

Utility-Scale Solar Impacts To Mojave Desert Tortoise Recovery



Kristina Drake*, Kim Field, Kerry Holcomb, Corey Mitchell
U.S. Fish & Wildlife Service – Desert Tortoise Recovery Office





Thanks For Supporting Tortoise Recovery

Providing data, resource materials, background knowledge, modeling support, & comments to improve landscape planning and implementation of utility –scale solar development.

Special thanks to BLM Southern Nevada District and Pahrump Field Offices, USGS, and FWS

Lara Kobelt, Mark Slaughter, Evan Myers, Corey Lange, Curtis Walker; Todd Esque, Lesley DeFalco, Ally Xiong, Sarah Doyle; Roy Averill-Murray, Glen Knowles, Rebecca Windsor, Many Others

A photograph of a desert tortoise in its natural habitat. The tortoise is on sandy ground with sparse green and yellow desert shrubs. It is facing towards the right of the frame.

Desert Tortoise Recovery Office

- Kristina_Drake@fws.gov
- Kimberleigh_Field@fws.gov
- Kerry_Holcomb@fws.gov
- Corey_Mitchell@fws.gov

Presentation Outline



Global initiatives to combat climate change



Responsibility achieving energy goals



Utility-scale solar siting and minimization



Predicting tortoise response to design features



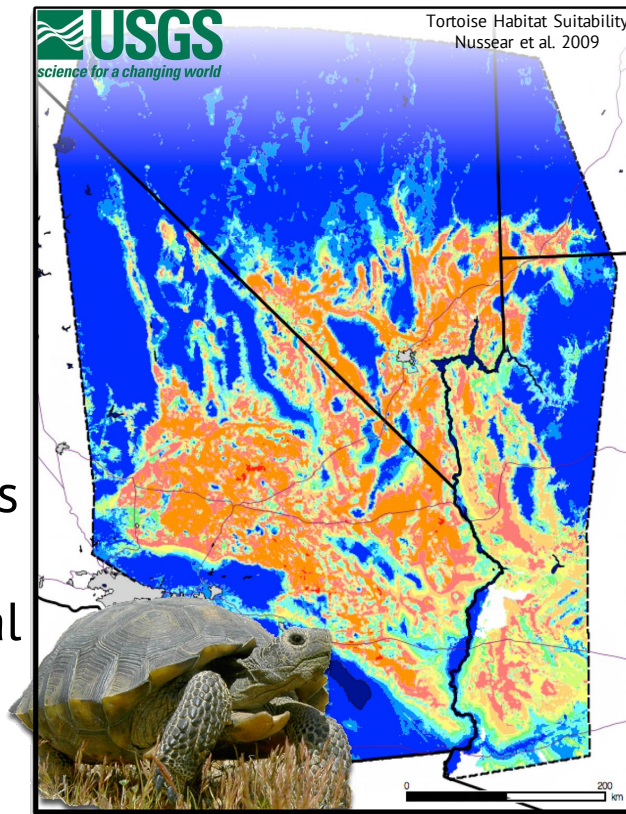
Conclusions and MOG Support



National & Global Initiatives to Reduce Greenhouse Gas Emissions

Goal to rapidly decarbonize traditional energy sources to mitigate climate change

- More efficient technology
- Availability of large land tracts (particularly public lands in Western US)
- Administrative priorities & incentives
- Target areas with high solar potential



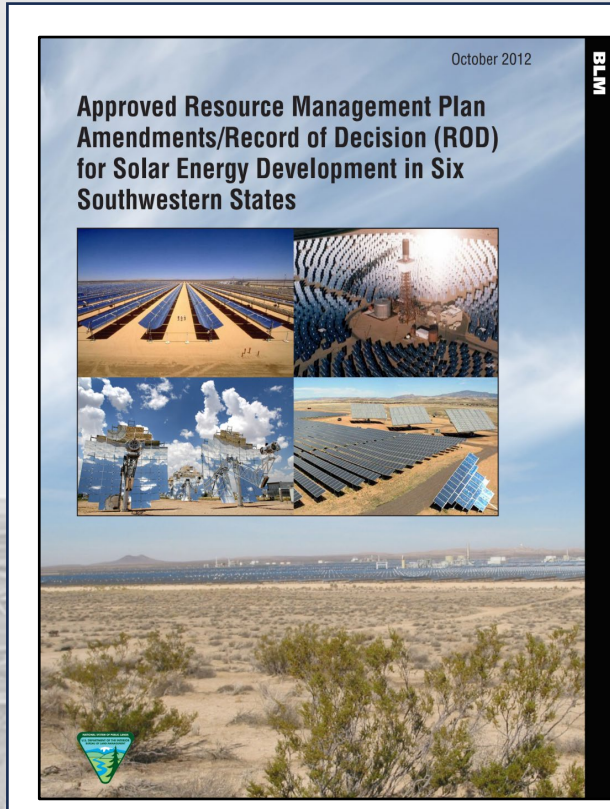
"The expansive solar resources in the Mojave Desert are second in area only to the Sahara Desert"

