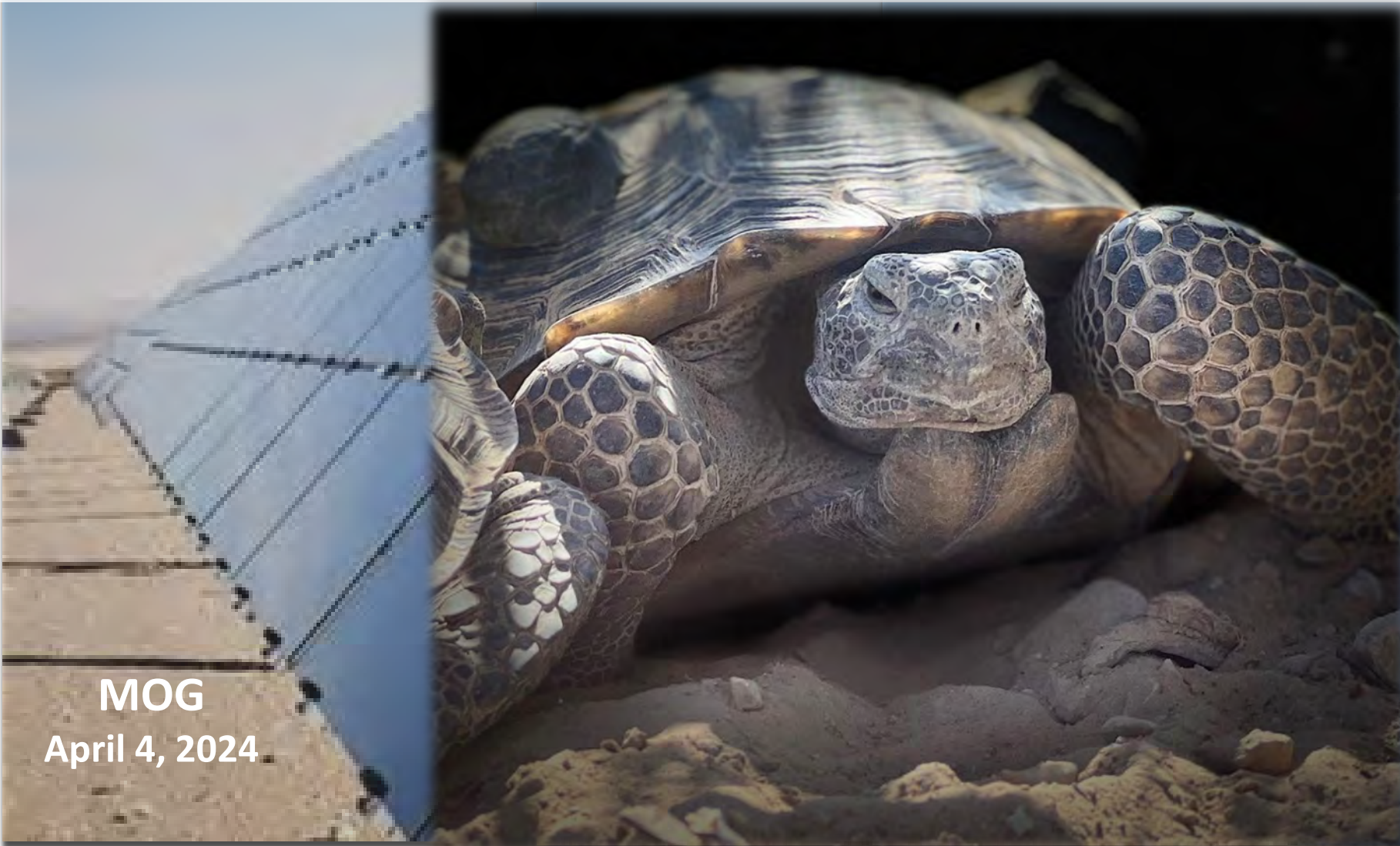


Relevance of BLM's Solar PEIS To Mojave Desert Tortoise Recovery Goals



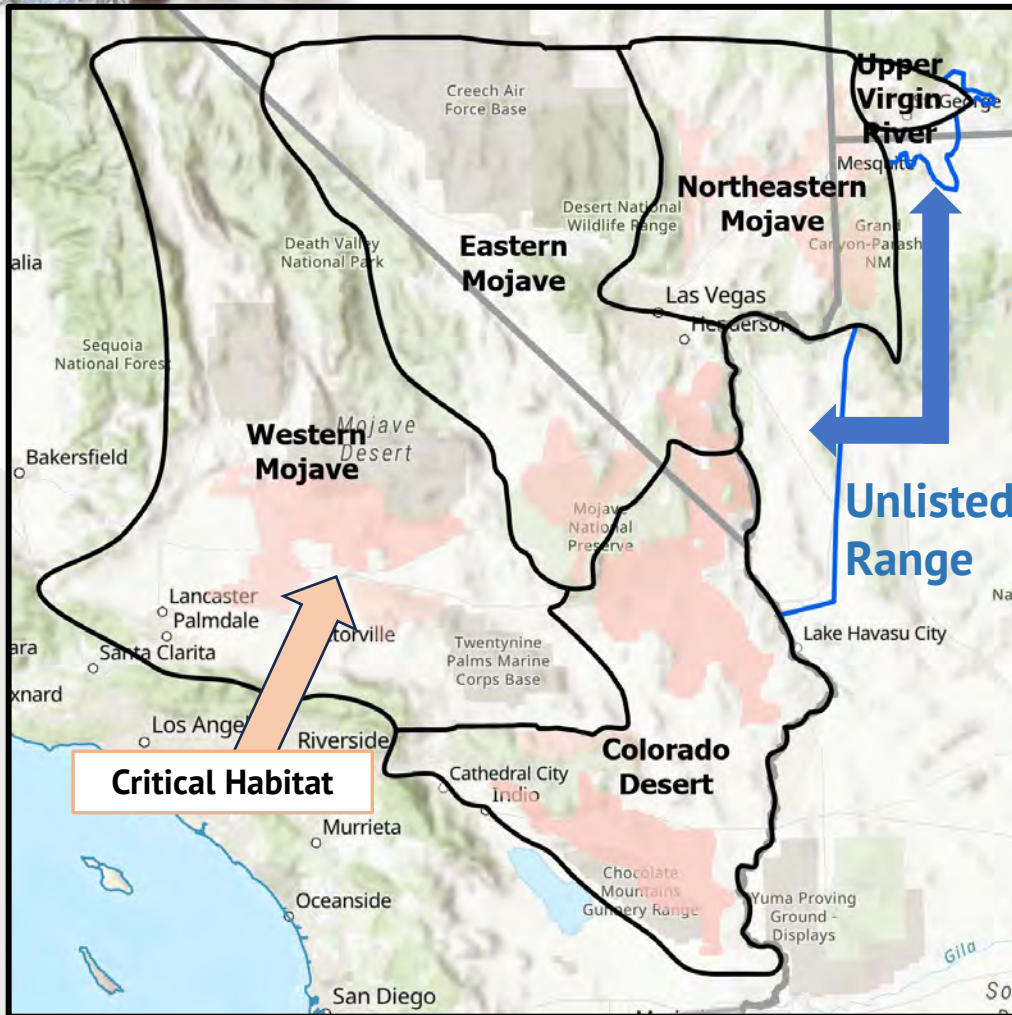
MOG

April 4, 2024

Kristina Drake

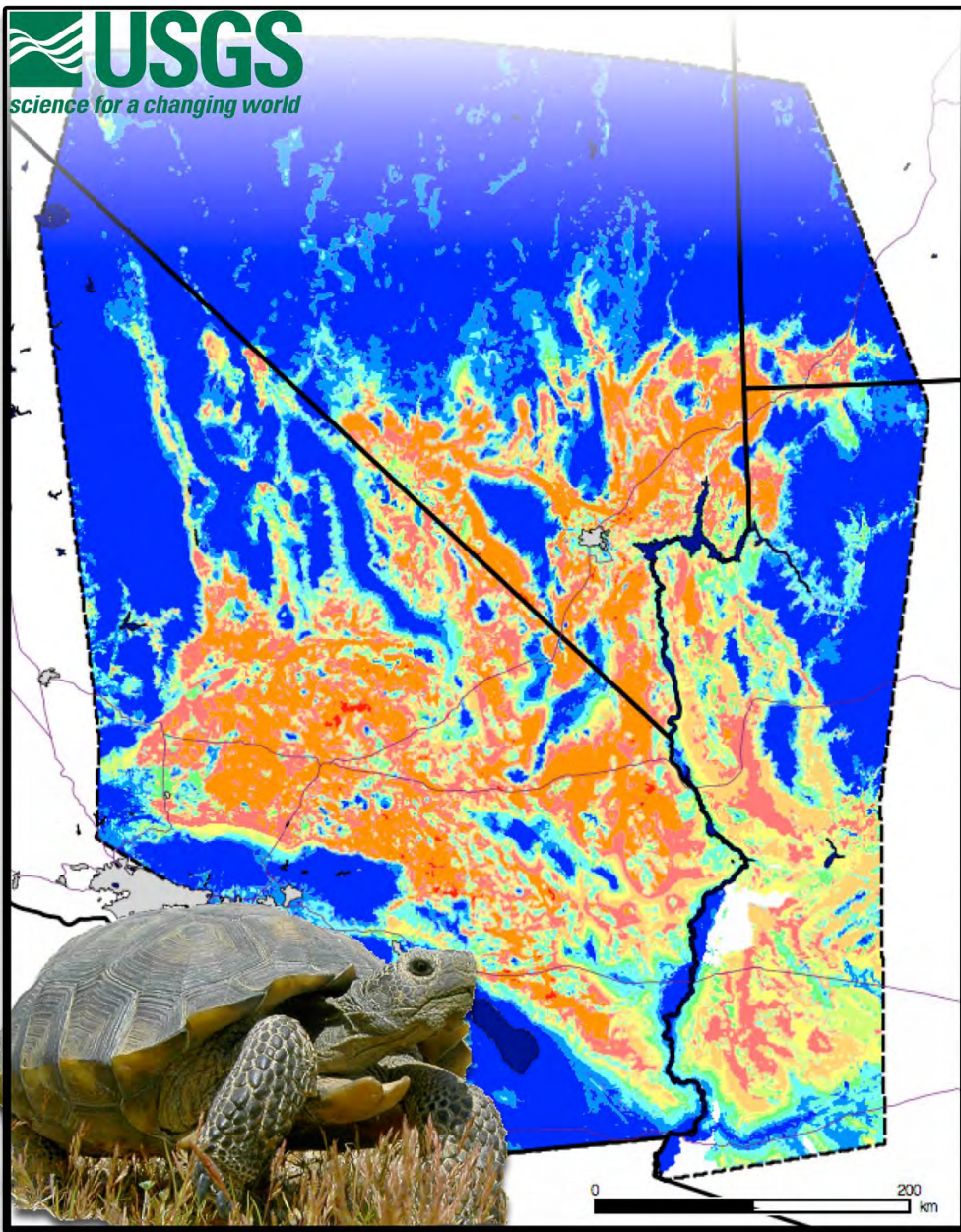
U.S. Fish & Wildlife Service -
Desert Tortoise Recovery Office

Mojave Desert Tortoise Range & Protections



ESA Listed as Threatened; Additional State Protections

- Current ESA protections include most of range West of the Colorado River.
- Tortoises do occupy habitats East of the Colorado River & associated populations are expected to be in decline.
- **Tortoise’s recent five-year status review (2022) recommended to update the taxonomy, distribution, and listed status of *Gopherus agassizii* under the ESA to include populations east of the Colorado River.**
- A “similarity of appearance” rule may be necessary for Sonoran desert tortoise (*G. morafkai*) populations or individuals that occur within the range of the Mojave desert tortoise.

