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Via email only

March 1, 2023

Attn: Jeremy Bluma, Acting Division Chief
National Renewable Energy Coordination Office
Bureau of Land Management Headquarters
Solar Energy PEIS Scoping, 1849 C Street NW, Washington, D.C. 20006
solar@blm.gov, jbluma@blm.gov

RE: Scoping: Programmatic Environmental Impact Statement (pEIS) To Evaluate Utility-Scale Solar Energy Planning and Amend Resource Management Plans for Renewable Energy Development

Dear Mr. Bluma,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer that the Bureau of Land Management (BLM) email to us future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats occupied by Mojave Desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise) and Sonoran desert tortoise (*G. morafkai*) (synonymous with Morafka's desert tortoise), our comments pertain to enhancing protection of this species during activities contemplated by the BLM and under this pEIS. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

The Mojave desert tortoise is among the top 50 species on the list of the world's most endangered tortoises and freshwater turtles. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021), "… based on population reduction (decreasing density), habit loss of over 80% over three generations (90 years), including past reductions and predicted future declines, as well as the effects of disease (upper respiratory tract disease/mycoplasmosis). *Gopherus agassizii* (*sensu stricto*) comprises tortoises in the most well-studied 30% of the larger range; this portion of the original range has seen the most human impacts and is where the largest past population losses had been documented. A recent rigorous rangewide population reassessment of *G. agassizii* (*sensu stricto*) has demonstrated continued adult population and density declines of about 90% over three generations (two in the past and one ongoing) in four of the five *G. agassizii* recovery units and inadequate recruitment with decreasing percentages of juveniles in all five recovery units." This status, in part, prompted the Council to join Defenders of Wildlife and Desert Tortoise Preserve Committee (Defenders of Wildlife et al. 2020) to petition the California Fish and Game Commission in March 2020 to elevate the listing of the Mojave desert tortoise from threatened to endangered in California.

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The Council also believes that the Mojave desert tortoise meets the definition of an endangered species under the Federal Endangered Species Act (FESA). The information summarized in the next section, *Status of the Mojave Desert Tortoise (Gopherus agassizii)*, indicates that the BLM has been ineffective in halting population declines, which resulted in non-viable populations. Because most of the populations of the Mojave desert tortoise were non-viable in 2014 (Table 2, below), are declining, as well as the threats to the Mojave desert tortoise are numerous and have not been substantially reduced throughout the species' range, the Council believes the Mojave desert tortoise should be designated as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW).

Mojave Desert Tortoise

Demographic Status of the Mojave Desert Tortoise (*Gopherus agassizii*)

We request that the BLM consider and analyze the direct, indirect, and cumulative impacts of the Proposed Action and Alternatives on the Mojave desert tortoise. This summary provides crucial information on the demographic status and trend of this species, as well as the rationale why decisions on renewable energy development under this pEIS must weigh heavily on the side of the Mojave desert tortoise throughout their habitat.

The Council has serious concerns about direct, indirect, and cumulative sources of human related mortality associated with the Mojave desert tortoise given the status and trend of the species range-wide, within each of the five recovery units, and within the Tortoise Conservation Areas (TCAs) that comprise each recovery unit. There are 17 populations of Mojave desert tortoise described below that occur in Critical Habitat Units (CHUs) and Tortoise Conservation Areas (TCAs); 14 are on lands managed by the BLM.

Densities of Adult Mojave Desert Tortoises: A few years after listing the Mojave desert tortoise under the FESA, the USFWS published a Recovery Plan for the Mojave desert tortoise (USFWS 1994a). It contained a detailed population viability analysis. In this analysis, the minimum viable density of a Mojave desert tortoise population is 10 adult tortoises per mile^2 (3.9 adult tortoises per km^2). This assumed a male-female ratio of 1:1 (USFWS 1994a, page C25) and certain areas of habitat with most of these areas geographically linked by adjacent borders or corridors of suitable tortoise habitat. Populations of Mojave desert tortoises with densities below this density are in danger of extinction (USFWS 1994a, page 32). The revised recovery plan (USFWS 2011) that designated five recovery units for the Mojave desert tortoise are intended to conserve the genetic, behavioral, and morphological diversity necessary for the recovery of the entire listed species (Allison and McLuckie 2018).

Range-wide, densities of adult Mojave desert tortoises declined more than 32% between 2004 and 2014 (Table 1) (USFWS 2015). At the recovery unit level, between 2004 and 2014, densities of adult desert tortoises declined, on average, in every recovery unit except the Northeastern Mojave (Table 1). Adult densities in the Northeastern Mojave Recovery Unit increased 3.1% per year (SE = 4.3%), while the other four recovery units declined at different annual rates: Colorado Desert (4.5%, SE = 2.8%), Upper Virgin River (3.2%, SE = 2.0%), Eastern Mojave (11.2%, SE = 5.0%), and Western Mojave (7.1%, SE = 3.3%)(Allison and McLuckie 2018). However, the small area and low starting density of the tortoises in the Northeastern Mojave Recovery Unit (lowest density of all Recovery Units) resulted in a small overall increase in the number of adult tortoises by 2014 (Allison and McLuckie 2018). In contrast, the much larger areas of the Eastern Mojave, Western Mojave, and Colorado Desert recovery units, plus the higher estimated initial densities in these areas, explained much of the estimated total loss of adult tortoises since 2004 (Allison and McLuckie 2018).

At the population level, represented by tortoises in the TCAs, densities of 10 of 17 monitored populations of the Mojave desert tortoise declined from 26% to 64% and 11 have a density that is less than 3.9 adult tortoises per km^2 (USFWS 2015).

Population Data on Mojave Desert Tortoise: The Mojave desert tortoise was listed as threatened under the FESA in 1990. The listing was warranted because of ongoing population declines throughout the range of the tortoise from multiple human-caused activities. Since the listing, the status of the species has changed. Population numbers (abundance) and densities continue to decline substantially between 2004 and 2014 (please see Table 1).

Density of Juvenile Mojave Desert Tortoises: Survey results indicate that the proportion of juvenile desert tortoises has been decreasing in all five recovery units since 2007 (Allison and McLuckie 2018). The probability of encountering a juvenile tortoise was consistently lowest in the Western Mojave Recovery Unit. Allison and McLuckie (2018) provided reasons for the decline in juvenile desert tortoises in all recovery units. These included decreased food availability for adult female

Table 1. Summary of 10-year trend data for 5 Recovery Units and 17 Critical Habitat Units (CHU)/Tortoise Conservation Areas (TCA) for the Mojave desert tortoise, *Gopherus agassizii* (=Agassiz's desert tortoise). The table includes the area of each Recovery Unit and Critical Habitat Unit (CHU)/Tortoise Conservation Area (TCA), percent of total habitat for each Recovery Unit and Critical Habitat Unit/Tortoise Conservation Areas, density (number of breeding adults/km^2 and standard errors = SE), and the percent change in population density between 2004-2014. Populations below the viable level of 3.9 adults/km^2 (10 adults per mi^2) (assumes a 1:1 sex ratio) and showing a decline from 2004 to 2014 are in red (Allison and McLuckie 2018, USFWS 2015).