Meeting Renewable Energy Goals Without Creating Dysfunctional Ecosystems

- **Understand impacted species & ecosystems**
 - improve landscape planning & project siting
 - incorporate ALL disturbance actions
- **Promote wildlife compatibility when possible**
 - improve minimization (design features) & mitigation
 - adaptive management
- **Allow for species resiliency**
 - environment is dynamic
 - (Reserve) protect intact connected habitat



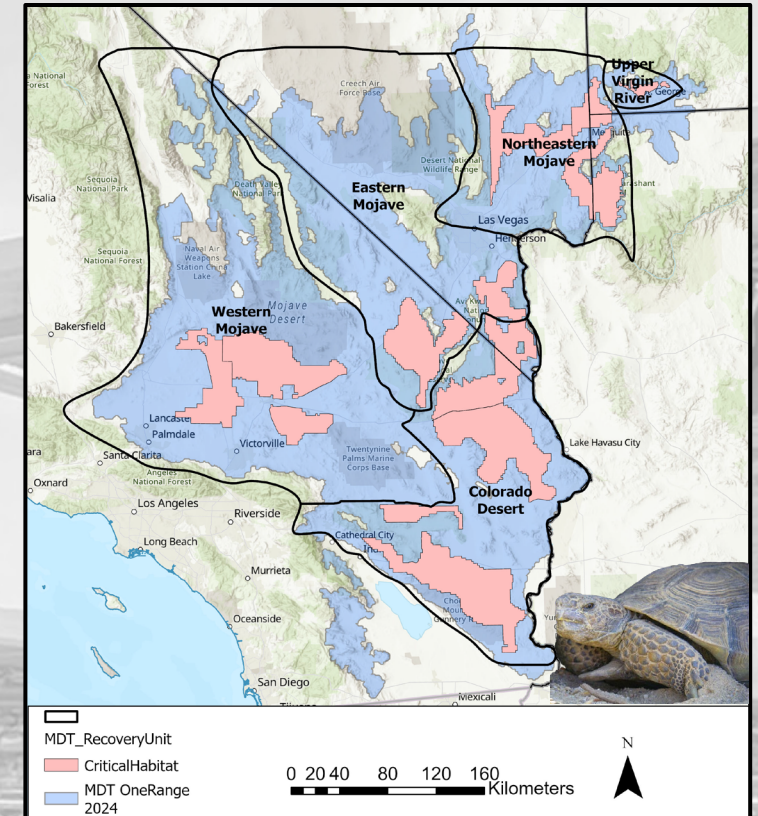
Need for Improved Landscape Solar Planning



2012 BLM Solar Plan

(6 States - AZ, CA, CO, NV, NM, UT)
CA Updated – 2016 BLM's DRECP

- **Habitat Exclusions**
Designated Tortoise Conservation Areas –
(critical habitat, BLM-ACECs, others)
- **Concentrated & Incentivized Development**
Solar Energy Zones (SEZ)
ex. Nevada (2 SEZs ~14,196 ac)
- **Pathway for Development Outside SEZ**
Variance Process
Additional requirements for tortoise connectivity

