

# BLM Solar Regional Mitigation Planning

## Dry Lake Solar Energy Zone Pilot Project

### Workshop 2: Baseline Conditions & Unavoidable Impacts

#### Welcome Introduction & Orientation

*Dick Bouts, BLM Washington  
National Renewable Energy Coordination Office  
Joe Vieira, BLM Renewable Energy Program  
Karen Smith, DOE Argonne National Laboratory*

*October 24, 2012*



FIGURE 3.1.2 Solar Two, CSP Power Tower Facility in Daguerre, California (Credit: SNL; Source: NREL 2009)



FIGURE 3.1.1 Solar Field for the Dinuba Power and Light Parabolic Trough Facility Known as SEGS-VI, Kramer Junction, California (Source: Hoesly et al. 2008)

# BLM Solar Energy Program Regional Mitigation Planning

- BLM-DOE Solar Programmatic Environmental Impact Statement (2008-2012)
- BLM NEPA/Planning - Response to Public Comment
- Mitigation Hierarchy: *Avoid/Minimize/Mitigate*
- BLM Off-site mitigation policy (2008)

# BLM Solar Energy Program & Long-term Monitoring

- Solar Long-term Monitoring Program
  - Understanding predicted & actual impacts
  - Evaluating mitigation success or failure
- Key Solar LTMP components:
  - Framing the issue & understanding the system
  - Developing monitoring objectives & compiling existing information
  - Developing a monitoring & sampling schema
  - Creating & finalizing a monitoring Plan
  - Implementing data collection & management
  - Analysis & reporting
  - Adaptive management

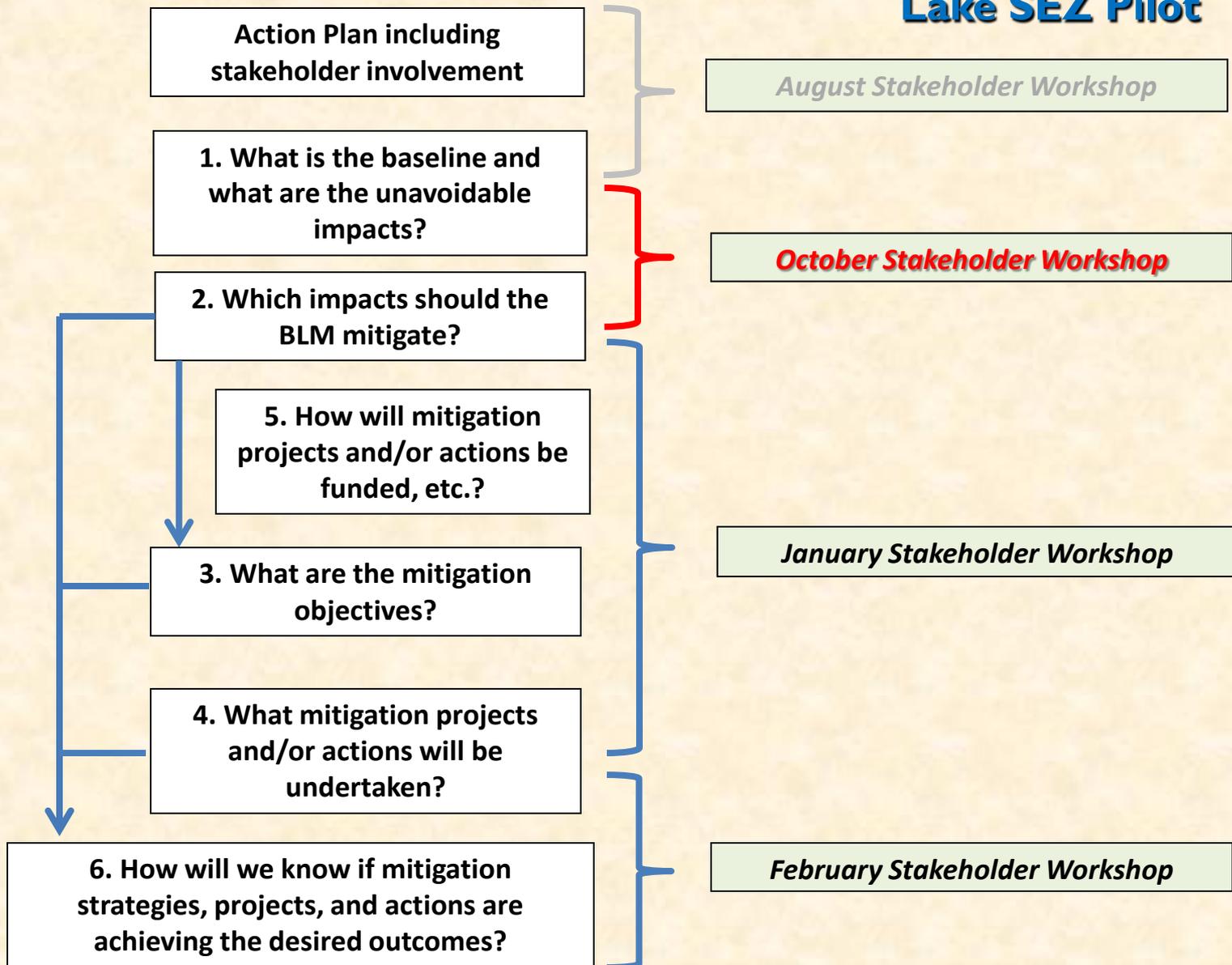
# Regional Mitigation Planning Framework Goals & Pilot Objectives

- **Framework Goals**
  - Consistent science-based approach
  - Reducing uncertainty
- **Solar Regional Mitigation Planning Elements**
  - Stakeholder engagement
  - Baseline for comparison
  - Methodology for unavoidable impact assessment
  - Methodology for obligation costs
  - Structure to hold mitigation investments
  - Regional Mitigation Objectives & Priority Projects
  - Adaptive Management & Monitoring

# Regional Mitigation Planning Framework Goals & Pilot Objectives

- **Pilot Project Objectives**
  - Test the framework elements
  - Dry Lake SEZ Regional Mitigation Plan
  - Lessons-learned & Guidance

# Action Plan: Dry Lake SEZ Pilot



# Workshop 2: Baseline Conditions – Unavoidable Impacts

- **Workshop 2 Goals**

- Present Dry Lake SEZ and regional baseline conditions
- Discuss unavoidable impacts, including which warrant off-site mitigation

- **Workshop 2 Desired Result(s)**

- Stakeholder understanding and input on unavoidable impacts likely at Dry Lake SEZ
- Organize follow-on work Solar Regional Mitigation Planning

# Workshop 2: Baseline Conditions – Unavoidable Impacts

- **Workshop 2 Agenda – Day 1**

- AM Introduction & Orientation
- AM Dry Lake Solar Energy Zone Field Trip
- PM Unavoidable Impact Breakout Groups
- PM Summation

- **Workshop 2 Agenda – Day 2**

- AM Review
- AM Regional Baseline Presentations
- PM Framework Implementation – Next Steps – Participant Support

# Questions & Discussion

# Workshop 2: Field Trip Orientation & Logistics

- Field Trip Objective
- Field Trip Agenda
- Risks & Safety

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

Karen P. Smith

Argonne National Laboratory

Presented at the

Dry Lake SEZ Regional Mitigation Planning Workshop

Las Vegas, NV, October 24, 2012

# Solar Energy Environmental Mapper

- Available at <http://solarmapper.anl.gov>
- Developed to share information analyzed in the Solar PEIS.
- Provides access to spatial information relevant to siting utility-scale solar projects in six southwestern states.



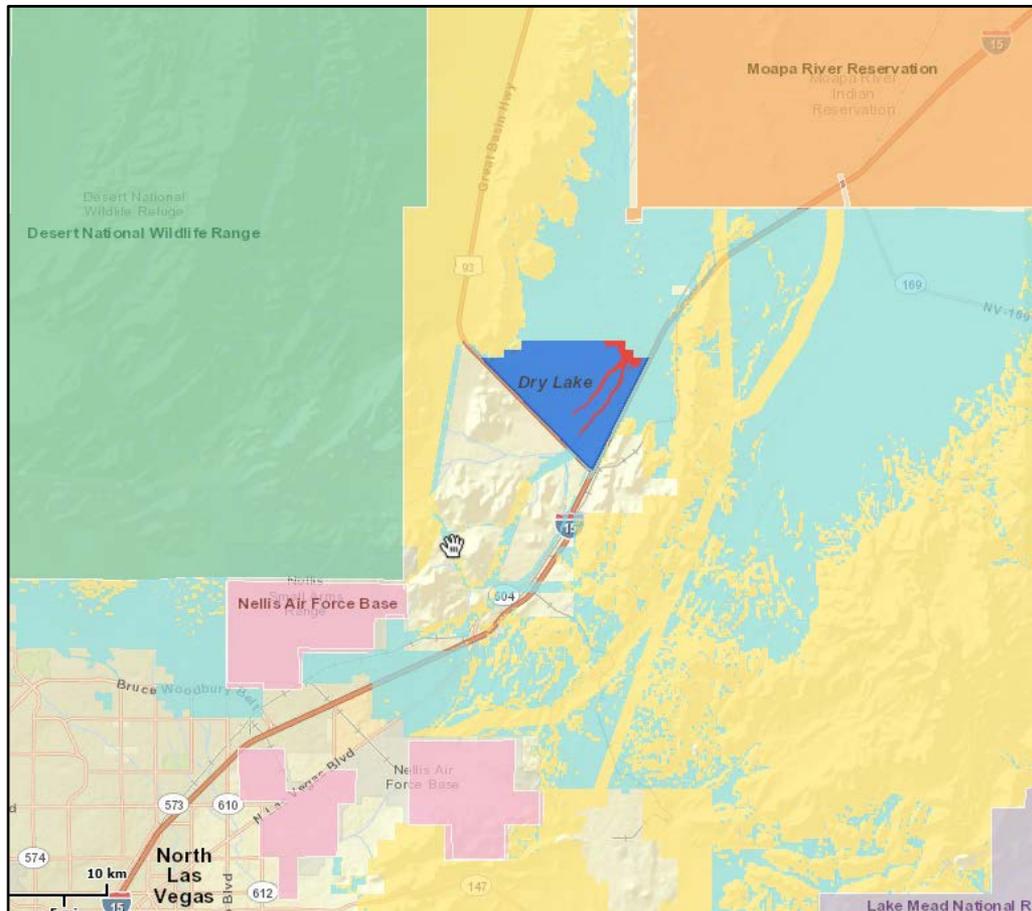
# A Variety of Spatial Data Are Available for Viewing



- Users can display or hide layers in order to evaluate specific resources of interest.
- Resources are organized by
  - Group,
  - Theme, and
  - Data source.
- Each group or theme can be expanded by clicking on the plus symbol.
- Metadata is available for each data layer via the information icon.

