

# Improving Decision Support Relative to Solar Energy Projects and the Desert Tortoise

December 2012

## Fact Sheet

### The Issue

Large scale desert solar energy projects are experiencing permitting and construction delays because of the lack of information and tools to assess and mitigate the interactions of sensitive plants, animals and habitats. Therefore, there is a need for research that addresses the information gaps and uncertainties that can cause delays in the renewable energy siting process.

A major concern for permitting utility scale solar projects has been assessing and mitigating impacts to the desert tortoise, which is listed as threatened under both state and federal endangered species regulations.

In the past, land-disturbing projects in the California Mojave Desert could mitigate their impacts solely through land acquisition. Given the scale of proposed solar energy development projects, there is a shortage of suitable habitat to offset project impacts with land acquisition alone. Other types of management actions need to be included in mitigation packages.

### Project Description

The University of Redlands and the U.S. Fish and Wildlife Service Desert Tortoise Recovery Office are developing a spatial decision support system (SDSS) for recovery and management of the desert tortoise. The SDSS uses impact and recovery models to quantify the impact of threats to tortoise populations, and identified and



The desert tortoise  
Credit: USGS

prioritizes recovery actions that will most likely alleviate such threats.

The goal of this research is to reduce environmental conflict over solar energy development projects by providing scientific information and decision-support technology to better assess the potential threats, impacts, and recovery actions affecting the desert tortoise in California.

This research will expand and enhance the existing SDSS web application and user interface, as well as the PIER-funded solar siting component that is under development. Specific objectives of this project are to:

- Improve the efficiency of model runs and project review through workflows,

automated processes, and an online data portal.

- Perform sensitivity analysis to provide agencies and other users with uncertainty measures (e.g., statistical “error bars”) for impact and mitigation calculations. This analysis evaluates confidence of the models, increasing defensibility and transparency in decision-making.
- Test model improvements using actual solar project data, and create an automated reporting module.
- Develop menus of specific, prioritized recovery actions.
- Examine the effects of population fragmentation, resulting from multiple large-scale solar developments.
- Incorporate large and long-term cumulative effects of impacts (e.g., climate change) and recovery actions.

## Anticipated Benefits for California

This research will further develop and refine the data, models, quantitative analysis, sensitivity analysis, and reporting functionality of the SDSS and improve the system's ability to rapidly calculate spatial and temporal impacts of solar energy development projects. This will enable the Energy Commission, other agencies, and stakeholders to more rapidly and efficiently obtain estimates of potential impacts of proposed projects on the desert tortoise, and evaluate alternative mitigation scenarios. This is intended to facilitate the environmental review process by making the development of appropriate mitigation packages and robust impact analyses more efficient.

As California moves rapidly toward achieving a 33 percent Renewables Portfolio Standard, it is

important that environmental concerns are balanced with the need for renewable energy development. This research will provide tools for decision-makers to ensure environmental protection while helping the state achieve its renewable energy development mandates.

## Project Specifics

Contract Number: PIR-11-013

Contractor: Redlands Institute, University of Redlands

City/County: Redlands/San Bernardino

Application: Local, regional, statewide

Amount: \$563,776.00

Cofunding: \$62,970.00

Term: June 2012 to March 2015

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