Recovery Unit Designated Critical Habitat Unit/Tortoise Conservation Area	Surveyed area (km^2)	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/km^2 (SE)	% 10-year change (2004–2014)
Western Mojave, CA	**6,294**	**24.51**	**2.8 (1.0)**	**–50.7 decline**
Fremont-Kramer	2,347	9.14	2.6 (1.0)	–50.6 decline
Ord-Rodman	852	3.32	3.6 (1.4)	–56.5 decline
Superior-Cronese	3,094	12.05	2.4 (0.9)	–61.5 decline
Colorado Desert, CA	**11,663**	**45.42**	**4.0 (1.4)**	**–36.25 decline**
Chocolate Mtn AGR, CA	713	2.78	7.2 (2.8)	–29.77 decline
Chuckwalla, CA	2,818	10.97	3.3 (1.3)	–37.43 decline
Chemehuevi, CA	3,763	14.65	2.8 (1.1)	–64.70 decline
Fenner, CA	1,782	6.94	4.8 (1.9)	–52.86 decline
Joshua Tree, CA	1,152	4.49	3.7 (1.5)	+178.62 increase
Pinto Mtn, CA	508	1.98	2.4 (1.0)	–60.30 decline
Piute Valley, NV	927	3.61	5.3 (2.1)	+162.36 increase
Northeastern Mojave	**4,160**	**16.2**	**4.5 (1.9)**	**+325.62 increase**
Beaver Dam Slope, NV, UT, AZ	750	2.92	6.2 (2.4)	+370.33 increase
Coyote Spring, NV	960	3.74	4.0 (1.6)	+ 265.06 increase
Gold Butte, NV & AZ	1,607	6.26	2.7 (1.0)	+ 384.37 increase
Mormon Mesa, NV	844	3.29	6.4 (2.5)	+ 217.80 increase
Eastern Mojave, NV & CA	**3,446**	**13.42**	**1.9 (0.7)**	**–67.26 decline**
El Dorado Valley, NV	999	3.89	1.5 (0.6)	–61.14 decline
Ivanpah, CA	2,447	9.53	2.3 (0.9)	–56.05 decline
Upper Virgin River	**115**	**0.45**	**15.3 (6.0)**	**–26.57 decline**
Red Cliffs Desert	115	0.45	15.3 (6.0)	–26.57 decline
Total amount of land	**25,678**	**100.00**		**–32.18 decline**

tortoises resulting in reduced clutch size, decreased food availability resulting in increased mortality of juvenile tortoises, prey switching by coyotes from mammals to tortoises, and increased abundance of common ravens that typically prey on smaller desert tortoises.

Declining adult tortoise densities through 2014 have left the Western Mojave adult numbers at 49% (a 51% decline of their 2004 levels) (Allison and McLuckie 2018, USFWS 2015). Such steep declines in the density of adults are only sustainable if there are suitably large improvements in reproduction and juvenile growth and survival. However, the proportion of juveniles has not increased anywhere in the range of the Mojave desert tortoise since 2007 (Allison and McLuckie 2018).

Abundance of Mojave Desert Tortoises: Allison and McLuckie (2018) noted that because the area available to tortoises (i.e., tortoise habitat and linkage areas between habitats) is decreasing, trends in tortoise density no longer capture the magnitude of decreases in abundance. Hence, they reported on the change in abundance or numbers of the Mojave desert tortoise in each recovery unit (Table 2). They noted that these estimates in abundance are likely higher than actual numbers of tortoises, and the changes in abundance (i.e., decrease in numbers) are likely lower than actual numbers because of their habitat calculation method. They used area estimates that removed only impervious surfaces created by development as cities in the desert expanded. They did not consider degradation and loss of habitat from other sources, such as the recent expansion of military operations (753.4 km^2 so far on Fort Irwin and the Marine Corps Air Ground Combat Center), intense or large scale fires (e.g., 576.2 km^2 of critical habitat that burned in 2005), development of utility-scale solar facilities (as of 2015, 194 km^2 have been permitted) (USFWS 2016), or other sources of degradation or loss of habitat (e.g., recreation, mining, grazing, infrastructure, etc.). Thus, the declines in abundance of Mojave desert tortoise are likely greater than those reported in Table 2.

Table 2. Estimated change in abundance of adult Mojave desert tortoises in each recovery unit between 2004 and 2014 (Allison and McLuckie 2018). Decreases in abundance are in red.

Recovery Unit	Modeled Habitat (km^2)	2004 Abundance	2014 Abundance	Change in Abundance	Percent Change in Abundance
Western Mojave	23,139	131,540	64,871	-66,668	-51%
Colorado Desert	18,024	103,675	66,097	-37,578	-36%
Northeastern Mojave	10,664	12,610	46,701	34,091	270%
Eastern Mojave	16,061	75,342	24,664	-50,679	-67%
Upper Virgin River	613	13,226	10,010	-3,216	-24%
Total	**68,501**	**336,393**	**212,343**	**-124,050**	**-37%**

Habitat Availability: Data on population density or abundance does not indicate population viability. The area of protected habitat or reserves for the subject species is a crucial part of the viability analysis along with data on density, abundance, and other population parameters. In the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a), the analysis of population viability included population density and size of reserves (i.e., areas managed for the desert tortoise) and population numbers (abundance) and size of reserves. The USFWS Recovery Plan reported that as population densities for the Mojave desert tortoise decline, reserve sizes must increase, and as population numbers (abundance) for the Mojave desert tortoise decline, reserve sizes must increase (USFWS 1994a). In 1994, reserve design (USFWS 1994a) and designation of critical habitat (USFWS 1994b) were based on the population viability analysis from numbers (abundance) and densities of populations of the Mojave desert tortoise in the early 1990s. Inherent in this analysis is that the lands be managed with reserve level protection (USFWS 1994a, page 36) or ecosystem protection as described in section 2(b) of the FESA, and that sources of mortality be reduced so recruitment exceeds mortality (that is, lambda > 1)(USFWS 1994a, page C46).

Habitat loss would also disrupt the prevailing population structure of this widely distributed species with geographically limited dispersal (isolation by distance; Murphy et al. 2007; Hagerty and Tracy 2010). Allison and McLuckie (2018) anticipate an additional impact of this habitat loss/degradation is decreasing resilience of local tortoise populations by reducing demographic connections to neighboring populations (Fahrig 2007). Military and commercial operations and infrastructure projects that reduce tortoise habitat in the desert are anticipated to continue (Allison and McLuckie 2018) as are other sources of habitat loss/degradation.

