

# General Overview of Colorado Solar Energy Zones, Baseline Conditions, and Data Sources

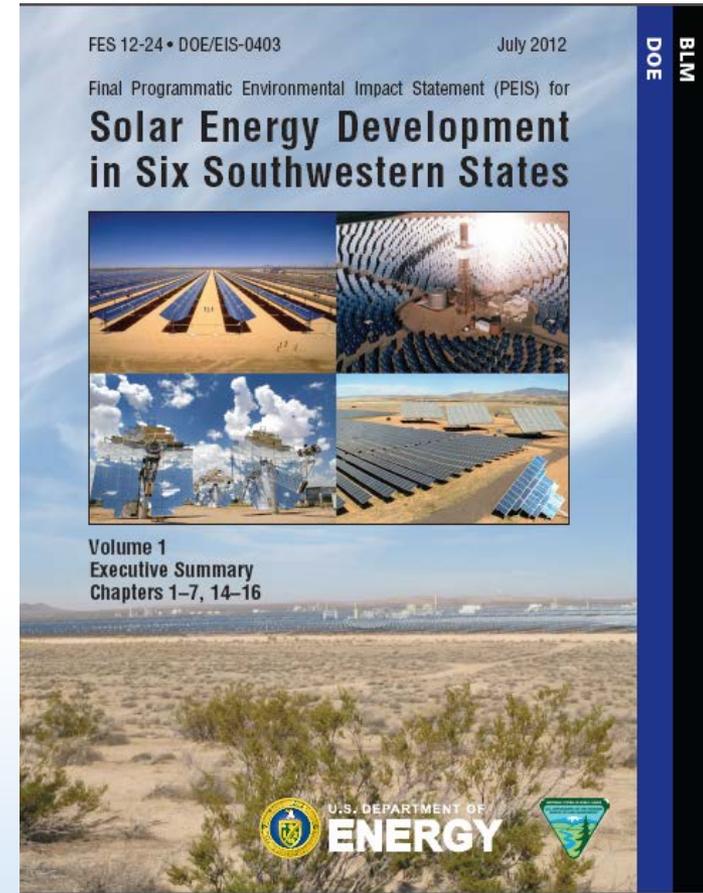
Presented by:

Heidi Hartmann, Argonne National Laboratory

Colorado SEZ Solar Regional Mitigation Strategy, BLM  
Public Workshop  
Alamosa, Colorado  
September 10, 2014

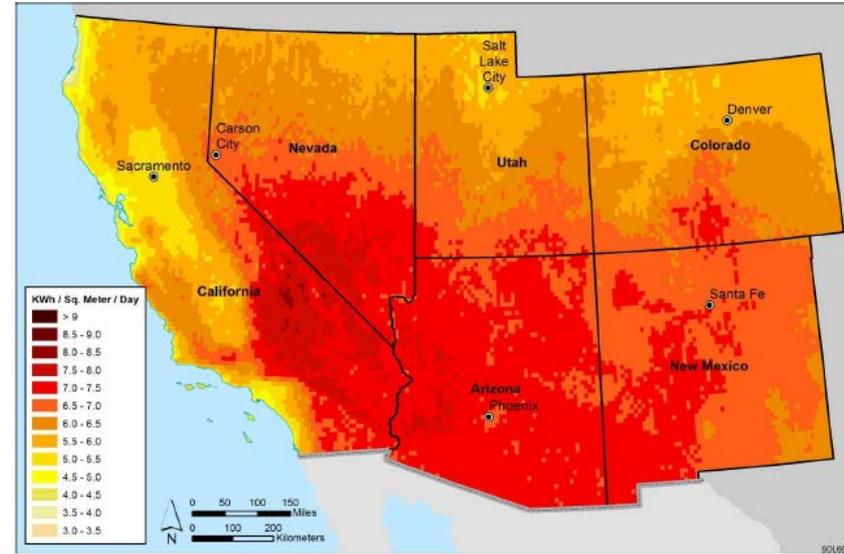
# BLM's Solar Energy Program

- Finalized in 2012, included 4 Solar Energy Zones (SEZs) in Colorado
- SEZs defined as “locations well suited for utility-scale production of solar energy, where the BLM will prioritize solar energy and associated transmission infrastructure development”
- Included 250+ design features, required measures or procedures to avoid, minimize, and/or mitigate potential adverse impacts



# Colorado Solar Energy Zones

- Four Colorado SEZs, all in San Luis Valley because of high solar radiation and low-slope locations on BLM-administered lands:
  - Antonito Southeast - 9,712 acres in Conejos County
  - De Tilla Gulch SEZ – 1,064 acres in Saguache County
  - Fourmile East SEZ – 2,882 acres in Alamosa County  
(not currently studied)
  - Los Mogotes SEZ – 2,650 acres in Conejos County