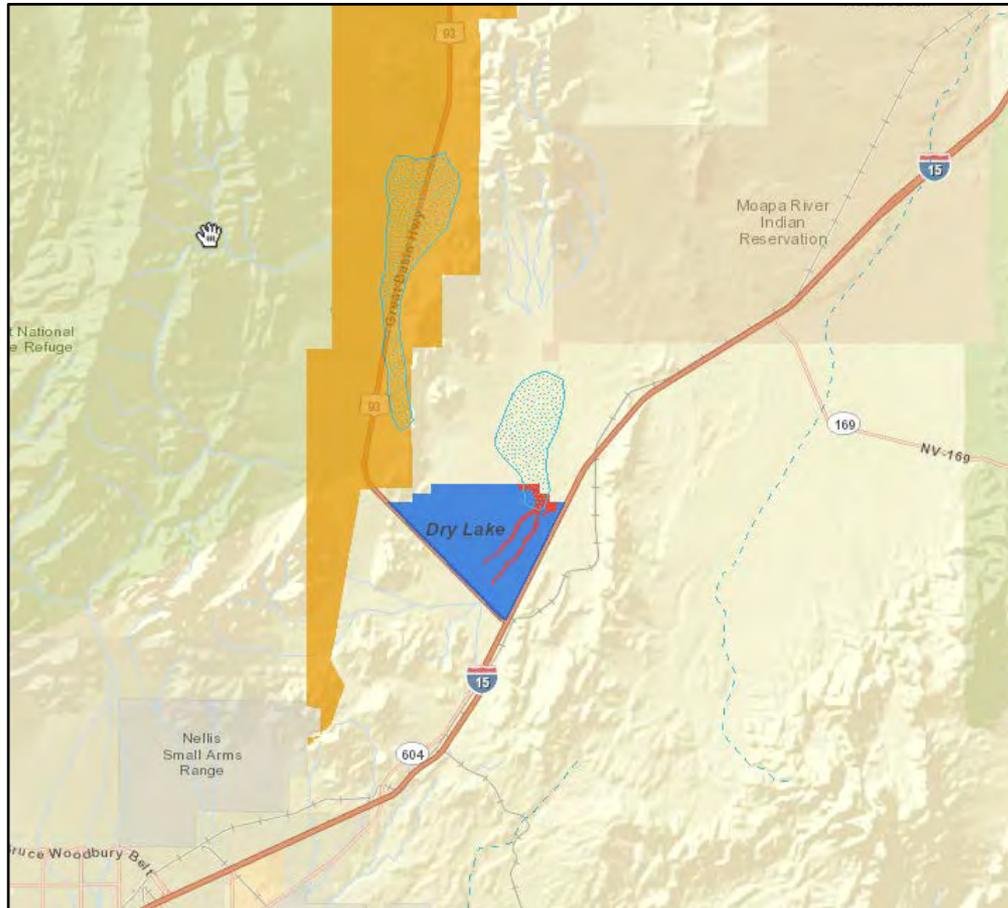
# Data Support Analysis and Decisions Regarding Siting of Utility-Scale Solar Projects

## BLM Solar Program Designations and Surface Management



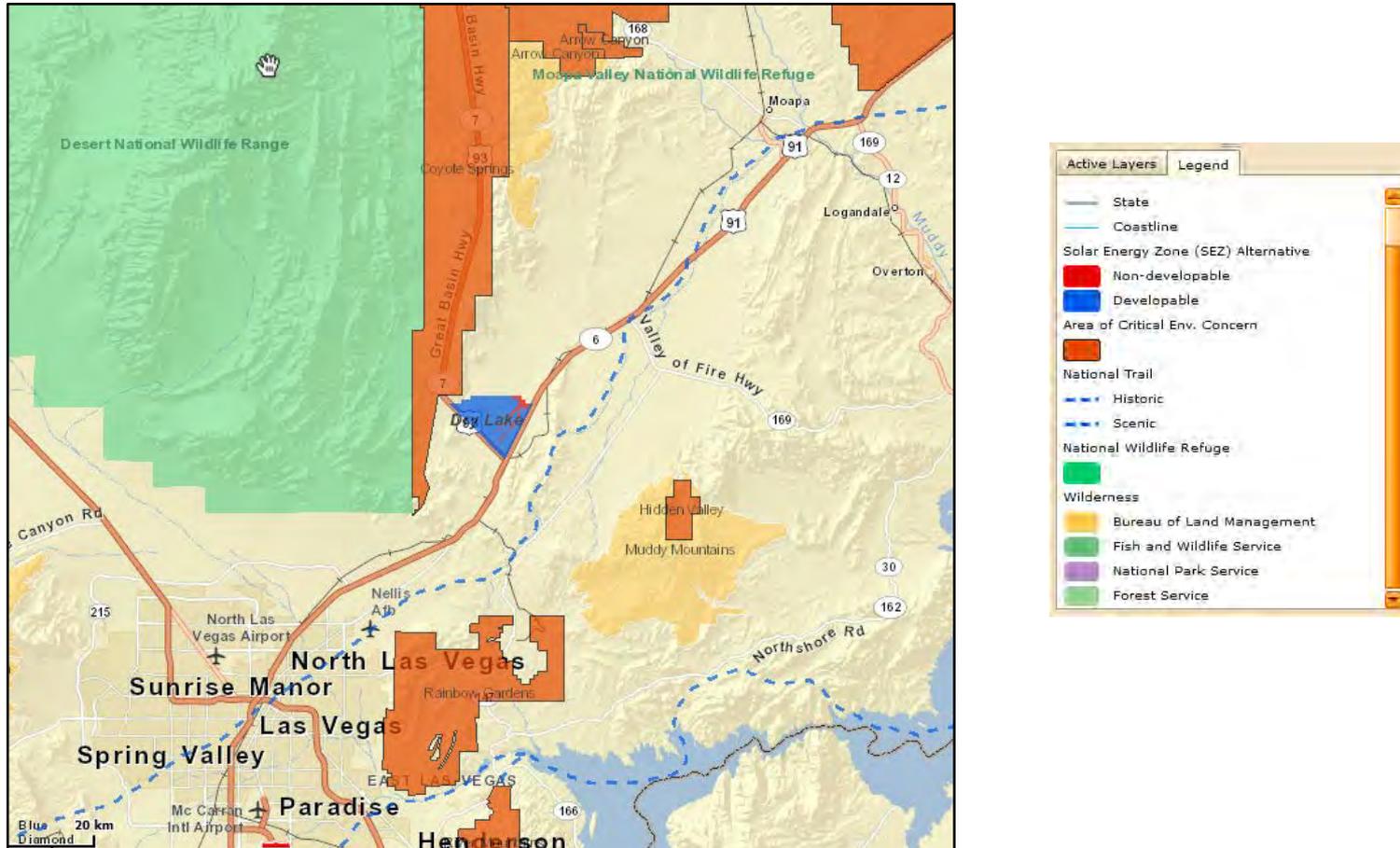
# Data Support Analysis and Decisions Regarding Siting of Utility-Scale Solar Projects

## Ecology and Hydrography Data



# Data Support Analysis and Decisions Regarding Siting of Utility-Scale Solar Projects

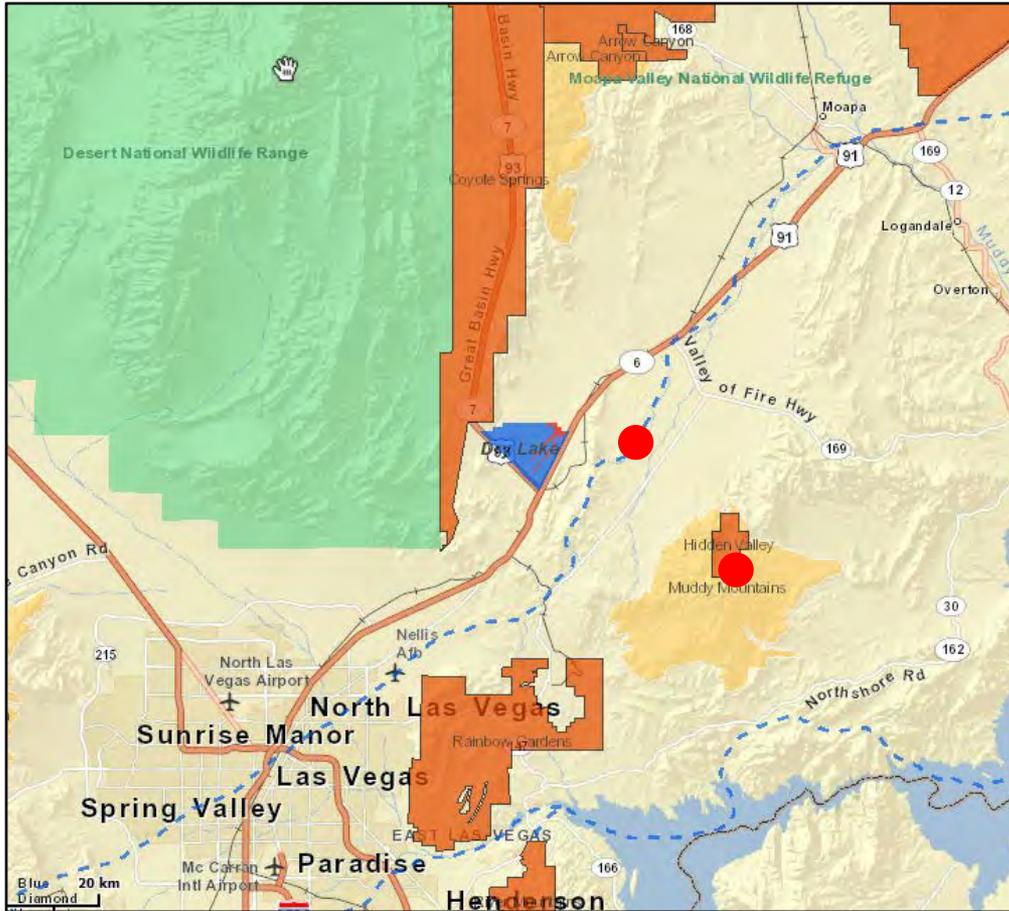
## Protected Resource Areas



# Protected Resource Areas Included in Solar Mapper

- National Register Site
- National Historic Landmark
- National Natural Landmark
- Scenic Byway
- National Monument
- National Trail
- National Conservation Area
- National Wildlife Refuge
- Special Recreation Mgmt. Area
- Area of Critical Env. Concern
- Wilderness
- Wilderness Study Area
- Wild and Scenic River
- ROW Avoidance Area
- ROW Exclusion Area
- No Surface Occupancy Area

# Metadata and Summary Information is Available for Each Data Layer



# Solar Mapper Has An Analytical Tool to Support Analyses of Site Suitability

- User selects area of interest and type of report
- USGS Gap Analysis Program Protected Areas Database report
  - Calculates total size of the selected area and acreage by surface management
  - Identifies protected areas within footprint and their
    - Management agency/owner,
    - IUCN category (e.g., Nature Reserve, Wilderness Area, National Park),
    - GAP status code
- Land Jurisdiction and Protected Areas report
  - Calculates total size of the selected area and acreage by surface management
  - Identifies protected areas within footprint and their
    - Management agency/owner,
    - Type of protected area (e.g., national trail, wilderness, ACEC)

# Solar Mapper Has Numerous Features to Enhance the User's Experience



- Introductory video and extensive help function included to minimize need for previous experience with geospatial browsers.
- Bookmark tool allows users to save specific views.
- Photographic panoramas created to support the Solar PEIS analyses are available.
- Users can locate a site by several options, including place name, street address, Public Land Survey System, and latitude/longitude coordinates.
- There are several base map options, including standard street map, topographic, shaded relief, and aerial photography views.
- Users can subscribe to receive e-mail updates.

# Solar Energy Environmental Mapper

<http://solarmapper.anl.gov>

Development funded by the Bureau of Land Management  
and the DOE Solar Energy Technologies Program

**For more information, contact:**

**Jim Kuiper**

**Environmental Science Division**

**Argonne National Laboratory**

**630-252-6206**

**[jkuiper@anl.gov](mailto:jkuiper@anl.gov)**

# An Ecoregional Assessment of the Mojave Desert

A presentation to the Dry Lake SEZ  
Pilot Mitigation Workshop  
25 October 2012  
Laura Crane & James Moore