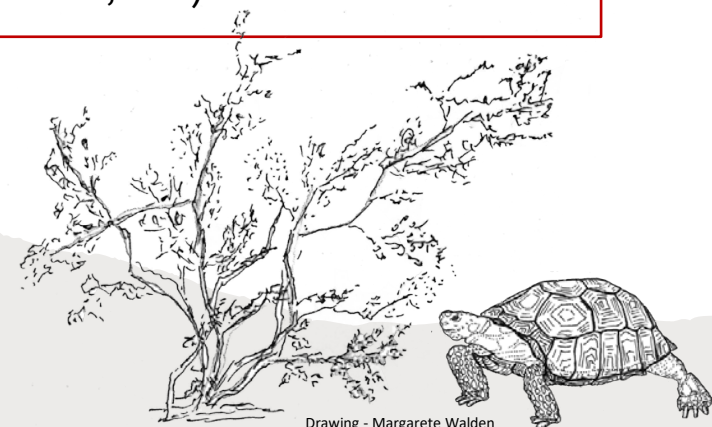


Tortoise Distributions

Habitat Suitability

Predicted habitat index with features & variables representing tortoise habitat

(climate, elevation, surface roughness, soil density & depth, perennial plant cover, etc.)



Tortoises Require Large Connected Habitats

(Dynamic Environment)



June 2009



Photo S. Snyder

June 2010



Photo S. Snyder

June 2012



June 2014



Temporal Changes in Habitat

Environmental
Context *It*
depends

Ecological Strategy

- #1 - Wait Until Conditions Improve
- #2 - Respond Quickly To Available Resources