**Solar Insolation Levels in 6 Southwestern States.  
(Note: must be >6.5 in SEZs)**

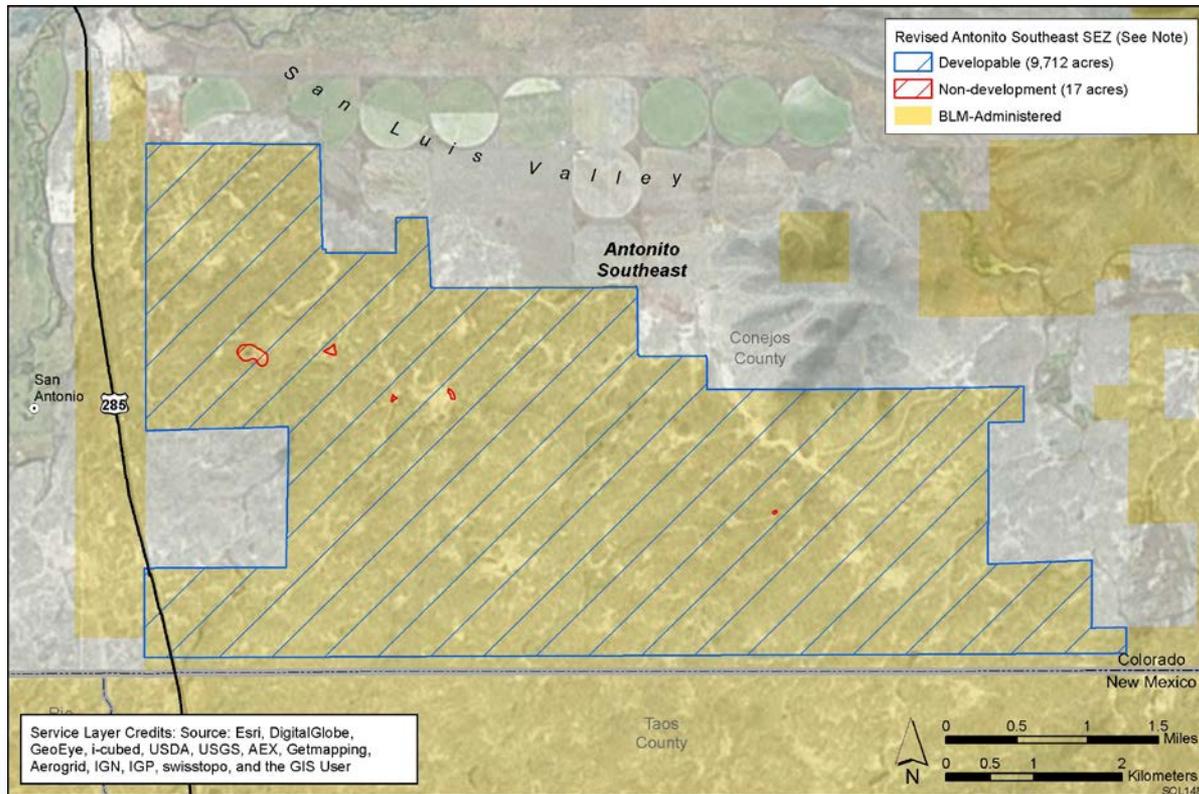
**Slope in solar  
energy zones must  
be less than 5%**

# Colorado SEZs (cont.)

- BLM's Solar Program committed to development of regional mitigation strategies for all SEZs
- Regional approach utilizes baseline condition data for larger areas around SEZs (Landscape Assessment)



