

San Luis Valley – Taos Plateau Landscape Assessment

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Colorado Solar Regional Mitigation Strategies Workshop
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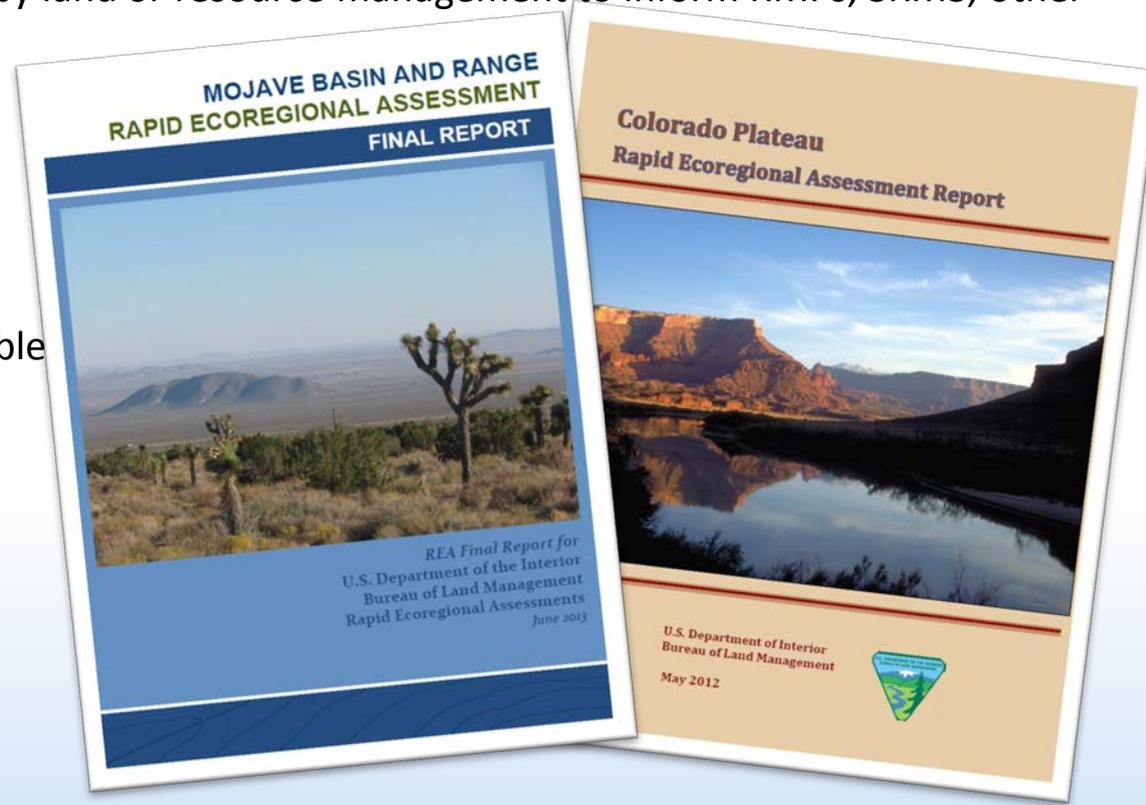
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Rapid Ecoregional Assessments (REAs):

- Characterize the status and trends of natural resources in the ecoregion
- Evaluate potential influence of change agents
- Inform identification of priority areas for conservation, restoration, and development
- Provide findings that can be used by land or resource management to inform RMPs, SRMS, other initiatives
- Not a decision document

REAs rely on existing spatial data

- No new data collection involved
 - Assessment limited to available data
- Some modeling/geoprocessing of existing datasets required

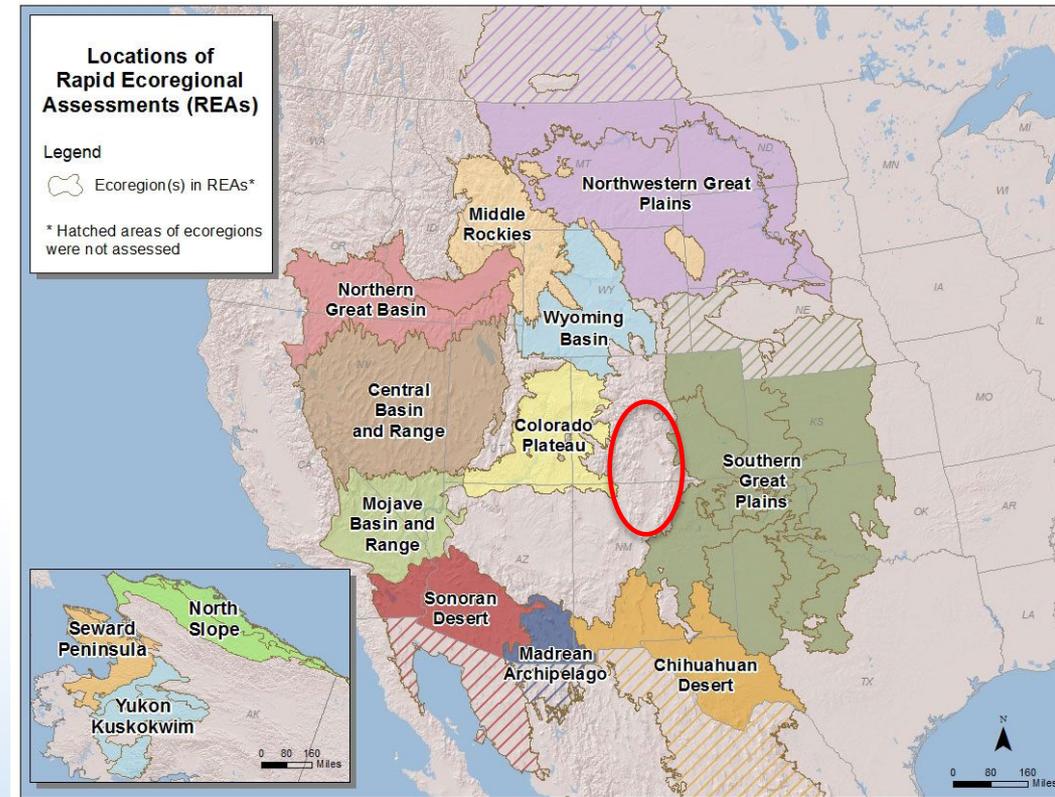


REAs inform the BLM's landscape approach to land management

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Need for San Luis Valley – Taos Plateau Landscape Assessment

