California Energy Commission
Public Interest Energy Research (PIER) Program
ENVIRONMENTAL AREA RESEARCH

# Minimizing Conflicts between Desert Tortoises and Energy Development Projects in the Mojave Desert

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Fact Sheet

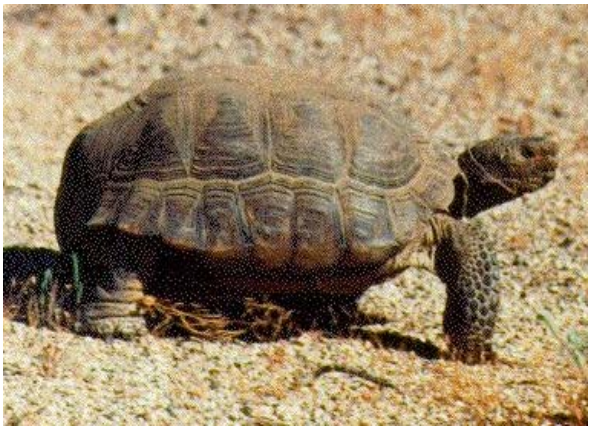
## The Issue

The need for reliable forms of energy within the United States is becoming increasingly important. Also crucial is identifying and developing clean, green energy from renewable sources, such as sunlight, wind, hydropower, and geothermal heat. California is aiming to achieve a goal of serving at least 33 percent of electricity demand with renewable energy by the year 2020. Large-scale solar developments are crucial to achieving California's renewable energy goals. Such developments can have negative impacts on ecosystems and vulnerable species, especially in the desert.

For the federally- and state-listed desert tortoise, there is little understanding of the ecology, habitat use, and resource needs of hatchling and juvenile desert tortoises. This is a serious data deficiency, given the critical role that successful juvenile recruitment serves in the recovery and persistence of wild desert tortoise populations. Survivorship of juveniles is generally considered to be much lower than that of adults, further increasing the challenges to studying juveniles and to overall efforts in desert tortoise conservation.

## Project Description

This project is aimed at desert tortoise conservation and recovery through the monitoring of survivorship, growth, and habitat use of juvenile tortoises. It will rigorously evaluate the effectiveness of head-starting and jump-starting as innovative mitigation and recovery tools. Head-starting involves maintaining eggs and juveniles in semi-natural enclosures to protect them from predators. Jump-starting provides rain supplementation that mimics natural rainfall in non-drought years, a method suggested to nearly double the growth rate of hatchlings.



The Desert Tortoise (*Gopherus agassizii*) is state, federally, and internationally listed as a threatened species in need of targeted conservation efforts.
Image Credit: U.S. Geological Survey

The project's goals are to:

- Quantify hatchling production, captive survival, and growth rates of rain-supplemented and non-rain supplemented captive tortoises for comparison to free-ranging hatchlings released directly into the Ivanpah Valley habitat in the Mojave National Preserve.

- Collect data on the habitat suitability and space use of young desert tortoises by using radio-telemetry to follow released hatchlings as they

age. Spatial components of sources and causes of young tortoise mortality will be identified. The data will be used to increase the understanding of the habitat requirements, vegetation characteristics, and space use of desert tortoises across a greater range of their life history.

- Evaluate the possibility and effectiveness of captive rearing as a mitigation tool for desert tortoise recovery, especially as it relates to ensuring long-term persistence of populations in protected areas to offset losses from energy development projects elsewhere in California deserts.

## PIER Program Objectives and Anticipated Benefits for California

This research is intended to help reduce the biological impacts of solar energy development on the desert tortoise, a threatened species native to California desert regions. If successful, this strategy may offset negative impacts of habitat loss elsewhere by increasing survivorship in protected habitats during the critical first years of a tortoise's life.

As the state energy demand continues to increase, seeking alternative sources of renewable energy is of vital importance. Through its focus on mitigating the environmental impacts of solar energy development, this project will help to ensure that stable, secure, and reliable sources of energy can continue to be provided to California residents in an environmentally responsible manner.

## Project Specifics

Contract Number: 500-10-020
Contractor: UC Davis
Contract Amount: $238,310; Match Amount: $46,000
Contract Term: November 2010 to March 2015

For more information, please contact:
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