Allison and McLuckie (2018) reported that the life history of the Mojave desert tortoise puts it at greater risk from even slightly elevated adult mortality (Congdon et al. 1993; Doak et al. 1994), and recovery from population declines will require more than enhancing adult survivorship (Spencer et al. 2017). The negative population trends in most of the TCAs for the Mojave desert tortoise indicate that this species is on the path to extinction under current conditions (Allison and McLuckie 2018). They state that their results are a call to action to remove ongoing threats to tortoises from TCAs, and possibly to contemplate the role of human activities outside TCAs and their impact on tortoise populations inside them.

Densities, numbers, and habitat for the Mojave desert tortoise declined between 2004 and 2014. As reported in the population viability analysis, to improve the status of the Mojave desert tortoise, reserves (area of protected habitat) must be established and managed. When densities of tortoises decline, the area of protected habitat must increase. When the abundance of tortoises declines, the area of protected habitat must increase. We note that the Desert Tortoise (Mojave Population) Recovery Plan was released in 1994 and its report on population viability and reserve design was reiterated in the 2011 Revised Recovery Plan as needing to be updated with current population data (USFWS 2011, p. 83). With lower population densities and abundance, a revised population viability analysis would show the need for greater areas of habitat to receive reserve level of management for the Mojave desert tortoise. In addition, we note that none of the recovery actions that are fundamental tenets of conservation biology has been implemented throughout most or all of the range of the Mojave desert tortoise.

Recent data since 2014 indicate that tortoise populations in sampled TCAs are not improving and in some areas are declining (Table 3).

Important points from these tables include the following:

Change in Status for the Mojave Desert Tortoise Range-wide

- Ten of 17 populations of the Mojave desert tortoise declined from 2004 to 2014.

- Eleven of 17 populations of the Mojave desert tortoise are below the population viability threshold. These 11 populations represent 89.7 percent of the range-wide habitat in CHUs/TCAs.

Change is Status for the Western Mojave Recovery Unit

- This recovery unit had a 51 percent decline in tortoise density from 2004 to 2014.
- The density of tortoises continues to fall below the density needed for population viability from 2015 to 2021.
- Tortoises in this recovery unit have densities that are below viability.

Change in Status for the Mojave Desert Tortoise in the Colorado Desert Recovery Unit:

- The population that had the highest density in this recovery unit had a continuous reduction in density since 2018 and fell substantially to the minimum density needed for population viability in 2021.

Change in Status for the Mojave Desert Tortoise in the Northeastern Mojave Recovery Unit:

- Two of the three population with densities greater than needed for population viability declined to level below the minimum viability threshold.

- The most recent data from three of the four populations in this recovery unit have densities below the minimum density needed for population viability.
- The population that had the highest density in this recovery unit has declined since 2014.

Change in Status for the Mojave Desert Tortoise in the Eastern Mojave Recovery Unit:
- Both populations in this recovery unit have densities below the minimum density needed for population viability.

Change in Status for the Mojave Desert Tortoise in the Upper Virgin River Recovery Unit:
- The one population in this recovery unit is small and appears to have stable densities.

BLM is the primary land management entity in the range of the Mojave desert tortoise. The Council believes these data (Tables 1, 2, and 3) clearly show that BLM's implementation of a conservation strategy for the Mojave desert tortoise through implementation of its Resource Management Plan and Amendments to conserve the tortoise as required under the FESA has failed.

The Endangered Mojave Desert Tortoise: The Council believes that the Mojave desert tortoise meets the definition of an endangered species. In the FESA, Congress defined an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range…" In the California Endangered Species Act (CESA), the California legislature defined an "endangered species" as a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant, which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes (California Fish and Game Code § 2062). Because most of the populations of the Mojave desert tortoise were non-viable in 2014, most are declining, and the threats to the Mojave desert tortoise are numerous and have not been substantially reduced throughout the species' range, the Council believes the Mojave desert tortoise should be designated as an endangered species by the USFWS and California Fish and Game Commission. Despite a recent report by USFWS (Averill-Murray and Field 2023) that a large number of individuals of a listed species and an increasing population trend in part of the range of the species prohibits it from meeting the definitions of endangered, we are reminded that the tenants of conservation biology include numerous factors when determining population viability. The number of individual present is one of a myriad of factors (e.g., species distribution and density, survival strategy, sex ratio, recruitment, genetics, threats including climate change, etc.) that are used to determine population viability. In addition, reviewing the data through 2021 does not show an increasing population trend (please see Tables 1 and 3).

IUCN Species Survival Commission: As mentioned above, the International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers Mojave desert tortoise to be Critically Endangered (Berry et al. 2021). This designation is more grave than endangered and the designation prior to extinct in the wild.

Table 3. Summary of data for Agassiz's desert tortoise, *Gopherus agassizii* (=Mojave desert tortoise) from 2004 to 2021 for the 5 Recovery Units and 17 Critical Habitat Units (CHUs)/Tortoise Conservation Areas (TCAs). The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km^2 and standard errors = SE), and percent change in population density between 2004-2014 (USFWS 2015). Populations below the viable level of 3.9 breeding individuals/km^2 (10 breeding individuals per mi^2) (assumes a 1:1 sex ratio) (USFWS 1994a, 2015) or showing a decline from 2004 to 2014 are in **red.**

Recovery Unit: Designated CHU/TCA &	**% of total habitat area in Recovery Unit & CHU/TCA**	**2004 density/ km^2**	**2014 density/ km^2 (SE)**	**% 10-year change (2004–2014)**	**2015 density/ km^2**	**2016 density/ km^2**	**2017 density/ km^2**	**2018 density/ km^2**	**2019 density/ km^2**	**2020 density/ km^2**	**2021 density/ km^2**
Western Mojave, CA	**24.51**		**2.8 (1.0)**	**–50.7 decline**							
Fremont-Kramer	9.14		2.6 (1.0)	–50.6 decline	4.5	No data	4.1	No data	2.7	1.7	No data
Ord-Rodman	3.32		3.6 (1.4)	–56.5 decline	No data	No data	3.9	2.5/3.4*	2.1/2.5*	No data	1.9/2.5*
Superior-Cronese	12.05		2.4 (0.9)	–61.5 decline	2.6	3.6	1.7	No data	1.9	No data	No data
Colorado Desert, CA	**45.42**		**4.0 (1.4)**	**–36.25 decline**							
Chocolate Mtn AGR, CA	2.78		7.2 (2.8)	–29.77 decline	10.3	8.5	9.4	7.6	7.0	7.1	3.9
Chuckwalla, CA	10.97		3.3 (1.3)	–37.43 decline	No data	No data	4.3	No data	1.8	4.6	2.6
Chemehuevi, CA	14.65		2.8 (1.1)	–64.70 decline	No data	1.7	No data	2.9	No data	4.0	No data
Fenner, CA	6.94		4.8 (1.9)	–52.86 decline	No data	5.5	No data	6.0	2.8	No data	5.3
Joshua Tree, CA	4.49		3.7 (1.5)	+178.62 increase	No data	2.6	3.6	No data	3.1	3.9	No data
Pinto Mtn, CA	1.98		2.4 (1.0)	–60.30 decline	No data	2.1	2.3	No data	1.7	2.9	No data
Piute Valley, NV	3.61		5.3 (2.1)	+162.36 increase	No data	4.0	5.9	No data	No data	No data	3.9