Photo - Todd Esque
Eldorado Valley, 2017



Photo - Phil Medica
Ivanpah Valley, 1981

Tortoise Aggregations

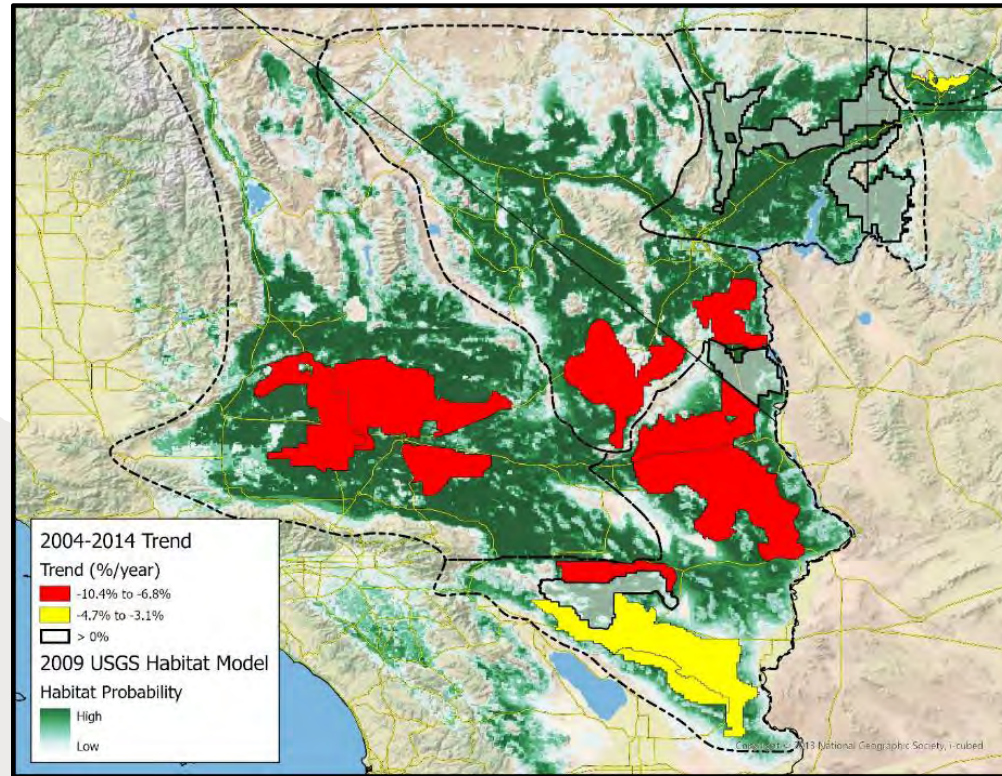


Stump Springs NV, 2024

- Abundance / Density Estimates

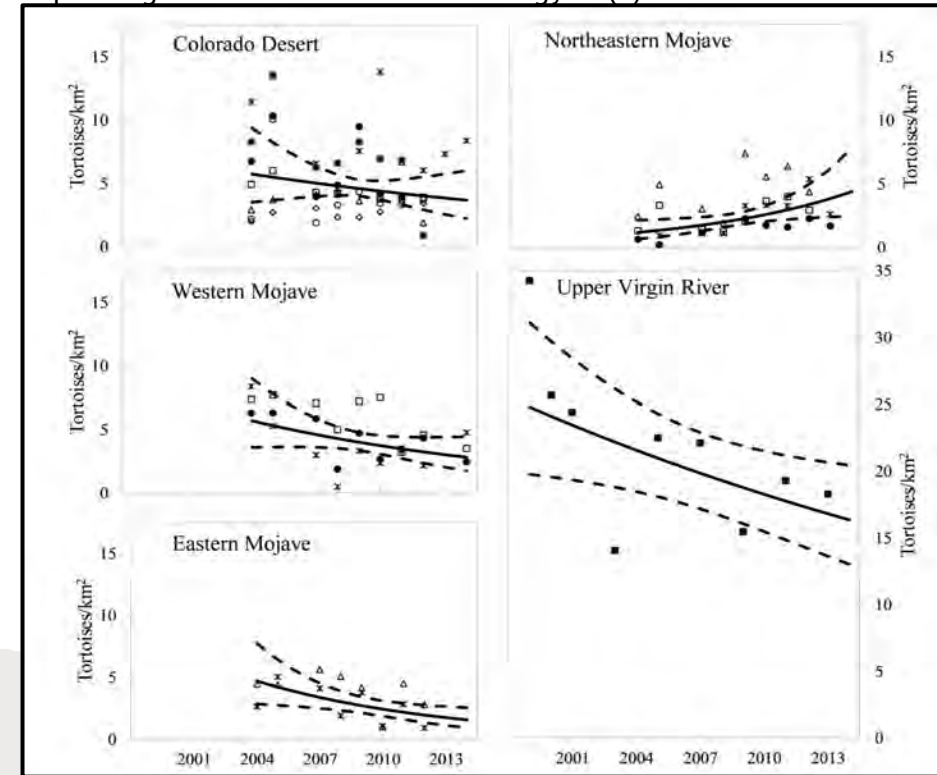
Mojave Desert Tortoise Population Trends

2004 – 2014 Trend



Allison and McLuckie 2018

Herpetological Conservation and Biology 13(2):433-452.



Negative population trends in most TCAs (11/17) for Mojave Desert Tortoises indicate that adaptive management is required to support recovery and continuance of the species.

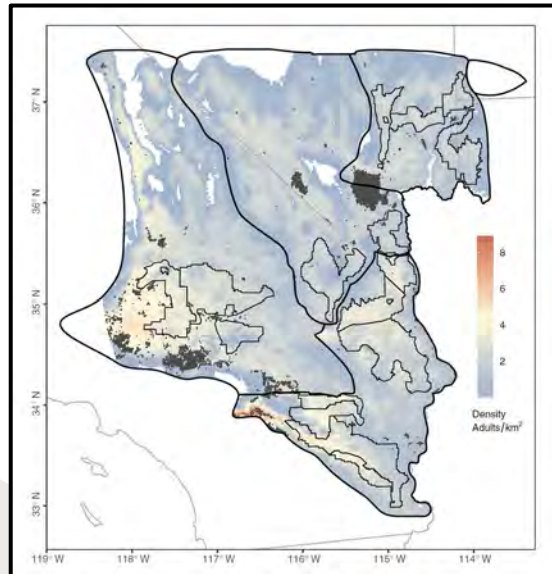
Spatial Variation in Tortoise Density



2001 – 2020 Trend

Zylstra et al. 2023

Ecosphere 14:e4448



- Density varied geographically
- Adult density declined ~1.8% per year
 - steepest declines in West Mojave
 - losing an estimated **129,000 adults (36%)** across range between 2001 and 2020.

Viab Population Threshold
3.9 adult tortoises per km²

TABLE 5 Predicted abundance (with associated standard error in parentheses) of adult Mojave desert tortoises in 2001 and 2020, and the difference between the two years, in modeled areas of four recovery units.

Recovery unit	2001		2020		Difference in abundance
	Area (km ²)	Abundance	Area (km ²)	Abundance	
Colorado Desert	30,815	75,918 (12,458)	30,723	62,820 (9862)	-12,782 (17,774)
Eastern Mojave	39,778	53,564 (10,784)	39,567	48,692 (9886)	-5081 (16,925)
Northeastern Mojave	19,537	24,322 (4991)	19,437	25,255 (5593)	1124 (8508)
Western Mojave	50,623	206,540 (35,443)	50,444	94,433 (16,737)	-112,020 (42,490)
Total	140,753	362,290 (41,513)	140,171	234,197 (25,106)	-129,380 (50,692)

Utility-Scale Solar Development



Opportunities to Promote Wildlife Compatibility?

Improving Siting of Utility-Scale Solar, Construction Practices, & Design Features



Graded and total removal

vs.



Elevated and vegetated




BLM's draft PEIS for Utility-Scale Solar

Document #DOI-BLM-HQ-3000-2023-0001-RMP-EIS

U.S. Department of the Interior
Bureau of Land Management

Draft Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Development



Volume I: Executive Summary, Chapters 1-7

The image shows the cover of a report. At the top, it has the document ID and BLM logo. The title is "Draft Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Development". Below the title is a photograph of a large solar farm in a desert landscape. At the bottom, it says "Volume I: Executive Summary, Chapters 1-7".



Described Habitat Exclusions

BLM's draft Solar PEIS

2.1.1.6 Exclusion Criteria Under the Action Alternatives

Under each of the Action Alternatives, lands would be excluded from solar energy application using various resource-based exclusion criteria, which are presented in Table 2.1-3. For this Solar Programmatic EIS, the exclusion criteria adopted under the Western Solar Plan have been reviewed and updated, taking into account BLM experience to date in permitting and monitoring PV solar energy facilities, as well as public and cooperating agency input.