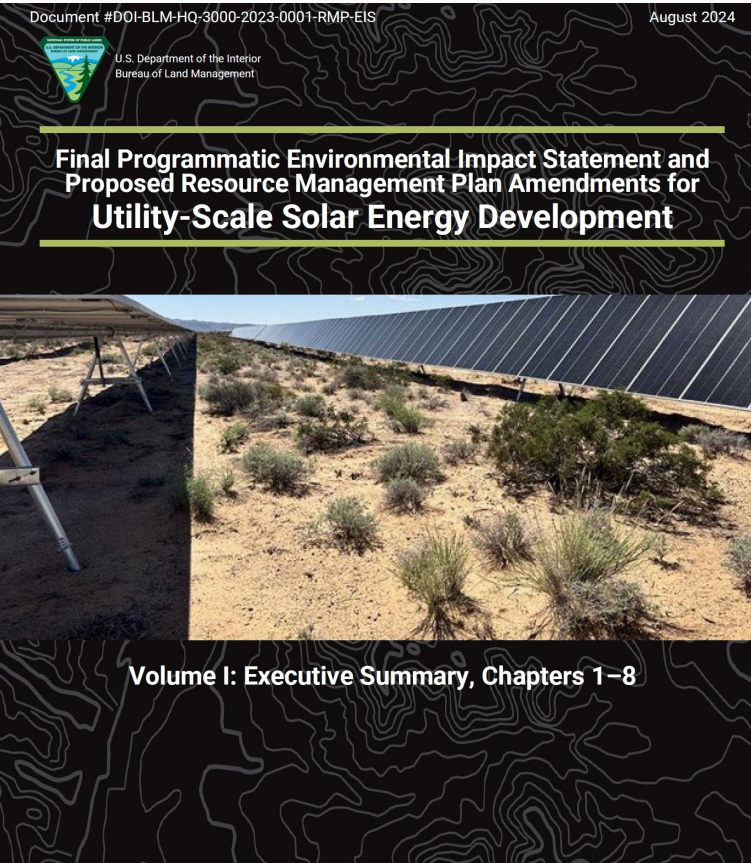


What's needed in this plan to best support tortoise conservation & recovery?



- Enhance habitat exclusions
- Include scale of development need
- Promote wildlife compatibility
- Certainty of project siting & adaptive management
- Inclusion of non-solar development, stressors, & species/ecosystem need