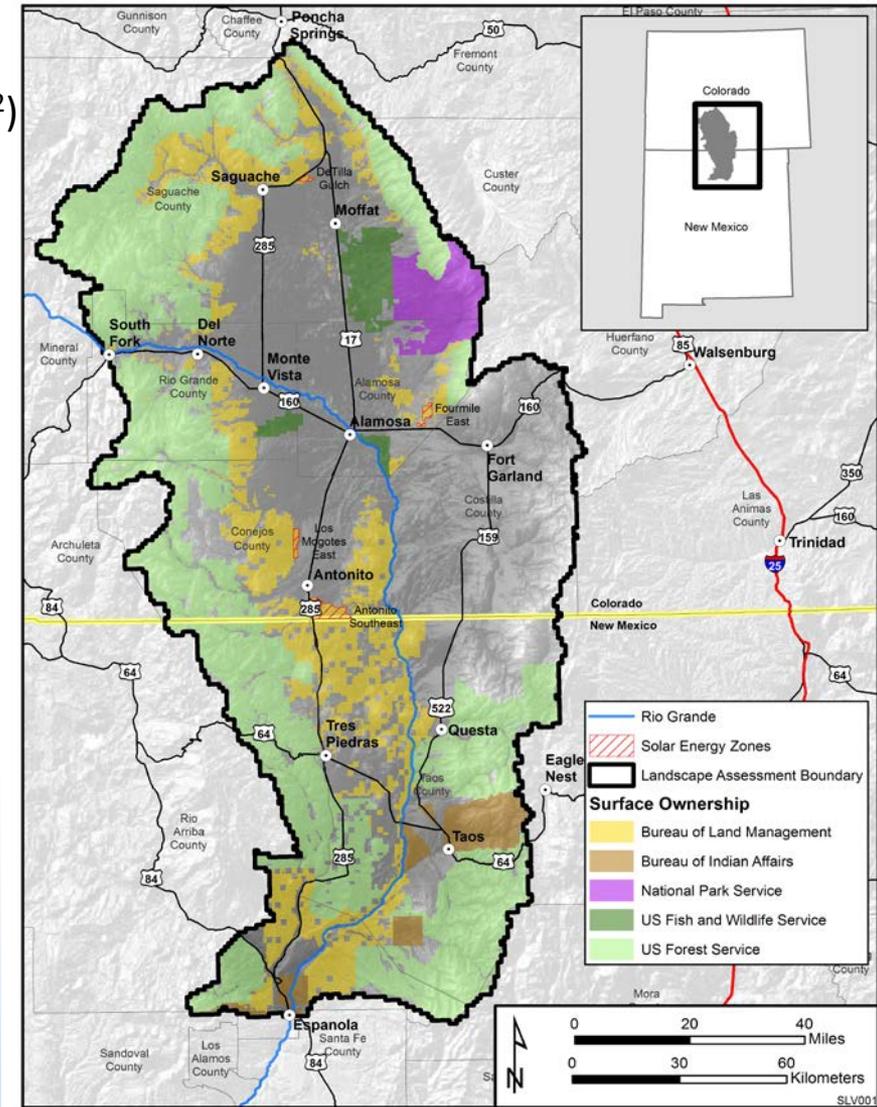
- REA results have been used in previous solar energy mitigation strategies (e.g., Dry Lake) to understand impacts of solar energy development on a landscape scale and to assist in evaluation of potential offsite mitigation locations.
- However, a REA has not been completed for the region encompassing the Colorado Solar Energy Zones
- Develop a Landscape Assessment (“modified REA”) for the Level IV Ecoregion encompassing the Colorado SEZs



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Landscape Assessment

- Study Area: Approximately 9,650 mi² (25,000 km²)
- Variety of ecosystem types
 - Grasslands & shrublands
 - Wetlands
 - Montane forests
- Important ecological and cultural resources
- Variety of human land uses
 - Residential and industrial development
 - Agriculture
 - Grazing
 - Recreation

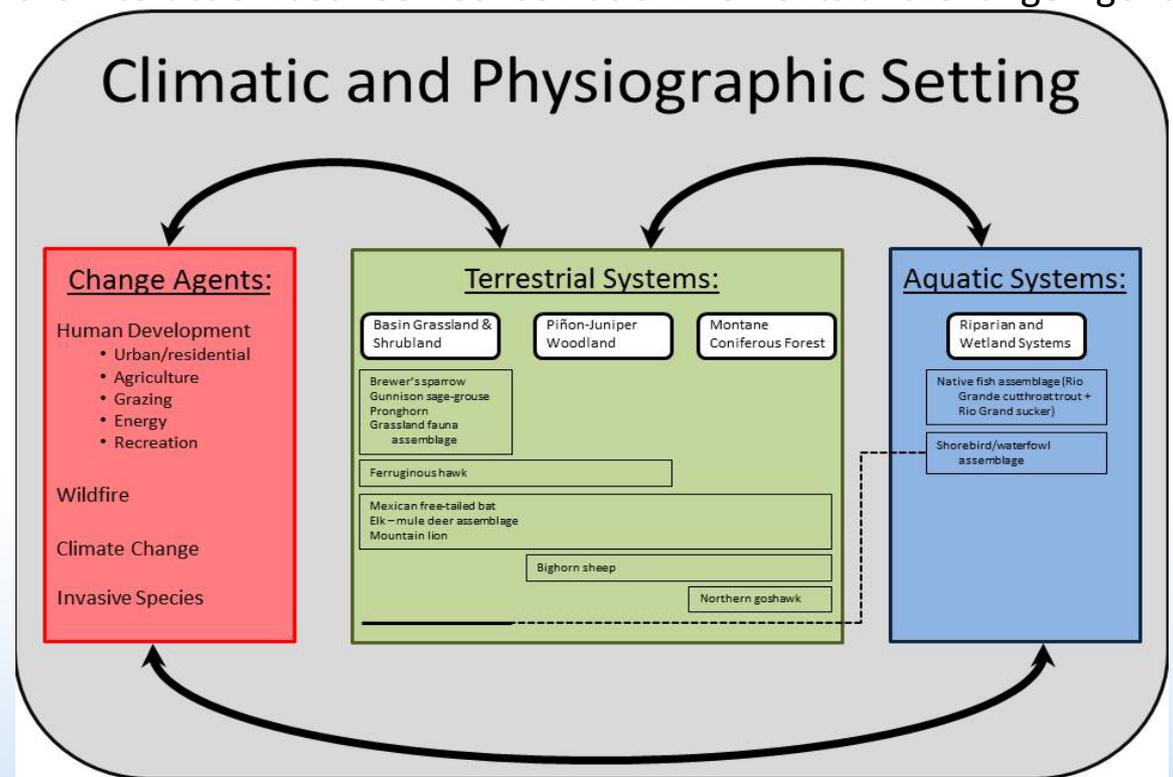


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Elements of the Landscape Assessment

- Management Questions (56)
- Conservation Elements (24)
- Change Agents (4 – human development, climate change, fire, invasive species)
- Conceptual Models – Illustrate the interaction between Conservation Elements and Change Agents

- A pre-assessment (Phase I) report for the Landscape Assessment is available.