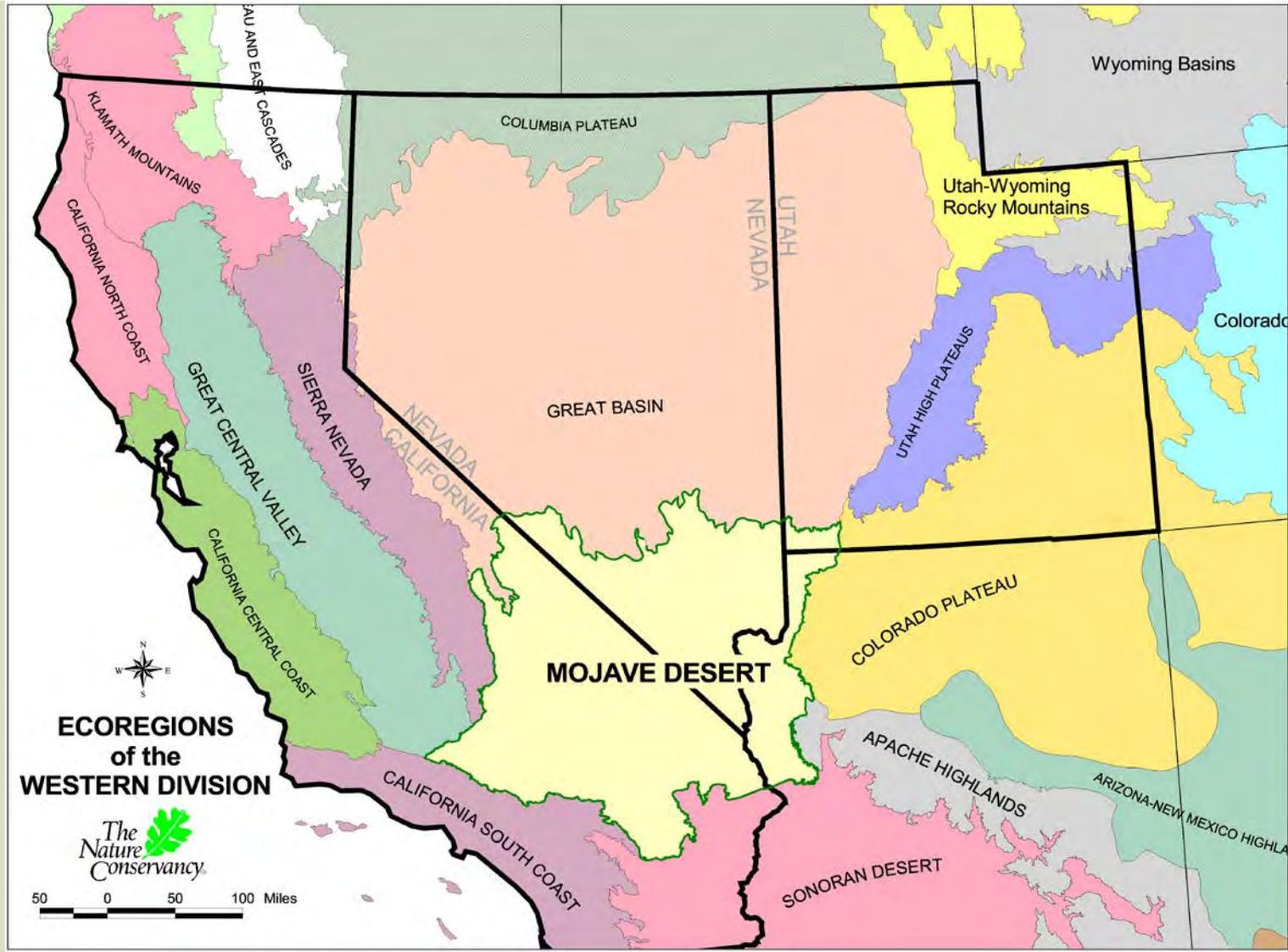


# Many Uses – Many Stakeholders





# Mojave Desert Ecoregion





# Mojave Desert Ecoregion

Figure 2-1  
Mojave Desert Ecoregion

Project Area  
 Mojave Desert

Boundaries  
 State  
 County

Transportation  
 Major Road  
 Other Road

Hydrology  
 Major River

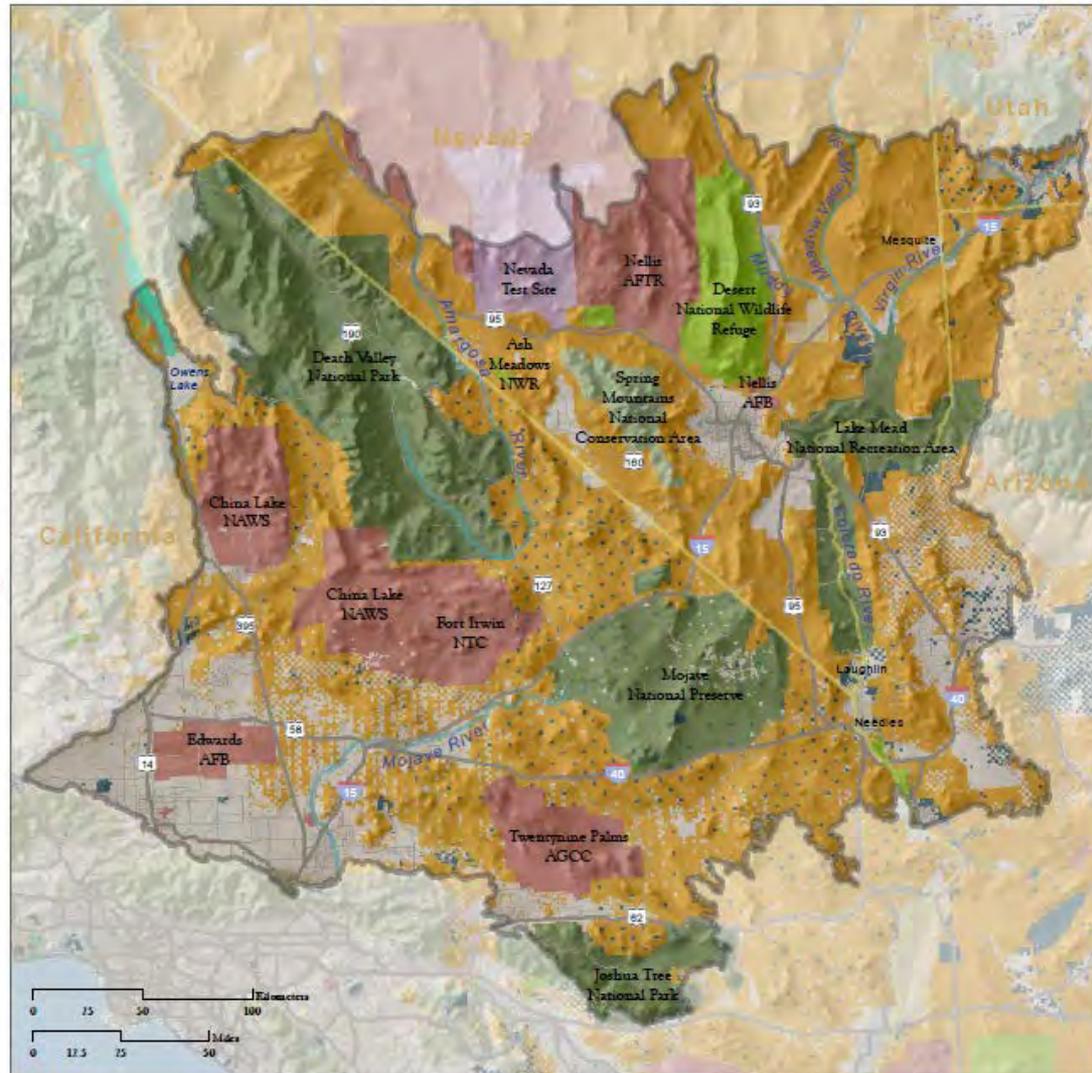
Elevation, meters  
 -75 3633





# Landownership of the Mojave

Figure 2-4  
Land Ownership



Produced by The Nature Conservancy  
 California South Coast & Deserts Program  
 Map Date: July 1, 2010  
 See Table A.1 for sources



# Mojave Assessment: Why?

## Assess Conservation Value & its Distribution across the Mojave to inform regional land use decisions

- Lower Conservation Value– Areas where development will have less impact
- High Conservation Value – Areas where conservation will have the greatest impact



# What the Mojave Assessment IS

1. **Synthesis of best available data on conservation values across the Mojave**
2. **Based on all biodiversity & intactness (lack of disturbance)**
3. **Different from, but complementary to, species-specific conservation plans & other ecological assessments**
4. **Regional map of conservation values**





# What the Mojave Assessment is NOT

1. An analysis based on consensus conservation goals
  2. A recovery plan for any one species
  3. A map of where development should occur (more site-specific information would be needed)
  4. An assessment of where restoration could/should occur
- 

# Steps Used in this Assessment

To assess **conservation value** and its **distribution** across the region

- Identified conservation **targets**
- Set quantitative conservation **goals** for each target
- Characterized **land-use impacts** such as roads, urban areas, and agricultural uses
- Used Marxan to help identify and map the **relative conservation value** of lands across the region for meeting the stated goals
- Attributed **high conservation value** to areas with low levels of disturbance and **unique/high concentrations** of conservation target occurrences
- Characterized conservation values using **four categories**: Ecologically Core, Ecologically Intact, Moderately Degraded, Highly Converted







# Levels of Disturbance in the Desert

Figure 6-1

## Anthropogenic Disturbance

### Project Area

Mojave Desert

### Boundaries

State

County

### Transportation

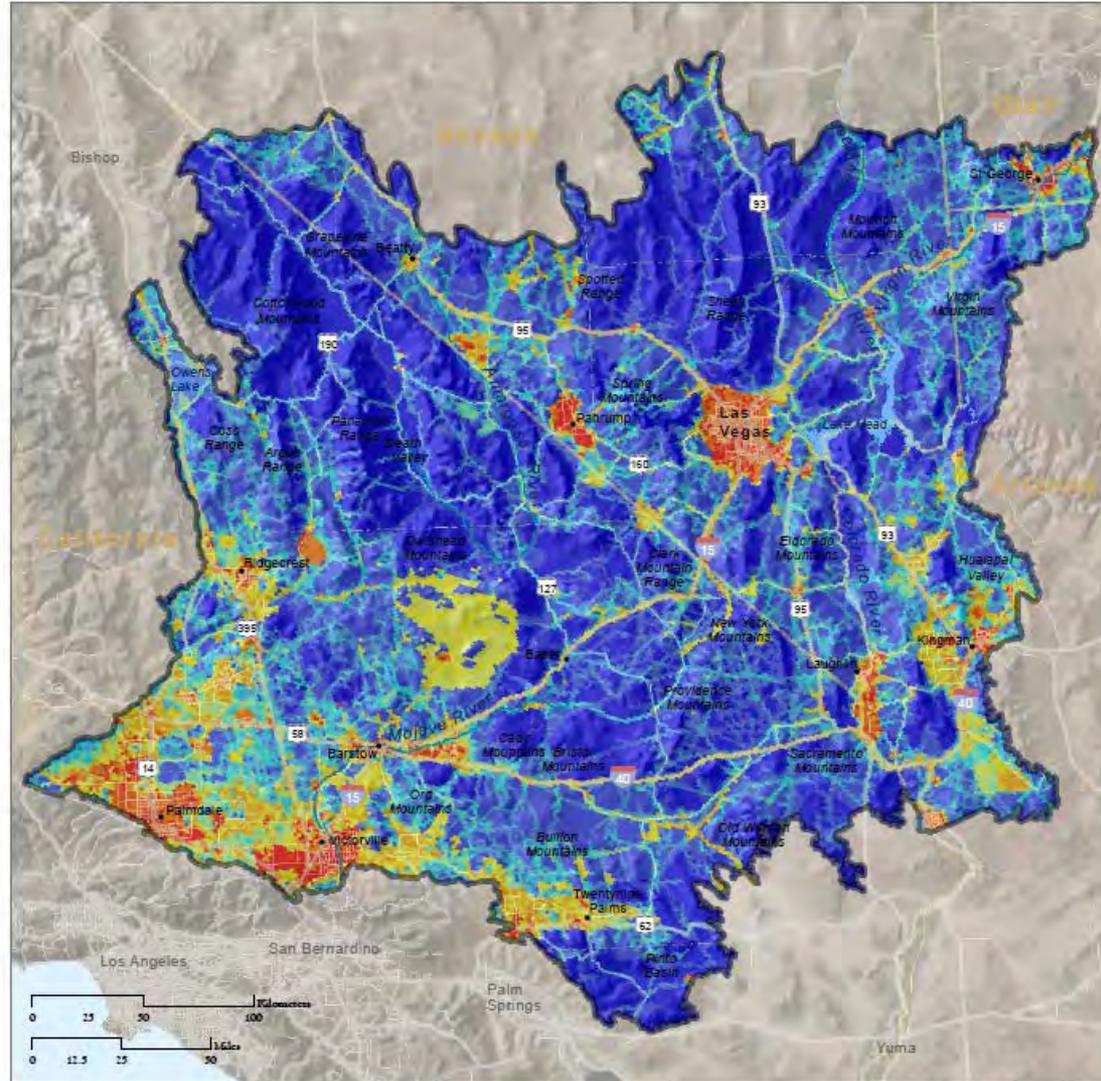
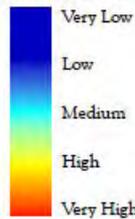
Major Road

Other Road

### Hydrology

Major River

### Anthropogenic Disturbance Score



Produced by The Nature Conservancy  
California South Coast & Desert Program  
Map Date: July 1, 2010  
See Table A.1 for sources

# Identifying Areas of High Conservation Value



Conservation Planning Software  
used to identify areas with greatest conservation value

<http://www.uq.edu.au/marxan/>



# Planning units



# Conservation Value of the Mojave Desert Ecoregion



## Mojave Desert Conservation Value

### Project Area

Mojave Desert

### Conservation Value

Ecologically Core

Land with low levels of anthropogenic disturbance which support conservation targets and whose protection is critical for the long-term conservation of the ecoregion's biological diversity

Ecologically Intact

Land with low levels of anthropogenic disturbance or which supports conservation targets and which requires a level of protection that will enable it to continue to support ecological processes and provide connectivity

Moderately Degraded

Land fragmented by roads, off-road-vehicle trails or in close proximity to urban, agricultural and other developments

Highly Converted

Land in urban and agricultural areas that is fragmented and most impacted by human uses