The extent of the land area excluded by application of those criteria will change over time as land use plans are revised or amended and new information on resource conditions is developed. For example, under Criterion 2, which excludes critical habitat for species protected under the ESA, if a new species is listed in the future, the critical habitat for that species would be excluded upon its designation. The maps for the Action Alternatives presented in Section 2.1.1 reflect the exclusion criteria to the extent that available GIS data allow, although some resource exclusions remain unmapped due to information sensitivity or lack of complete geospatial data for the 11-state planning area. Lands are excluded if they satisfy any one of the exclusion criteria regardless of whether they are shown to be part of exclusion areas mapped based on GIS data.

Table 2.1-3. Proposed Resource-Based Exclusion Criteria Common to All Action Alternatives

Exclusion No.	Exclusion Name	Exclusion Description	Exclusion Status for Alternatives Analysis *
1	Areas of Critical Environmental Concern (ACECs)	All ACECs identified in applicable land use plans.	Mapped
2	Threatened and Endangered Species	All designated and proposed critical habitat areas for species protected under the ESA (https://ecos.fws.gov/ecp/report/critical-habitat). Known occupied habitat for ESA-listed species, based on current available information or surveys of project areas."	Partially mapped
3	Lands with Wilderness Characteristics	All areas for which an applicable land use plan establishes protection for lands with wilderness characteristics.	Partially mapped
4	Recreation	Developed recreational facilities and all Special Recreation Management Areas (SRMAs) identified in applicable land use plans."	Mapped
5	Habitat Areas	Dixie valley toad habitat, Wyoming toad habitat, and Carson wandering sparrow habitat. All areas where the BLM has agreements with USFWS and/or state agency partners and other entities to manage sensitive species habitat in a manner that would preclude solar energy development, including habitat protection and other recommendations in conservation agreements/strategies.	Unmapped
6	Greater Sage-Grouse and Gunnison Sage-Grouse	Greater sage-grouse and Gunnison sage-grouse habitat as identified for exclusion in applicable land use plans."	Mapped

7	Land Use Designations	All areas designated as no surface occupancy (NSO) in applicable land use plans. All ROW exclusion areas identified in applicable land use plans. All ROW avoidance areas identified in applicable land use plans to the extent the purpose of the ROW avoidance is incompatible with solar energy development.	Mapped
8	Desert Tortoise	All desert tortoise translocation sites identified in applicable resource management plans, project-level mitigation plans, or Biological Opinions.	Unmapped

Table 2.1-3

Proposed Resource Exclusion Criteria to All Action Alternatives

- "All ACECs"
- "All Designated & Proposed Critical Habitat for ESA protected species"
- "Known Occupied habitat for ESA-listed species"
- "All desert tortoise translocation sites applicable"



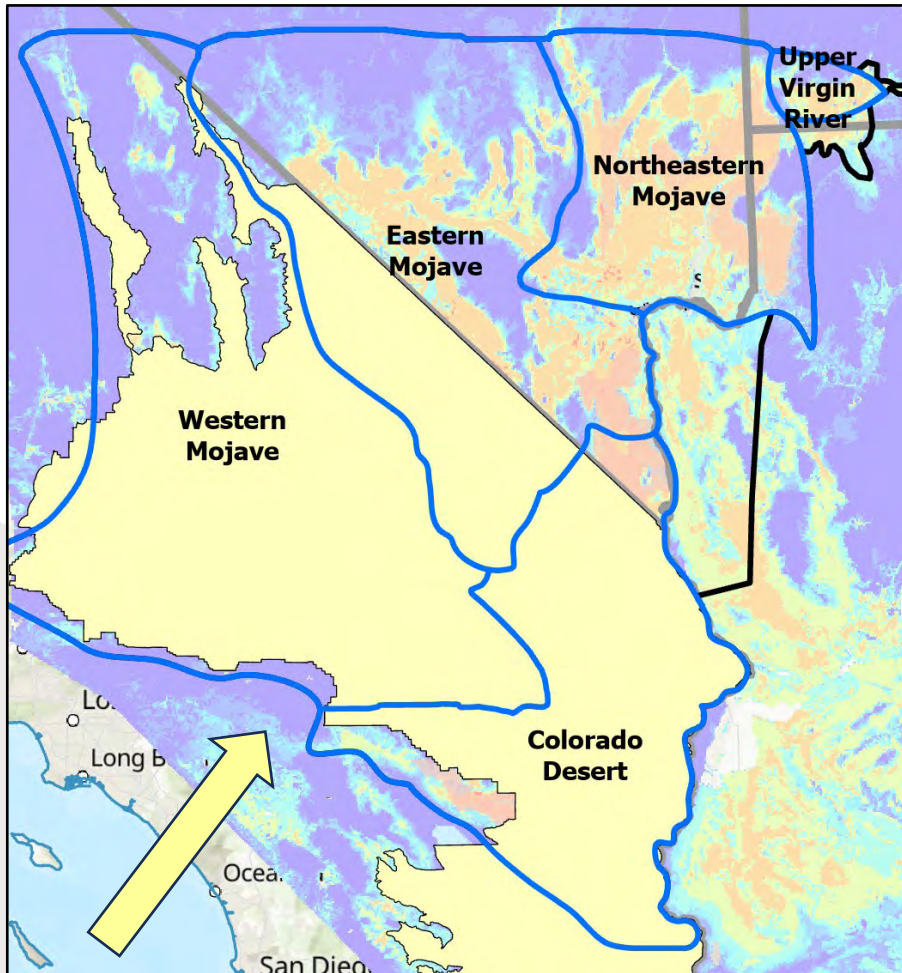
Described Habitat Exclusions

BLM's draft Solar PEIS

As Described Within the **Range of Mojave Desert Tortoise**, the USFWS Supports Excluding Solar from

- ✓ ACECs
- ✓ Designated Critical Habitat
- ✓ Occupied Tortoise Habitat
- ✓ Translocation Sites