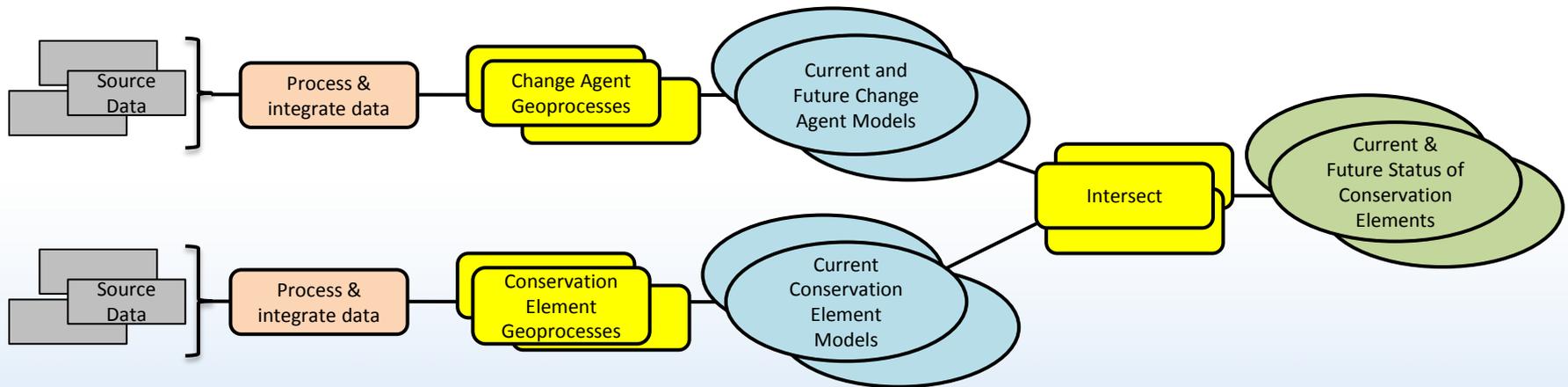


Phase I Report: http://www.blm.gov/co/st/en/fo/slvfo/solar/landscape_assessment.html

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Evaluating Conservation Element Status & Trends in the Landscape Assessment

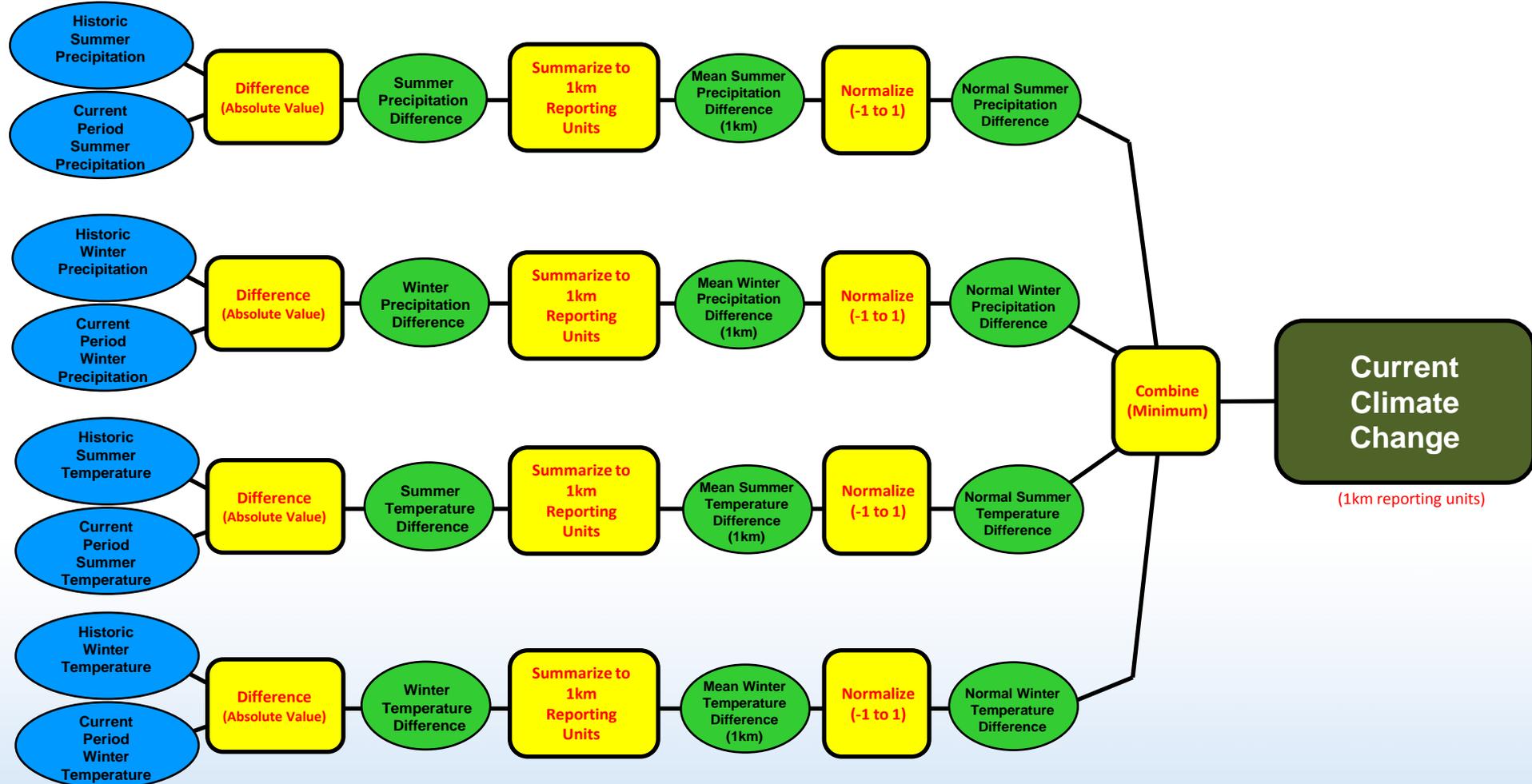
- Characterizing Conservation Element and Change Agent attributes at two snapshots in time.
 - Current status
 - Future status (e.g., 2015-2030)
 - Trends are understood by comparing current and future status
(where is the resource now and in what direction is it going?)
- Developing a geospatial framework for status & trends assessment