### Boundaries

State  
 County

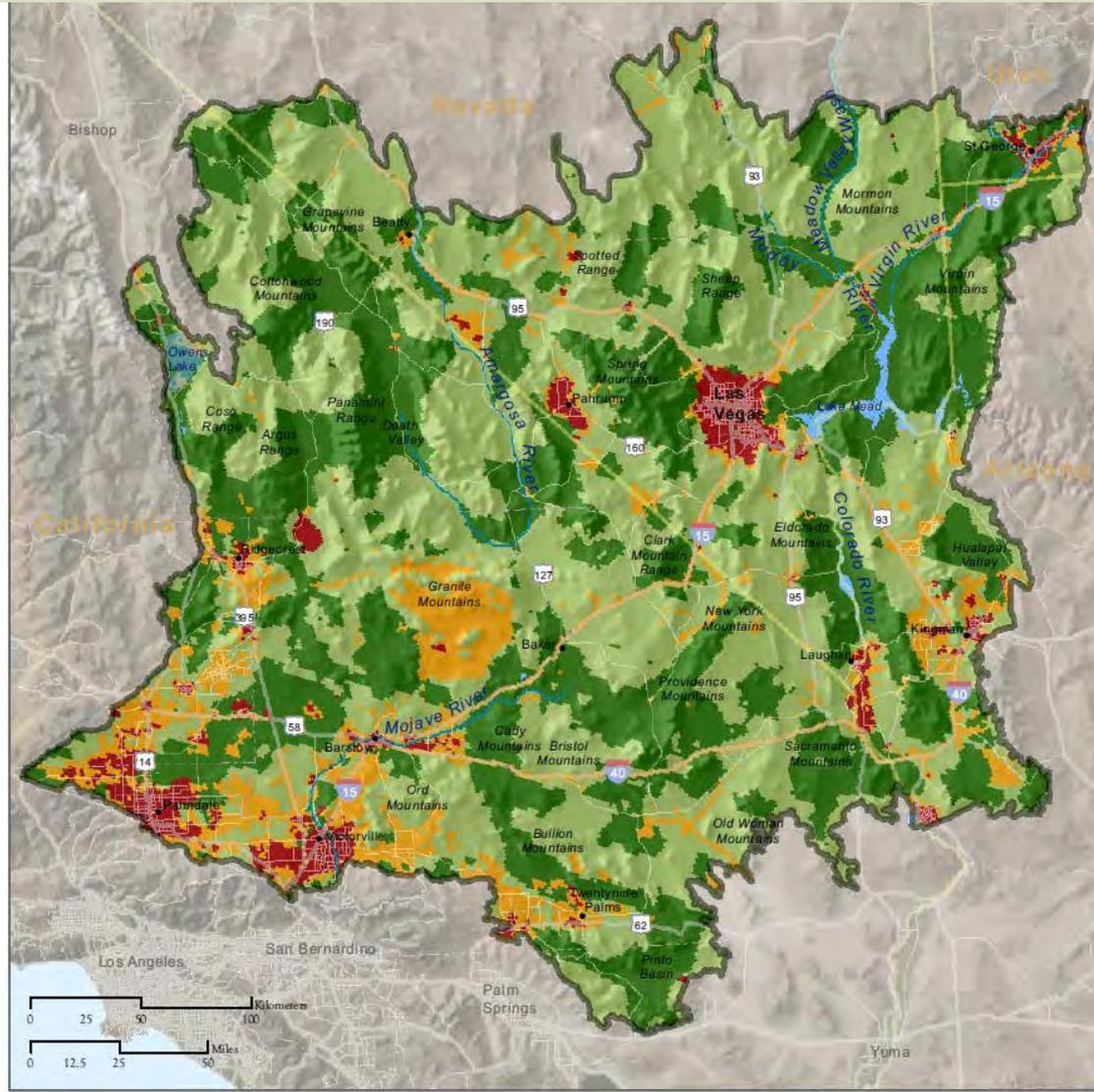
### Transportation

Major Road  
 Other Road

### Hydrology

Major River

Produced by The Nature Conservancy  
California South Coast & Deserts Program  
Map Date: July 1, 2010  
See Table A.1 for sources



# Results: Entire Mojave Desert

- High Conservation Value - 86% of Mojave
  - Ecologically Core – 37%
  - Ecologically Intact – 49%
- Lower Conservation Value – 14% of Mojave
  - Moderately Degraded – 10%
  - Highly Converted – 4%



# Results by Landowner: Entire Mojave

## Ownership of Ecologically Core lands

- BLM 45%
- NPS 27%
- DoD 11%
- Private 8%

## Ownership of Ecologically Core + Ecologically Intact lands

- BLM 49%
- NPS 23%
- DoD 12%
- Private 8%



# Results by Landowner: Entire Mojave (continued)

## Ownership of Highly Converted Lands

- Private 85%
- BLM 6%
- DoD 4%
- NPS 0.3%

## Ownership of Moderately Degraded + Highly Converted

- Private 57%
- BLM 23%
- DoD 14%
- NPS 2%



# Conclusions

- **The Mojave Ecoregion is rich in conservation value and one of the least fragmented ecoregions among the 48 contiguous states, with large blocks of undisturbed land.**
- **Still, 14% -almost 4.5 million acres– of the Mojave is moderately degraded or highly converted, including many sites likely to have fewer environmental constraints for development.**





# Summary

**Ecological assessments can provide key information for:**

- **describing the *relative risk* of siting developments across an ecoregion**
- **Identifying areas of higher conservation value for mitigation of impacts elsewhere within the ecoregion**



# Summary continued

## Uses for the Mojave Ecoregional Assessment:

- **A coarse screen: possible conservation areas; least regret development areas**
- **A high-level overview: what is possible across the landscapes of the ecoregion?**
- **Insights into future legislative and administrative needs (development and mitigation trends)**



# Contact Information

- 🌱 **Laura Crane – [lcrane@tnc.org](mailto:lcrane@tnc.org)**
- 🌱 **James Moore – [jmoore@tnc.org](mailto:jmoore@tnc.org)**

The full assessment and associated Map Service products are available at ConserveOnline:

[http://conserveonline.org/workspaces/mojave/documents/mojave-desert-ecoregional-2010/@ @view.html](http://conserveonline.org/workspaces/mojave/documents/mojave-desert-ecoregional-2010/@@view.html)





# Connecting REA Results to Management Actions

**Workshop on Unavoidable Impact & Baseline  
Conditions**

**October 25, 2012**

**Sandra Brewer, PhD**

**BLM Nevada State Office**

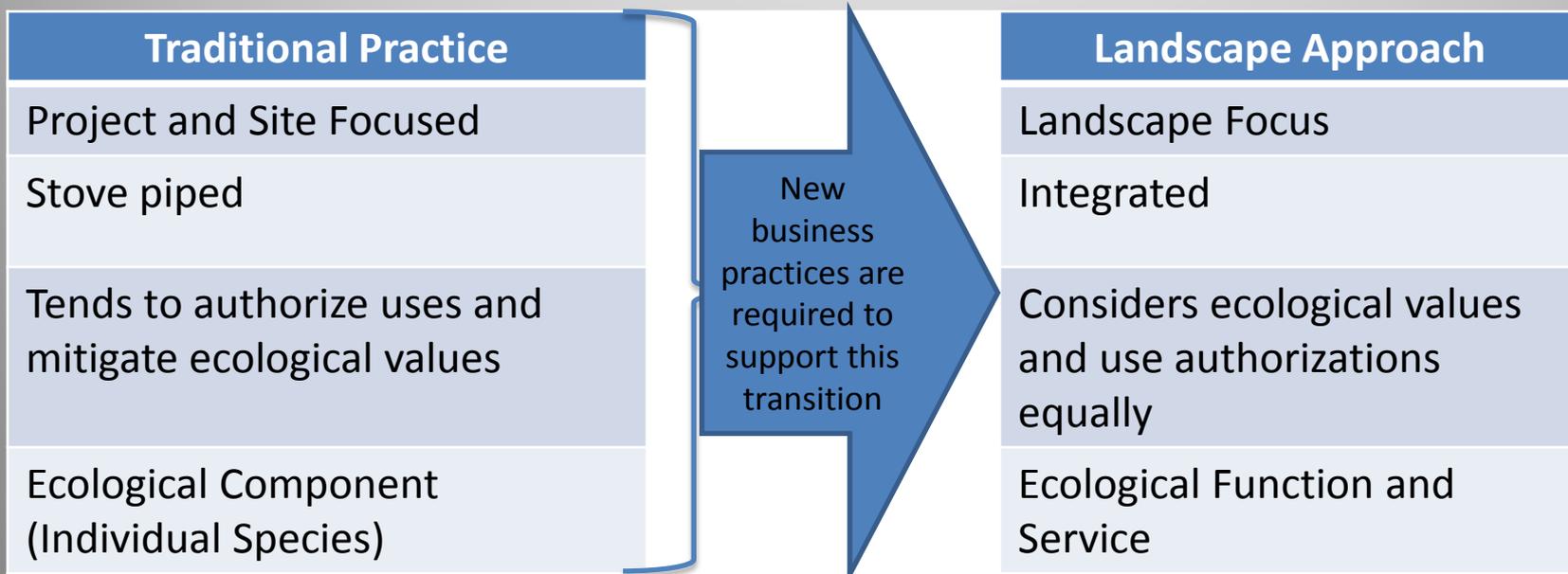
**Program Lead Wildlife and T&E Species**

# Purpose of Today's Discussion

- Discuss what the REA provides
- What's in the REA for practitioners
- What some of the anticipated uses may be
- Examples of how the REA information has been used
- A Decision Support Tool that is available that can use the REA information
- How to get to the information
- What's next

# Vision for BLM's Landscape Approach

Develop business practices to manage resources and uses at multiple scales in the face of compounding stressors. **These practices will help the BLM and partners identify what to sustain, at what scale, and the associated trade-offs.**



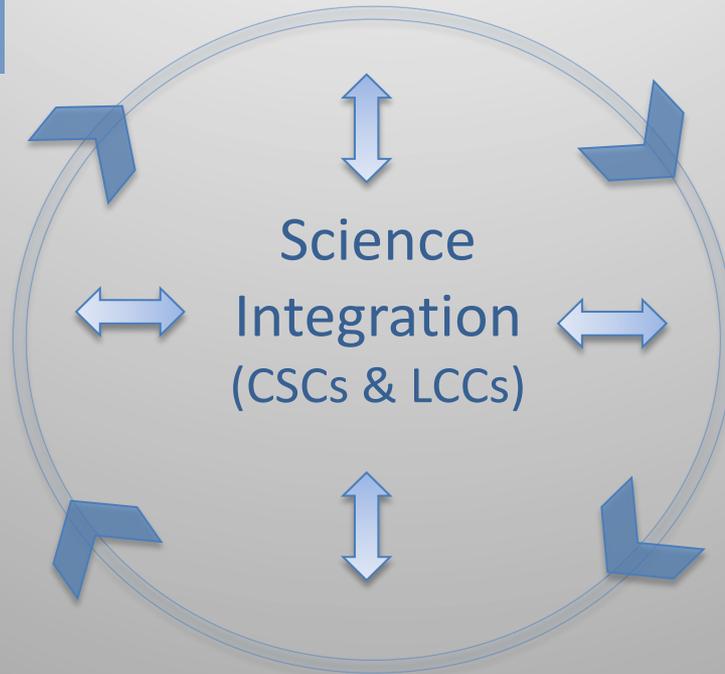
# BLM's Landscape Approach

## IB 2012-058

Rapid Ecoregional Assessments are the first step

### Rapid Ecoregional Assessments

Monitoring for Adaptive Mgmt.