Northeastern Mojave AZ, NV, & UT	**16.2**		**4.5 (1.9)**	**+325.62 increase**							
Beaver Dam Slope, NV, UT, & AZ	2.92		6.2 (2.4)	+370.33 increase	No data	5.6	1.3	5.1	2.0	No data	No data
Coyote Spring, NV	3.74		4.0 (1.6)	+ 265.06 increase	No data	4.2	No data	No data	3.2	No data	No data
Gold Butte, NV & AZ	6.26		2.7 (1.0)	+ 384.37 increase	No data	No data	1.9	2.3	No data	No data	2.4
Mormon Mesa, NV	3.29		6.4 (2.5)	+ 217.80 increase	No data	2.1	No data	3.6	No data	5.2	5.2
Eastern Mojave, NV & CA	**13.42**		**1.9 (0.7)**	**–67.26 decline**							
El Dorado Valley, NV	3.89		1.5 (0.6)	–61.14 decline	No data	2.7	5.6	No data	2.3	No data	No data
Ivanpah Valley, CA	9.53		2.3 (0.9)	–56.05 decline	1.9	No data	No data	3.7	2.6	No data	1.8
Upper Virgin River, UT & AZ	**0.45**		**15.3 (6.0)**	**–26.57 decline**							
Red Cliffs Desert**	0.45	29.1 (21.4-39.6)**	15.3 (6.0)	–26.57 decline	15.0	No data	19.1	No data	17.2	No data	
Rangewide Area of CHUs - TCAs/Rangewide Change in Population Status	**100.00**			**–32.18 decline**							

*This density includes the adult tortoises translocated from the expansion of the MCAGCC, that is resident adult tortoises and translocated adult tortoises.

**Methodology for collecting density data initiated in 1999

Cumulative Effects

Given this status and trend of Mojave desert tortoise populations, we request a thorough analysis of project impacts within this habitat area, including federal, state, and private actions, prior to proposing land use planning allocations for solar and other renewable energy development. While we recognize the programmatic nature of this analysis, we also recognize the very impactful effects of these land use planning decisions as implemented throughout the range of the Mojave desert tortoise since the Western Solar Plan of 2012 (BLM and DOE 2012).

In the cumulative effects analysis of the pEIS, please ensure that the Council on Environmental Quality's (CEQ's) "Considering Cumulative Effects under the National Environmental Policy Act" (1997) is followed, including the eight principles, when analyzing cumulative effects of the proposed action to the tortoise and its habitats. CEQ states, "Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects." The analysis "must describe the response of the resource to this environmental change." Cumulative impact analysis should "address the sustainability of resources, ecosystems, and human communities." For example, the pEIS should include data on the estimated number of acres of tortoise habitats degraded/lost, the numbers of tortoises that may be lost to growth-inducing impacts in the region, and the likelihood that the tortoise population will be sustained into the future given its status and trend as summarized previously.

Please see G*rand Canyon Trust* v. *F.A.A.,* 290 F.3d 339, 345-46 (D.C. Cir. 2002) in which the court decided that agencies must analyze the cumulative impacts of actions in environmental assessments. In the cumulative effects analysis of the pEIS, please ensure that the CEQ's "Considering Cumulative Effects under the National Environmental Policy Act" (1997) is followed, including the eight principles, when analyzing cumulative effects of the proposed action to the tortoise and its habitats. CEQ states, "Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects." The analysis "must describe the response of the resource to this environmental change." Cumulative impact analysis should "address the sustainability of resources, ecosystems, and human communities."

CEQ's guidance on how to analyze cumulative environmental consequences, which contains eight principles listed below:

1. Cumulative effects are caused by the aggregate of past, present, and reasonable future actions.
The effects of a proposed action on a given resource, ecosystem, and human community, include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to the effects (past, present, and future) caused by all other actions that affect the same resource.

2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
Individual effects from disparate activities may add up or interact to cause additional effects not apparent when looking at the individual effect at one time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.

3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resources, ecosystem, and human community that may be affected and developing an adequate understanding of how the resources are susceptible to effects.

4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
For cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly, or the effects are no longer of interest to the affected parties.

5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
Resources are typically demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.

6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
Repeated actions may cause effects to build up through simple addition (more and more of the same type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.

7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine damage, radioactive waste contamination, species extinctions). Cumulative effects analysis needs to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.

8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.

Analysts tend to think in terms of how the resource (e.g., Mojave desert tortoise), ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of each resource impacted by the proposed action including the Mojave desert tortoise. The CEQ recognizes that synergistic and interactive impacts as well as cumulative impacts should be analyzed in the National Environmental Policy Act (NEPA) document for the resource issues.

Principles six, seven, and eight apply to the long-term survival of the tortoise and should be analyzed in the pEIS. We request that the pEIS (1) include these eight principles in its analysis of cumulative impacts to the Mojave desert tortoise; (2) address the sustainability of the tortoise in proximate habitats and conservation areas; and (3) include effective mitigation along with monitoring and adaptive management plans that protect desert tortoises and their habitats during construction, operation, and maintenance, decommissioning, and restoration of approved facilities. The pEIS should include an analysis of all proposed mitigation and how its implementation (including monitoring for effectiveness and adaptive management) would result in "no net loss in quantity and quality of Mojave desert tortoise habitat….and using offsite mitigation (compensation) for unavoidable residual habitat loss."

To help BLM understand the complexity of the cumulative and interactive nature of multiple anthropogenic threats to desert tortoise populations and to help develop BLM's analysis of cumulative impacts in the pEIS, we have included a map of some of these multiple anthropogenic threats and their relationships to other threats (Tracy et al. 2004) (please see Figure 1 on the next page). Note that renewable energy development was not included as it was not a prominent activity at that time. Consequently, renewable energy projects would be another anthropogenic threat to the tortoise that should be added to Figure 1's complex web of anthropogenic threats to the Mojave desert tortoise.