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Example Geoprocess Model to Characterize Current Climate Change (from historic)

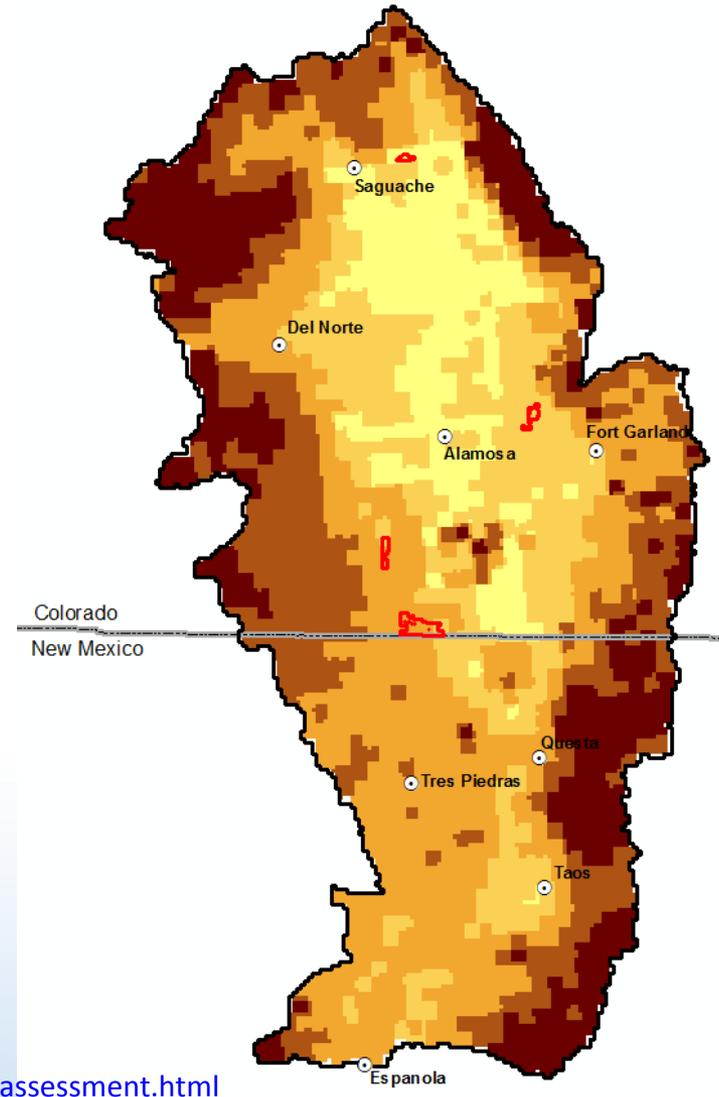
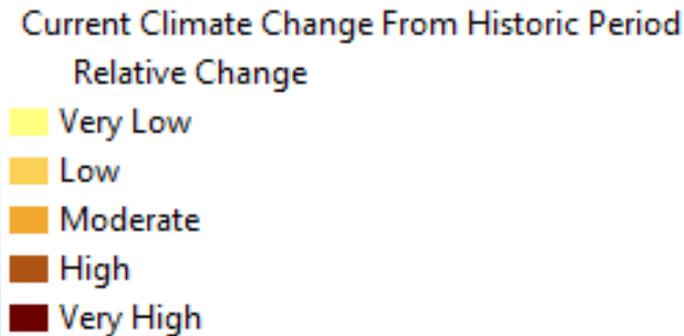


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Current Climate Change Results

Map output shows areas with relatively greater precipitation / temperature change compared to historic values



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Landscape Condition Model

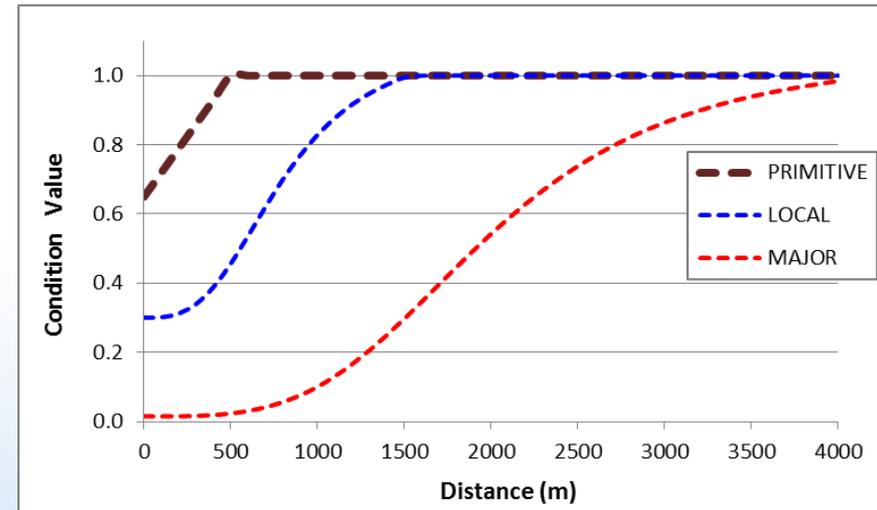
- Characterizes the ecological condition of the landscape as a function of human influence
- Proxy for human development Change Agent model
- Composite scoring system using relative impact values of various human land uses
- Incorporates a site impact score and distance decay function

Human Land Use or Impact Factor	Site Impact Score	Presumed Relative Stress	Distance of Influence (m)	Function
Transportation				
Dirt roads (primitive)	0.65	Low	500	linear
Secondary roads (local)	0.3	Moderate	1500	logistic
Primary roads (major)	0.015	High	4000	logistic

Human land uses are modeled along a continuum between 0 and 1.