Potential Tortoise Habitat Impacts in draft Solar PEIS



- **California** - tortoise habitat mostly excluded
- **Nevada** – largest impact
- **Arizona** – impact to listed and unlisted tortoise range
- **Utah** – southwest corner

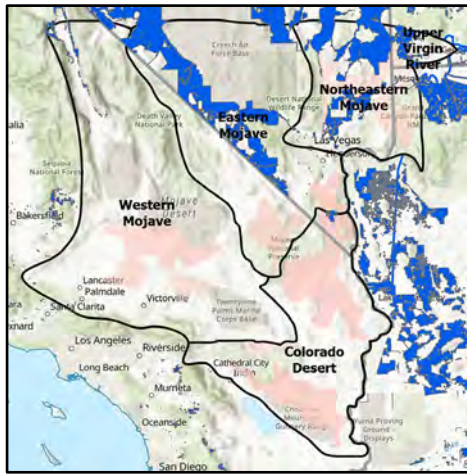
Desert Renewable Energy Conservation Plan (DRECP)
BLM 2016 (10.8 million acres in California)



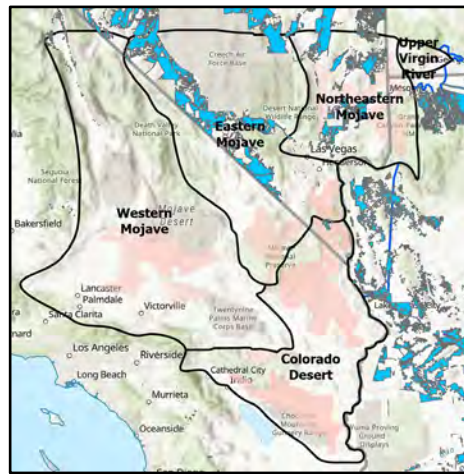
Potential Placement of Solar In Tortoise Habitat



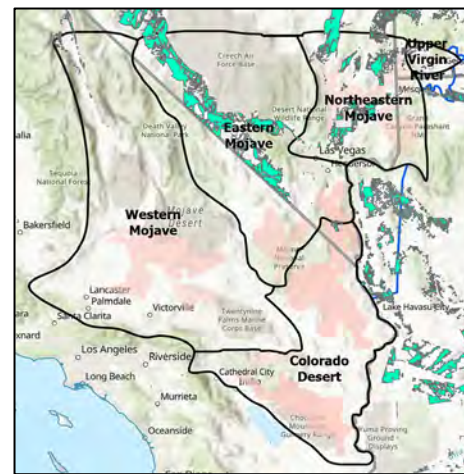
“targeting ~700,000 ac for solar across 11 states”



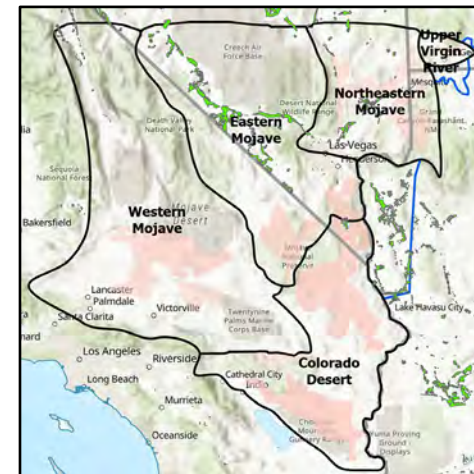
Alternative 1



Alternative 2



Alternative 3



Alternative 4



Alternative 5

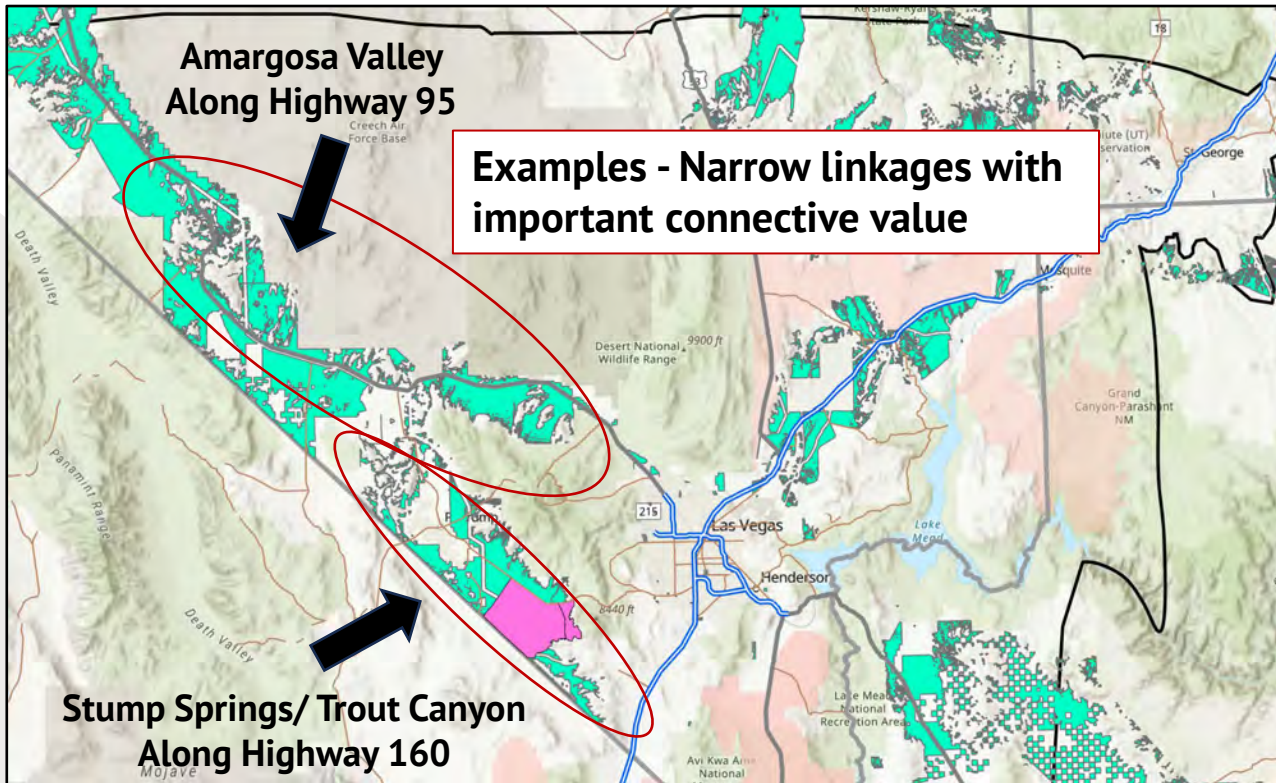
BLM's Proposed Development Alternative	Within Entire Range of Mojave Desert Tortoise		Within Entire Range & Represents Highly Suitable Habitat (≥ 0.5 Habitat Suitability*)		ESA Listed Range (West of Colorado River) & Represents Highly Suitable Habitat (≥ 0.5 Habitat Suitability*)		Non-Listed Range (East of Colorado River) & Represents Highly Suitable Habitat (≥ 0.5 Habitat Suitability*)	
	km ²	acres	km ²	acres	Km ²	Acres	km ²	acres
Alt 1	13,711	3,388,125	12,938	3,197,109	11,193	2,765,851	1,745	431,199
Alt 2	8,594	2,123,663	7,578	1,872,600	6,252	1,544,903	1,326	327,662
Alt 3	7,274	1,797,478	6,494	1,604,732	5,328	1,316,577	1,166	288,125
Alt 4	2,385	589,357	2,053	507,317	1,449	358,056	604	149,252
Alt 5	2,093	517,201	1,847	456,412	1,355	334,828	492	121,576

