

**DESERT TORTOISE COUNCIL**

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**Via email only**

Revised and resubmitted 5 January 2023

Attn: Ms. Erica Stewart, Project Manager  
Bureau of Land Management  
Yuma Field Office  
7341 E 30th Street, Yuma, AZ 85365  
[BLM\\_AZ\\_CRD\\_SOLAR@BLM.GOV](mailto:BLM_AZ_CRD_SOLAR@BLM.GOV), [estewart@blm.gov](mailto:estewart@blm.gov)

RE: Jove Solar Energy Project

Dear Ms. Stewart,

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."

Despite the fact that we have asked BLM offices in Arizona to contact us for projects that may affect tortoises, including a specific letter dated November 12, 2019<sup>1</sup>, it was a third party, not the BLM, who contacted us on December 7, 2022 about the opportunity to provide scoping comments on this project. Again, we reiterate that we want to be considered an Affected Interest and be notified of all proposed actions that BLM may authorize, fund, or carry out that may affect the Sonoran desert tortoise or its habitat.

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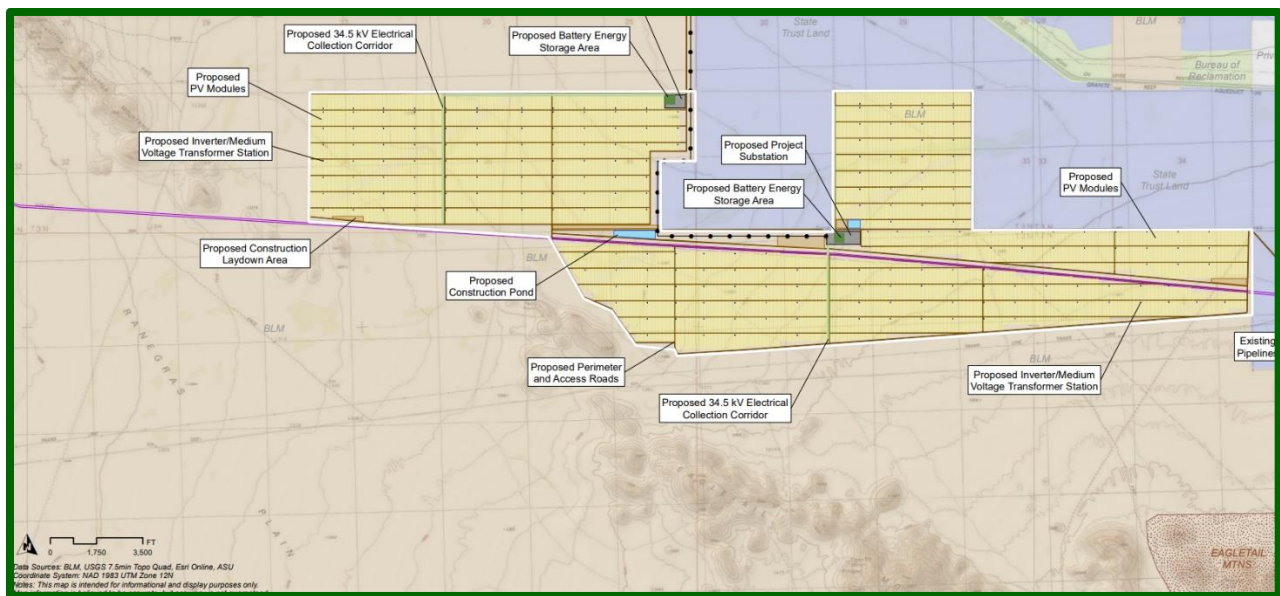
<sup>1</sup> <https://www.dropbox.com/s/dzsh3feh6ys3qv/BLM%20AZ%20District%20Managers%20DTC%20as%20an%20Affected%20Interest%20%202019-11-8.pdf?dl=0>

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats possibly occupied/used by Sonoran desert tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise), our comments pertain to enhancing protection of this species during activities funded, authorized, or carried out by the BLM, which we assume will be added to the Decision Record for this project as needed. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

According to the Federal Register Notice dated December 7, 2022, "the Bureau of Land Management (BLM) Yuma Field Office, Yuma, Arizona, intends to prepare an [Draft] Environmental Impact Statement (EIS) [DEIS] to consider the effects of granting a right-of-way (ROW) for the Jove Solar Project (Jove Solar), an up to 600-megawatt (MW) solar photovoltaic (PV) project and battery storage system proposed on 3,495 acres of BLM-administered land in La Paz County, Arizona, and by this notice is announcing the beginning of the scoping process to solicit public comments and identify issues." BLM has received a request for the ROW for the proposed action from an unidentified Applicant.