Fragmenting Connectivity

The Council is very concerned about the effects of the existing solar projects on the range-wide connectivity of desert tortoise populations, approved under the Western Solar Plan (BLM and DOE 2012), and request a full incorporation of potential impacts on wildlife corridors associated with proposed land use plan allocations including habitat needed to provide functioning connectivity among Mojave tortoise populations. Further fragmenting of wildlife/tortoise corridors would substantially reduce or destroy their functionality as related to normal movements of the Mojave desert tortoise, genetic viability of populations, and critical needed corridors associated with the effects of future climate change. We strongly request that the environmental consequences section of the pEIS include a thorough analysis of this direct and indirect effects (40 Code of Federal Regulations 1502.16) to maintain the functions of population connectivity for the Mojave desert tortoise and other wildlife species be identified. Please use Averill-Murray et al. 2021 and other recent relevant publications for this analysis.

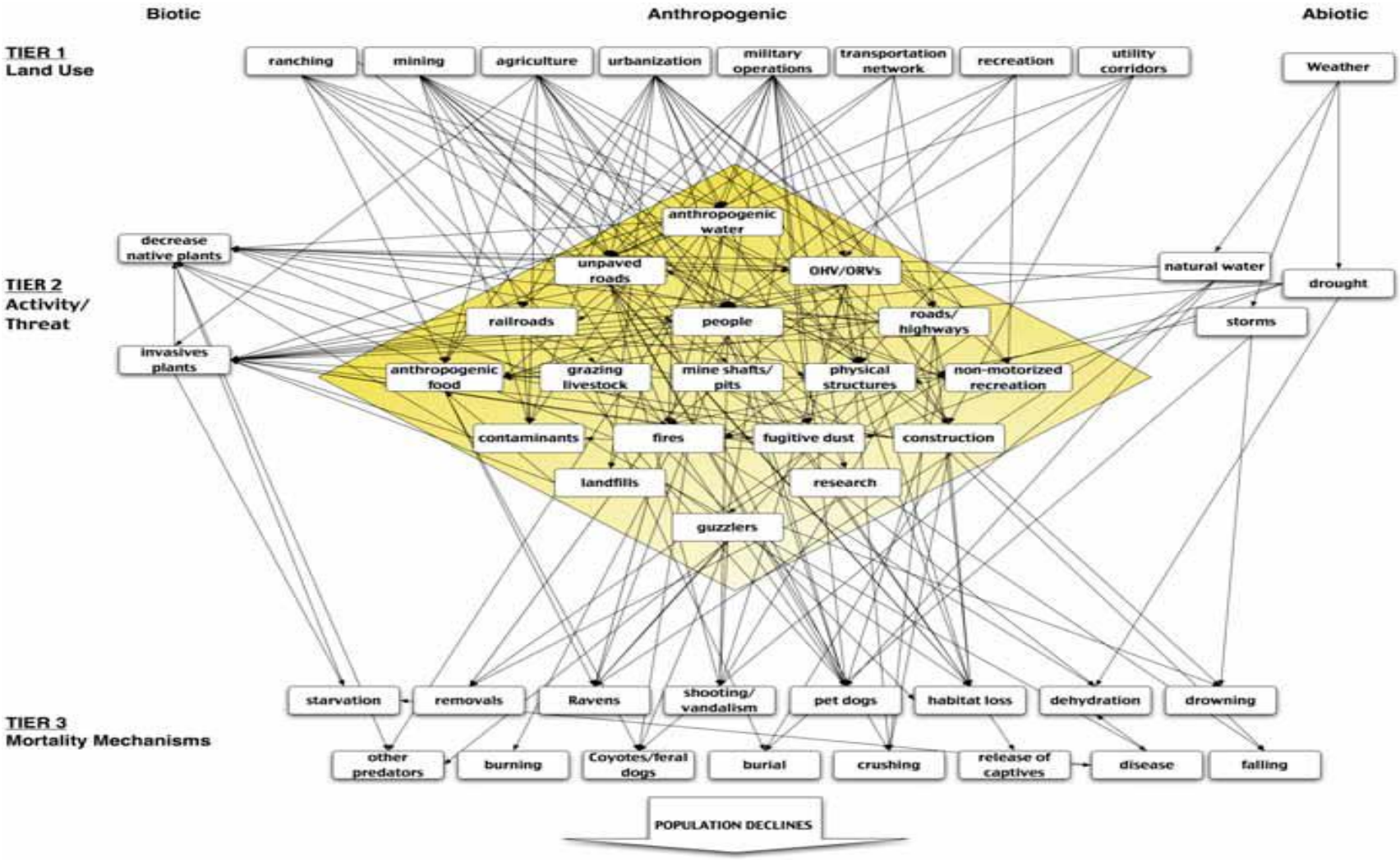


Figure 1. Network of threats demonstrating the interconnectedness between multiple human activities that interact to cause mortality and prevent recovery of tortoise populations. Tier 1 includes the major land use patterns that facilitate various activities (Tier 2) that impact tortoise populations through a suite of mortality factors (Tier 3). Just one land use results in several activities that are threats to the tortoise and cause numerous mortality mechanisms (from Tracy et al. 2004).

Effect of Roads

Roads have a profound effect on Mojave desert tortoise populations (see partial bibliography included in Appendix A). We request that the pEIS summarize this information and include analyses of the projected effects of new and improved roads associated with potential development. While mitigating project design features (PDFs) would have an effect of minimizing associated impacts, the presence of roads, even with low vehicle use, has several adverse effects on the desert tortoise and its habitats. These include the mortality; injury; collection; vandalism; release of ill and non-endemic tortoises; deterioration/loss of wildlife habitat, hydrology, geomorphology, and air quality; increased competition and predation (including by humans); and the loss of naturalness or pristine qualities, all of which must be analyzed in the pEIS.

Please include in the pEIS an analyses of the five major categories of primary road effects to the tortoise and special status species: (1) wildlife mortality from collisions with vehicles; (2) hindrance/barrier to animal movements thereby reducing access to resources and mates; (3) degradation of habitat quality; (4) habitat loss caused by disturbance effects in the wider environment and from the physical occupation of land by the road; and (5) subdividing animal populations into smaller and more vulnerable fractions (Jaeger et al. 2005a, 2005b, Roedenbeck et al. 2007).

Note that CEQ includes analysis of interactive and synergistic impacts with cumulative impacts. We request that the pEIS (1) include these eight principles in its analysis of cumulative impacts to the Mojave desert tortoise; (2) address the sustainability of the tortoise given the information on the *Demographic Status of the Mojave Desert* given herein; and (3) include mitigation for direct, indirect, and cumulative impacts along with science-based monitoring and adaptive management plans that protect desert tortoises and their habitats during construction operation and maintenance and decommissioning of approved facilities.