Ecoregional Direction

Field Implementation

*Mojave Basin and Range Rapid Ecoregional Assessment*

**BLM**

# What is a REA?

- Ecoregional assessments are compendia of information to assist BLM managers in developing planning and management strategies
- REAs are limited in scope
- REAs, as a minimum focus upon three sets of resource values and four major types of change agents that can affect those values.
- REAs are not NEPA or decision documents

# Three Components of REAs

**Conservation Elements + Change Agents = Management Questions**

**EX: Species  
Habitat  
Soils**

**EX: Invasive Species  
Fire  
Climate Change  
Human Development**

**EX: Where are areas  
where desert tortoise  
and potential  
development occur  
(don't occur)?**



*“what we want to conserve”*

*“what is causing change to these resources”*

*“what land managers need to know”*

# What REAs Provide

- REA Reports – Are summaries of process with selected case studies.
  - Most of the assessment information is in appendices.
  - Will identify some data gaps
- Data – REAs used best available at time.
  - Data was evaluated with AMT and Technical Team in Pre-Assessment Phase of process
  - There is clear understanding that data will change and more current information is/will be available
  - BLM and others need to keep data up to date to maintain utility
  - The REA data sets will be the only regional datasets for conservation elements and change agents in many cases
  - Many of the datasets are the same resolution as we use in RMPs now

# Species Conservation Elements

Central Basin and Range	Mojave Basin and Range
Sage-Grouse	Desert Tortoise
Pygmy Rabbit	Desert Bighorn Sheep
Mule Deer	Mojave Ground Squirrel
Bighorn Sheep	Wild Horses and Burros
Wild Horses and Burros	Other Priority Wildlife Species
Other Priority Wildlife Species	Other Priority Plant Species
Other Priority Plant Species	Other Priority Fish Species
Other Priority Fish Species	Federally Listed Species
Federally Listed Species	

# Terrestrial Conservation Elements

## Native Plant Communities of Interest

Central Basin and Range	Mojave Basin and Range
Sagebrush-Steppe (Mtn, WY, Low)	Blackbrush
Salt Desert Shrub (& Winterfat)	Joshua Tree
Aspen	Desert Shrub Communities
Conifer (Bristlecone Pine)	Mesquite/Acacia Communities
Juniper & Pinyon-Juniper	Unusual Plant Assemblages
	Desert Wash Areas

# Terrestrial Conservation Elements

## Sites of High Biological Diversity

Central Basin and Range	Mojave Basin and Range
TNC Portfolio Sites	TNC Portfolio Sites
NatureServe Sites	NatureServe Sites
Important Bird Areas (Audubon)	Others (Spring Mtn. Con. Agree.)
Partner-in-Flight Areas	
State Wildlife Plan Recognized Areas	

# Terrestrial Conservation Elements

## Soils

Central Basin and Range	Mojave Basin and Range
Areas of High Susceptibility to Wind Erosion	Areas of High Susceptibility to Wind and/or Water Erosion
	Areas of Carbon Sequestration or Potential for Sequestration
	Sand Dunes & Their Sources
	Gypsum Soils
	Rock Outcroppings & Boulder Fields

# Change Agents

Central Basin and Range	Mojave Basin and Range
<p>Wildland Fire</p> <ul style="list-style-type: none"> <li>• Fire History</li> <li>• Fire Potential</li> </ul>	<p>Wildland Fire</p> <ul style="list-style-type: none"> <li>• Fire History</li> <li>• Fire Potential</li> </ul>
<p>Invasive Species</p> <ul style="list-style-type: none"> <li>• Cheatgrass</li> <li>• Conifer (PJ)</li> <li>• Tamarisk</li> <li>• Exotic Plants</li> <li>• Aquatic Invasives</li> </ul>	<p>Invasive Species</p> <ul style="list-style-type: none"> <li>• Red Brome/Cheatgrass/Schismus spp.</li> <li>• Mustard</li> <li>• Tamarisk</li> <li>• Palm Trees</li> <li>• Aquatic Plant Invasives</li> <li>• Invasive Wildlife</li> </ul>
<p>Development</p> <ul style="list-style-type: none"> <li>• Urban &amp; Road Development</li> <li>• Oil, Gas, Mining</li> <li>• Renewable Energy Development (Solar, Wind, Geothermal)</li> <li>• Groundwater Extraction &amp; Transmission</li> </ul>	<p>Development</p> <ul style="list-style-type: none"> <li>• Urban &amp; Road Development</li> <li>• Oil, Gas, Mining</li> <li>• Renewable Energy Development (Solar, Wind, Geothermal)</li> <li>• Groundwater Extraction &amp; Transmission</li> </ul>
<p>Climate Change</p> <ul style="list-style-type: none"> <li>• Terrestrial</li> <li>• Aquatic</li> </ul>	<p>Climate Change</p> <ul style="list-style-type: none"> <li>• Terrestrial</li> <li>• Aquatic</li> </ul>
<p>Military Constrained Areas</p>	<p>Military Constrained Areas</p>

# What REAs Provide

- Models – REAs produced regional scale models and like data.
  - There will be new and improved models over time
  - Need to remember the scale in using models, REA models were not intended for project level analysis but do give regional context.
  - Some models may be modified to use for project level analysis.
  - Models will be useful in RMP efforts.
  - AMT & Tech Team reviewed and evaluated conceptual models used

# What's in it for the Practitioner?

- Consistent science based information and tools for land use allocation and decision-making processes that are repeatable
- Predictive modeling that may change understanding and descriptions of the affected environment and cumulative impacts analysis
- Data organized at an ecoregional scale that paints a broader picture and helps to put proposed actions into a larger context
- Provides information to identify focus areas to concentrate work to do a complete job
- Provides information for working towards similar goals across resource programs and jurisdictional boundaries

# What are some Preliminary and Anticipated Uses

- Preliminary and anticipated uses
  - Mojave Desert :
    - Developing some climate change adaptation strategies such as refugia
    - Assist in identifying areas to restore desert tortoise habitat
    - Identify translocation sites using climate trend data

# What are some Preliminary and Anticipated Uses

- Provide information to identify focal areas for conservation and development
- Provide information for NEPA analysis such as:
  - Analyze the management situation
  - Describe the affected environment
  - Formulation of alternatives
  - Discuss cumulative effects
  - Develop regional mitigation strategies
- Provide a science-based information platform for formulating coordinated, multi-agency strategies for:
  - Climate change
  - Wildfire
  - Other environmental challenges that transcend local administrative boundaries

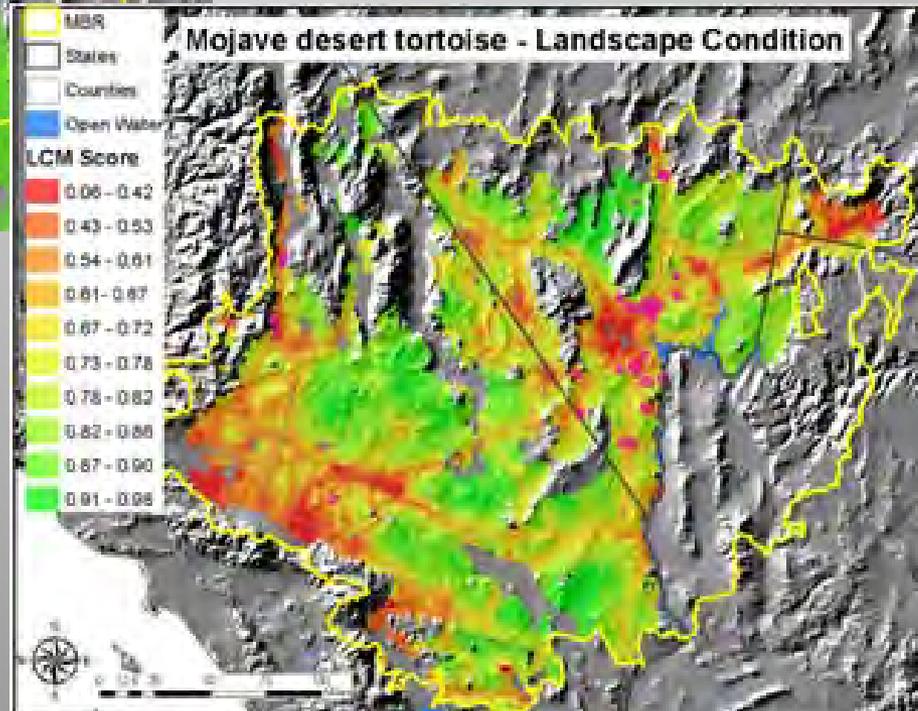
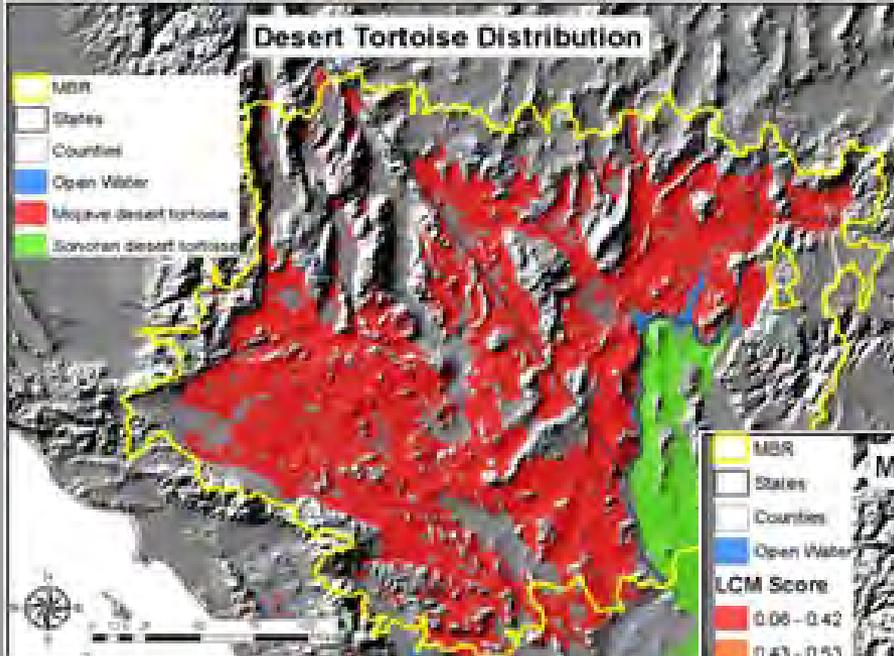
# Mitigation Tools and Example



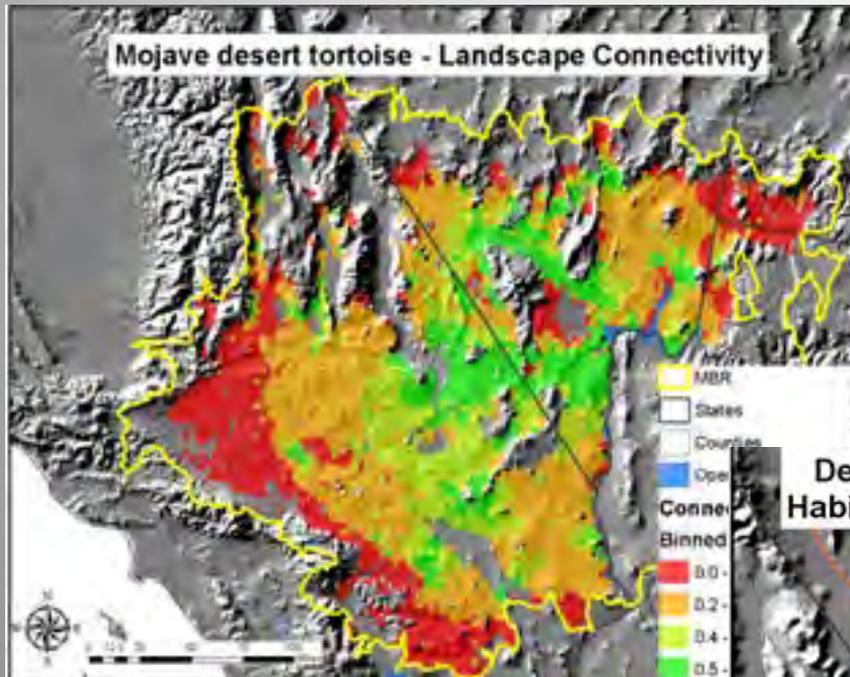
**BLM**

*Mojave Basin and Range Rapid Ecoregional Assessment*

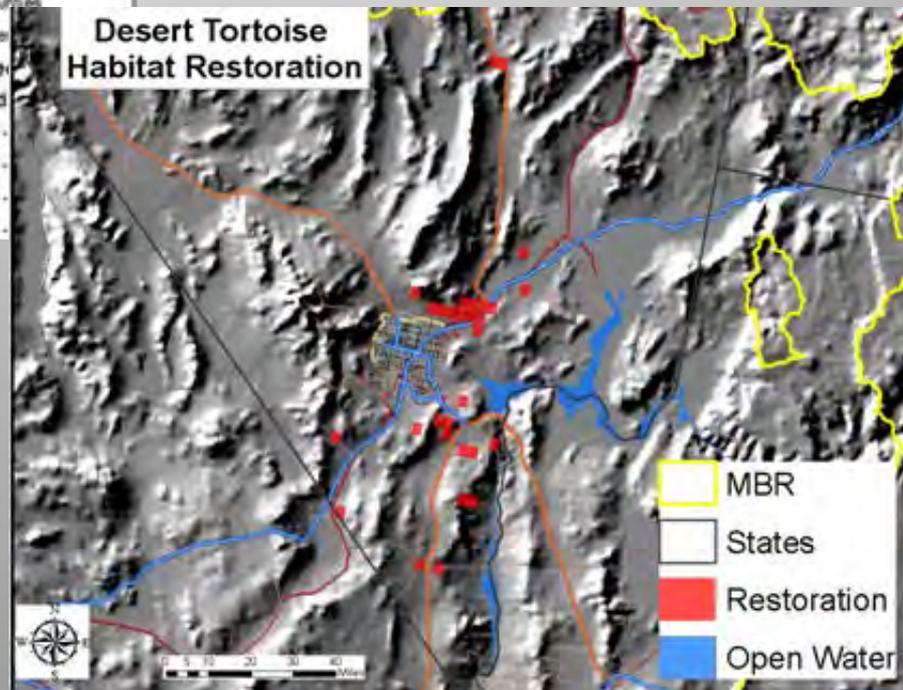
# Mojave Basin and Range REA Desert Tortoise Case Study