0: High human activity (low ecological condition)

1: Low human activity (high ecological condition)

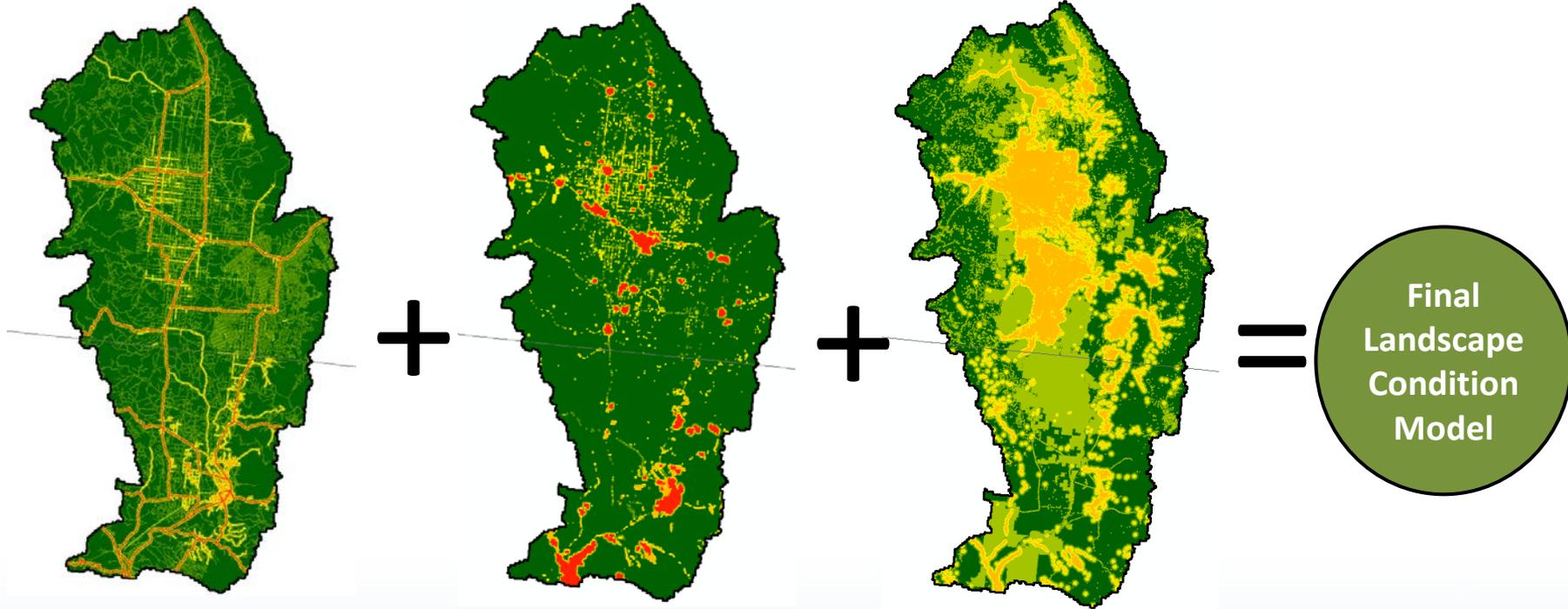


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Landscape Condition Model

Green: ~1 (high ecological condition)
Red: ~0 (low ecological condition)



Roads and Utility Lines

- Major roads
- Local roads
- Primitive roads
- Power lines
- Transmission lines

Urban Development

- Landcover (high dev)
- Urban polygons
- Impervious surfaces
- NASA Earth City Lights
- Energy / industrial developments

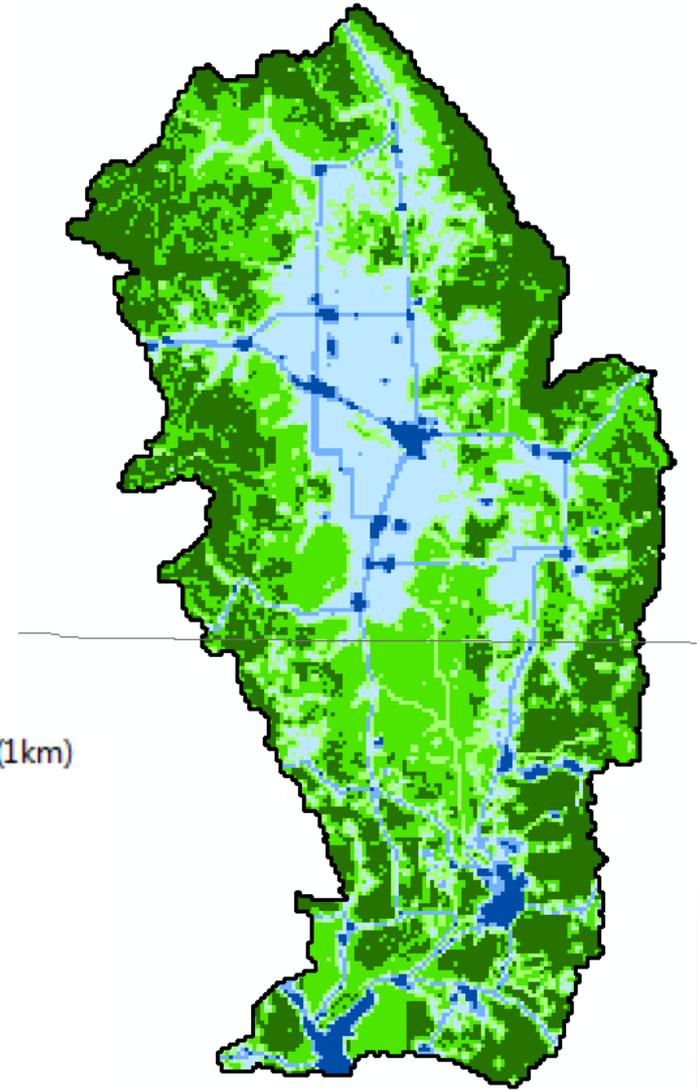
Modified Landcover

- Landcover (low dev)
- Agriculture
- Invasive species
- Grazing allotments

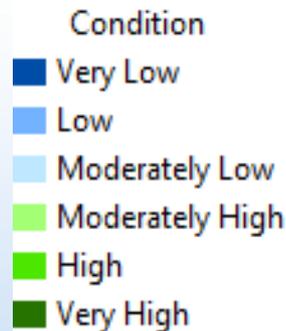
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Current Landscape Condition Model

- Model based on current distribution of human influence in the study area.
- Ecological condition values summarized to 1 km² reporting units.
- Condition values grouped into 6 categories.



