



California's Research Initiative on Avian-Solar Interactions is EPIC!

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California Energy Commission

Technical Review of Avian-Solar Interactions

August 16, 2017



Overview of EPIC Program

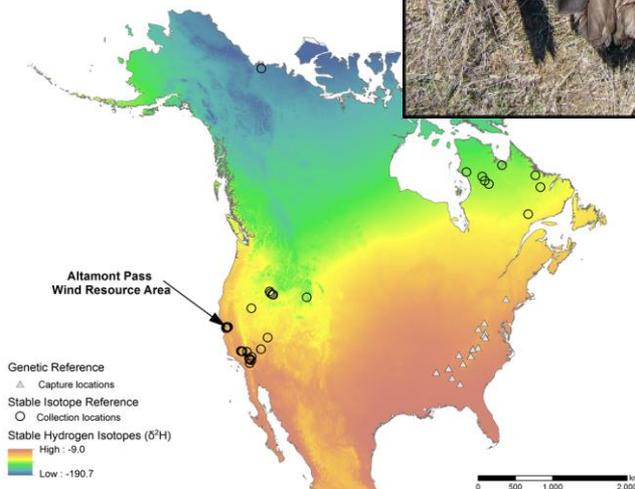
- **EPIC program is California's R&D investment in the 21st century electric power system.**
- **Approximately \$120 M/year from ratepayers**
 - ~\$1-2 M/year for applied research on species and habitat
 - Typical funding for species-related study is ~\$500k for a 3-4 year project
- **All EPIC research initiatives must:**
 - Address the state's pioneering energy priorities.
 - Accelerate technology innovations and tools.
 - Provide benefits to California ratepayers.
- **The Energy Commission is committed to ensuring that a diverse range of applicants has the opportunity to participate in EPIC projects.**

More info at: www.energy.ca.gov/research/epic/index.html



Learning from Real-World Experience to Understand Renewable Energy Impacts to Wildlife - Dr. Todd Katzner, USGS, 2015-2019

1. **Analysis of observed wildlife fatalities and habitat loss to determine the significance of fatalities to population persistence.**
 - Stable isotopes inform local vs. non-local origins of fatalities for population models
2. **Comparison of predicted vs. actual fatality estimates and mitigation outcomes**

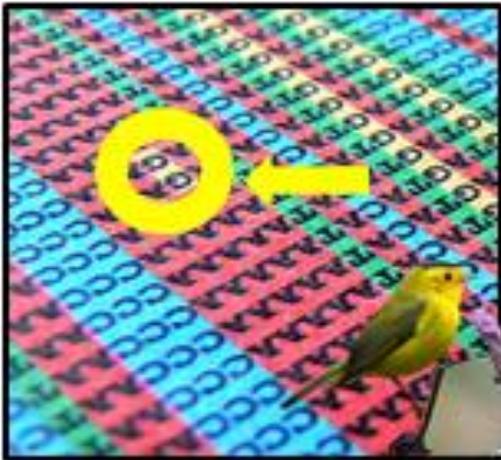




Development of a Genoscape Framework for Assessing Population-Level Impacts of Renewable Energy Development on Migratory Bird Species in California

- Dr. Kristen Ruegg, UCLA, 2016-2019

Step 1: Sequence Genome and identify base pairs unique to populations.



Step 2: Build map of genetic variation across geographic space (genoscape).



Step 3: Map population specific routes and build timetables of migration.





Investigating Avian Attraction to Solar Energy Facilities Through a Lake Effect

- Dr. Robb Diehl, USGS, 2017-2020

- Exploring a visual-sensory basis of attraction
- Reorientation of birds in flight toward solar facilities
- Mortality and natural history of birds at solar facilities



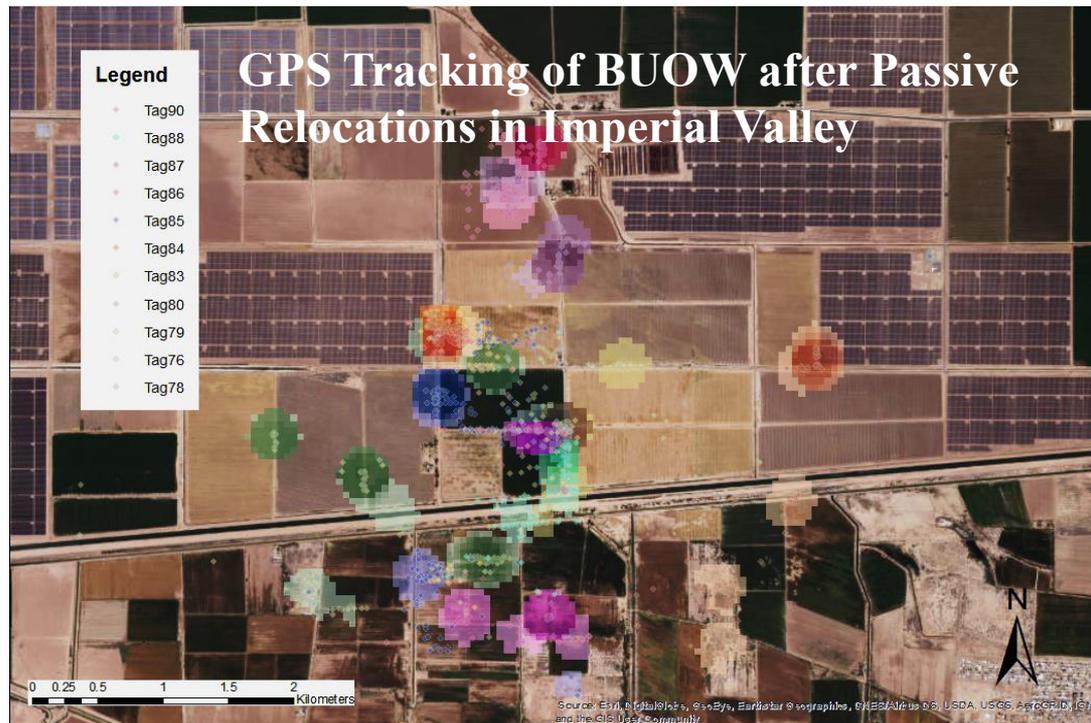
Copper Mountain PV facility in southern Nevada.