# Mojave Basin and Range REA Desert Case Study



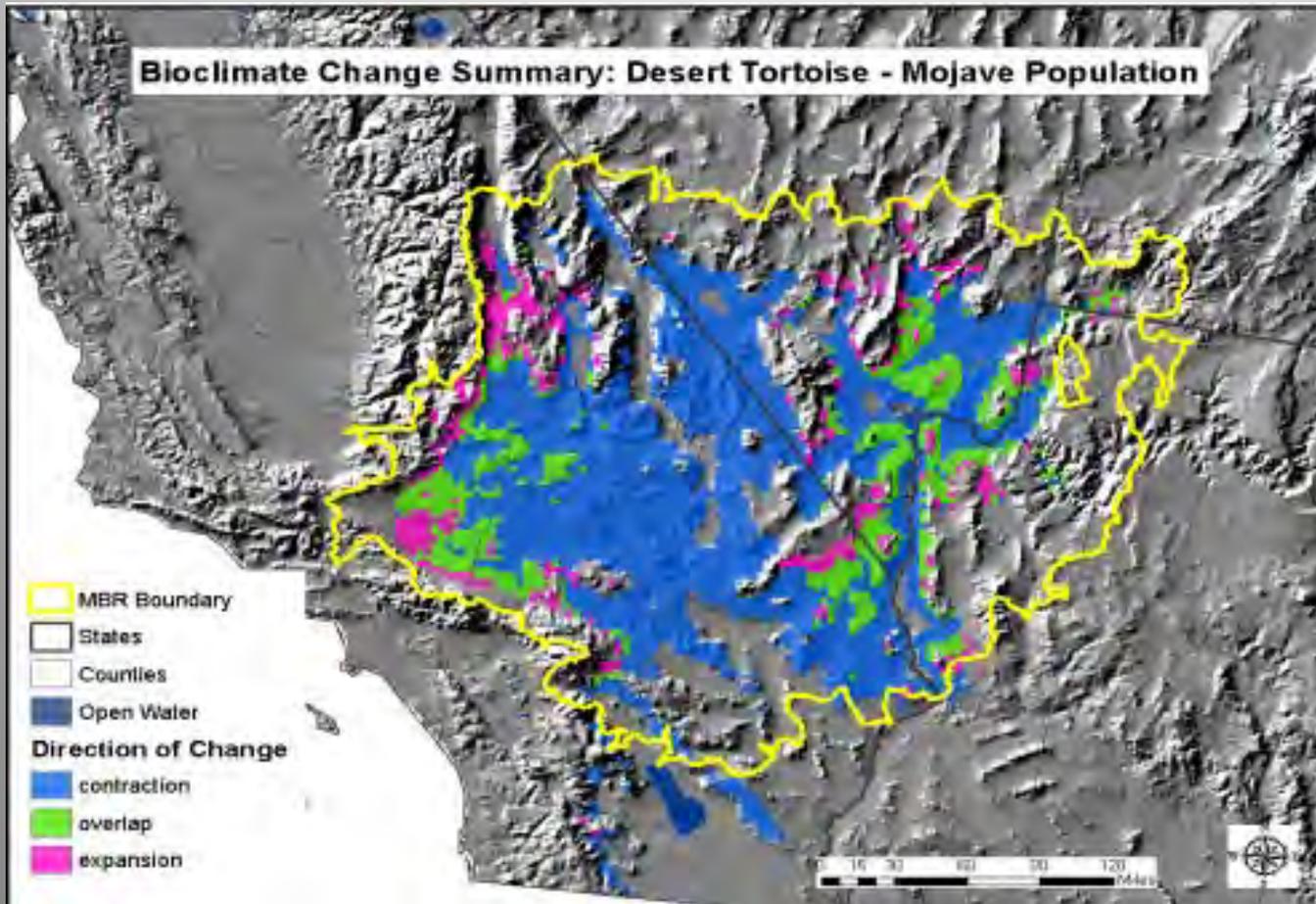
Landscape Connectivity



Potential Restoration Areas

# Mojave Basin and Range REA Desert Tortoise Case Study

## Projected Bioclimatic Change in 2060



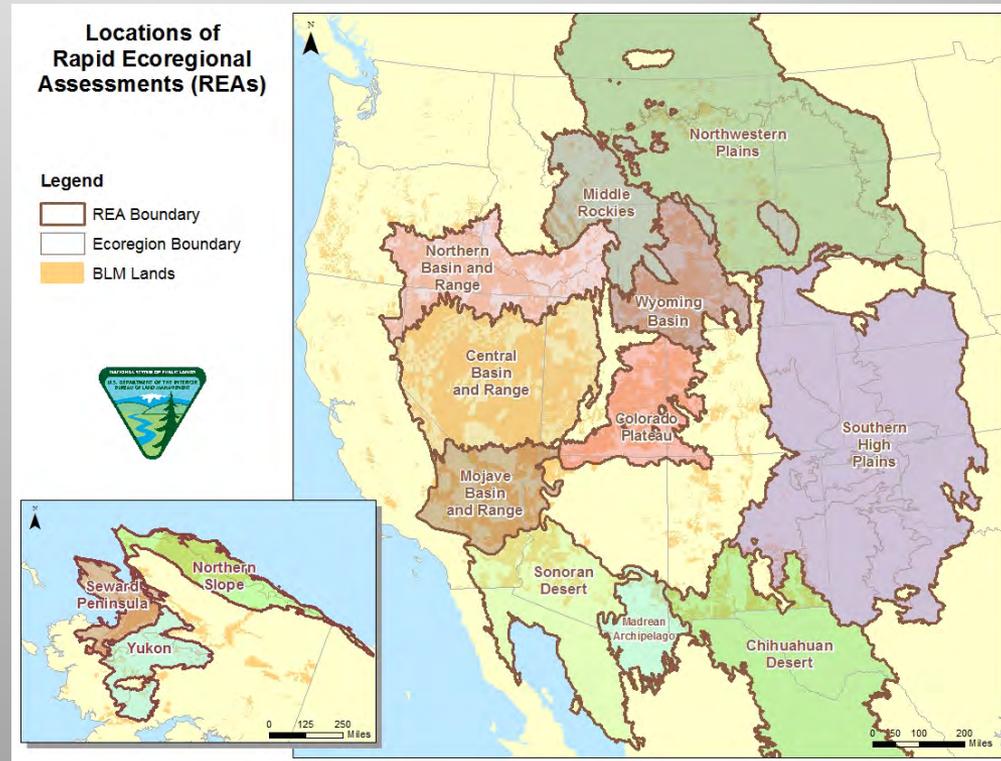
# How to get the Information

## Data Portal – Coming soon.....

- The release of the REA Data Portal is anticipated by the end of October.
- The websites listed in this presentation are not yet publically available but will be soon.
- This brief presentation offers an overview of:
  - When REAs will be available on the Data Portal,
  - What products and services it will provide,
  - Where it can accessed, and
  - What the Data Portal will look like.

# When will REAs be available on the Portal?

- Colorado Plateau will be available by end of October
- Next in line....
  - Sonoran Desert
  - Central Basin & Range
  - Mojave Basin & Range
  - Seward Peninsula
  - Middle Rockies
  - Northwestern Great Plains



# What does the Data Portal Provide?

Product/Service	End User
Downloadable Data	Everyone
Online Map Services	Everyone
Terminal Services (access to ArcMap & ArcCatalog software)	BLM personnel & REA Collaborators only

- Access to:
  - All non-proprietary data used in and produced by the REAs
    - As downloadable layer packages
  - All the maps included in the final reports
    - As online map services via ArcGIS.com
  - GIS software for BLM personnel & REA Collaborators
    - Can access original map documents (.mxd), data files (.shp, .lyr, grid), and model files (.tbx) to use in ESRI software

# How can I access the Data Portal?

[http://www.blm.gov/wo/st/en/prog/more/Landscape\\_Approach/reas/dataportal.html](http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/dataportal.html)

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

Enter Search Term(s):  
Search

National  
▣ What We Do  
▣ Visit Us  
▣ Information Center  
▣ Get Involved  
▣ Our Offices/Centers  
▣ Contact Us

BLM > More BLM Programs > Landscape Approach > Rapid Ecoregional Assessments > Data Portal

Print Page

## REA Data Portal

**Data Portal**  
To access REA data products and services, follow the steps below:

- **Identify your User Group** by reading the descriptions below.
- **Identify the data products and services** you want to access: **Downloadable data** (ESRI Layer Packages), **Map Services** (ArcGIS Services), or **Terminal Services** (Data, Metadata, Maps, and Models).
- **Read the corresponding User's Guide** for important instructions on how to access those products or services.
- **Click the button** under your User Group to access the products and services.

**BLM Personnel - Logins**

BLM personnel and contractors with BLM network logins can access data products using the links below.

**Required Information:** Windows login name and password for BLM network.

<b>Downloadable Data &amp; Maps Services</b> Access ESRI Layer files, ArcGIS services, and documents through DOI SharePoint	<b>Data &amp; Terminal Services</b> Access Data, Maps, & Models in ArcGIS Desktop through Citrix
<a href="#">Login to DOI Sharepoint</a>	<a href="#">Login to Citrix</a>
<a href="#">User's Guide</a>	<a href="#">User's Guide</a>

**REA Collaborator (restricted) - Logins**

Any person affiliated with the development of an REA (such as members of the Assessment Management Team (AMT), Technical Team, and Peer Reviewers) can access data products using the links below.

**Required Information:** All REA Collaborators must sign a Rules of Behavior form and request DOI SharePoint and Remote Desktop guest login information from the AMT lead.

<b>Downloadable Data &amp; Maps Services</b> Access ESRI Layer files, ArcGIS services,	<b>Data &amp; Terminal Services</b> Access Data, Maps, & Models in ArcGIS
---	--

**Report Problems**

To report problems either with the REA Data Portal or with REA data products, please contact:

Megan McLachlan  
Resource Programs  
Data Coordinator

**Landscape Approach**  
Rapid Ecoregional Assessments  
Ecoregional Direction  
Monitoring for Adaptive Management  
Public Involvement  
Related Documents  
Landscape Approach: Questions and Answers

**Rapid Ecoregional Assessments**  
Central Basin and Range  
Colorado Plateau  
Middle Rockies  
Mojave Basin and Range  
Northwestern Plains  
Seward Peninsula  
Sonoran Desert  
Map of Ecoregions  
Rapid Ecoregional Assessments: Questions and Answers  
REA Data Portal  
REA Data Portal Info

Mojave Basin and Range Rapid Ecoregional Assessment

BLM



# Login to SharePoint for Data & Maps

Site Actions Browse Page Mclachlan, Megan M

**REA0927TestSubsite** Home

Subsite created from the 2012-09-27 template.

I Like It Tags & Notes

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REA COP

**REA Management Questions**

**REA Elements**

Map Catalog

Data Catalog

**Documents**

Recycle Bin

All Site Content

## Colorado Plateau REA

Welcome to the Colorado Plateau (COP) REA SharePoint Site! Here you will find the results of the COP REA, including the:

- Final Report,
- Managements Questions,
- Conservation Elements and Change Agents,
- Data Catalog, and
- Map Catalog.

For more information about the COP REA, review the additional resources listed in the table of contents or visit the [COP REA website](#).

For information about the overall REA program, visit the [REA website](#). There you can learn about the purpose of the assessments, how they were conducted, and how the results of the REAs can be used.

