 760 MW that could be generated from the proposed Brenda SEZ; thus,
39 there is enough spare capacity through 2020 to accommodate the SEZ outputs.
40

41 Note that the current scope of analysis will treat each SEZ independently. Conducting
42 coordinated transmission development studies that consider multiple SEZs contributing power to
43 the same load center or centers is considered beyond the scope of the additional SEZ-specific
44 transmission analysis planned for the Final Solar PEIS. However, discussion of the likelihood of
45 potential impacts from multiple SEZs will be included in the Final Solar PEIS, based on the
46 likely load centers identified for the SEZs.

1
2

TABLE C.7-4 Estimated Spare Capacity on Existing Lines from the Proposed Brenda SEZ to Phoenix and San Diego^a

Transmission Line Start/End Locations	Transmission Line Description	Spare MW		
		2011	2015	2020
Devers to Palo Verde	1 circuit 500 kV	4,693	4,488	4,582
Palo Verde to Rudd	1 circuit 500 kV	1,322	1,795	1,270
Hassayam to N. Gila	1 circuit 500 kV	2,923	1,144	2,385

^a Details of the calculation of spare MW using a calculated sending angle and receiving angle are provided in the full report for this test case (see the Solar PEIS project Web site [<http://solareis.anl.gov>]).

3
4
5
6

TABLE C.7-5 Estimated Spare Capacity on Existing Lines from the Proposed Brenda SEZ to the Los Angeles Area^a

Transmission Line Start/End Locations	Transmission Line Description	Spare MW		
		2011	2015	2020
Palo Verde to Devers	2 circuit 500 kV ^b	1,637	NA	NA
Devers to ValleySC	1 circuit 500 kV	1,615	NA	NA
Palo Verde to Colorado River	1 circuit 500 kV	NA ^c	1,158	958
Colorado River to Devers	2 circuit 500 kV	NA	5,738	5,636
Devers to ValleySC	2 circuit 500 kV	NA	4,001	3,482
ValleySC to Serrano	1 circuit 500 kV	2,434	1,979	2,532

^a Details of the calculation of spare MW using a calculated sending angle and receiving angle are provided in the full report for this test case (see the Solar PEIS project Web site [<http://solareis.anl.gov>]).

^b Conflicting sources: single circuit per Powermap; double circuit per WECC diagram.

^c NA = not applicable.

7
8
9
10
11
12

Discussion and Caveats to the Analyses. Although the DLT analyses may be useful in determining higher cost/higher impact estimates for the Solar PEIS, these analyses do have shortcomings. The approach ignores the systems approach, whereby common reserves and spares are shared within a system to maximize the use of available resources. Also, because the

1 transmission lines are assumed to be dedicated to SEZ operation, their utilization factor over the
2 planning horizon would remain essentially constant at about 20% (based on the estimated
3 average capacity factor of solar facilities), which is low and would not likely justify the huge
4 investments required. It also holds the SEZ owners captive to being the only probable investor on
5 the transmission lines. Because of fundamental limitations for the DLT analysis as discussed
6 above, the transmission configurations resulting from this approach should be considered
7 hypothetical.
8

9 An important finding from the SLT analysis is that there appears to be spare capacity
10 available in the existing 500-kV network linking the proposed Brenda SEZ to major load areas
11 and potential solar energy markets. The 10-year projection of the loading levels for existing and
12 planned 500-kV transmission lines also predicts the availability of spare capacity to
13 accommodate the SEZ output. However, a limitation of this analysis is that it does not
14 investigate potential queues of customers who might be waiting to occupy such excess capacity.
15 Nonetheless, this finding of potential spare capacity would indicate that the transmission
16 investment cost for this SEZ could be minimal, consisting mainly of approximately \$35 million
17 to construct the tie-line to existing transmission (assuming a cost of \$3.5 million per mile. This
18 finding needs to be confirmed through further peer review with transmission planning agencies,
19 particularly the WECC.
20
21

22 **C.7.2 Water Resources Action Plan**

23
24 There are seven main action plan items relating to water resources that apply to all SEZs
25 being carried forward. The following sections explain each action plan item and provide some
26 additional consideration for consultation with other federal, state, and local agencies and feasible
27 timelines for the additional work.
28
29

30 **C.7.2.1 Planning-Level Inventory of Water Resources**

31
32 The Draft Solar PEIS summarized surface water and groundwater resources for
33 individual SEZs at the programmatic level, but a more in depth or planning-level inventory
34 would provide a common resource for developers of individual SEZs, as well as address
35 comments on the Draft Solar PEIS.
36

37 The planning-level inventory of water resources will be presented in the Final Solar
38 PEIS. Products of the planning-level inventory will include (sources in parentheses):
39

- 40 • Maps of basin valley and surrounding mountain ranges
- 41 – All canals and perennial, intermittent, ephemeral streams (U.S. Geological
42 Survey [USGS] National Hydrography Dataset [NHD])
- 43 – HUC8 (8-digit, 4th-level hydrologic unit code) watersheds (USGS NHD)
- 44 – Groundwater wells (USGS National Water Information System [NWIS]
45 and Water Science Centers, National Resources Conservation Service
46 [NRCS])

- 1 – Springs (USGS NWIS)
- 2 – Groundwater basin(s) (state water agency)
- 3 – Wetlands (USFWS National Wetlands Inventory [NWI] or state agency)
- 4 – Playas and dry lakes (USGS NHD or state agency)
- 5 – Meteorological station locations (USGS NWIS, Western Regional Climate
- 6 Center [WRCC], state agency climate stations, e.g., California Irrigation
- 7 Management Information System [CIMIS] in California)
- 8
- 9 • Tabular information
- 10 – Canals and perennial and intermittent streams (USGS NHD)
- 11 – Total length of ephemeral stream channels (USGS NHD)
- 12 – Total length of stream channels by stream order (USGS NHD)
- 13 – Annual, seasonal, peak discharge values (USGS NWIS and Water Science
- 14 Centers)
- 15 – HUC8 watershed areas (USGS NHD)
- 16 – Groundwater basins—area, generic properties (state water agency, PEIS,
- 17 USGS NWIS and Water Science Centers, NRCS)
- 18 – Wetlands—areas, types (USFWS NWI or state agency)
- 19 – Springs—names, elevations, flows (USGS NWIS or state agency)
- 20 – Climate—precipitation, snowfall, evapotranspiration (USGS NWIS,
- 21 WRCC, state agencies)
- 22
- 23 • Google Earth™/geographic information system (GIS) data files, providing
- 24 links to datasets (USGS NWIS)
- 25 – Stream gages—flows and water quality
- 26 – Groundwater wells—depth to groundwater and water quality
- 27 – Meteorological stations—temperatures, precipitation, snowfall, etc.
- 28
- 29

30 **C.7.2.2 Floodplain Determinations**

31

32 In May 27, 1977, the President signed Executive Order 11988 “Floodplain Management,”

33 which states that federal agencies should avoid surface disturbance activities within identified

34 100-year floodplains (*Federal Register*, Volume 42, page 117, May 27, 1977). Only a few SEZs

35 being carried forward (Afton, Dry Lake, Imperial East, and Gillespie) have prior floodplain

36 analyses available to map exclusion floodplain areas. Identifying 100-year floodplain areas must

37 be performed in order to define non-development areas within SEZs. Given the episodic and

38 sometimes catastrophic nature of rainfall-runoff events in the desert southwest, floodplain

39 analyses could extend beyond the 100-year floodplain to regions susceptible to extreme flooding

40 events (e.g. alluvial fans, high gradient areas).