# Antonito Southeast Solar Energy Zone

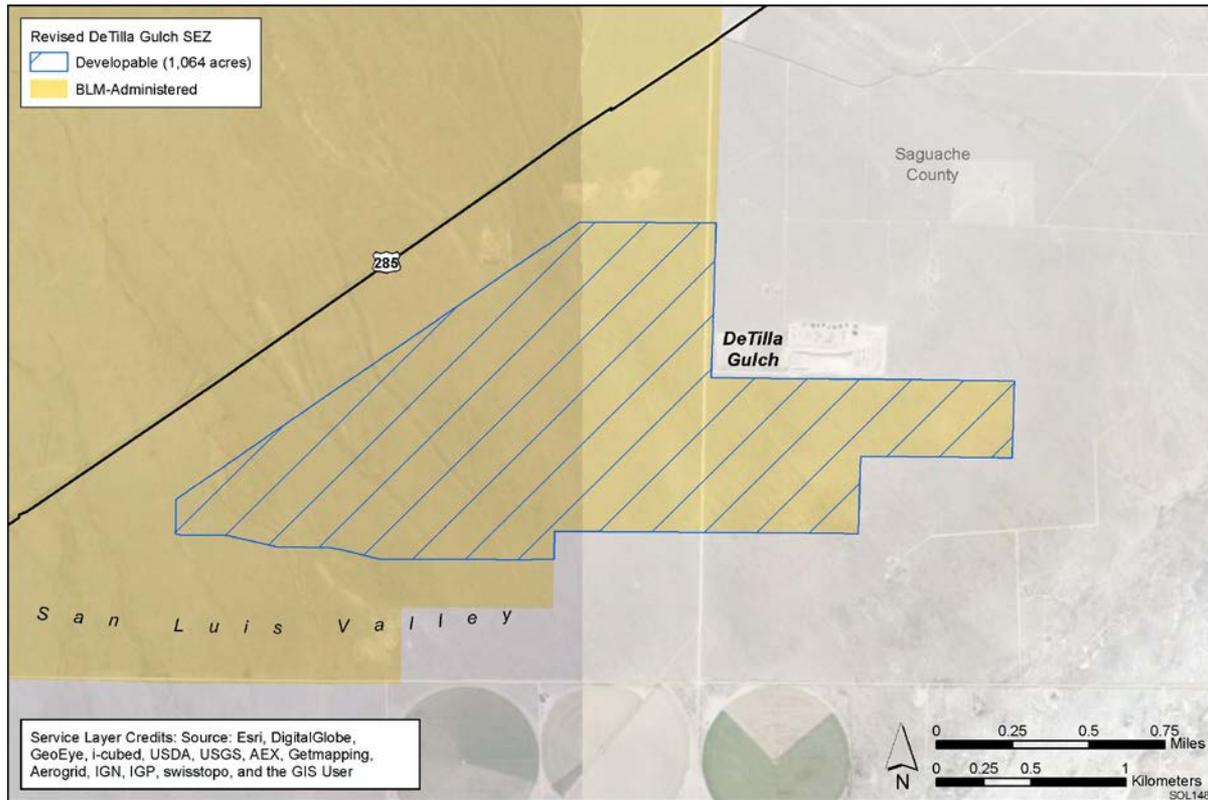


**Developable area: 9,712 acres**

**Maximum Solar Generation Capacity: 1,554 MW (enough to power about 500,000 homes)**



# De Tilla Gulch Solar Energy Zone



- **Developable area:**  
1,064 acres
- **Maximum Solar Generation Capacity:**  
170 MW (enough to power about 56,000 homes)



# Los Mogotes East Solar Energy Zone



- **Developable area:**  
2,650 acres
- **Maximum Solar Generation Capacity:**  
424 MW (enough to power about 140,000 homes).

# Baseline Conditions in the Study Area

- Regional baseline conditions will be compared to conditions expected after solar development
- Baseline data facilitate evaluation of regional mitigation needs
- Collected from local, state, and federal sources, both public and private
- Public is invited to suggest additional data sources





Colorado

  
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BLM>Colorado>Field Offices>San Luis Valley Field Office

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**San Luis Valley/Taos Plateau Study:  
Landscape Assessment and Solar Regional Mitigation Strategy**

- Colorado**
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The San Luis Valley/Taos Plateau Study is intended to help BLM ensure environmentally responsible solar energy development on public lands through long-term planning.

The **Landscape Assessment** will apply BLM Rapid Ecoregional Assessment protocol and use existing data on the ecological values, trends and conditions in the geographic area covering Colorado's San Luis Valley and New Mexico's Taos Plateau (~6,115,000 acres). The assessment is designed to increase knowledge of the potential impacts and cumulative effects of change (i.e. human development, climate change, invasive species) on important ecological, cultural and socioeconomic values.

The **Solar Regional Mitigation Strategy** is designed to improve the mitigation process, account for potential impacts in the landscape context and facilitate solar energy development in Solar Energy Zones. The strategy will use the information, maps and tools provided by the Landscape Assessment.