Climate Change, Non-native Plants, and Wildfire

We request that the pEIS address the effects of the proposed action on climate change and the effects that climate change may have on the proposed action. For the latter, we recommend including: an analysis of habitats that may provide refugia for tortoise populations; an analysis of how the proposed action would contribute to the spread and proliferation of nonnative invasive plant species; how this spread/proliferation would affect the desert tortoise and its habitats (including the frequency and size of human-caused fires); and how the proposed action may affect the likelihood of human-caused fires. We strongly urge the BLM to develop and implement a management and monitoring plan using this analysis and other relevant data that would reduce the transport to and spread of nonnative seeds and other plant propagules to and within solar energy facilities and eliminate/reduce the likelihood of human-caused fires. The plan should integrate vegetation management with fire prevention and fire response.

Mitigation (Project Design Features)

Among the myriad of potential mitigations measure that may be proposed as PDFs, we recommend that there be a focus on these key measures:

Tortoise Translocation: The pEIS should present an updated approach to relocating/translocating displaced tortoises including an analysis of previous translocation efforts, such as at Fort Irwin National Training Center and more recently at Twentynine Palms Marine Corps Base, to ensure that translocation standards are up-to-date and acceptable to the USFWS. We suggest starting with the following paper on Revised Translocation of Mojave Desert Tortoises from Project Sites (USFWS 2020) to assist in this effort. BLM's analysis should address past failures/negative impacts from desert tortoise translocation, and develop and implement solutions to ensure these do not occur again. In addition, because translocation is a mitigation measure, translocation areas should be managed for the tortoise in perpetuity. To assure this, these lands should have a permanent legal designation such as a conservation easement placed on them so it cannot be changed by future amendments to resource management plans.

Non-native Plants and Wildfires: The pEIS should analyze how the proposed action and alternatives would contribute to the spread and proliferation of nonnative invasive plant species; how this spread/proliferation would affect the desert tortoise and its habitats (including the frequency and size of human-caused fires); and how this spread/proliferation may affect potential refugia for tortoise populations as the effects of climate change become apparent throughout the landscape. BLM should require that all solar development in the western U.S. develop and implement an effective management and monitoring plan using this analysis and other relevant data that would reduce the transport to and spread of nonnative seeds and other plant propagules within the project area and eliminate/reduce the likelihood of human-caused fires. The plan should integrate management/enhancement of native vegetation, require management to prevent fires, require a fire response plan, and require implementation of an effective revegetation pan if a fire does occur.

Common Ravens: The pEIS should analyze how the proposed action and alternatives could result in an increase of common ravens and other predators of the desert tortoise and how any proposed projects would reduce these effects by addressing human subsidies for food and water as well as sites for nesting, roosting, and perching. If not completely effective in reducing predation to levels that allow for needed recruitment of tortoises, the proposed action and alternatives should include methods that would be implemented to reduce predators in/near the project areas for the duration of the projects.

Roads: New and existing new roads are usually developed/improved and used to provide access to solar projects and associated subtransmission lines during construction, operation and maintenance, decommissioning, and restoration activities. These roads may be available to the public and would result in numerous types of impacts to the tortoise/tortoise habitat (e.g., collection, vandalism, injury and mortality from vehicles strikes, transport of non-native invasive plant species in vehicle tires and undercarriages, wildfires, littering that attracts predators, new route proliferation and soil compaction, loss of additional native plant species needed for cover and forage, etc.). These roads should be permanently closed and blocked to effectively prevent the public from accessing them and to assure the security of the solar facilities and subtransmission lines. If not closed/effectively blocked, the pEIS should analyze these impacts to the tortoise/tortoise habitat, as they currently occur at some project sites that have not implemented this action in the range of the tortoise.

Surface Hydrology and Water Quality: We have concerns about impacts to the quantity and flow of surface water and its water quality. There will likely be washes in many of the solar energy development sites in the Mojave and Sonoran deserts. These washes and wash systems are likely important to the well-being of the tortoise and many special status species as they serve as travel routes and forage areas for tortoises. Non-point or accidental discharges of chemicals (e.g., chemicals used to wash solar panels, oil and toxicants from vehicles, etc.) have high potential to damage the wash system and impact annual plants that tortoises use for forage.

To mitigate these impacts, the pEIS should include an analysis of the impacts of water use and discharge for panel washing, potable uses, and any other uses associate with the construction, operation and maintenance, decommissioning, and restoration of solar project sites, including cumulative impacts from water use and discharge on native perennial shrubs and annual vegetation used for forage by the Mojave desert tortoise, including downstream impacts.

Regarding quantity of surface water, the pEIS should analyze how any grading, placement, and/or use of any solar energy project will impact downstream/downslope flows that are reduced, altered, eliminated, or enhanced. This analysis should include impacts to native and non-native vegetation and habitats for wildlife species including the Mojave desert tortoise. Washes are of particular importance to the Mojave desert tortoise for feeding, shelter, and movements.

We note that some areas where solar energy zones may be considered are experiencing reductions in ground water. Therefore, we request that the pEIS include an analysis of how water use during construction, operations and maintenance, decommissioning, and habitat restoration will be addressed and mitigated if solar projects are approved in these areas.

The analyses of water quality and quantity of surface and ground water should include appropriate measures to ensure that these impacts are fully mitigated, preferably beginning with avoidance and continuing through CEQ's other forms of mitigation (40 CFR 1508.20).

Maintaining Habitats within Solar Projects: The pEIS should consider recently developed solar fields where soils have been bladed versus those facilities where the vegetation has been mowed and allowed to revegetate the area. In the latter case, it may be appropriate to allow tortoises to enter the facilities and re-establish residency under the solar panels as vegetation recolonizes the area. The environmental documents should document recent successes and failures with this approach at other solar facilities in the desert.

Mitigation near/at the End of the Project

In addition, BLM should require that all approved solar facilities during/immediately following decommissioning should implement an effective habitat restoration plan (see Abella and Berry 2016 for restoration best management practices). This plan should restore the native vegetation that was degraded/destroyed during the earlier phases of the solar project. This requirement is especially important to help combat climate change as native vegetation is vital to sequester carbon and reduce the increasing impacts of climate change. Studies around the world have shown that desert ecosystems can act as important areas for carbon sequestration. For example, the California deserts account for nearly 10 percent of the state's carbon sequestration; below ground in soil and

root systems, and above ground in biomass. Protecting this biome can contribute to securing carbon stores in the state (MDLT 2021). This situation is likely true for deserts throughout the southwest. Given the current climate change conditions, there is an increasing need for carbon sequestration. Because vascular plants are a primary user of carbon and the pEIS Project would result in the loss/degradation of thousands of acres of plants and their ability to sequester carbon for decades or longer unless successful measures are implemented to restore the same biomass of native vegetation as it is being destroyed, it is imperative that the pEIS minimize the loss of vegetation and mitigate by implementing successful efforts to enhance native vegetation.