Current Landscape Condition (1km)

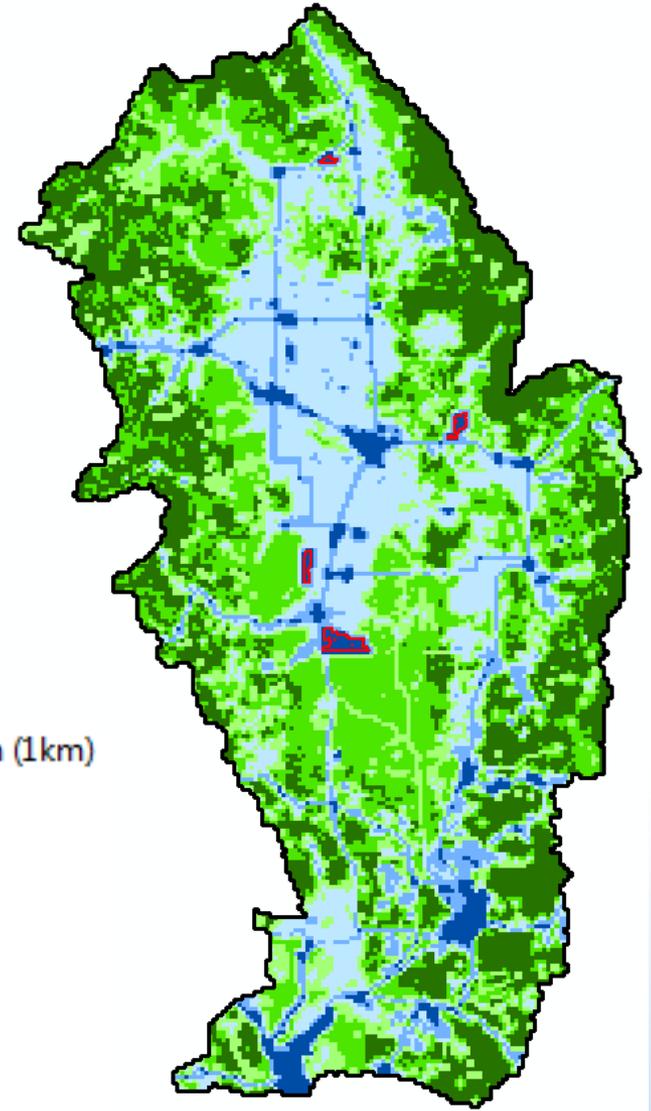


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Future Landscape Condition Model

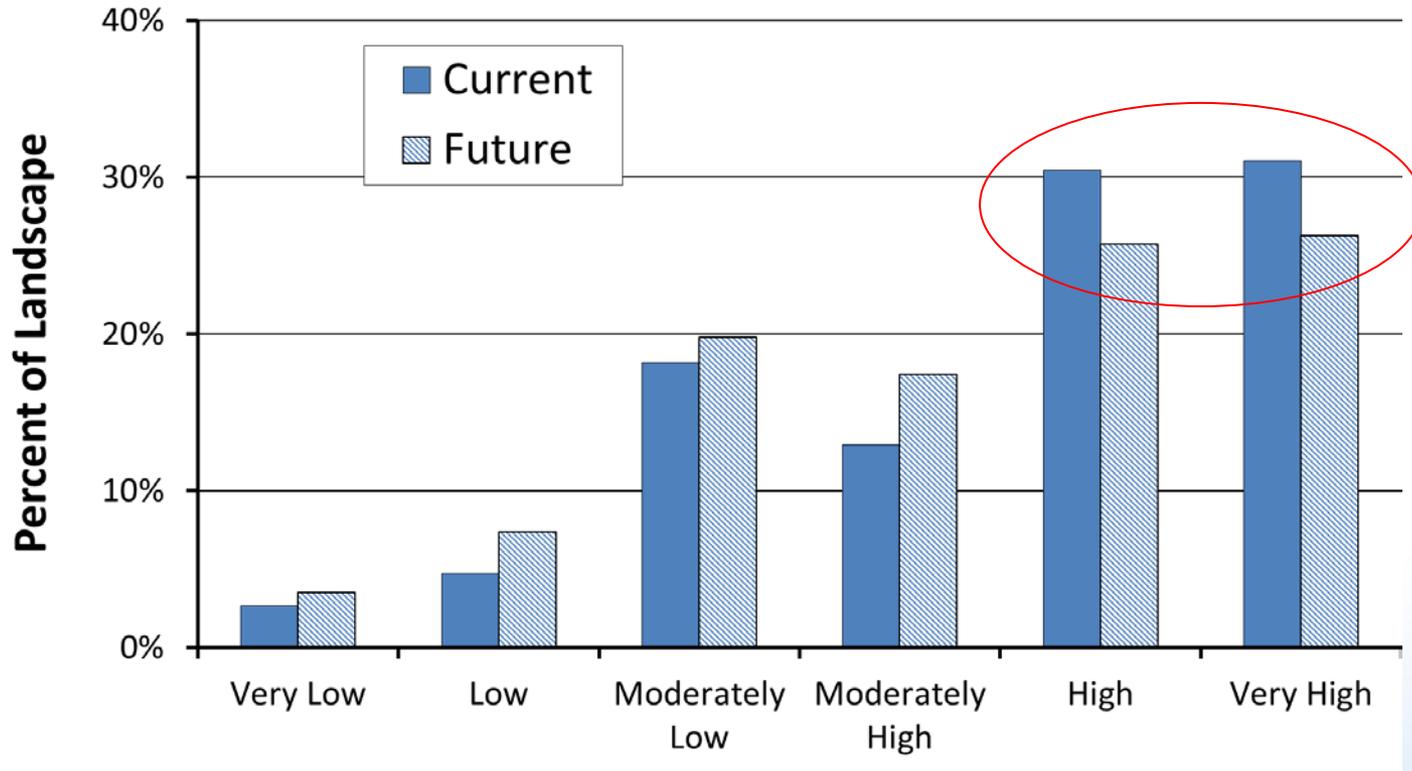
- Model based on potential for human activity in the near term (2015-2030).
 - Wildland-urban interface (WUI)
 - Urban development risk
 - Potential for oil & gas development
 - Potential for solar development (SEZs)

Near-Term Landscape Condition (1km)