**Links of Interest**

- BLM Solar Energy Program - Western Solar Plan
- BLM Regional Mitigation Policy
- BLM Rapid Ecoregional Assessments
- San Luis Valley Field Office Resource Management Plan
- Taos Field Office Resource Management Plan

**Map of Study Area**



Frequently Asked Questions (FAQs)

Landscape Assessment Project Documents

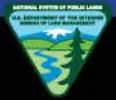
Solar Regional Mitigation Strategy Project Documents

Español

**Links for LA and SRMS Pages**



BLM  
Colorado  
LA/SRMS  
Website:  
<http://www.blm.gov/co/st/en/fo/slvfo/solar.html>



# Landscape Assessment Page

U.S. DEPARTMENT OF THE INTERIOR  
**BUREAU OF LAND MANAGEMENT**



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**Landscape Assessment**

BLM>Colorado>Field Offices>San Luis Valley Field Office

**Landscape Assessment  
Management Questions, Conservation Elements, Change Agents**

This page is under construction. More information will be added as it becomes available. Please check back for updates.

[RECOMMENDED Management Questions \(July 2014\)](#)

[RECOMMENDED Conservation Elements \(July 2014\)](#)

[Landscape Assessment Phase 1 Report \(August 2014 - 6.42 MB\)](#)

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**Links to  
Phase I Report**



# Solar Regional Mitigation Strategy Page



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BLM > Colorado > Field Offices > San Luis Valley Field Office

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## Solar Regional Mitigation Strategy Documents

### Strategy Studies, Data and Methodology Documents

#### Methodology

- Element 1** Collect Baseline Data for Assessing Unavoidable Impacts
- Element 2** Assess Degree of Impacts and Identify Resources that May Warrant Regional Mitigation
- Element 3** Identify Regional Mitigation Goals
- Element 4** Evaluation of Appropriate Mitigation Locations, Objectives, and Actions
- Element 5** Recommend Method for Calculating Mitigation Compensation for SEZs
- Element 6** Recommend Solar Regional Mitigation Fee Structure

### Partner and Public Engagement

#### Outreach

- Letters to partners
  - List of partners
  - Example letter
- Press Releases
  - Feb. 26, 2014 SLV/Taos Plateau Study announcement
- Other public outreach
  - Email to Solar PEIS stakeholders
- Presentation to Front Range Resource Advisory Council (June 4, 2014)
- Presentation to Front Range Resource Advisory Council (Aug. 20, 2014)
- KRZA Radio Interview (August 20 and 21, 2014)
  - Part 1 (MP3 - 12.8 MB)
  - Part 2 (MP3 - 6.0 MB)

#### Workshops

- Monday, September 8: De Tilla Gulch SEZ
  - 4 - 6:30 PM
  - Saguache County Road and Bridge

## Baseline Studies and Data

- Baseline Data Documents (June 25, 2014)
- SEZ Sensitive Species Survey Report (2011 - 1.57 MB)
- SEZ Bat Survey Report (2011 - 2.26 MB)
- SEZ Sensitive Species Survey Report (2012 - 1.63 MB)
- Los Mogotes SEZ Water Resources Report (2013 - 8.89 MB)
- De Tilla Gulch SEZ Water Resource Report (2014 - 2.56 MB)

## Reports

- Antonito SEZ Impact Table (Aug. 2014)
- De Tilla Gulch SEZ Impact Table (Aug. 29 2014)
- Los Mogotes SEZ Impact table (Aug. 2014)



# SEZ Baseline Studies

**TETRA TECH**  
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BLM SOLAR ENERGY ZONE HYDROLOGY CONSULTING SERVICES  
LOS MOGOTES EAST SOLAR ENERGY ZONES

WATER RESOURCES INVENTORY REPORT  
AUGUST 2013

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BLM SOLAR ENERGY ZONE HYDROLOGY CONSULTING SERVICES  
DE TILLA GULCH SOLAR ENERGY ZONE

FINAL SUBMITTAL  
April 25, 2014

**TETRA TECH**  
1301 Blu Hill Road #110  
Boulder, CO 80506  
(970) 443-6094  
www.tetra-tech.com

## Assessment of Gunnison Prairie Dog and Burrowing Owl Populations On San Luis Valley Solar Energy Zone Proposed Areas

Melissa Garcia & Loree' A. Harvey

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

December, 2011



## Wildlife Assessment of San Luis Valley Proposed Solar Energy Zones:

**Gunnison's Prairie Dogs  
Raptors**

**Burrowing Owls  
Herpetofauna**

Loree' A. Harvey

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

November, 2012



## Final Report 2011 Colorado Bat Monitoring – 5 Locations San Luis Valley Bureau of Land Management Contract #L11PX00813



Prepared By:  
Klamath Wildlife Resources

November 30, 2011

## Front Range District Bat Surveys of Solar Energy Zones within the San Luis Valley, Colorado

DRAFT FINAL REPORT – October 2011



Prepared For:  
Joe Vieira  
Bureau of Land Management  
1803 West Hwy 160  
Monte Vista, CO 81144