Spatial files associated with BLM's Draft Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Development (<http://gbp-blm.egis.hub.arcgis.com/datasets/6fb6871a7d2445b2800c4c0e5bb3fc0f/about>; Published 1/16/2024; Information Updated 2/2/2024); Table calculations generated by USFWS-Desert Tortoise Recovery Office 3/16/2024; *Nussear et al. 2009 USGS Open File Report 2009-1102 (Habitat Suitability Model).

Solar Exclusions Required In Tortoise Habitat To Meet Recovery & Management Goals



Alternative 3
BLM's Preferred Action

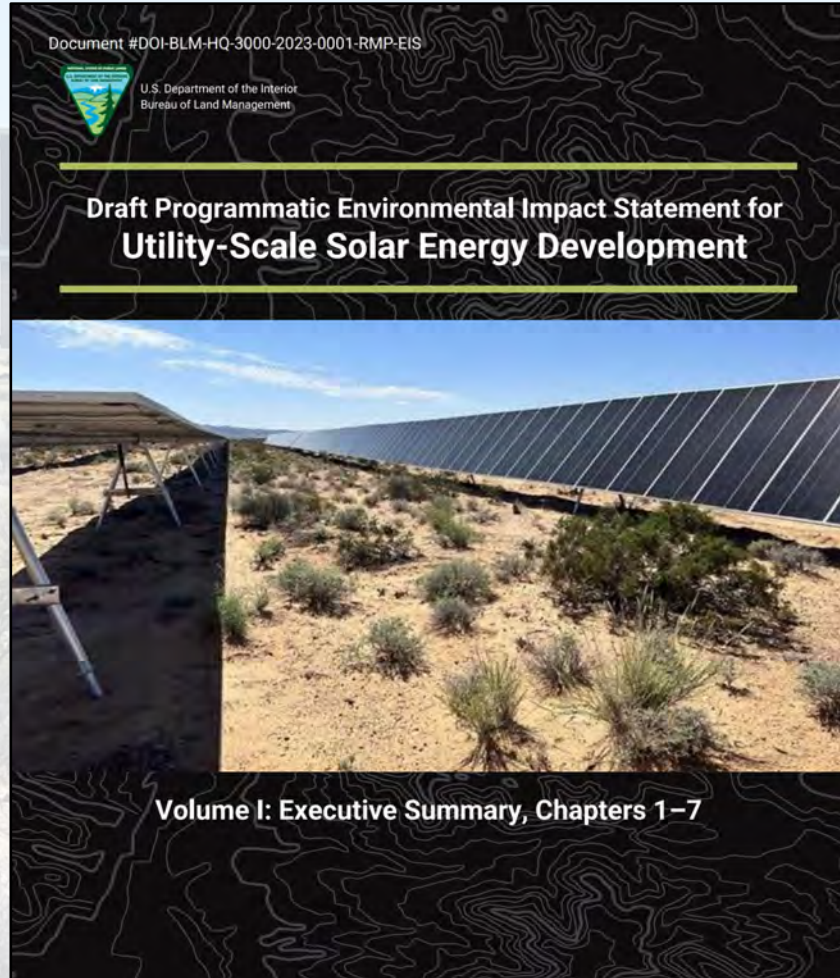


Recommendations Depend On

- Maintaining important **habitat linkages & connectivity** & promoting intact habitat
- Overall **project siting & strategy** for solar development
- Acceptance of **pending projects & “Grandfathering”** requirements
- **Other disturbances on BLM lands** (resource extractions, airport extensions, etc.)
- **Non-BLM habitat disturbances** (solar, many more)