41

42 Floodplain determinations require field surveys, consultations with the Federal

43 Emergency Management Agency (FEMA) and state/local flood control agencies, and hydrologic

44 analyses. The primary steps to identifying floodplain areas include the following:

- 45
- 46 • Identifying of main surface drainage pathways within and adjacent to SEZs

- 1 • Consulting with FEMA and state/local flood control agencies regarding
2 floodplain mapping protocols
3
- 4 • Conducting field surveys
 - 5 – Channel geometries
 - 6 – High-water-mark indicator maps
 - 7 – Ground-truthing NHD channel networks
8
- 9 • Performing hydrologic analyses
 - 10 – Analysis of flood frequency
 - 11 – Hydraulic modeling of runoff routing
 - 12 – Determination of inundation areas
13
- 14 • Obtaining approvals (BLM-coordinated)
 - 15 – FEMA/agency for floodplains
16
17

18 **C.7.2.3 Jurisdictional Waters Determinations**

19
20 Section 404 of the Clean Water Act (CWA) requires a permitting process for dredging
21 and filling activities affecting “jurisdictional waters” of the United States. The U.S. Army Corps
22 of Engineers (USACE) and EPA oversee the permitting process and make determinations on
23 what constitutes jurisdictional water on a case-by-case basis. Jurisdictional water determinations
24 can be made by using a variety of techniques, including topographic maps and aerial
25 photographs, field surveys, and hydrologic analyses. The appropriate method for jurisdictional
26 water determinations must be coordinated with the appropriate offices of the USACE and EPA.
27 If field surveys are required, coordination with field surveys for floodplain determinations should
28 be made. Jurisdictional water determinations will not define non-developmental areas within
29 SEZs but will determine where CWA Section 404 permitting will be required.
30
31

32 **C.7.2.4 Significant Ephemeral Waters Determinations**

33
34 In addition to floodplains and jurisdictional waters, several commentors and cooperators
35 had concerns regarding the loss of ephemeral stream networks because of their importance to
36 hydrology, geomorphology, and habitat. The Draft Solar PEIS identified significant washes to be
37 excluded from development that showed physical evidence of conveying substantial flood flows
38 (these areas will likely overlap with 100-year floodplain mapping). Further analyses should be
39 performed to identify dense ephemeral stream networks that overlap with critical habitat, provide
40 significant groundwater connectivity, or constitute critical geomorphic features necessary for
41 maintaining connected features (e.g., dunes, eolian transport corridors, and active alluvial fans).
42 These additional analyses should include consultation with local BLM offices, cooperating
43 federal agencies, and state agencies regarding critical ephemeral stream networks for habitat,
44 hydrologic, and geomorphic value.
45
46

1 **C.7.2.5 Long-Term Monitoring Programs**
2

3 Careful siting and planning of solar facilities can reduce adverse impacts on surface water
4 and groundwater resources, but there are many unknowns regarding both surface water and
5 groundwater processes. Establishing a robust monitoring program and analysis tools for SEZs
6 would gain important information on whether surface water or groundwater resources are being
7 affected by solar facilities. Monitoring programs would need to incorporate stakeholder
8 involvement including appropriate federal/state/local agencies (e.g., local BLM offices, USGS
9 Water Science Centers, USFWS, National Park Service [NPS], state water resources agencies)
10 that conduct water resources monitoring. The Final Solar PEIS will recommend a process and
11 methods and tools for developing SEZ monitoring programs for water resources.
12

13
14 **C.7.2.5.1 Stakeholder Monitoring Committee**
15

16 Stakeholder agencies involved with water rights and water resources for each SEZ could
17 be identified to oversee the development and implementation of a monitoring program. The Final
18 Solar PEIS will describe the generic functions of stakeholder committees that could carry out
19 long-term monitoring at SEZs.
20

21
22 **C.7.2.5.2 Surface Water and Groundwater Monitoring**
23

24 The basic components for a long-term monitoring program of surface water and
25 groundwater resources will be described in the Final Solar PEIS. Examples of the basic
26 components at an individual SEZ include recommendations on monitoring parameters,
27 measuring frequency, and stakeholder involvement.
28

29
30 **C.7.2.6 Modification of Design Features**
31

32 Public and cooperator comments on the Draft Solar PEIS provided additional information
33 on water resources and new information that could be obtained from further analyses described
34 in the action plans. New information obtained from comments and work done for proposed
35 action plans will be used to modify design features for the Final Solar PEIS. Examples include
36 the following:
37

- 38 • Describing long-term monitoring programs that can be implemented for SEZs;
- 39
- 40 • Requiring water flow meters on groundwater pumps to accurately measure
41 extractions (to be used in groundwater models and analyses to support long,
42 term monitoring programs); and
43
- 44

- Requiring varying levels of groundwater analyses from developers depending on proposed water use (e.g., less detailed analyses required for photovoltaic [PV] facilities and more detailed analyses for higher water use parabolic trough facilities)

C.7.2.7 Groundwater Analyses

Utility-scale solar energy facilities have the potential to affect groundwater. The Draft Solar PEIS analysis of groundwater impacts was done qualitatively by summarizing available information relative to groundwater processes and comparing that information to estimates of potential groundwater extractions for the four main solar energy technologies evaluated. Seven of the SEZs being carried forward that would benefit from a more quantitative analysis have been identified: Afton, Amargosa Valley, Brenda, Dry Lake, Dry Lake Valley North, Imperial East, and Riverside East. At these seven SEZs, numerical groundwater modeling analyses will be presented in the Final Solar PEIS to better address two major concerns: potential drawdown impacts on surface water features (e.g., loss of springs, change in river discharge) and drawdown impacts on other groundwater users and groundwater processes. Where there are existing groundwater models, the following will be added:

- Groundwater model refinements for SEZ analysis, and
- Analyses of full build-out pumping scenarios.

Where there are not existing groundwater models, the following will be provided:

- Simplified, superposition-based, groundwater modeling; and
- Analyses of full build-out pumping scenarios.

C.7.3 Visual Resource Design Features for Select SEZs

The Draft Solar PEIS identified design features to lessen the adverse impacts of solar development on visual resources that would be applicable to all projects located on BLM-administered lands (see Section A.2.2.13 of the Draft). Additionally, the Draft Solar PEIS identified the need for SEZ-specific design features to reduce impacts on visual resources for eight of the proposed SEZs being carried forward for the Final Solar PEIS: Afton, Amargosa Valley, Antonito Southeast, De Tilla Gulch, Fourmile East, Gillespie, Los Mogotes East, and Riverside East. For three of these proposed SEZs (De Tilla Gulch, Fourmile East, and Gillespie), the recommended mitigation was to prohibit power tower facilities within the SEZ. For the other SEZs, the mitigation proposed in the Draft Solar PEIS was that development within certain portions of the SEZ be restricted to meet visual resource management (VRM) Class II- or Class III-consistent objectives (see Section 5.12 of the Draft PEIS for definitions of VRM classes). For the proposed Afton, Amargosa, Fourmile East, and Riverside East SEZs, some or all of the area

1 proposed for VRM Class II- or Class III-consistent management objectives has been eliminated
2 from the SEZ, so that the potential for large impacts on visual resources has been reduced.
3

4 The BLM has proposed revised SEZ-specific design features for visual resources for all
5 eight SEZs listed above, except De Tilla Gulch; these design features are listed in the SEZ
6 Action Plans (Sections C.1 through C.6). In addition to the SEZ-specific design features, the
7 BLM has determined that proposed development within these SEZs shall abide by the Draft
8 Solar PEIS visual resource design features, with the addition of the following requirements
9 pertaining to areas previously listed for meeting VRM Class II- and III-consistent management
10 objectives:

- 11 • No vertical development over 100 ft (30.5 m), including transmission towers
12 and other structures.
- 13 • Color-treat all facilities using color selection from the BLM Environment
14 Color Chart CC-001 to reduce visual color contrast with surrounding
15 landscape (including, but not limited to, buildings, storage facilities,
16 substation equipment, solar panel frames and electrical storage boxes).
17
- 18 • Color-treat surfaces cleared and stabilized with gravel paving to reduce color
19 contrast.
- 20 • Bury all transmission lines routed through the areas within the SEZs that are
21 listed for meeting VRM Class II-consistent management objectives.
- 22 • Color-treat solar panel backs to reduce visual contrast with landscape setting.
- 23 • Coat security fencing with black polyvinyl or other visual contrast-reducing
24 color.
- 25 • Shield glint and glare emitted from the surfaces of concentrated solar mirrors
26 and heliostats, solar engine mirrors, and other ancillary facilities shall be
27 shielded from sensitive observation areas including, but not limited to,
28 National Scenic and Historic Trails; National Parks and Wildlife Refuges;
29 Wilderness Areas and Wilderness Study Areas; Special Recreation
30 Management Areas; and National State and Back Country Byways. If
31 shielding of the glare and glint is impossible in these areas, then the default
32 is the use of PV technology.
33
34
35
36
37
38
39

C.8 REFERENCES

- 1
2
3
4 AARoads' Interstate Guide, 2006a, *Interstate 25*. Available at <http://www.interstate-guide.com/i-025.html>.
5
6
7 AARoads' Interstate Guide, 2006b, *Interstate 10*. Available at <http://www.interstate-guide.com/i-010.html>.
8
9
10 AARoads' Interstate Guide, 2007, *Interstate 15*. Available at <http://www.interstate-guide.com/i-015.html>.
11
12
13 America's Byways, 2011a, *Los Caminos Antiguos*. Available at <http://www.byways.org/explore/byways/2111/>.
14
15
16 America's Byways, 2011b, *Route 78—Anza-Borrego Desert State Park Road*. Available at
17 <http://www.byways.org/explore/byways/2171/>.
18
19 BLM (Bureau of Land Management), 2010, *National Landscape Conservation System*. Available
20 at [http://www.blm.gov/pgdata/etc/medialib/blm/wo/Law_Enforcement/nlcs/online_electronic.](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Law_Enforcement/nlcs/online_electronic.Par.90025.File.dat/NHSTrails%20detail%20table%20December2010.pdf)
21 [Par.90025.File.dat/NHSTrails%20detail%20table%20December2010.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Law_Enforcement/nlcs/online_electronic.Par.90025.File.dat/NHSTrails%20detail%20table%20December2010.pdf).
22
23 BLM, 2011a, *Old Spanish National Historic Trail*. Available at http://www.blm.gov/az/st/en/prog/blm_special_areas/hist_trails/old_span_tr.html.
24
25
26 BLM 2011b, *Kilbourne Hole Volcanic Center*. Available at http://www.blm.gov/nm/st/en/prog/recreation/las_cruces/kilbourne_hole.html.
27
28
29 BLM California, 2011, *The Bradshaw Trail*. Available at <http://www.blm.gov/ca/st/en/fo/palmsprings/bradshaw.html>.
30
31
32 Dalley, G., 2009, personal communication from Dalley (Bureau of Land Management, Cedar
33 City Field Office, Cedar City, Utah) to B. Verhaaren (Argonne National Laboratory, Argonne,
34 Ill.), May 26.
35
36 DOE and DOI (U.S. Department of Energy and U.S. Department of the Interior), 2008,
37 *Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal*
38 *Land in the 11 Western States*, DOE/EIS-0386, Final, Nov. Available at <http://corridoreis.anl.gov/eis/guide/index.cfm>.
39
40
41 DOT (U.S. Department of Transportation), 2011a, *Highway History: U.S. 93 Reaching*
42 *for the Border*. Available at <http://www.fhwa.dot.gov/infrastructure/us93.cfm>.
43
44 DOT, 2011b, *Highway History: U.S. 6—The Grand Army of the Republic Highway*. Available at
45 <http://www.fhwa.dot.gov/infrastructure/us6.cfm>.
46

1 EPRI (Electric Power Research Institute, 2005, *AC Transmission Line Reference Book—200 kV*
2 *and Above*, 3rd ed., 1011974, Final Report, Palo Alto, Calif.
3
4 FERC (Federal Energy Regulatory Commission), 2011, *FERC Form 715: Load Flow*
5 *Data Set for Western Electricity Coordinating Council*, transmitted by D. Burnham to
6 Argonne National Laboratory, July 2011
7
8 Leake, S.A., et al., 2008, *Use of Superposition Models to Simulate Possible Depletion of*
9 *Colorado River Water by Ground-Water Withdrawal*, U.S. Geological Survey Scientific
10 Investigations Report 2008-5189.
11
12 Nevada Commission on Tourism, 2011, *Silver State OHV Trail*. Available at
13 <http://travelnevada.com/tourist-attractions/info/must-see-silver-state-ohv-trail.aspx>.
14
15 Platts, 2011, POWERmap, Strategic Desktop Mapping System, The McGraw Hill Companies.
16 Available at <http://www.platts.com/Products/powermap>.
17
18 Steward, J.H., 1938, *Basin-Plateau Aboriginal Sociopolitical Groups*, *Bureau of American*
19 *Ethnology Bulletin 120*, Smithsonian Institution, Washington, D.C.
20
21 Stoffle, R.W., and H.F. Dobyns, 1983, *Nuvagantu: Nevada Indians Comment on the*
22 *Intermountain Power Project*, prepared by the Applied Urban Field School, University of
23 Wisconsin–Parkside, Kenosha, Wis., for the Bureau of Land Management, Nevada.
24
25 Stoffle, R.W., et al., 1997, “Cultural Landscapes and Traditional Cultural Properties: A
26 Southern Paiute View of the Grand Canyon and Colorado River,” *American Indian*
27 *Quarterly* 21(2):229–250.
28
29 Stoffle, R.W., et al., 2000a, *Ha’tata (The Backbone of the River): American Indian Ethnographic*
30 *Studies Regarding the Hoover Dam Bypass Project*, prepared by the Bureau of Applied Research
31 in Anthropology, University of Arizona, Tucson, Ariz., for the Federal Highway Administration.
32
33 Stoffle, R.W., et al., 2000b, *From Place to Object: Native American Graves Protection and*
34 *Repatriation Act Consultation for the Hot Creek Valley Collection, Central Nevada Test Area*,
35 prepared by the Bureau of Applied Research in Anthropology, University of Arizona, Tucson,
36 Ariz., for the U.S. Department of Energy Nevada Operations Office.
37
38 Stoffle, R.W., et al., editors, 2001, *American Indians and the Nevada Test Site: A Model of*
39 *Research and Consultation*, Government Printing Office, Washington, D.C.
40
41 U.S. Bureau of the Census, 2011a, *Colorado—Place GCT-PH1. Population, Housing Units,*
42 *Area, and Density: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.*
43 Available at http://factfinder.census.gov/servlet/GCTTable?_bm=y&-geo_id=04000US08&-_box_head_nbr=GCT-PH1&-ds_name=DEC_2000_SF1_U&-format=ST-7.
44
45