Planning Criteria

Scope of the Project: The Council is concerned that the development goals expressed in this project appear inconsistent with objects expressed in the Federal Land Policy and Management Act (FLPMA) for managing public lands, including multiple use management and sustained yield. The size of presently proposed solar projects and the overall scope of this proposed development appears more like industrial development and is not what is understood by many of our members as how public lands and resources are to be managed for this and future generations. Please provide an explanation in the pEIS as to how this level and type of development is consistent with FLPMA especially with respect to sustained yield of wildlife resources, including the Mojave desert tortoise.

Desert Renewable Energy Conservation Plan (DRECP): The DRECP (BLM 2016) is a very recent and comprehensive land use plan amendment that is very collaborative in scope, involving a long list of agencies, NGOs, the science community, and the public. Using the DRECP as a foundation, the BLM and CDFW recently signed a 2022 amendment to their Durability Agreement and Co-Management Plan, which is a key conservation agreement that provides innovative tools to managing impacts to wildlife and their habitats in California. This is one of many such agreements and commitments because of the DRECP. The Council is genuinely concerned that amending the DRECP, using this very broad approach to land use planning in 12 western states, risks undoing science-based and very collaborative efforts at managing both renewable energy development and high-value habitats within the DRECP area. Consequently, we support BLM's recent decision not to include the area under the DRECP, corresponding to the California Desert Conservation Area, in the current effort, as the BLM continues to believe the DRECP supports an acceptable balance between conservation and renewable energy opportunities within its planning area boundary.

pEIS Development Process: We recommend that BLM start with the DRECP development process a model for how to develop the pEIS. As part of this process, we recommend that BLM collect and analyze recent data and heed the recommendations of the scientific community concerning impacts to biological resources, including the Mojave desert tortoise. These data, analyses, and recommendations should be a major influence in determining site selection, construction, operation and maintenance, decommissioning, and restoration of lands with solar energy projects. BLM should demonstrate that it has used a process that embraces available science in locating future solar energy development including analyzing impacts of climate change to listed/special status species and including biodiversity as a criterion in site selection.

We recommend that sites be selected that have the least environmental impacts especially to biological resources such as the tortoise. Once solar energy development sites are approved, these sites should be priority sites for development. Solar development applications outside these sites should not be processed until all priority sites have been fully developed. BLM should provide notice of achieving this milestone and ensure that proposed development outside approved sites will require a greater level of mitigation to offset the greater impacts to biological resources in these non-priority sites.

pEIS General Criteria: We request that the pEIS address each of the following criteria**.**

The pEIS will:

- Fully review the implementation of the variance lands approach utilized in the 2012 Western Solar Plan, including issues associated with recent approved and proposed solar energy projects. These projects are creating a proliferation of project approvals that lack any adherence to overall land-use planning goals for the areas involved.
- Ensure a thorough analysis of connected actions associated with the placement of substations that attract additional project proposals that may or may not meet area goals.
- Ensure proposed development areas in the pEIS will be in locations with low or comparatively low resource conflicts and where conflicts can be resolved;
- Ensure proposed development areas in the pEIS will be located in, or adjacent to, previously contaminated or disturbed lands where possible;
- Focus on minimizing adverse impacts to important fish and wildlife habitats and migration/movement corridors including the desert tortoise;
- Focus on minimizing impacts to lands with wilderness characteristics and the values associated with these lands;
- Not propose actions that would adversely affect lands donated, acquired, or managed for conservation purposes, or mitigation lands identified in previously approved projects such as translocation areas for desert tortoise;
- Ensure that significant cumulative impacts on resources of concern will not occur as a result of actions carried forward in the pEIS (i.e., violating established thresholds such population viability for the tortoise and connectivity of tortoise populations among recovery units);
- Ensure BLM's analysis uses current data on the tortoise for affected regions, range wide, which is provided, in part, in the previous status and trends section, as population numbers and densities have substantially declined in most recovery units and the data/knowledge currently available on what is needed for habitat linkages for the tortoise is greater than in 2012.

Mitigation and Monitoring: The Council has concerns about BLM's commitment to the following and request fully addressing these issues:

- Mitigation to improve conditions within the wildlife connectivity areas, and if these options do not exist, mitigation may be applied toward the nearest tortoise conservation area [e.g., an Area of Critical Environmental Concern (ACEC) for which tortoise had been identified in the Relevant and Important Criteria or critical habitat]; and

- Measures identified in the pEIS that would effectively monitor desert tortoise impacts, including verification that desert tortoise connectivity corridors are functional. The required FESA consultation should further define a science-based, statistically robust monitoring plan.

Regarding the first concern, we believe that a multiagency approach is best to ensure BLM is meeting its obligations, soliciting review and input from pertinent federal and state resource agencies, Tribal governments/agencies, and non-governmental organizations (NGOs). Mitigation of impacts should include, in priority order, avoidance, minimization, and compensation for unavoidable impacts. Mitigation should, at a minimum, offset all direct, indirect, and cumulative impacts, especially given the status and trend of the tortoise as previously described. BLM should ensure it is effectively implementing its section 7(a)(1) conservation mandate under the FESA.

Mitigation should be applied only in areas where the lands are effectively managed for the benefit of the tortoise for both the short-term and long-term. As currently managed, BLM ACECs in Nevada and the California Desert Conservation Area are not meeting this criterion. Consequently, mitigation should be implemented on lands with a durable conservation designation, or on privately owned lands with a conservation easement or other legal instrument that ensures conservation in perpetuity. Please see *Mitigation Plans* below for additional concerns and requested requirements.

Regarding the second concern, a monitoring plan should (1) be scientifically and statistically credible; (2) be implementable; and (3) require BLM/project proponent to implement adaptive management to correct land management practices if the mitigation is not accomplishing its intended purposes. Compliance with Chapter 11 of the BLM NEPA Handbook H-1790-1 BLM (2008a) needs to be monitored by a third party to ensure that it occurs.

Alternatives

We note that a federal appellate court has previously ruled that in an EIS a federal agency must evaluate a reasonable range of alternatives to the project including other project and mitigation sites, and must give adequate consideration to the public's needs and objectives in balancing ecological protection with the purpose of the proposed project, along with adequately addressing the proposed project's impacts on the desert's sensitive ecological system [*National Parks & Conservation Association v. Bureau of Land Management*, Ninth Cir. Dkt Nos. 05-56814 et seq. (11/10/09)]. Therefore, the Council requests that the BLM describe the purpose and need for this project and develop and analyze other viable alternatives, such as "rooftop solar," which is a term for placing solar panels in already developed areas including parking lots as well as on the roofs of buildings, and which we believe constitute "other reasonable courses of actions" (40 CFR 1508.25).

The Council supports alternatives to reduce the need for additional solar energy projects in relatively undisturbed habitats.