Prepared By:  
Rogelio M. Rodriguez  
Zotz Ecological Solutions, LLC  
1165 Locust Street  
Denver, CO 80220



# Baseline Data Sources Current List

Baseline Studies, Data, and Documents Referenced for the San Luis Valley-Taos Plateau Landscape Assessment and Solar Regional Mitigation Strategy

Description/Title	Author/ Source	Year	Resource Discipline(s)	URL (if available)
<b>NEPA Documents</b>				
Solar PEIS	BLM	2012	Renewable Energy, All	<a href="http://blmsolar.anl.gov/program/">http://blmsolar.anl.gov/program/</a>
Solar PEIS – Solar Energy Zone Sections and Updates	BLM	2012	Renewable Energy, All	<a href="http://blmsolar.anl.gov/sez/">http://blmsolar.anl.gov/sez/</a>
San Luis Valley Geothermal Leasing EA-RMP Amendment	BLM	2012	Renewable Energy, All	<a href="http://www.blm.gov/co/st/en/fo/slvfo/Geothermal_Leasing.html">http://www.blm.gov/co/st/en/fo/slvfo/Geothermal_Leasing.html</a>
Vegetation Treatment PEIS	BLM	2007	Vegetation	<a href="http://www.blm.gov/wo/st/en/prog/more/veg_eis.html">http://www.blm.gov/wo/st/en/prog/more/veg_eis.html</a>
South San Luis Lakes Wetland Restoration - EA	BLM	2009	Wetlands, All	<a href="http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/slvplc/Upload_Files.Par.51774.File.dat/SSL_Final_EA.pdf">http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/slvplc/Upload_Files.Par.51774.File.dat/SSL_Final_EA.pdf</a>
San Luis Valley Field Office Travel Management Plan EA-RMP Amendment	BLM	2013	Recreation, All	<a href="http://www.blm.gov/co/st/en/fo/slvfo/Travel_Management.html">http://www.blm.gov/co/st/en/fo/slvfo/Travel_Management.html</a>
San Luis Valley Fire Management Plan - EA	BLM	2004	Fire	<a href="http://www.blm.gov/co/st/en/fo/slvfo/fmp.html">http://www.blm.gov/co/st/en/fo/slvfo/fmp.html</a>
San Luis Valley Regional Habitat Conservation Plan -EA	USFWS	2012	Wildlife, All	<a href="http://www.fws.gov/coloradoES/SLV-HCP.html">http://www.fws.gov/coloradoES/SLV-HCP.html</a>

Stakeholder input is ongoing



This Web site is the online center for public information regarding the ongoing implementation of the Bureau of Land Management's (BLM's) Solar Energy Program (also known as the Western Solar Plan), approved in October 2012 through the Record of Decision (ROD) for the Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States. The Web site will provide up-to-date information on the features of the BLM's Solar Energy Program for the purpose of aiding the public, solar energy developers, and regulators in understanding the BLM's requirements and incentives for utility-scale solar energy development on public lands.

- AUG 28 [Colorado – Reminder: Landscape Assessment and SRMS: Public Workshops Sept. 8-11](#)
- AUG 14 [BLM Releases Draft Guidance on Solar Regional Mitigation Strategies](#)
- JUL 2 [BLM Auction Yields Millions; New List of Solar Energy Projects](#)

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Sign up to receive e-mail updates. Optionally register to receive updates for specific states. [Subscribe »](#)

## Solar Energy Program

Comprehensive information on the program, including summaries of the legal, regulatory, and policy requirements for utility-scale solar energy development on public lands. This section also includes required design features (i.e., required mitigation measures) and information on compliance with other laws, such as the Endangered Species Act and the National Historic Preservation Act. [more »](#)

## Solar Energy Zones (SEZs)

General SEZ information, competitive leasing requirements, the protocol for identifying new or expanded SEZs, detailed information on individual SEZs, SEZ-specific design features, and long-term requirements for monitoring and mitigation. New data for individual SEZs will be provided as it becomes available (e.g., cultural survey data, groundwater information and models). [more »](#)

## Variance Areas

Variance areas include about 19.3 million acres of public lands outside of SEZs. The policies that will be applied to site-specific proposals within variance areas are presented. These policies address early coordination with other agencies and the public, and early evaluation of variance ROW applications. [more »](#)