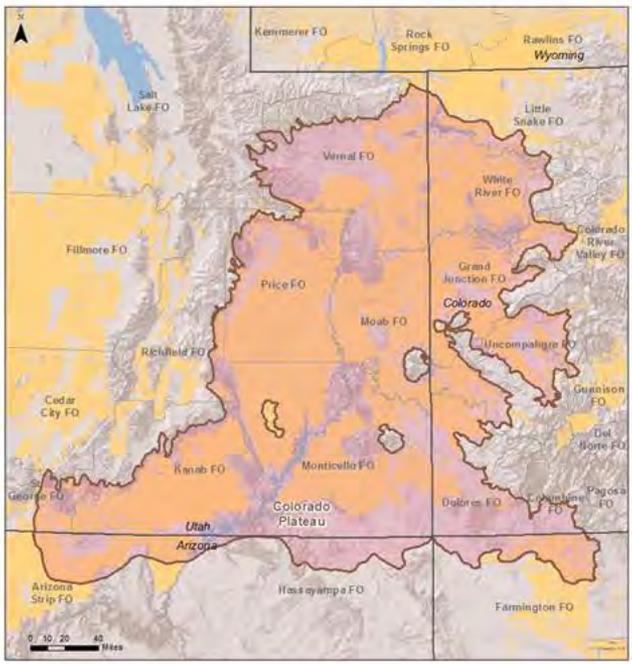


Rattlesnake Canyon, CO (BLM)

**Location of the Colorado Plateau Rapid Ecoregional Assessment (REA)**

**Legend**

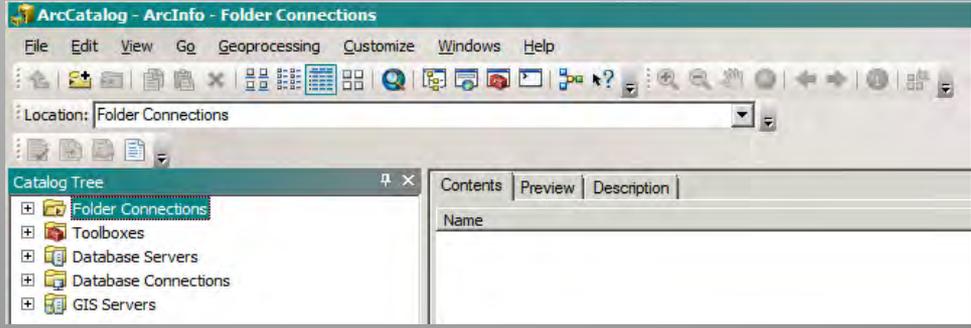
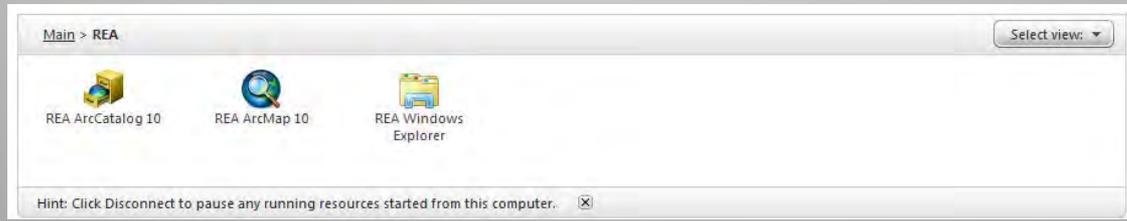
- REA Boundary
- BLM Field Office (FO)
- BLM Lands



**Ecoregion Links**

Edit	Title	URL
	Colorado Plateau REA Website	<a href="http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/coloplateau.html">http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/coloplateau.html</a>
	REA Program Website	<a href="http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html">http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html</a>

# Login to Citrix for ArcGIS Software



# For More Information.....

- Visit the REA website
- Read the User's Guides
- Contact
  - Megan McLachlan
  - Resource Programs Data Coordinator
  - [mmclachlan@blm.gov](mailto:mmclachlan@blm.gov)

# What's Next

- Public workshops to present REA information
- REA will be reviewed and other information to develop a report to highlighted regional challenges and opportunities
- Following completion of reports, the BLM States involved would work with partners to
  - Describe what additional steps are needed to address the challenges and opportunities,
  - Identify a 3-5 year program of work to address the identified challenges and opportunities

# Questions?



**BLM**

*Mojave Basin and Range Rapid Ecoregional Assessment*

Developing the Regional Mitigation Plan for  
the Dry Lake Solar Energy Zone (SEZ):  
**Where We Go From Here**

Michael Dwyer

BLM

# Goal of Regional Mitigation Planning for SEZs

- *For those impacts that cannot be avoided or minimized, the BLM will consider the implementation of measures to offset (or mitigate) impacts with the goal of ensuring viability of resources over time.*

# Dry Lake SEZ Regional Mitigation Plan Pilot Project

- **Goals:**

- Develop a Regional Mitigation Plan for the Dry Lake SEZ
- Apply the lessons learned to produce guidance for the development of regional mitigation plans for the remaining SEZs.

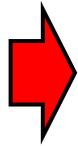
# Outline of the Regional Mitigation Plan for the Dry Lake SEZ

1. What are the unavoidable impacts? ✓
2. Which impacts should the BLM mitigate?
3. What are the mitigation objectives?
4. What mitigation projects/actions will be undertaken to off-set the selected impacts?
5. How will the mitigation actions be funded?
6. How will we know if the mitigations actions have achieved the desired objectives?

## 2. Which impacts should the BLM mitigate?

- Selection Criteria

- Degree of impact

-  – Threat to the resilience and/or sustainability of the relevant ecological, social, and cultural systems in the region

- Feasibility

# Which impacts represent significant threats to the ecological, social, and/or cultural systems in the region?

- What are the relevant ecological, social, and cultural systems in the region?
- What are the current trends in the condition of the relevant systems?
- What roles do the affected resources play in the functionality of the relevant systems?
- How significant are the impacts on the functionality of the relevant systems?