1 U.S. Bureau of the Census, 2011b, *New Mexico—Place GCT-PH1. Population, Housing Units,*
2 *Area, and Density: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.*
3 Available at http://factfinder.census.gov/servlet/GCTTable?_bm=y&-context=gct&-ds_name=DEC_2000_SF1_U&-mt_name=DEC_2000_SF1_U_GCTPH1_ST7&-tree_id=4001&-redoLog=false&-_caller=geoselect&-geo_id=04000US35&-format=ST-7|ST-7S&-_lang=en.
4
5
6
7 U.S. Bureau of the Census, 2011c, *California—Place GCT-PH1. Population, Housing Units,*
8 *Area, and Density: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.*
9 Available at http://factfinder.census.gov/servlet/GCTTable?_bm=y&-geo_id=04000US06&-box_head_nbr=GCT-PH1&-context=gct&-ds_name=DEC_2000_SF1_U&-tree_id=4001&-redoLog=false&-mt_name=DEC_2000_SF1_U_GCTPH1_ST7&-format=ST-7.
10
11
12
13 U.S. Bureau of the Census, 2011d, *Arizona—Place GCT-PH1. Population, Housing Units, Area,*
14 *and Density: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.* Available
15 at http://factfinder.census.gov/servlet/GCTTable?_bm=y&-context=gct&-ds_name=DEC_2000_SF1_U&-mt_name=DEC_2000_SF1_U_GCTPH1_ST7&-tree_id=4001&-redoLog=true&-_caller=geoselect&-geo_id=04000US04&-format=ST-7|ST-7S&-_lang=en.
16
17
18
19 USDA (U.S. Department of Agricultural), et al., 2009, *Memorandum of Understanding among*
20 *the U.S. Department of Agriculture, Department of Commerce, Department of Defense,*
21 *Department of Energy, Environmental Protection Agency, the Council on Environmental*
22 *Quality, the Federal Energy Regulatory Commission, the Advisory Council on Historic*
23 *Preservation, and Department of the Interior Regarding Coordination in Federal Agency Review*
24 *of Electric Transmission Facilities on Federal Land*, BLM MOU WO-350-2010-05, Oct. 23.
25 Available at [http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/im_attachments/2010.Par.65839.File.dat/IM201-169_att1.pdf)
26 [Management/policy/im_attachments/2010.Par.65839.File.dat/IM201-169_att1.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/im_attachments/2010.Par.65839.File.dat/IM201-169_att1.pdf).
27
28 USGS (U.S. Geological Survey), 2005, *National Gap Analysis Program, Southwest Regional*
29 *GAP Analysis Project—Land Cover Descriptions*, RS/GIS Laboratory, College of Natural
30 Resources, Utah State University. Available at http://earth.gis.usu.edu/swgap/legend_desc.html.
31 Accessed March 15, 2010.
32
33 USGS, 2010, *Gap Analysis Program Land Cover Viewer*. Available at <http://lc.gapanalysisprogram.com/landcoverviewer/Downloads.aspx>. Accessed Aug. 23, 2011.
34
35
36 USGS, 2011, *Monitoring Network of the Ground-Water Flow System and Stream-Aquifer*
37 *Relations in the Mesilla Basin, Doña Ana County, New Mexico and El Paso County, Texas.*
38 Available at <http://nm.water.usgs.gov/projects/mesilla/>.
39
40 US-Highways.com, 2007, *U.S. Highways: From US 1 to (US 830)*. Available at [http://www.us-](http://www.us-highways.com/usbt.htm)
41 [highways.com/usbt.htm](http://www.us-highways.com/usbt.htm).
42
43 US-Highways.com, 2010, *Sequential List with Termini and Lengths in Miles*. Available at
44 <http://www.us-highways.com/us1830.htm>.
45

1 Utah DOT (Utah Department of Transportation), 2008, *Highway Reference: 0021*. Available at
2 <http://www.dot.utah.gov/main/uconowner.gf?n=7207725046907213>.
3

4 WECC (Western Electricity Coordinating Council), 2010. *2009 Western Interconnection*
5 *Transmission Path Utilization Study, Path Flows, Schedules, and OASIS ATC Offerings WECC*
6 *Transmission System 2008 and 2009, Including 10-year History*, June 24. Available at
7 [http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/TEPPC%20Annual%](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/TEPPC%20Annual%20Reports/2009/2009%20Western%20Interconnection%20Transmission%20Path%20Utilization%20Study.pdf)
8 [20Reports/2009/2009%20Western%20Interconnection%20Trasnmission%20Path%20](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/TEPPC%20Annual%20Reports/2009/2009%20Western%20Interconnection%20Transmission%20Path%20Utilization%20Study.pdf)
9 [Utilization%20Study.pdf](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/TEPPC%20Annual%20Reports/2009/2009%20Western%20Interconnection%20Trasnmission%20Path%20Utilization%20Study.pdf).
10

11 WECC, 2011a, *Draft WECC 10-Year Regional Transmission Plan—for Public Comment,*
12 *Western Electricity Coordinating Council*, Aug. Available at [http://www.wecc.biz/](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7})
13 [committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7})
14 [%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7})
15 [%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7})
16 [comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7})
17 [FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7}](http://www.wecc.biz/committees/BOD/TEPPC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fcommittees%2fBOD%2fTEPPC%2fShared%20Documents%2fDRAFT%20WECC%2010-Year%20Regional%20Transmission%20Plan%20-%20for%20public%20comment%2fWECC%20Path%20Reports%20-%20for%20public%20comment&FolderCTID=&View={3FECCB9E-172C-41C1-9880-A1CF02C537B7}).
18

19 WECC 2011b, *10-Year Regional Transmission Plan, WECC Path Reports, September 2011,*
20 *Sept. 22.*
21

22 Western (Western Area Power Administration), 2009, *Transmission Line Electrical Design:*
23 *Right-of-Way, Section IX*, Aug.
24
25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

APPENDIX D:
PROPOSED IDENTIFICATION PROTOCOL FOR NEW SOLAR ENERGY ZONES

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

CONTENTS

APPENDIX D: PROPOSED IDENTIFICATION PROTOCOL FOR NEW SOLAR ENERGY ZONES D-1

D.1 Assess the Need for New SEZs D-1

D.2 Establish Technical and Economic Feasibility Criteria D-2

 D.2.1 Size Threshold D-3

 D.2.2 Solar Insolation Level D-3

 D.2.3 Slope Threshold D-3

 D.2.4 Load Areas To Be Served D-4

 D.2.5 Infrastructure Access D-4

D.3 Apply Environmental Screening Criteria D-5

 D.3.1 Program Exclusion Criteria D-5

 D.3.2 Application of Relevant Land Use Plan Decisions D-5

 D.3.3 Additional Locally Relevant Screening Criteria D-5

D.4 Consider Other Factors D-6

 D.4.1 Identify Disturbed or Previously Disturbed Sites D-6

 D.4.2 Identify Opportunities To Combine Other Federal and Nonfederal Lands D-6

D.5 Analyze Proposed SEZs through a Planning and NEPA Process D-7

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

1
2
3 **APPENDIX D:**

4 **PROPOSED IDENTIFICATION PROTOCOL FOR NEW SOLAR ENERGY ZONES**

5
6 The solar energy zones (SEZs) being carried forward in this Supplement identify
7 approximately 285,000 acres (1,153 km²) across the 6-state study area. In addition, the
8 U.S. Department of the Interior Bureau of Land Management (BLM) has made a commitment to
9 continue processing pending applications. Although this is a strong start in facilitating utility-
10 scale solar energy development on public lands, the BLM intends to identify new SEZs and/or
11 expand existing SEZs on an as-needed basis. The BLM has already initiated efforts to identify
12 new SEZs in the states of California, Arizona, Nevada, and Colorado through ongoing state-
13 based efforts (see Section 2.2.2.2.6 of this Supplement for more information) and anticipates
14 identifying new or expanded SEZs in the remaining states in the near future.

15
16 The BLM believes that having a workable process for identifying new SEZs is an
17 essential element of its overall approach to solar energy development. The process must be
18 open and transparent, with opportunities for substantial involvement of stakeholders including
19 solar industry and transmission providers. This protocol establishes a process that would be
20 undertaken at the state or field office level as an individual land use planning effort or as part of
21 an ongoing land use plan revision. It is the BLM's goal to complete the work of identifying new
22 SEZs and amending applicable land use plans within 12 to 18 months of initiating such effort.