Need for Improved Landscape Solar Planning

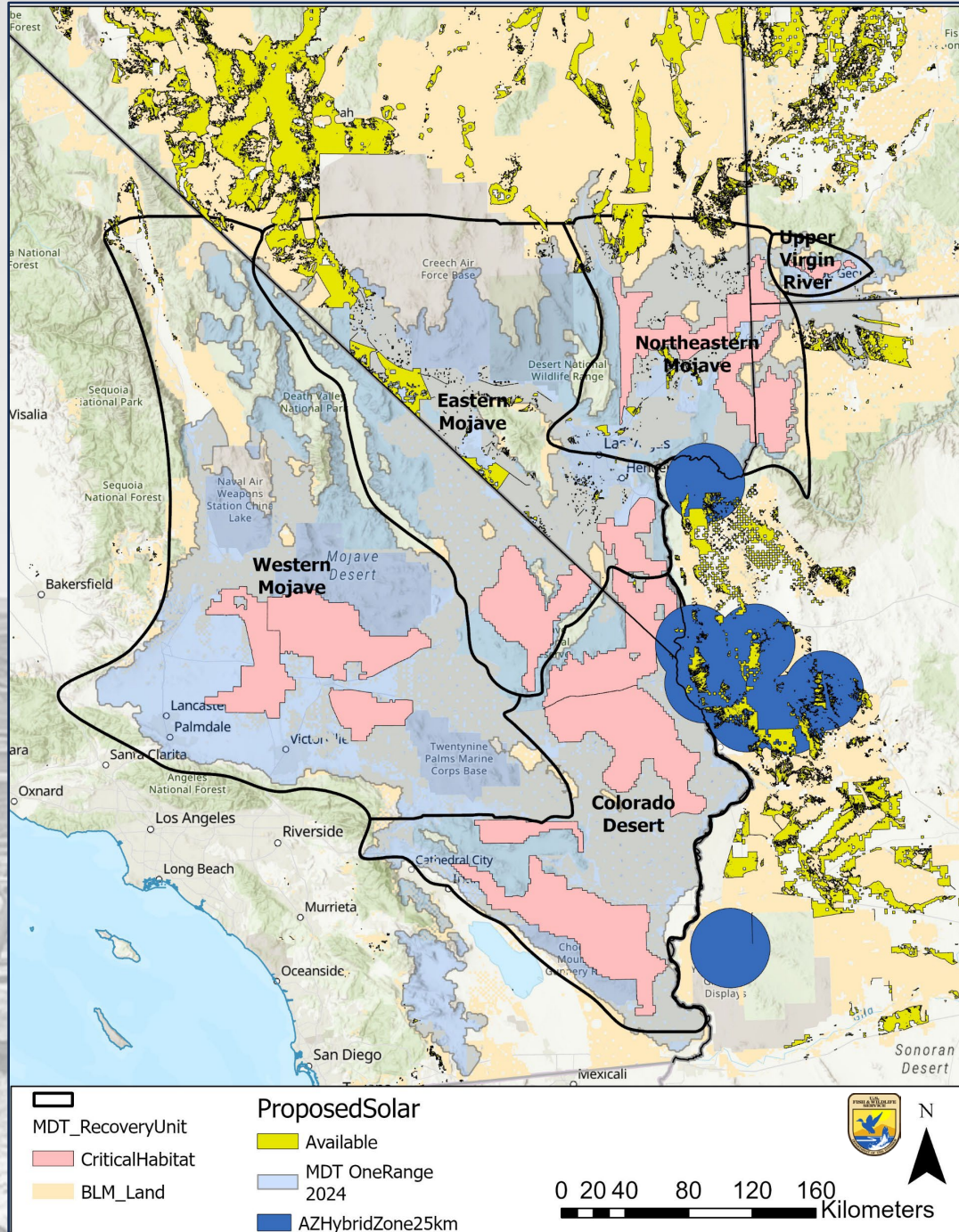


2024 BLM Final PEIS & Proposed RMPA

Western Solar Plan

11 States - **AZ**, CA, CO, ID, MT, **NV**, NM, OR, **UT**, WA, WY
CA – BLM 2016 DRECP area excluded

- **Habitat Exclusions**
Increased habitats & conservation linkages
- **Proposed Potential Solar Development**
Includes **449,488 acres** within listed tortoise range
Limited protections for unlisted tortoise range (AZ)
- **Legacy Projects**
Pending solar applications/ BLM direction?
May occur in habitat exclusions & impact connectivity
- **Improved Minimization**
Reduced disturbance; Design features



How does BLM's 2024 solar plan interface with non-BLM lands, other developments, resource management plans, and tortoise recovery needs?



Promoting Wildlife Compatibility

- What does that include?
- Can tortoises thrive in and around engineered solar habitats?



Disturbance Minimization

Inherent Assumptions

Large desert surfaces undisturbed or minimally disturbed may provide habitat for tortoises.

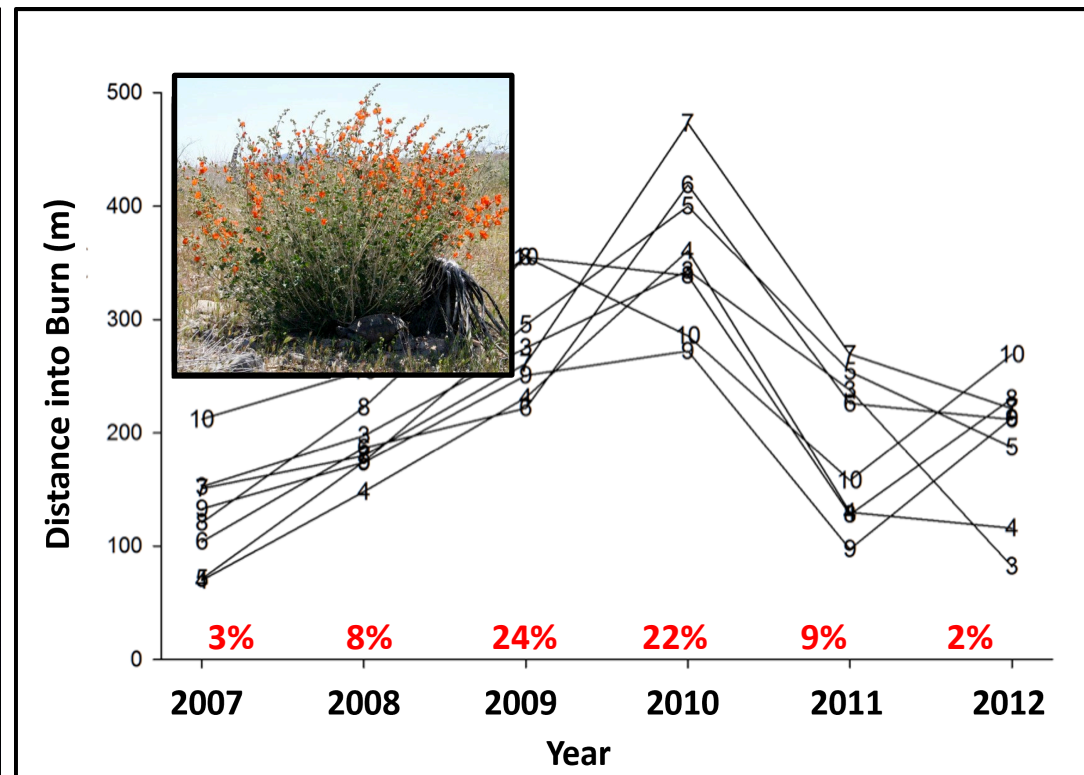
- Assumes soil surfaces, annual and perennial vegetation, tortoise burrows, surficial water flows and infiltration, and seed banks **remain mostly intact & functional**.
- Allows site to recover from construction disturbances in a shorter time frame.
- Resulting environment would provide adequate food, cover from predators, drinking sites, and thermal protection for tortoises even within a modified built environment.