Rooftop Solar: For example, the City of Los Angeles has implemented a rooftop solar Feed-in Tariff (FiT) program, the largest of its kind in America. The FiT program enables the owners of large buildings to install solar panels on their roofs, and sell the power they generate back to utilities for distribution into the power grid. We request that BLM include an urban solar alternative. Under this alternative, owners of large buildings or parking areas would grant the project proponent permission to install solar panels on their roofs and cover parking areas, and sell the power they generate back to utilities for distribution into the power grid.

This approach puts the generation of electricity where the demand is greatest, in populated areas. It may also reduce transmission costs, greenhouse gas emissions from constructing energy projects far from the sources of power demand and materials for construction, the number of affected resources in the desert that must be analyzed under the NEPA, and mitigation costs for direct, indirect, and cumulative impacts; monitoring and adaptive management costs; and habitat restoration costs following decommissioning. The pEIS should include an analysis of where the energy generated by this project would be sent and the needs for energy in those targeted areas that may be satisfied by urban solar. We request that at least one viable alternative be analyzed in the pEIS where electricity generation via solar energy is located much closer to the areas where the energy will be used, including generation in urban/suburban areas.

We request that a realistic analysis of rooftop solar be developed in the pEIS and not dismissed in an "Alternative Considered but Rejected from Further Consideration" without any meaningful analysis; that the project does not financially benefit this particular project proponent is not a good enough reason to dismiss a rooftop solar alternative. In addition, BLM should include a viable alternative of locating solar projects on bladed or highly degraded tracts of land (e.g., abandoned agricultural fields). Such an alternative would not result in the destruction of desert habitats and mitigation for the lost functions and values of these habitats. These losses and mitigation are costly from an economic, environmental, and social perspective.

Distributed Generation Alternatives: Distributed Generation installs smaller scale photovoltaic facilities at or near the point of energy use, i.e., metropolitan/urban areas. The Distributed Energy Alternatives should include BLM land only and a combination of BLM land and land owned/managed by others (e.g., private and State lands).

In developing alternatives, BLM should use the results of research conducted by Cameron et al. (2012) in the Mojave Desert to determine initial locations that would be potentially suitable for solar energy projects. In addition, BLM should incorporate climate change into conservation planning and include strategies for building adaptive capacity, ameliorating the threat posed by climate, and accounting for future changes in human land usage (Smith et al. 2023). Combining these three strategies with genomic and ecological studies of the tortoise and other target species will have the greatest success (Smith et al. 2023).

Overall Considerations when Addressing Proposed Changes to Previous Land Use Decisions within Habitat For the Mojave Desert Tortoise

The Mojave desert tortoise is an indicator and umbrella species for ecosystem health (Berry and Medica 1995). Indicator species are used to monitor environmental changes, assess the efficacy of management, and provide warning signals for impending ecological shifts. An umbrella species is a species whose conservation is expected to confer protections to a large number of co-occurring species. Thus, when the Mojave desert tortoise is declining in density, numbers, and recruitment, this decline is an indicator of environmental change that is degrading the desert environment, ineffective management by land management agencies, and a warning that ecological shifts in the Mojave and Colorado deserts are occurring. In addition, this decline indicates that other species in the Mojave and Colorado deserts are also declining in density, numbers, and recruitment. Consequently, BLM should consider the data on the demographic trend of the tortoise as a "wake-up call" that more must be done to effectively manage for the tortoise and other species in the Mojave and Colorado deserts. Impacts to other local and wide-ranging species and their habitats should be analyzed in the pEIS with this fully in mind.

Sonoran Desert Tortoise

The issues identified above for siting areas for solar projects, analyzing direct, indirect, and cumulative impacts to the Mojave desert tortoise, and developing and implementing science-based plans to effectively mitigate these impacts especially from impacts to climate change should also be conducted for the Sonoran desert tortoise.

In addition, we request that BLM ensure that provisions given in the following documents be effectively implemented for solar development areas that BLM considers in the pEIS:

- Arizona Game and Fish Department. 2010. Desert Tortoise Survey Guidelines for Environmental Consultants.
- Arizona Game and Fish Department. 2014. Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects.
- Arizona Interagency Desert Tortoise Team. 2008. Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat. June 2008.
- Bureau of Land Management. 2008. Special Status Species Management – Manual 6840. Washington, D.C. December 12, 2008.
- Bureau of Land Management. 2012. Desert Tortoise Mitigation Policy. Instructional Memorandum IM-AZ-2012-031.
- Bureau of Land Management. 2021a. Reinstating the Bureau of Land Management (BLM) Manual Section (MS-1794) and Handbook (H-1794-1) on Mitigation. Instruction Memorandum IM 2021-046. September 22, 2021.
- Bureau of Land Management. 2021b. Mitigation Handbook (H-1794-1). https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046_att2.pdf.
- Bureau of Land Management. 2021c. Mitigation Manual (MS-1794). Bureau of Land Management, September 22, 2021. https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046_att1_0.pdf.
- Bureau of Land Management. 2022. Habitat Connectivity on Public Lands Instruction Memorandum 2023-005.
- U. S. Fish and Wildlife Service and Cooperating Agencies comprising the Arizona Interagency Desert Tortoise Team. 2015. Candidate Conservation Agreement for the Sonoran Desert Tortoise (*Gopherus morafkai*) in Arizona. Phoenix AZ.

For example, under the Candidate Conservation Agreement (USFWS et al. 2015), BLM committed that it management would result in "no net loss in quantity and quality of Sonoran desert tortoise habitat….and using offsite mitigation (compensation) for unavoidable residual habitat loss."

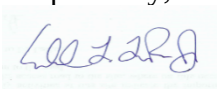
According to the BLM Manual 6840, Special Status Species Management includes the following BLM directives (BLM 2008) that are applicable to the Sonoran desert tortoise:

> *6840.01 Purpose*. The purpose of this manual is to provide policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-administered lands. BLM special status species are: (1) species listed or proposed for listing under the Federal Endangered Species Act (FESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the FESA, which are designated as BLM sensitive by the State Director(s).

6840.02 Objectives. The objectives of the BLM special status species policy are (1) to conserve and/or recover FESA-listed species and the ecosystems on which they depend so that FESA protections are no longer needed for these species, and (2), to initiate proactive conservation measures that reduce or eliminate threats to BLM-sensitive species to minimize the likelihood of and need for listing of these species under the FESA. With respect to the Sonoran desert tortoise, we request that the Proposed action or other alternatives contribute to meeting objectives in BLM Manual 6840 – Special Status Species Management (BLM 2008).

We appreciate this opportunity to provide comments on this project and trust they will help protect tortoises during any resulting changes to existing land use plans. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this pEIS that may affect species of desert tortoises. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this project.

Respectfully,



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