23
24 New or expanded SEZs should be identified in the context of existing solar market
25 conditions, existing and planned transmission systems, and new state or federal policies affecting
26 the level and location of utility-scale solar energy development. The BLM, in conjunction with
27 the states and the U.S. Department of Energy, will periodically review the need for additional
28 public lands for solar development following the protocol outlined below.

29
30 This appendix to the Supplement to the Draft Solar Programmatic Environmental Impact
31 Statement (PEIS) presents a step-by-step process for identifying new SEZs. The five steps in the
32 process, outlined in the following sections, are as follows:

- 33
34 1. Assess the need for new SEZs,
35 2. Establish technical and economic feasibility criteria,
36 3. Apply environmental screening criteria,
37 4. Consider other factors, and
38 5. Analyze proposed SEZs through a planning and National Environmental
39 Policy Act (NEPA) process.

40
41
42 **D.1 ASSESS THE NEED FOR NEW SEZS**

43
44 Assessment of the need for new or expanded SEZs will take place a minimum of every
45 5 years in each of the 6 states covered by the Solar PEIS. The assessment of need may take place
46 as part of the regular land use planning process or as a separate effort. BLM State Offices will be

1 responsible for overseeing the assessment of SEZs and for making the determination that
2 additional acreage is needed following appropriate stakeholder outreach. Acknowledging that
3 significant changes can occur in the interim between required assessments of need, the BLM will
4 also provide for an assessment triggered by a petition process.
5

6 Petitions for reassessing the need for new or expanded SEZs must be submitted in writing
7 to the appropriate BLM State Director with documentation supporting the request. Petitions must
8 have a rational basis and should be linked to factors such as policy and/or market changes
9 (e.g., increase in state or national renewable standards or approval of a foundational transmission
10 line). Developers, environmental stakeholders, local and state governments, and/or industry
11 associations may collectively or individually petition the BLM to consider specific areas for new
12 or expanded SEZs based on market interest or other relevant considerations. Petitioners may also
13 request changes in already identified SEZs, such as eliminating or revising boundaries due to
14 changes in status of species or critical habitat under the Endangered Species Act (ESA). In
15 addition to the petition process, the public may also raise the need for new, expanded, or
16 modified SEZs through the land use planning scoping process.
17

18 When considering the need for new or expanded SEZs, the BLM will rely on outside
19 expert consultation regarding electricity demands, markets, and renewable energy policies.
20 Utility-approved plans, state public utility commissioners, and regional planning entities such as
21 the California Independent System Operator and the Western Energy Coordinating Council can
22 all provide useful inputs into the BLM's determination of needed additional acreage to meet
23 renewable generation goals. The BLM will take into consideration policy goals and trends in the
24 solar market. The BLM will consider the availability of land in existing SEZs when it evaluates
25 the need for new or expanded SEZs. The BLM's assessment of need should also establish as
26 necessary new state-based Reasonably Foreseeable Development Scenarios that incorporate any
27 new federal or state policies affecting projections.
28
29

30 **D.2 ESTABLISH TECHNICAL AND ECONOMIC FEASIBILITY CRITERIA**

31
32 In addition to considering the amount of renewable energy needed across a state or
33 region, the BLM's assessment will take into account technological advances in solar energy
34 generation systems, identify where new energy is going to be needed and at what levels, and
35 specify any existing constraints. These additional factors will influence not only whether new or
36 expanded SEZs are needed but also where they should logically be located, considering
37 transmission, load, and solar resources and their configuration in terms of size and terrain.
38

39 A number of factors determine the technical and economic suitability of an area for
40 utility-scale solar energy development, including the quality of the solar resource, terrain, and
41 proximity to existing load and infrastructure. These factors may vary by state and/or region and
42 will continue to evolve over time. As part of its SEZ identification process, the BLM will work
43 with outside experts and stakeholders to establish the following technical and economic
44 suitability criteria.
45
46

1 **D.2.1 Size Threshold**

2
3 An SEZ should generally encompass an area of 5,000 acres (20.2 km²) or more, so that
4 the supporting infrastructure can be shared by multiple facilities. Smaller areas, particularly areas
5 near existing and available transmission infrastructure, may be suitable for solar facilities.
6 Smaller areas of public lands adjacent to private, state, or other federal lands suitable for solar
7 development may also be useful as SEZs, particularly in conjunction with the adjacent areas. In
8 general, however, SEZs on public lands should be large enough to generate substantial quantities
9 of solar-generated power in order to justify the effort and expense required to determine whether
10 a specific area is well suited for solar development.
11

12
13 **D.2.2 Solar Insolation Level**

14
15 Solar insolation levels in SEZs should be high, thus allowing for optimum power
16 production. Under BLM's proposed Solar Energy Program, a minimum direct normal solar
17 insolation level of 6.5 kWh/m²/day is required for BLM-administered lands to be available
18 for utility-scale solar development. Although locations with insolation values lower than
19 6.5 kWh/m²/day would appear less economically viable given current technologies, it may be
20 appropriate to select and establish new SEZs in areas with lower insolation levels, if the areas are
21 otherwise well suited for development and provide for economically viable projects.
22

23 Higher insolation values provide significant benefits for solar generation facilities. For
24 instance, a reduction of 1 kWh/m²/day in insolation is equivalent to approximately a 10%
25 reduction in efficiency and, in turn, a proportional increase in costs and land use footprint (due to
26 the need for additional solar collection equipment to provide the same quantity of energy).
27 Different types of insolation are most relevant to the different large-scale solar generating
28 technologies. For concentrating solar technologies, direct normal insolation is most pertinent,
29 while for photovoltaic (PV) systems, global tilt insolation is the appropriate measure of the solar
30 resource. As part of the process to identify new SEZs, the BLM should consider both the direct
31 normal insolation and the global tilt insolation.
32

33
34 **D.2.3 Slope Threshold**

35
36 Most solar generating technologies must be sited on relatively flat ground to ensure that
37 the solar collectors can utilize the solar resource effectively. Depending on the technology, the
38 required slope can range from less than 2% to more than 5%, although lower slopes are generally
39 better for siting solar generation. Under BLM's proposed Solar Energy Program, slopes of less
40 than 5% are required for BLM-administered lands to be available for utility-scale solar
41 development. In the selection of new SEZs on BLM-administered lands, some flexibility in
42 applying the slope criterion may be appropriate, particularly for PV or dish engine technologies
43 that are more tolerant of lands with steeper slopes, if the area is otherwise well suited for
44 development and provides for economically viable projects. It is unlikely that lands with slopes
45 of greater than 10% would be technically viable for utility-scale solar production.
46

1 **D.2.4 Load Areas To Be Served**

2
3 When considering the appropriate locations for new SEZs, the BLM will determine the
4 load areas likely to be served by needed new solar generation. The BLM should rely on outside
5 expert consultation regarding electricity demands, markets, and renewable energy policies. The
6 BLM should also consider policy goals and trends in the solar market. For example, it could be
7 that the Renewable Portfolio Standard in a given state has been met (e.g., Nevada) and new solar
8 development is expected to serve demand in an adjacent state (e.g., California). In this example
9 the logical location for new SEZs may be in proximity to existing transmission close to the
10 border of the adjacent state.
11

12
13 **D.2.5 Infrastructure Access**

14
15 As part of the identification of new or expanded SEZs, the BLM will consider proximity
16 to existing infrastructure, such as transmission lines, utility corridors, and roads. Where SEZs
17 can be located close to existing infrastructure, environmental disturbance may be minimized
18 through use of the existing facilities (in some cases, however, transmission lines may be sited in
19 environmentally sensitive areas that are not suitable for locating SEZs). Use of existing
20 infrastructure may also reduce costs of construction and mitigation, making locations close to
21 existing and utilizable infrastructure attractive to developers.
22