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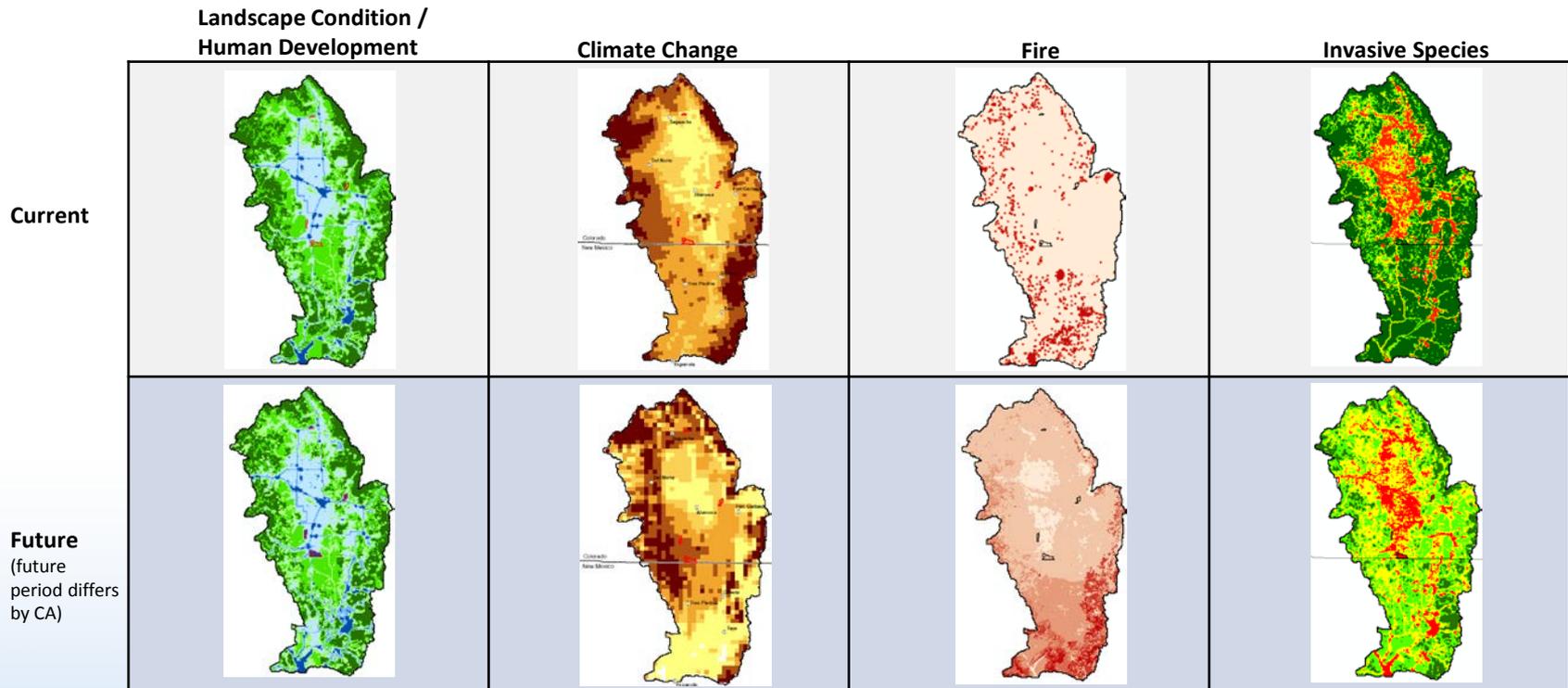
Trends in Landscape Condition



~10% decrease in "high" and "very high" condition in the future

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Change Agent Models



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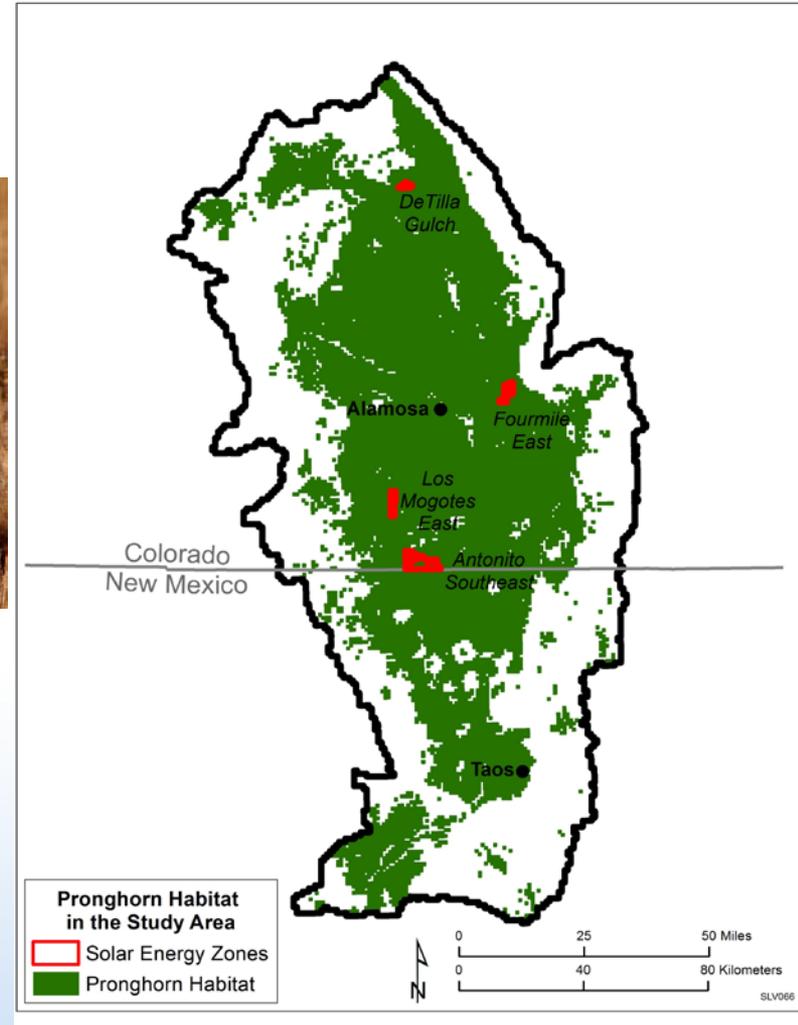
Conservation Element Status/Trends Assessment

- Intersection with Change Agents

Example 1: Pronghorn Antelope



Distribution of current potentially suitable habitat for pronghorn obtained from Southwest Regional Gap Analysis Program (SWReGAP)