## Project Authorizations

The ROD for the Final PEIS for Solar Energy Development in Six Southwestern States did not authorize any on-the-ground solar energy development. The Solar Energy Program requires additional, site-specific analyses prior to approval of utility-scale solar energy projects. The robust analysis in the Solar PEIS will be incorporated into the evaluation of future site-specific projects through "tiering." The analyses from the Solar PEIS will be applied, to the extent appropriate, to future proposed utility-scale solar energy projects, allowing future project analyses to focus on site-specific conditions and issues not fully addressed in the Solar PEIS. This is expected to streamline future decision-making on proposed utility-scale solar energy developments on BLM-administered public lands. This Web site contains links to the analysis



BLM Solar Program Website:  
<http://blmsolar.anl.gov>

Online resource sharing information about BLM's program implementation





- ▶ **Solar Energy Program**
- Authorization Policies
- Design Features
- Exclusions
- Laws, Orders, and Regulations
- Forms and Templates
- Pending Solar Applications
- Application Processing Flowchart

- ▶ **Solar Energy Zones (SEZs)**
- Policies
- Competitive Leasing for SEZs
- Identification Protocol for New SEZs
- Withdrawal of SEZ Lands
- Arizona
- California
- Colorado
- Nevada
- New Mexico
- Utah

- ▶ **Variance Areas**
  - Variance Process
  - Variance Applications
- 
- ▶ **Solar Program Maps**
  - Solar Program-Related Maps
  - ArcReader GIS Application
  - GIS Shape Files

Menus for each major page direct you to relevant information.





- Solar Energy Zones (SEZs)
  - Policies
  - Competitive Leasing for SEZs
  - Identification Protocol for New SEZs
  - Withdrawal of SEZ Lands
  - Arizona
  - California
  - ▶ Colorado
    - News/Announcements
    - Antonito Southeast
    - De Tilla Gulch
    - Fourmile East
    - Los Mogotes East

## Colorado

Four SEZs were identified in Colorado through the Record of Decision (ROD) for the Solar PEIS: Antonito Southeast SEZ, De Tilla Gulch SEZ, Fourmile East SEZ, and Los Mogotes East SEZ.

As of June 2014, there were no [pending applications](#) or [approved projects](#) in Colorado.

Additional SEZ information and maps for each Colorado SEZ are available on the SEZ-specific Web pages for [Antonito Southeast](#), [De Tilla Gulch](#), [Fourmile East](#), and [Los Mogotes East](#).



There is a page dedicated to each state and subpages for each SEZ.

Updated: 7/9/2014

News items are posted to share updates.

### Colorado News

- August 28, 2014  
[Reminder: Landscape Assessment and Solar Regional Mitigation Strategy for Three Solar Energy Zones in Colorado: Public Workshops September 8-11, 2014](#)
- February 26, 2014  
[Solar Regional Mitigation Strategy for three Solar Energy Zones in Colorado: BLM Launches Study](#)
- August 16, 2013  
[BLM Colorado Releases Notice of Competitive Auction for SEZs](#)





**Solar Energy Zones (SEZs)**

- Policies
- Competitive Leasing for SEZs
- Identification Protocol for New SEZs
- Withdrawal of SEZ Lands
- Arizona
- California
- Colorado
- News/Announcements
- ▶ Antonito Southeast
- Monitoring and Adaptive Management
- Mitigation Strategy
- De Tilla Gulch
- Fourmile East
- Los Mogotes East
- Nevada
- New Mexico
- Utah

## Antonito Southeast

The Antonito Southeast solar energy zone (SEZ) is located in Colorado in a semiarid basin with undeveloped scrubland currently used for BLM-authorized grazing. The SEZ is located on BLM-administered land within the La Jara Field Office.

## Development Status

As of June 2014, there were no [pending solar project applications](#) within the SEZ, and BLM Colorado had received no [expressions of interest](#) for new projects in the SEZ.

## Size and Location

The Antonito Southeast SEZ has a total area of 9,729 acres (39.4 km<sup>2</sup>). In the Supplement to the Draft Solar PEIS, 17 acres (0.07 km<sup>2</sup>) of wetland and lake areas were identified as non-development areas, leaving the SEZ with a potentially developable area of 9,712 acres (39.3 km<sup>2</sup>). No additional changes to the SEZ developable area were made in the Final Solar PEIS.

The Antonito Southeast SEZ is located in southeastern Conejos County on the New Mexico border in the south-central part of the San Luis Valley. The San Luis Valley is bounded by the San Juan Mountains to the west and the Sangre de Cristo Range to the east. The largest nearby town of Alamosa is located about 34 mi (55 km) to the north. In 2008, the county population was 8,232, while the surrounding six-county region in Colorado and New Mexico had a population of 116,511.