23 For initial consideration of a potential SEZ location, the existing and proposed
24 transmission lines serving the area should be cataloged in relation to the potential power
25 generation from the proposed SEZ location. The BLM should then consult with state and
26 regional transmission planning and coordination authorities, state energy offices, and
27 transmission system operators to evaluate available capacity on the existing and proposed lines
28 and to determine whether transmission access issues might create barriers to development in a
29 specific area. Where new transmission lines are needed, they should be planned to utilize
30 existing rights-of-way (ROWs) or designated utility corridors if possible. To formalize
31 transmission-related goals and objectives for new SEZs, the BLM may find it appropriate to
32 enter into a Memorandum of Understanding with appropriate transmission planners and
33 providers.
34

35 It is important to note that efforts to assess the feasibility and cost of supplying
36 transmission to a specific area have a high degree of uncertainty, because new transmission lines
37 are proposed, constructed, and added to the existing transmission grid over time and because the
38 available capacity on the grid also changes as demand increases and new power sources are
39 added over time. Due to the remote locations of many prime solar resource areas, transmission
40 upgrades and additions will generally be needed to connect those locations to the grid. SEZs
41 should be located in areas where it will be feasible and cost-effective to connect new power
42 sources to the grid.
43

44 The ability to utilize existing paved roads for access to SEZs can also reduce impacts
45 associated with development; therefore, SEZs should be located adjacent to major paved roads
46 where possible. For potential SEZs where existing paved roads are located some distance away,

1 existing dirt roads should be upgraded for site access to the greatest extent possible in order to
2 minimize land disturbance.

3 4 5 **D.3 APPLY ENVIRONMENTAL SCREENING CRITERIA**

6 7 8 **D.3.1 Program Exclusion Criteria**

9
10 The BLM will apply program exclusion criteria established through the Solar PEIS to
11 lands that meet the established technical and economic feasibility criteria described above.

12
13 BLM-administered lands off-limits to utility-scale solar energy development include
14 lands prohibited by law, regulation, presidential proclamation, or executive order (e.g., lands in
15 the National Landscape Conservation System). As part of the Draft Solar PEIS, the BLM
16 identified additional categories of lands that are known or believed to be unsuitable for utility-
17 scale solar development. The BLM’s proposed Solar Energy Program identifies these lands as
18 exclusion areas for utility-scale solar energy development ROWs. The categories of lands that
19 have been proposed as exclusion areas for utility-scale solar energy development ROWs have
20 been updated as part of this Supplement and are described in Section 2.2.2.1.

21 22 23 **D.3.2 Application of Relevant Land Use Plan Decisions**

24
25 State and field offices undertaking efforts to identify new or expanded SEZs should apply
26 all relevant decisions in existing land use plans (e.g., ROW avoidance and exclusion areas,
27 timing restrictions, and so forth).

28 29 30 **D.3.3 Additional Locally Relevant Screening Criteria**

31
32 State and field offices undertaking efforts to identify new or expanded SEZs may choose
33 to identify and apply additional screening criteria based on local conditions and institutional
34 knowledge in consultation with other local, state, and federal authorities and Tribes.

35
36 The BLM should use landscape-scale ecological assessments to identify, and exclude
37 from SEZs, areas of high ecological value or importance (e.g., BLM’s rapid ecological
38 assessment, California’s Desert Renewable Energy Conservation Plan [DRECP], The Nature
39 Conservancy’s eco-regional assessments, and Crucial Habitat Assessment Tools being developed
40 pursuant to the Western Governors Wildlife Council “Wildlife Corridors Initiative”). For
41 example, in areas with pre-existing landscape-scale conservation plans, such as the DRECP in
42 California, future SEZs will not be considered in areas needed to achieve biological goals and
43 objectives established in the plan. Other types of areas to screen for based on landscape-scale
44 information may include areas with significant populations of sensitive, rare, and special status
45 species or unique plant communities, important biological connectivity areas for special status
46 species, designated wildlife habitat management areas, and areas with high concentrations of

1 ethno-botanical resources of importance for Native American use. Potential landscape-scale
2 effects of development should be evaluated through consultation with relevant federal, state, and
3 local resource management agencies and Tribes.

4
5 To identify additional locally relevant screening criteria, the BLM will undertake
6 consultation with appropriate land management agencies for consideration of areas close to
7 special designations such as the National Parks, National Refuges, and National Forests. Such
8 consultation may result in agreements not to locate SEZs near specific units, based on an
9 agency's assessment of potential adverse impacts on those units.

10
11 As its environmental analysis for individual solar ROW applications on public lands
12 continues, the BLM is expanding its knowledge of areas not suitable for development. Areas
13 eliminated from ROW applications due to resource conflicts (e.g., rare vegetation or desert
14 washes) may provide additional screening criteria for SEZs.

15 16 **D.4 CONSIDER OTHER FACTORS**

17 **D.4.1 Identify Disturbed or Previously Disturbed Sites**

18
19
20
21
22 As part of its SEZ identification process, the BLM will identify disturbed or previously
23 disturbed sites that may be suitable for new SEZs. Examples include, but are not limited to, the
24 following:

- 25 • Lands that have been mechanically disturbed or degraded;
- 26
27 • Lands that have been “type-converted” from native vegetation through
28 plowing, bulldozing, or other mechanical impact, often in support of
29 agriculture or other land cover change activities (e.g., mining, clearance
30 for development, or heavy off-road vehicle use);
- 31
32 • Brownfields and other contaminated or previously contaminated sites
33 identified by the Environmental Protection Agency's RE-Powering America's
34 Land Initiative (<http://www.epa.gov/renewableenergyland/>); and
- 35
36 • Idle or underutilized industrial sites.
- 37
38

39 Sources of information will include, but are not limited to, the BLM's landscape-scale
40 ecological assessments, which identify converted or highly degraded lands on BLM-
41 administered and adjacent federal and nonfederal lands.

42 43 44 **D.4.2 Identify Opportunities To Combine Other Federal and Nonfederal Lands**

45
46 As part of the SEZ identification process, the BLM will take into account opportunities
47 to partner with adjacent federal and nonfederal landowners (e.g., private, state, Tribal, or

1 U.S. Department of Defense-withdrawn lands). For example, SEZs may be located on public
2 lands of comparatively low resource value or small size situated adjacent to degraded and
3 affected private lands. This combination of BLM-administered and nonfederal lands could allow
4 for a combined use area, allowing for the expansion of renewable energy development onto well-
5 suited adjacent lands.
6
7

8 **D.5 ANALYZE PROPOSED SEZS THROUGH A PLANNING AND NEPA PROCESS** 9

10 Upon the completion of the preliminary steps outlined above, the BLM will publish a
11 Notice of Intent (NOI) in the *Federal Register* stating its intent to prepare a Land Use Plan
12 amendment(s) to identify new or expanded SEZ(s) and prepare the associated NEPA
13 documentation. The NOI will also begin the formal scoping process (40 CFR 1501.7). Through
14 the scoping process, the BLM will solicit input on the technical and economic suitability criteria,
15 locally relevant screening criteria, disturbed and previously disturbed lands and opportunities for
16 federal–nonfederal partnerships. Based on scoping, the BLM will identify potential SEZs to be
17 analyzed through the planning and NEPA process. The public will also be invited to nominate
18 proposed SEZs that meet the objectives of the planning effort through the scoping process.
19 The BLM will document the results of its scoping in a publicly available scoping report
20 (43 CFR 1610.2(d)).
21

22 When the BLM is preparing environmental impact statements (EISs) for new SEZs,
23 its goal will be to produce documents with comprehensive analyses of resources within the
24 proposed SEZ at a level of detail sufficient to allow for tiering of future solar projects within the
25 SEZ. The potential impacts associated with the development of transmission interconnection and
26 other infrastructure to support the establishment of an SEZ will be considered as part of the
27 NEPA review for the SEZ. Analysis of SEZs will also include appropriate consultations pursuant
28 to the ESA and the National Historic Preservation Act. The BLM will make the draft land use
29 plan amendment and draft EIS available for a 90-day public comment period (43 CFR
30 1610.2(e)). The final EIS and Record of Decision will amend affected land use plans.
31