Photo Credit: Robert Sullivan, Argonne National Laboratory



Assessing California's mitigation guidelines for burrowing owls impacted by renewable energy

- Dr. Lisa Nordstrom, Zoological Society of San Diego, 2016-2019

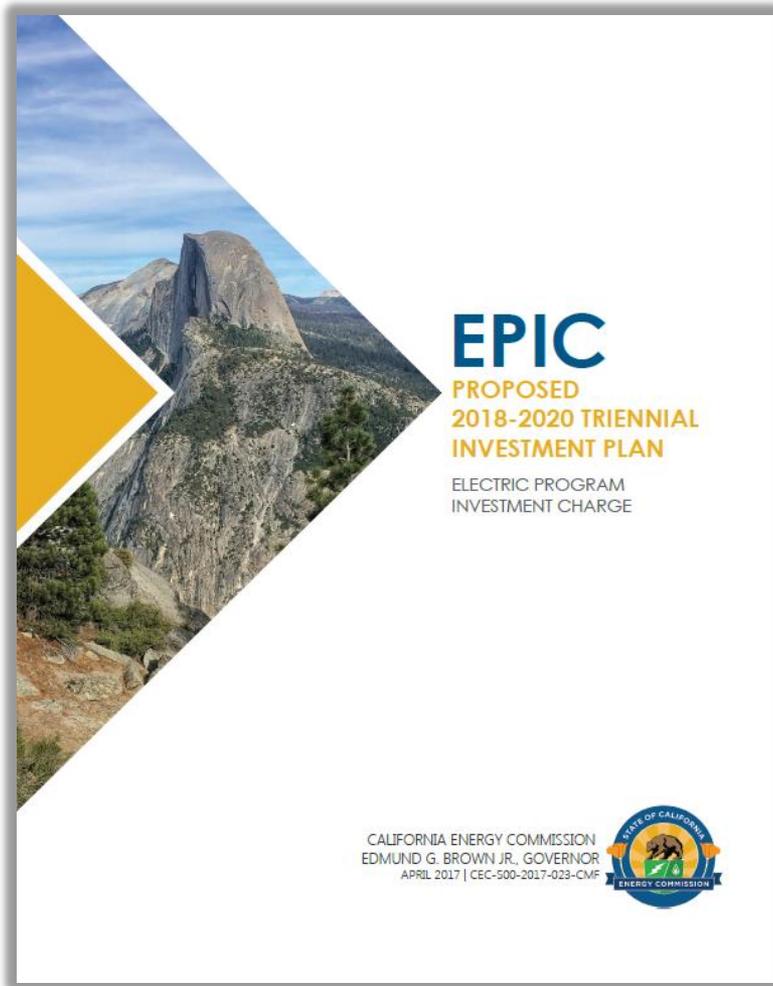


Objectives

- Record and evaluate BUOW dispersal, mortality, and reproductive output in response to passive and active relocations
- Test addition of experimentally planted conspecific cues to improve post-relocation settlement
- Determine most effective mitigation method and recommend improvements



EPIC Proposed 2018-2020 Investment Plan



- Approval by CPUC expected in December, 2017
- Last period authorized
- Stakeholder input
- Building on previous plans—“*moving the needle*”



Initiative 7.3.1 Find Environmental and Land Use Solutions to Facilitate the Transition to a Decarbonized Electricity System

- Investigate risks to sensitive species and habitats from interactions with energy facilities, and discover the mechanisms involved so that effective solutions can be developed
- Marine environmental research to assist the development, planning, and permitting of offshore renewable generation
- Develop avoidance, impact minimization, or compensatory mitigation tools or strategies



Solicitation Process

GRANT FUNDING OPPORTUNITY

Addressing Air Quality and Environmental Impacts of
Conventional and Emerging Electricity Sector
Technologies in a Changing Climate



GFO-16-306

<http://www.energy.ca.gov/contracts/index.html>

State of California
California Energy Commission
September 2016

- Grant funding opportunity translates the plan initiatives to specific project topics
- Listserv for alerts
- Scoring process
 - Screening criteria
 - Scoring criteria (technical and administrative)



Thank you!

- Links
 - Listserv: <http://www.energy.ca.gov/listservers/>, subscribe to 'epic'
 - Proposed EPIC Investment Plan:
<http://www.energy.ca.gov/research/epic/17-EPIC-01/documents/>
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