### Maps

Colorado Variance Areas Antonito Southeast SEZ



- Letter (1.84 MB)
- Letter (1.7 MB)
- Poster (4.57 MB)

### Solar PEIS SEZ Analyses

- Antonito Southeast SEZ Analysis: Draft PEIS (4.5 MB)
- Antonito Southeast SEZ Analysis Updates in the Final Solar PEIS (5.1 MB)
- Antonito Southeast SEZ Recommended Additional Data Collection (95 KB)
- Antonito Southeast SEZ-Specific Design Features (39 KB)

### Other Studies and Information

- Solar PEIS Mineral Report
- Antonito Southeast SEZ Monitoring and Adaptive Management
- Antonito Southeast SEZ Mitigation Strategy

- For each SEZ, a webpage provides:
  - Development status
  - Size and location
  - Physical characteristics
  - Technical suitability
- Maps
- Links to relevant sections in Solar PEIS
- Subpages dedicated to
  - Minerals report
  - Monitoring and adaptive management strategies
  - **Mitigation strategies (link to BLM’s Project Website)**



## Subscribe

Please provide the information requested below to subscribe to receive general e-mail announcements related to BLM's Solar Energy Program (for example, announcements related to new rulemaking or availability of Instruction Memoranda related to solar development). You may optionally subscribe to state-specific e-mail lists as well (see below).

### Contact Information

Name

Organization

**E-mail (required)**

### State Lists (Optional)

In addition to the general e-mail announcements, you can subscribe to receive state-specific announcements. Check one or more of the state-specific boxes below to also receive e-mail announcements related to the implementation of BLM's Solar Energy Program in the various states (for example, announcements about regional mitigation or monitoring work for specific solar energy zones, public meetings for various projects, or new applications in specific states).

- Arizona
- California
- Colorado
- Nevada
- New Mexico
- Utah

Subscribe for email updates either for just general program information or also for state-specific updates.



# Solar Energy Environmental Mapper: – An Interactive, Web-Based Tool Providing Access to Spatial Data Relevant to BLM's Solar Energy Program

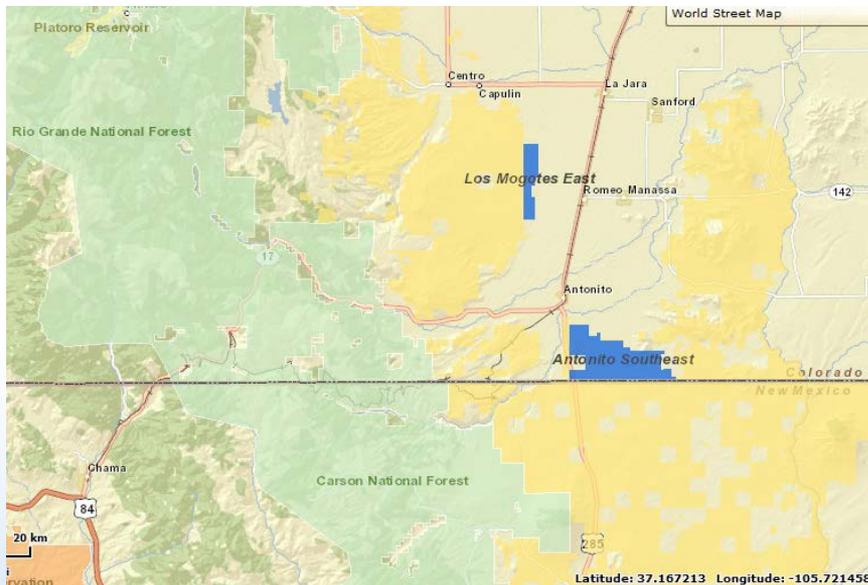


Available at  
<http://solarmapper.anl.gov>

- Siting information on utility-scale solar projects in six southwestern states.



Data Layers Include Surface Management, Protected Resources, and Program Designations (for example, variance areas and solar exclusions)



Active Layers Legend

**Solar Energy Zones**

- Non-Development Area
- Developable
- Renewable Energy Development Area (AZ RDEP)
- Variance Areas

**Variance Areas**

- 

**Surface Management Agency**

- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Fish and Wildlife Service
- National Park Service
- Other
- Tribal Land
- U.S. Forest Service

**Layers**

Search

By Group By Theme By Data Source

- State Label
- State Boundary
- County Boundary
- Public Land Survey System Group
- Hydrography Group
- Pending and Authorized Solar ROW Appl...
- Variance Applications
- Potential BLM Solar Development Area G...
  - Solar Energy Zones
  - Renewable Energy Development Area...
  - Variance Areas
- BLM Solar Development Exclusions Group
- FWS and NPS Areas of Concern Group
- Energy Corridor Group
- Protected Resources Group
- Ecology Group
- Solar Facility Group
- Solar Energy Potential Group
- Land Management Group