32 Through the planning and NEPA process, the BLM will refine and evaluate proposed
33 SEZs based on resource-specific considerations. Chapter 5 of the Draft Solar PEIS includes a
34 comprehensive description of the impacts of solar energy development and possible mitigation
35 measures in the categories below. This information will be used as a guide to inform the analysis
36 of SEZs.
37

- 38 • Lands and Realty
- 39
- 40 • Specially Designated Areas and Lands with Wilderness Characteristics
- 41
- 42 • Livestock Grazing
- 43
- 44 • Wild Horses and Burros
- 45
- 46 • Wildland Fire

- 1 • Recreation
- 2
- 3 • Military and Civilian Aviation
- 4
- 5 • Geologic Setting and Soil Resources
- 6
- 7 • Minerals
- 8
- 9 • Water Resources
- 10
- 11 • Ecological Resources
- 12
- 13 • Vegetation and Plant Communities
- 14
- 15 • Wildlife
- 16
- 17 • Aquatic Biota
- 18
- 19 • Special Status Species
- 20
- 21 • Air Quality and Climate
- 22
- 23 • Visual Resources
- 24
- 25 • Acoustic Environment
- 26
- 27 • Paleontological Resources
- 28
- 29 • Cultural Resources and Native American Concerns
- 30
- 31 • Socioeconomics
- 32
- 33 • Environmental Justice
- 34
- 35 • Cumulative Impact Considerations
- 36

37 While establishing SEZ boundaries that avoid sensitive resources is generally the most
38 effective means of ensuring resource protection, complete avoidance of all sensitive resources is
39 not always possible. Depending on the size of a proposed new SEZ and the location of resources
40 within an SEZ, it may be practical to include some areas within the boundaries of an SEZ, with
41 requirements that no disturbance occur in these areas (i.e., solar facilities would be required to be
42 constructed outside of such areas). Inclusion of sensitive areas within an SEZ would in practice
43 allow the BLM to identify a block of land for solar energy development, instead of fragmented
44 land pieces.

45

1 Design features and/or mitigation measures may also be effective in minimizing potential
2 resource impacts in new SEZs. In the future the BLM would require implementing the design
3 features of its Solar Energy Program (currently described in Appendix A of the Draft Solar
4 PEIS) in new SEZs. These design features would adequately mitigate many resource-specific
5 impacts that could be associated with solar development. The BLM will identify and analyze
6 additional design features and/or mitigation measures particular to new SEZs as necessary
7 through its planning and NEPA processes. The BLM will also develop regional mitigation plans
8 for SEZs to the extent practicable to more effectively facilitate future development.
9

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

APPENDIX E:
UPDATE TO LAND USE PLAN AMENDMENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank.

CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

APPENDIX E: UPDATE TO LAND USE PLAN AMENDMENTS..... E-1

TABLE

E-1 Proposed Land Use Plans To Be Amended under BLM’s Modified Action
Alternatives and Proposed Acreage Available for Application for Solar Energy
Development by Planning Area E-2

1
2
3
4
5
6
7
8
9
10
11
12
13

This page intentionally left blank.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39

APPENDIX E:

UPDATE TO LAND USE PLAN AMENDMENTS

Analyses conducted for the Solar Programmatic Environmental Impact Statement (PEIS) will support the amendment of U.S. Department of the Interior Bureau of Land Management (BLM) land use plans in the six-state study area. In response to comments received on the Draft Solar PEIS, the BLM has modified its proposed action alternatives (see Section 2.2 of this Supplement). Consequently, the proposed land use plan amendments (previously presented in Appendix C of the Draft Solar PEIS) also will change.

Under the BLM’s modified action alternatives presented in Section 2.2 of this Supplement, the BLM anticipates making the following land use plan decisions that will establish the foundation for a comprehensive Solar Energy Program:

1. Land use plan amendments that identify exclusion areas for utility-scale solar energy development in the six-state study area;
2. Land use plan amendments that identify priority areas for solar energy development that are best suited for utility-scale production of solar energy (i.e., solar energy zones [SEZs]);
3. Land use plan amendments that identify variance areas for utility-scale solar energy development in the six-state study area; and
4. Land use plan amendments that establish design features (i.e., mitigation requirements) for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy (some may be SEZ-specific, as necessary).

Table E-1 lists all of the land use plans in the six-state study area to be amended. Table E-1 also includes the acres proposed to be available in SEZs and variance areas for individual planning areas.

As discussed in the Draft Solar PEIS, land use plans that are undergoing revision or amendment concurrent with the Solar PEIS will be reviewed to identify and resolve inconsistencies between the PEIS and individual planning efforts.

1 **TABLE E-1 Proposed Land Use Plans To Be Amended under BLM’s Modified Action Alternatives and Proposed Acreage Available for**
 2 **Application for Solar Energy Development by Planning Area^a**