**Baseline**

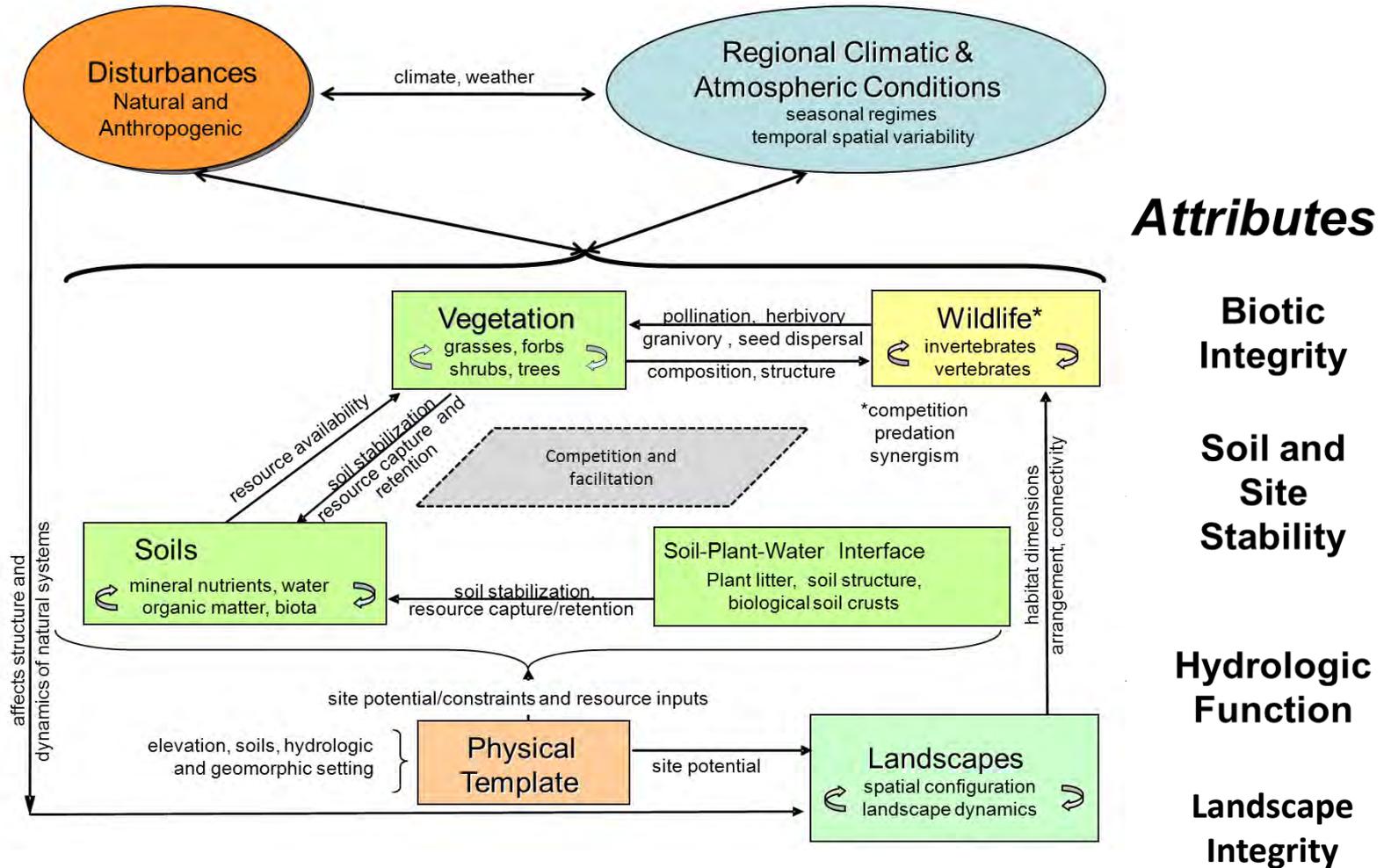
**Data**

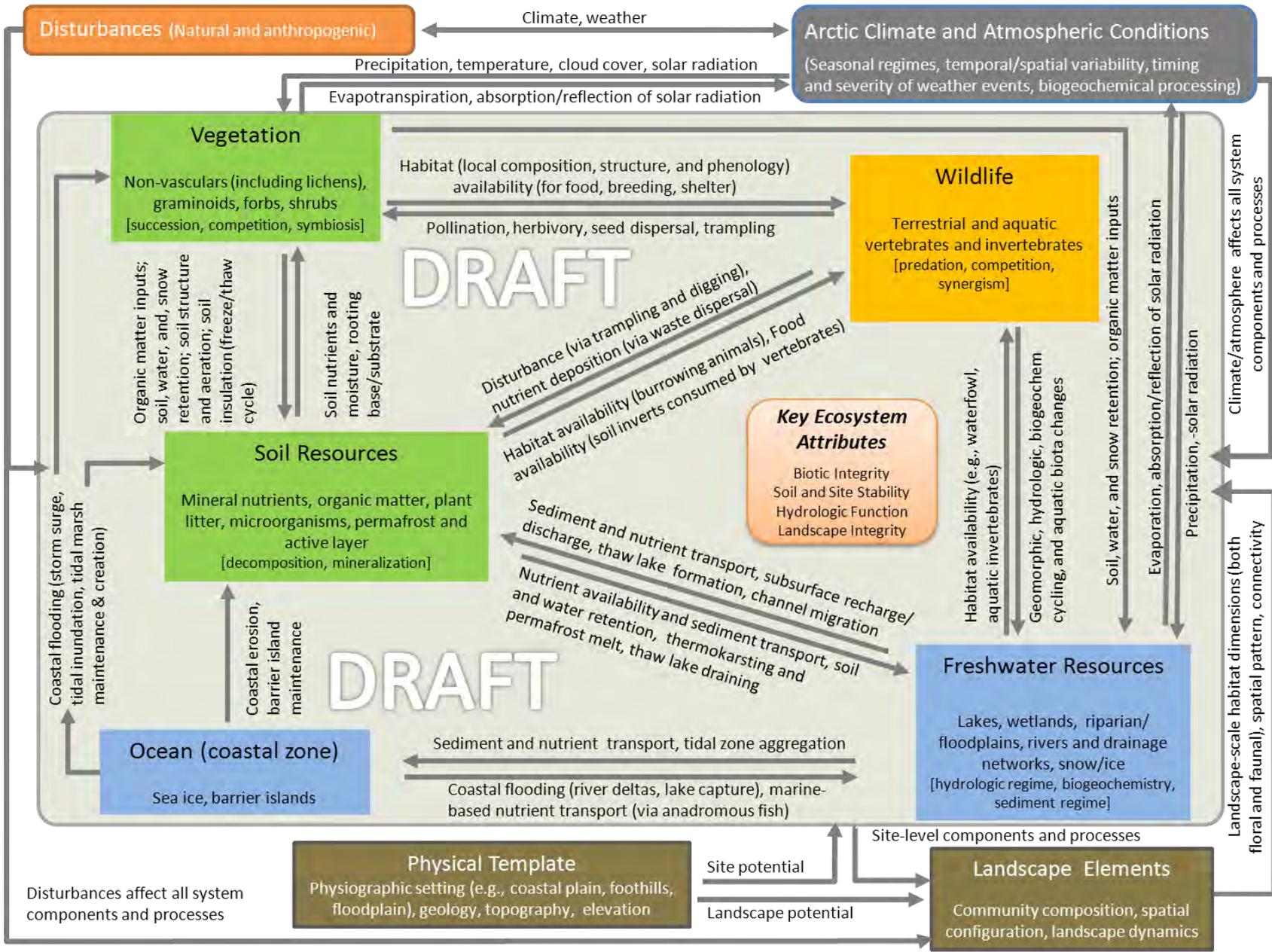
**Models**

# Conceptual Models

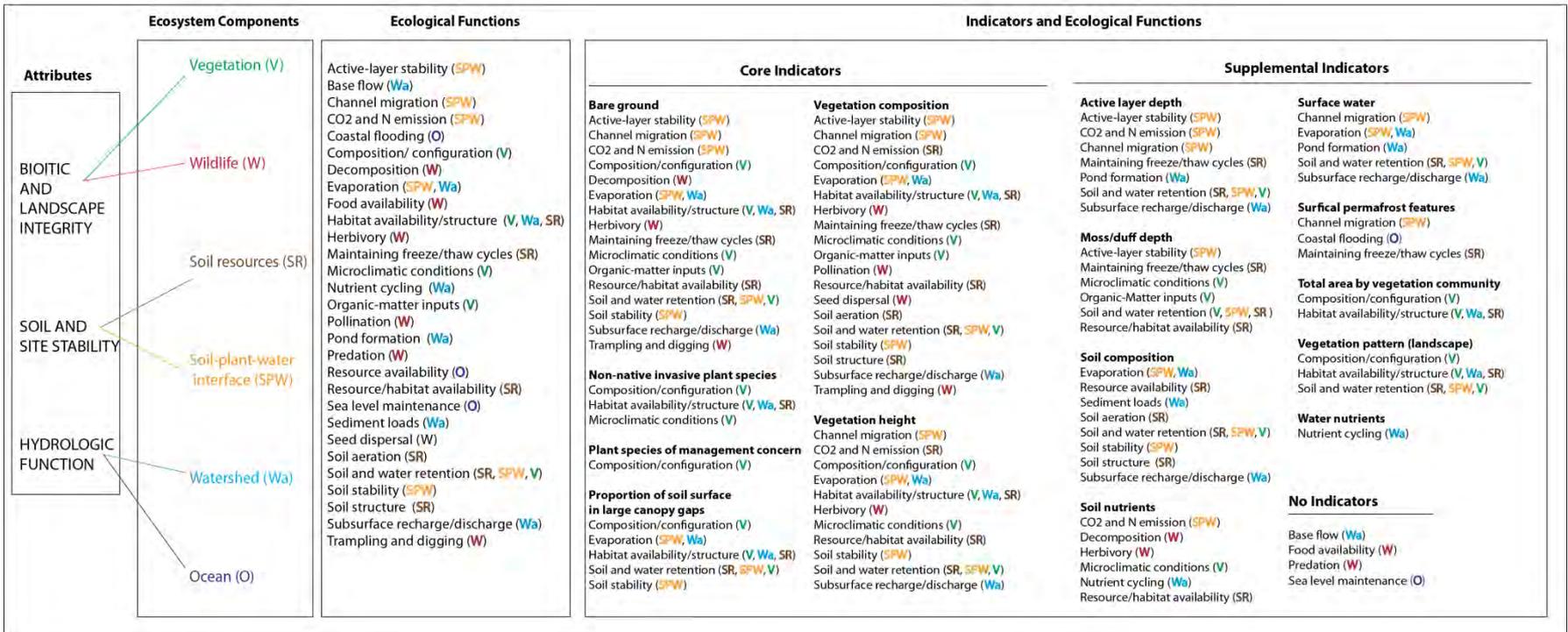
- Conceptual ecosystem models
  - Build a hypothetical understanding of an ecosystem (encapsulated in box and arrow figure)
  - Focused on major ecosystem components and their:
    - compositional, structural, and functional characteristics and interactions
  - Striving for models that are ecologically meaningful but relevant, interpretable, and usable by resource managers

# Conceptual Models





# Linking Models and Indicators



DRAFT

# Alaska NPR-A Indicators *(2012 pilot)*

## Core:

- vegetation composition
- vegetation height
- bare ground
- non-native invasive plant species
- plant species of management concern
- proportion of soil surface in large canopy gaps
- landcover (habitat) amount, location, and pattern

## Supplemental:

- moss/duff depth
- soil profile
  - Including pH, conductivity
- surficial permafrost features
- active layer depth
- surface water

## 2. Which impacts should the BLM mitigate? **EXAMPLES**

	Visual Impacts	Special Status Species – Vegetation
What are the relevant ecological, social, and cultural systems in the region?		
What are the current trends in the condition of the relevant systems?		
What roles do the affected resources play in the functionality of the relevant systems?		
How significant are the impacts on the functionality of the relevant systems?		

## 2. Which impacts should the BLM mitigate?

- Challenges
  - Base line data
    - SEZ versus Region
      - Regional boundaries
    - Variation
    - Dynamic systems
  - Models
  - Thresholds/tipping points
  - Cumulative impacts

## 2. Which impacts should the BLM mitigate?

- **How?**

- BLM Interdisciplinary Team

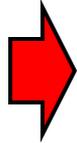
- Develop a preliminary list

- Document responses to the questions & challenges

- Present at the next workshop for consideration

- Possible interim stakeholder web conference

# Outline of the Regional Mitigation Plan for the Dry Lake SEZ

1. What are the unavoidable impacts? 
-  2. Which impacts should the BLM mitigate? 
3. What are the mitigation objectives?
-  4. What mitigation projects/actions will be undertaken to off-set the selected impacts?
-  5. How will the mitigation actions be funded?
6. How will we know if the mitigations actions have achieved the desired objectives?

## **4. What mitigation projects/actions will be undertaken to off-set the selected impacts?**

- Develop and apply a methodology for identifying and prioritizing off-site mitigation projects

### **How?**

- Team develop a prioritized list of off-site mitigation projects using existing tools, protocols, models, etc.
- Document the process
- Present to January Workshop for consideration

# 5. How will the mitigation actions be funded?

## – Mitigation fee?

- How much and on what basis?
- How collected, held, and accounted for?
- How will funds be allocated to projects/actions?

## **How?**

- Team develop a plan using existing tools, protocols, models, etc.
- Present to January Workshop for consideration

# Take-Aways

- Incentives > Disincentives
- Think Globally, Act Locally
  - Time
  - Space
  - Connectivity
- It Takes a Village
- Visualize whirled peas

# Questions?

Michael Dwyer

702-515-5186

[mdwyer@blm.gov](mailto:mdwyer@blm.gov)

# **BLM Solar Regional Mitigation Planning**

## **Dry Lake Solar Energy Zone Pilot Project**

### **Next Steps**

#### **Workshop 3 Preparation & Framework Stakeholder Engagement:**

**Complete Baseline Conditions & Unavoidable Impacts**  
**Understanding the System – Conceptual Model**  
**Regional Mitigation Objectives & Priorities**  
**Mitigation Obligation Costs – Fee Structures**

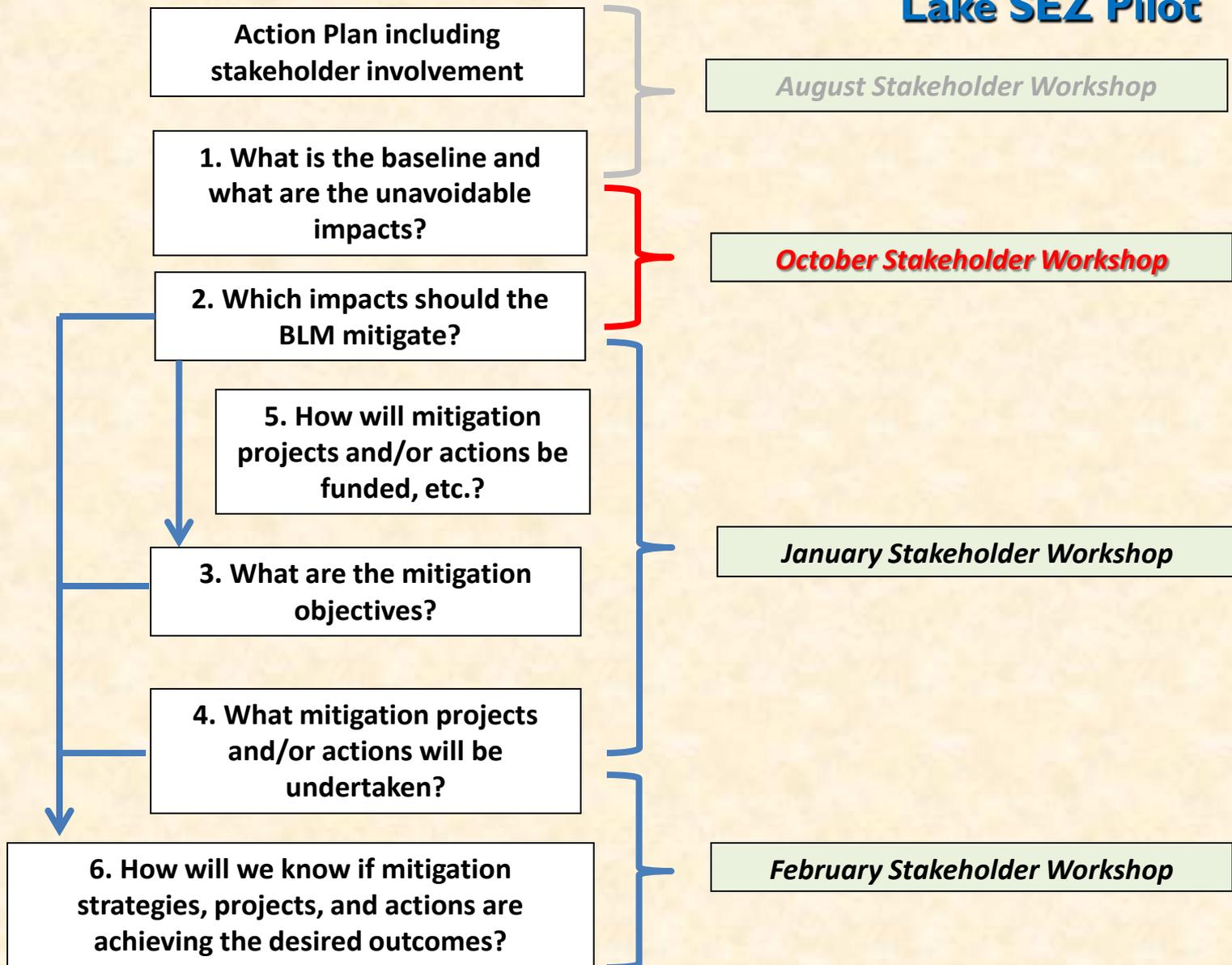
*Joe Vieira, BLM Renewable Energy Program*

*October 25, 2012*

# Workshop 2: Baseline Conditions – Unavoidable Impacts

- Did we meet our goals?
- Workshop 2 Goals
  - Present Dry Lake SEZ and regional baseline conditions
  - Discuss unavoidable impacts, including which warrant off-site mitigation
- Workshop 2 Desired Result(s)
  - Stakeholder understanding and input on unavoidable impacts likely at Dry Lake SEZ
  - Organize follow-on work Solar Regional Mitigation Planning

# Action Plan: Dry Lake SEZ Pilot



# Regional Mitigation Planning Framework Goals & Pilot Objectives

- **Framework Goals**
  - Consistent science-based approach
  - Reducing uncertainty
- **Solar Regional Mitigation Planning Elements**
  - Stakeholder engagement
  - Baseline for comparison
  - Methodology for unavoidable impact assessment
  - Methodology for obligation costs
  - Structure to hold mitigation investments
  - Regional Mitigation Objectives & Priority Projects
  - Adaptive Management & Monitoring

# BLM Solar Energy Program & Long-term Monitoring – Next Steps

- Key Solar LTMP components:
  - Framing the issue & understanding the system
  - Developing monitoring objectives & compiling existing information
  - Developing a monitoring & sampling schema
  - Creating & finalizing a monitoring Plan
  - Implementing data collection & management
  - Analysis & reporting
  - Adaptive management

# Workshop 2: Baseline Conditions – Unavoidable Impacts

- **Workshop 2 Agenda – Day 1**

- AM Introduction & Orientation
- AM Dry Lake Solar Energy Zone Field Trip
- PM Unavoidable Impact Breakout Groups
- PM Summation

- **Workshop 2 Agenda – Day 2**

- AM Review
- AM Regional Baseline Presentations
- PM Framework Implementation – Next Steps – Participant Support