Learning from Tortoise Responses to Wildfires in Southern Nevada

Adult Tortoises in Burned Habitats

- Similar health, reproduction, survival
- Tied to dynamic vegetation changes
- Use dead vegetation structure
- Continue to use habitat burned once by wildfire



Drake et al. In 2015 Journal of Wildlife Management

Conclusion

Within the Mojave Desert Tortoise's Range

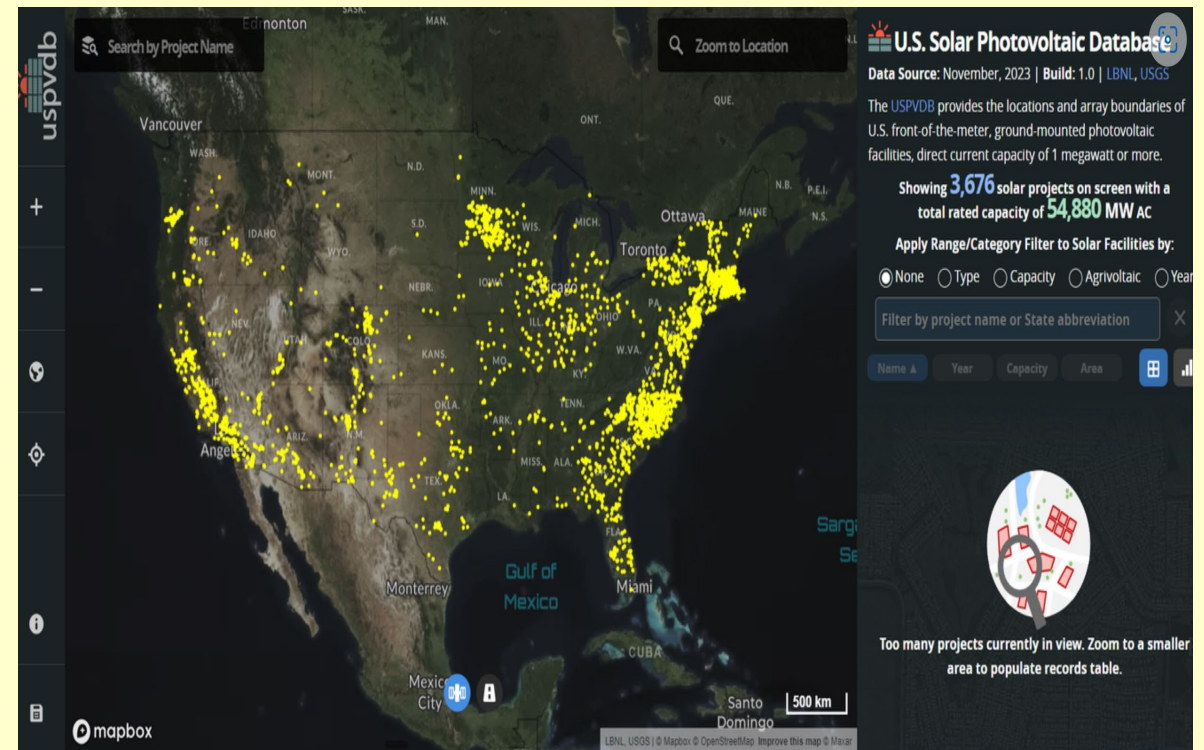
- Extensive solar development is expected.
- Need to track planned & current landscape change
 - Need online publicly available tools
 - Need MOG/Agency support to update
- Projects should provide frequent comprehensive findings.
- Resource managers learn and adapt through adaptive management.
 - Propose annual MOG Special Session
 - Manager updates to MOG



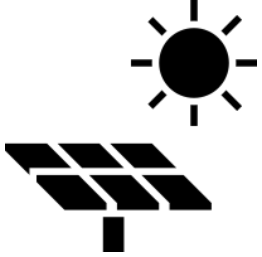
Tracking Solar PV Development in Tortoise Habitat

U.S. Solar Photovoltaic Database USGS & Lawrence Berkeley National Laboratory

- “released **database and interactive map of all large-scale solar energy facilities** in the U.S.”
- nearly 3,700 facilities & their attributes can be seen on and downloaded from the interactive map
- <https://eerscmap.usgs.gov/uspvdb/>



****Not complete in Mojave EcoRegion (e.g., Gemini Solar missing)**



Recent Related References

(Solar in Mojave Desert Ecoregion)

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