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Arizona^c</i>		
Agua Fria NM Plan, Hassayampa Field Office	All lands would be excluded.	None
Arizona Strip RMP, Arizona Strip Field Office	739,340 acres	None
Bradshaw–Harquahala RMP, Hassayampa Field Office	185,930 acres	None
Grand Canyon–Parashant NM Plan, Arizona Strip Field Office	All lands would be excluded.	None
Gila Box Riparian NCA Plan, Safford Field Office	11 acres	None
Goldwater Range RMP, Lower Sonoran Field Office	71 acres	None
Kingman R.A. RMP, Kingman Field Office	662,508 acres	None
Lake Havasu RMP, Lake Havasu Field Office	506,076 acres	Brenda SEZ (3,847 acres)
Las Cienegas NCA Plan, Tucson Field Office	All lands would be excluded.	None
Lower Gila North and South RMP Amendment, Lower Sonoran Field Office	295,867 acres	Gillespie SEZ (2,618 acres)
Phoenix R.A. RMP, Lower Sonoran, Safford, and Tucson Field Offices	249,572 acres	None
Safford RMP, Safford, and Tucson Field Offices	613,467 acres	None
San Pedro Riparian NCA Plan, Tucson Field Office	143 acres	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Arizona (Cont.)</i>		
Vermilion Cliffs NM Plan, Arizona Strip Field Office	All lands would be excluded.	None
Yuma RMP, Yuma Field Office	144,015 acres	None
<i>California^c</i>		
Alturas RMP, Alturas Field Office	All lands would be excluded.	None
Arcata RMP, Arcata Field Office	All lands would be excluded.	None
Bishop RMP, Bishop Field Office	31,581 acres	None
Caliente RMP, Bakersfield Field Office	1,506 acres	None
California Coastal NM Plan, California State Office	All lands would be excluded.	None
California Desert Conservation Area RMP, Barstow, El Centro, Needles, Palm Springs–South Coast, and Ridgecrest Field Offices ^d	1,318,894 acres	Imperial East SEZ (5,717 acres) Riverside East SEZ (147,910 acres)
Carrizo Plain NM Plan, Bakersfield Field Office	All lands would be excluded.	None
Eagle Lake RMP, Eagle Lake Field Office	11 acres	None
Eastern San Diego RMP, El Centro Field Office	293 acres	None
Headwaters Forest Reserve Plan, Arcata Field Office	All lands would be excluded.	None
Hollister RMP, Hollister Field Office	All lands would be excluded.	None
King Range NCA Plan, Arcata Field Office	All lands would be excluded.	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>California^c (Cont.)</i>		
Piedras Blancas Historic Light Station ONA Plan, Bakersfield Field Office	All lands would be excluded.	None
Redding RMP, Redding Field Office	All lands would be excluded.	None
Santa Rosa and San Jacinto Mountains NM Plan, Palm Springs–South Coast Field Office	All lands would be excluded.	None
South Coast RMP, Palm Springs–South Coast Field Office	2,273 acres	None
Surprise RMP, Surprise Field Office	All lands would be excluded.	None
Ukiah RMP, Ukiah Field Office	All lands would be excluded.	None
<i>Colorado^c</i>		
Canyon of the Ancients NM Plan, Canyon of the Ancients NM	All lands would be excluded.	None
Glenwood Springs RMP, Glenwood Springs Field Office	All lands would be excluded.	None
Grand Junction RMP, Grand Junction Field Office	All lands would be excluded.	None
Gunnison RMP, Gunnison Field Office	3,162 acres	None
Gunnison Gorge NCA Plan, Gunnison Field Office	All lands would be excluded.	None
Kremmling RMP, Kremmling Field Office	All lands would be excluded.	None
Little Snake RMP, Little Snake Field Office	All lands would be excluded.	None
McInnis Canyons NCA Plan, Grand Junction Field Office	All lands would be excluded.	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Colorado^c (Cont.)</i>		
Royal Gorge/Northeast RMP, Royal Gorge Field Office	29,477 acres	None
San Juan Public Lands Center RMP, Columbine, Dolores, Pagosa Springs, and Uncompahgre Field Offices	16,535 acres	None
San Luis Valley Public Lands Center RMP, Del Norte, La Jara, and Saguache Field Offices	61,885 acres	Antonito Southeast SEZ (9,712 acres) La Jara Field Office De Tilla Gulch SEZ (1,064 acres) Saguache Field Office Fourmile East SEZ (2,882 acres) La Jara Field Office Los Mogotes East SEZ (2,650 acres) La Jara Field Office
Uncompahgre RMP, Uncompahgre Field Office	All lands would be excluded.	None
White River RMP, White River Field Office	All lands would be excluded.	None
<i>Nevada^c</i>		
Black Rock Desert—High Rock Canyon Emigrant Trails NCA Plan Winnemucca District Office	All lands would be excluded.	None
Carson City Consolidated RMP, Carson City District	918,161 acres	None
U.S. Department of Energy Plan, Southern Nevada District Office ^e	All lands would be excluded.	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Nevada^c (Cont.)</i>		
Elko RMP, Elko District Office	All lands would be excluded.	None
Ely RMP, Ely District Office	3,344,963 acres	Dry Lake Valley North SEZ (25,069 acres)
Las Vegas RMP, Southern Nevada District Office	1,004,660 acres	Amargosa Valley SEZ 8,479 acres)
		Dry Lake SEZ (5,717 acres)
Nellis Non-renewal Area Plan, Southern Nevada District Office ^e	All lands would be excluded.	None
Nellis Test & Training Range RMP, Southern Nevada District Office ^e	All lands would be excluded.	None
Paradise-Denio RMP, Winnemucca District Office	All lands would be excluded.	None
Red Rock Canyon NCA Plan, Southern Nevada District Office	183 acres	None
Shoshone–Eureka RMP, Battle Mountain District Office	663,198 acres	None
Sloan Canyon NCA Plan, Southern Nevada District Office	17 acres	None
Sonoma–Gerlach RMP, Winnemucca District Office	85,771 acres	None
Tonopah RMP, Battle Mountain District Office	3,190,335 acres	Gold Point SEZ (4,596 acres)
		Millers SEZ (16,534 acres)

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Nevada^c (Cont.)</i>		
Wells RMP, Elko District Office	All lands would be excluded.	None
<i>New Mexico^c</i>		
Carlsbad RMP, Carlsbad Field Office	271,504 acres	None
El Malpais NCA Plan, Rio Puerco Field Office	64 acres	None
Farmington RMP, Farmington Field Office	411,883 acres	None
Kasha-Katuwe Tent Rocks NM Plan, Rio Puerco Field Office	All lands would be excluded.	None
McGregor Range RMP, Las Cruces District Office	All lands would be excluded.	None
Mimbres RMP, Las Cruces District Office	1,422,603 acres	Afton SEZ (29,964 acres)
Rio Grande Corridor	34 acres	None
Rio Puerco RMP, Rio Puerco Field Office	320,387 acres	None
Roswell RMP, Roswell Field Office	759,743 acres	None
Socorro RMP, Socorro Field Office	656,335 acres	None
Taos RMP, Taos Field Office	24,191 acres	None
White Sands RMP, Las Cruces District Office	425,535 acres	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Utah^c</i>		
Box Elder RMP, Salt Lake City Field Office ^f	All lands would be excluded.	None
Cedar-Beaver-Garfield-Antimony RMP, Cedar City Field Office	180,801 acres	Escalante Valley SEZ (6,533 acres) Milford Flats South SEZ (6,252 acres)
Grand Staircase–Escalante NM Plan, Grand Staircase–Escalante NM	8 acres	None
House Range RMP, Fillmore Field Office ^f	213,111 acres (all inside the UTTR)	None
Kanab RMP, Kanab Field Office	18,633 acres	None
Moab RMP, Moab Field Office	1,320 acres	None
Monticello RMP, Monticello Field Office	123,712 acres	None
Park City MFP, Salt Lake City Field Office	All lands would be excluded.	None
Pinyon MFP, Cedar City Field Office ^f	476,312 acres (469,187 acres outside the UTTR) (7,125 acres inside the UTTR)	Wah Wah Valley SEZ (5,873 acres)
Pony Express RMP, Salt Lake City Field Office ^f	All lands would be excluded.	None
Price RMP, Price Field Office	26 acres	None
Randolf MFP, Salt Lake City Field Office	All lands would be excluded.	None

TABLE E-1 (Cont.)

Plan/BLM Office	Modified Program Alternative – Approximate Proposed Acreage in Variance Areas ^b	Modified SEZ Alternative – Proposed Developable Acreage in SEZs
<i>Utah^c (Cont.)</i>		
Richfield RMP, Richfield Field Office	134,372 acres	None
St. George RMP, St. George Field Office	9,402 acres	None
Vernal RMP, Vernal Field Office	All lands would be excluded.	None
Warm Springs RMP, Fillmore Field Office ^f	804,974 acres (200,372 acres outside the UTTR) (604,603 acres inside the UTTR)	None

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

- ^a Land use plan amendments for the modified program alternative would include the identification of SEZs and the identification of variance areas; all remaining lands would be identified as exclusion areas. Note that acreage in some plan areas has increased from that presented in the Draft Solar PEIS because areas less than 247 acres (1 km²) have been added. Land use plan amendments for the modified SEZ alternative would include the identification of SEZs; all remaining lands would be identified as exclusion areas. Totals may be off due to rounding. This table lists plans as of August 2010; the list of plans and acres affected will be updated for the Final Solar PEIS.
- ^b These acreage estimates include the acreage in the proposed SEZs. The estimates were calculated on the basis of the best available geographic information system (GIS) data. GIS data were not available for the entire set of exclusions; thus the exact acreage could not be calculated. Exclusion areas that could not be mapped because of the lack of data would be identified during pre-application consultations with local BLM staff or site-specific evaluation of individual ROW applications.
- ^c For state totals, refer to Table 2.3-1 of this Supplement. Minor inconsistencies with GIS data for land use plan boundaries will be resolved for the Final Solar PEIS.
- ^d Currently, the California Desert Conservation Area (CDCA) RMP requires a plan amendment for individual energy projects; the amendment to this plan pursuant to the Solar PEIS Record of Decision (ROD) would remove this requirement for individual plan amendments for utility-scale solar energy projects in SEZs. The requirement would remain for projects proposed in variance areas.

Footnotes continued on next page.

TABLE E-1 (Cont.)

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