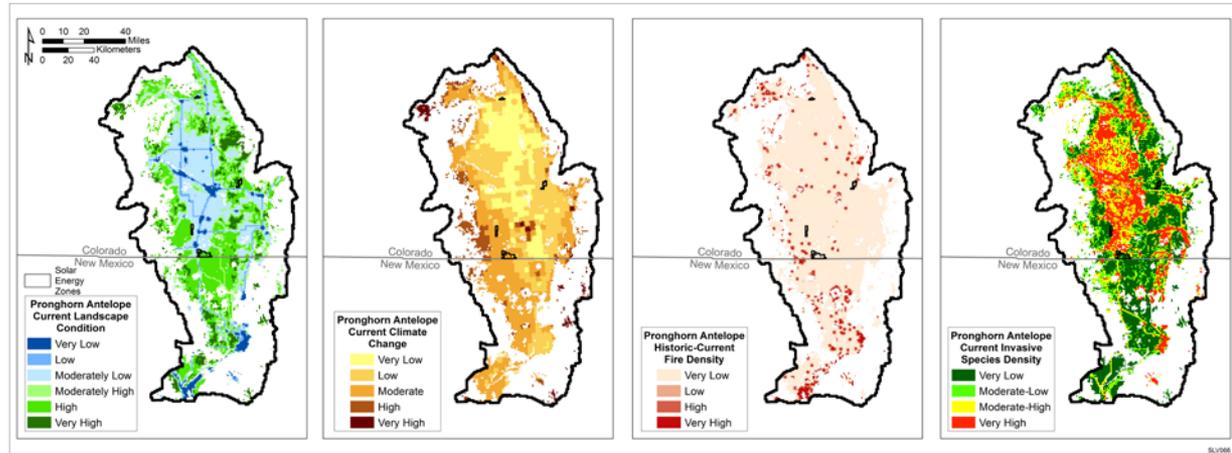


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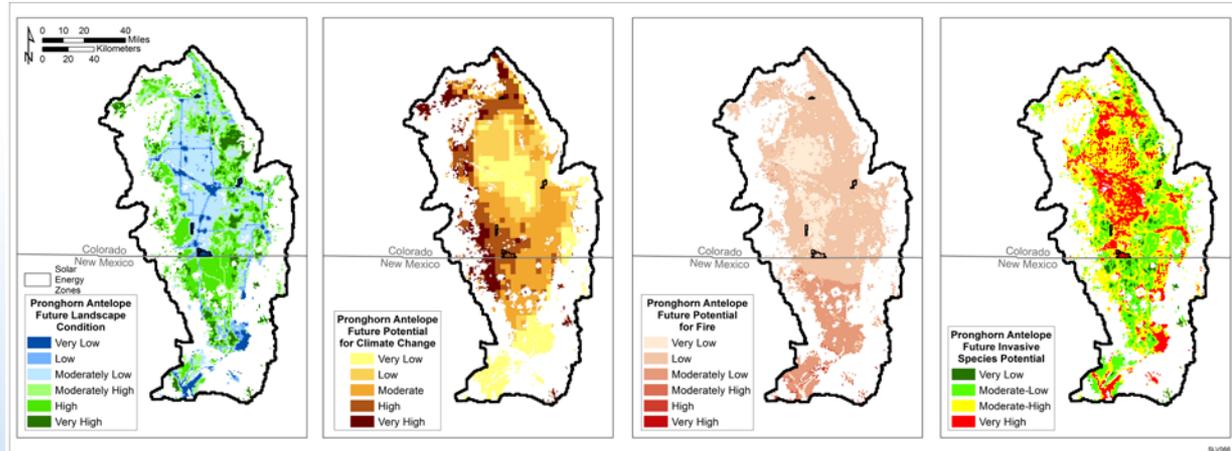
Conservation Element Status/Trends Assessment

Example 1: Pronghorn Antelope

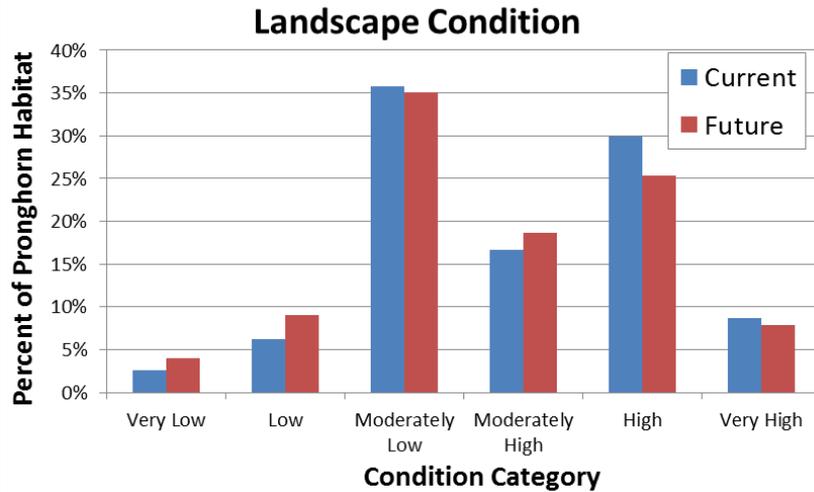
Current status of pronghorn habitat relative to change agents.



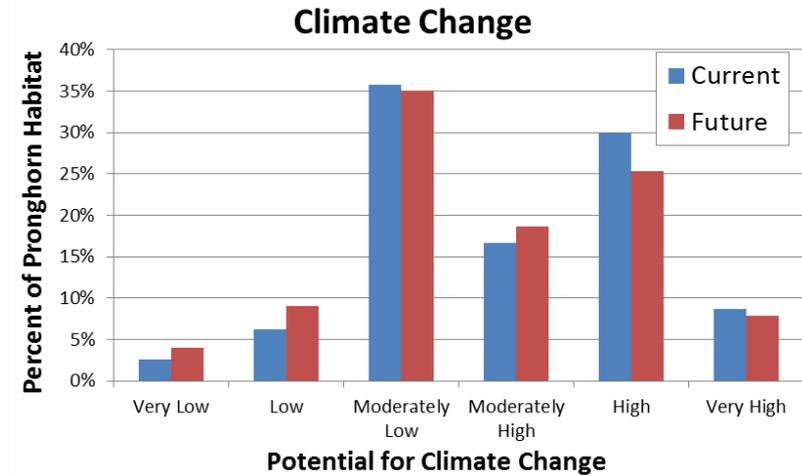
Future status of pronghorn habitat relative to change agents.



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Habitat condition is expected to slightly decline in the future due to human development.



Habitat has greater potential to experience climate change in the future.