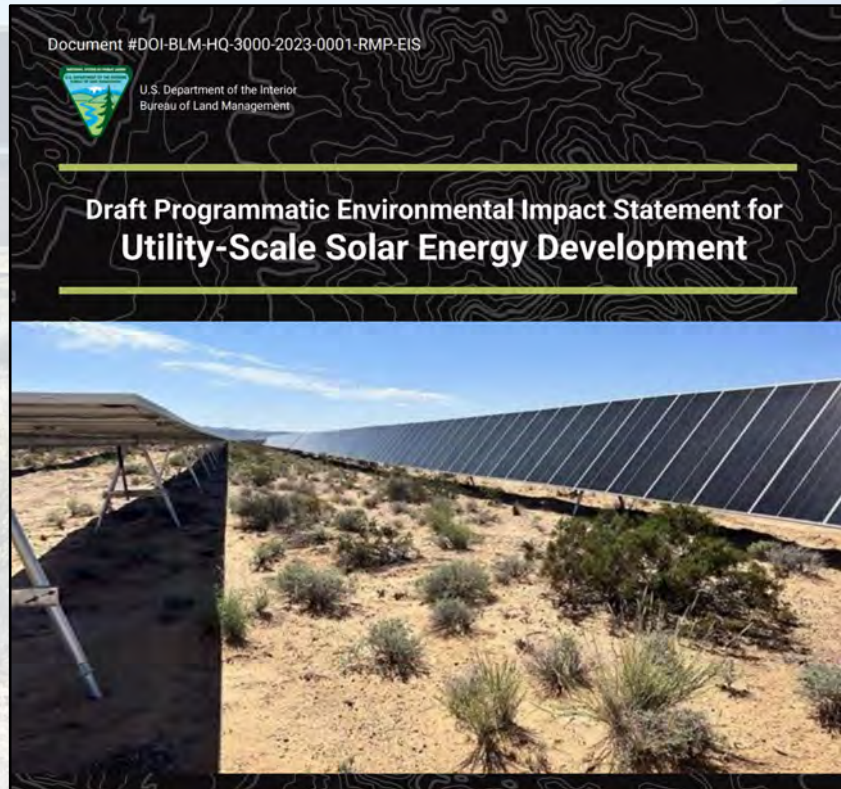
Improved Design Features



- Minimizing disturbance
- Maintaining landscape contours
- Retaining native vegetation
- Modified construction
- Many others

“Implementing revised design features within **modeled habitat with a suitability index ≥ 0.5 OR habitat supporting ≥ 5 tortoises per square-mile**” (currently defined in BLM’s draft PEIS).

Improved Design Features



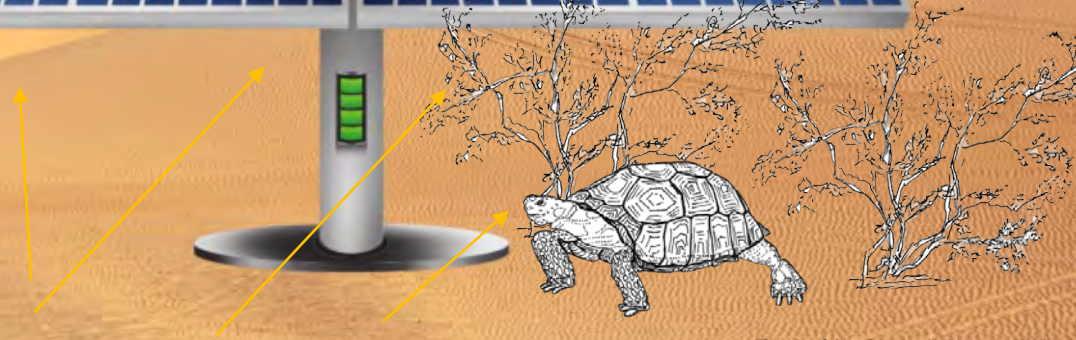
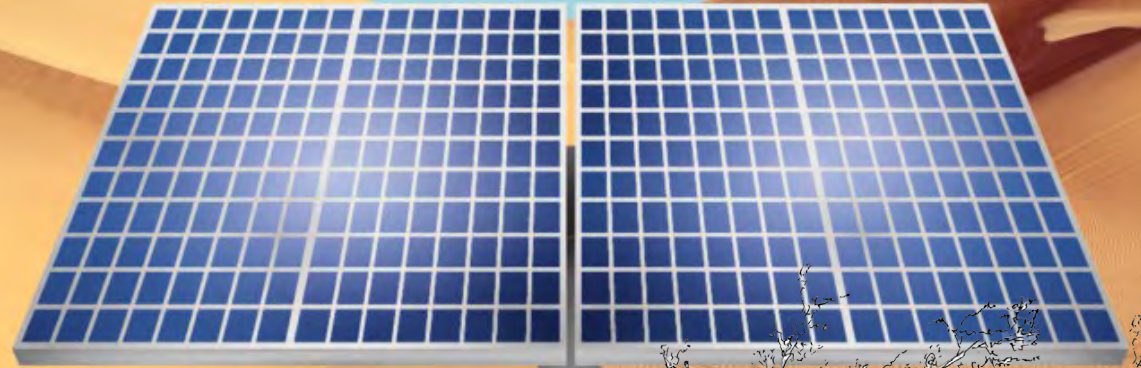
DTRO Recommendation:

Include a **separate section** in Western Solar Plan (draft PEIS) to accurately describe design features needed in Mojave Desert Tortoise habitats

How will tortoises perform in engineered solar environments?



More discussion this afternoon



Thank You For Supporting Mojave Desert Tortoise Recovery!



Desert Tortoise Recovery Office

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



Photo – Corey Mitchell