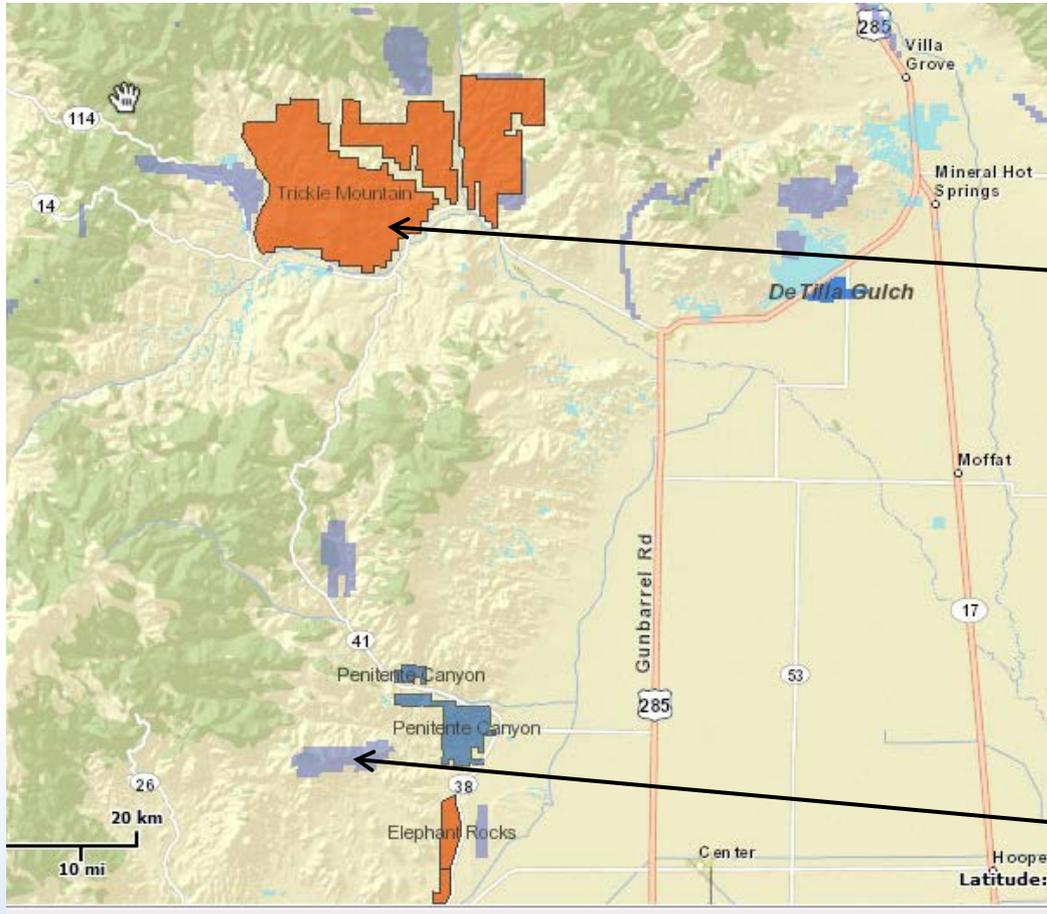
## BLM Solar Program Designations and Surface Management

# Solar Energy Environmental Mapper

Explore geospatial solar energy environmental data

- ◆ HOME
- ◆ LEARN MORE
- ◆ ABOUT THE DATA
- ◆ RELEASE NOTES

- ◆ Legal Notice
- ◆ Contact Us
- ◆ Help



Metadata and summary information are available for each data layer.

**Identify**

Layers: All active and identifiable layers

Click on the map for location information

Feature	Name	1 ▲	Value
▼ Area of Critical Env.			
▼ Trickle Mountain			
Acreage			22163.322549
Archaeological			U
BLM District Office Name			N/A
BLM Field Office Name			Saguache
BLM State Office Name			Colorado
BLM Sub Office Name			N/A
Cultural			U
District Office Code			CO220
Ecological			U
Edit Date			10/21/2009
Field Office Code			N/A
Geological			U
Historical			U
Land Use Plan			San Luis Resource Area Resource Management Plan
Land Use Plan Date			12/18/1991

**Identify**

Layers: All active and identifiable layers

Click on the map for location information

Feature	Name	1 ▲	Value
▼ No Surface Occupan			
▼ 11718364.77155			
Acreage			2895.659414
Object ID			719
Shape			Polygon

Reset