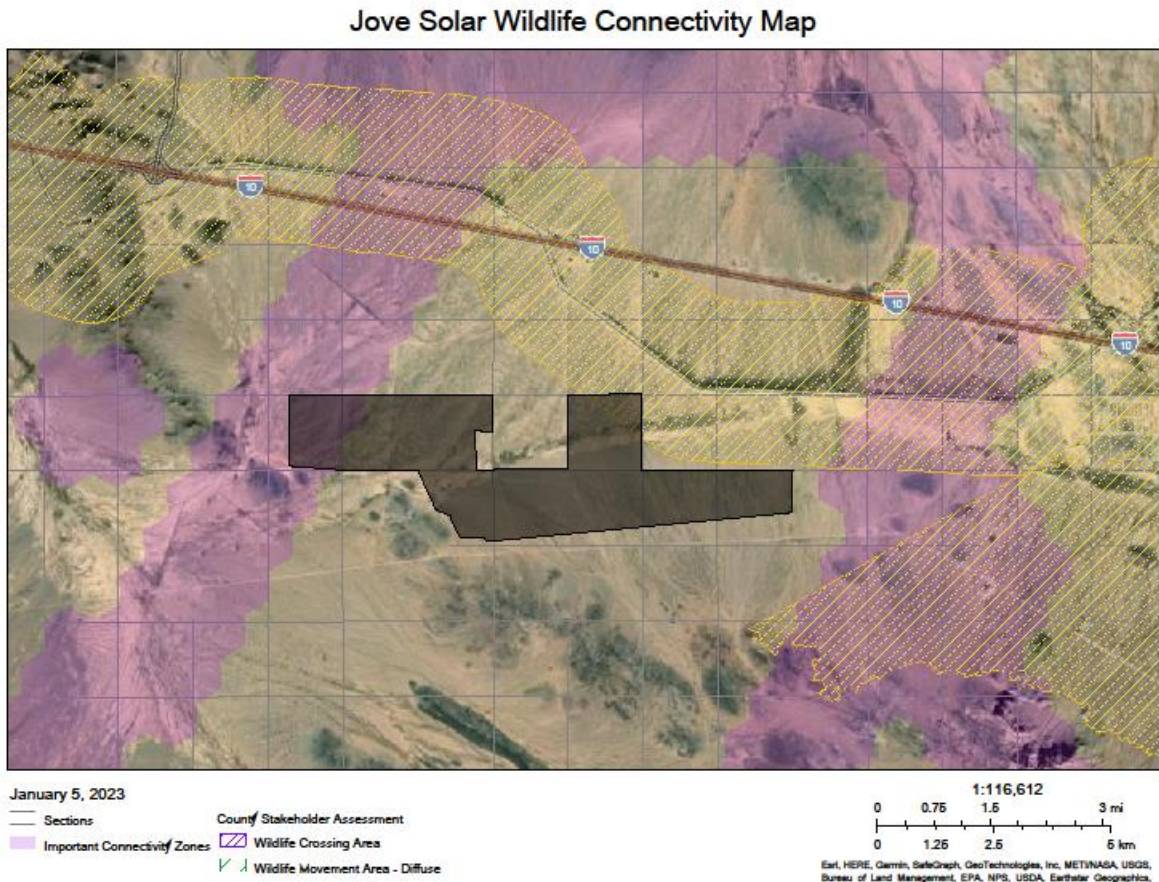
"The Proposed Action is to construct, operate, maintain, and decommission a solar PV facility and battery storage system on 3,495 acres of BLM-administered land in La Paz County, Arizona. The Jove Solar proposal includes PV modules, battery energy storage facilities, substations, electrical collector and connection lines, switch yards, monitoring and maintenance facilities, access roads, and temporary use areas. The Project may have a generating capacity of up to 600 megawatt alternating current (MWac) net capacity. The Project would connect into the authorized Ten West Link 500-kilovolt transmission line."

The following map is provided among the available materials in the BLM's eplanning website:

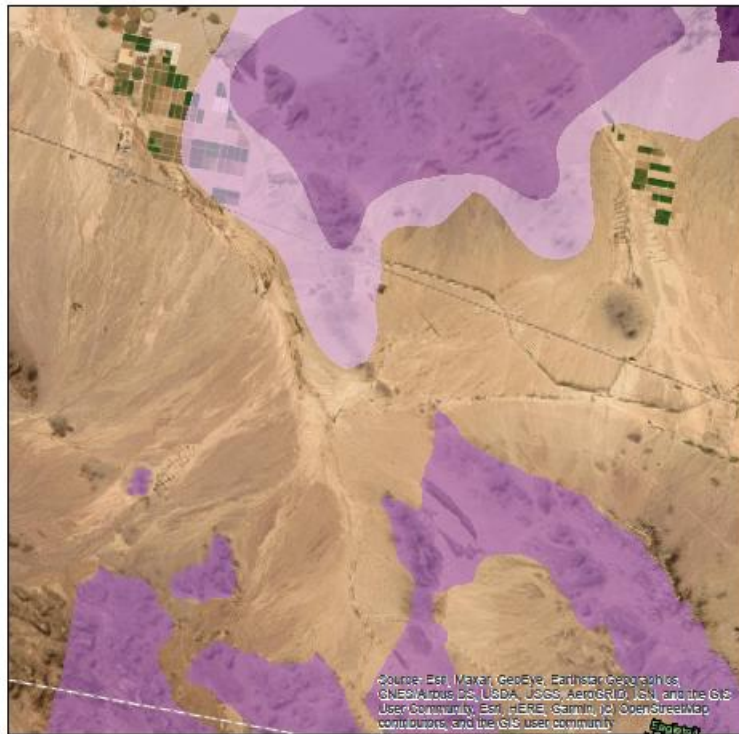


**Analyses of direct and indirect impacts:** Given the proposed location of the solar facilities proximate to the Little Harquahala Mountains to the west and northwest and the Eagletail Mountains to the south, including the Eagletail Mountains Wilderness Area to the southeast, we are very concerned about the potential direct impacts to tortoises that may travel between these two important tortoise habitats and the indirect impacts very likely to occur on resident tortoises in the mountain ranges if the project is developed at this particular site.

We understand that Aspen Environmental has completed a variance report, which did not include Arizona Game and Fish Department (AGFD) connectivity maps. The variance process report states that, "The [Jove Solar] site is approximately 9 miles east of the Kofa National Wildlife Refuge (NWR) and about 17 miles east of the nearest wildlife linkage zone." Although the project Variance Process Report does not discuss important connectivity zones located in proximity to the project, as identified in the AGFD On-line Environmental Review Tool, we were able to find the following map that shows the proposed facility relative to the important connectivity areas (AGFD Source: <https://ert.azgfd.gov/content/home>):






We note, too, that the BLM has designated habitat categories in the immediate region, shown in the following map (although the project boundaries are missing):



**Legend**

**Arizona BLM Desert Tortoise Habitat Areas**

**CATEGORY**

-  Category 1
-  Category 2
-  Category 3



Please ensure a full discussion of these connectivity zones in relation to the project are included in the DEIS. Be sure to map the site relative to the BLM-designated habitat categories, and discuss the ramifications of the project’s direct and indirect impacts on these management categories.

Given these concerns, we expect the DEIS to fully integrate the results of the Eagletail Mountains long-term desert tortoise monitoring plot. The Eagletail Mountains plot was established in 1987 and has been surveyed numerous times, most recently in 2019 (Rubke et al 2020). Although a monitoring plot has not been established in the Little Harquahala Mountains, AGFD has records of anecdotal tortoise observations in the range. We expect existing AGFD data for both mountain

ranges to be utilized and integrated into the DEIS. We believe the Applicant should make a financial commitment to fund future studies of the Eagletail plot and to establish and make future surveys of a plot in appropriate habitat in the Little Harquahala Mountains. In addition, Sonoran tortoises may use habitat between the two ranges to either disperse or to make regular movements. Surveys to assess the impacts this project, if constructed, may have on proximate tortoise populations are essential to monitor their health and status. These surveys and scientific studies should be designed to answer ascertain trends that may be affected by the project, if developed.

We expect that the DEIS consultant or BLM will research the known effects of heat sink impacts on tortoises and publish those results in the draft document, and then apply the results to the proposed project and proximate tortoise locations. Over the past 10 years, there has been a trend towards mowing the vegetation beneath new solar panels, allowing it to grow back, and then allowing tortoises to repatriate areas beneath the panels. The DEIS should consider the monitoring results of recently developed solar projects where soils have been bladed versus those facilities where the vegetation has been mowed or crushed 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 (i.e., repatriate) under the solar panels as vegetation recolonizes the area or allow tortoises to move through the Project site when traversing between upper elevation habitat. This could be an *option* for the current project. It should be designed/implemented as a scientific experiment to add to the limited data on this approach to determine the extent of effects on Sonoran desert tortoise populations and movements/connectivity between populations, which is an important issue for this species, particularly over the long-term. Long-term monitoring for the life of the project would need to be included to accurately evaluate the effectiveness of this strategy. We request that this study be included in the DEIS.

Impacts from Proliferation of Nonnative Plant Species and Management Plan: The DEIS should include an analysis of how the proposed project would contribute to the spread and proliferation of non-native invasive plant species; how this spread/proliferation would affect the desert tortoise and its habitats (including availability of adequate and nutritious forage and the frequency and size of human-caused fires); and how the proposed project may affect the frequency, intensity, and size of human-caused and naturally occurring fires. For reasons given in the previous paragraph, we strongly urge the BLM require the project proponent to develop and implement a management and monitoring plan for nonnative invasive plant species. The plan should integrate management/enhancement of native vegetation with fire prevention and fire response to wildfires.

Climate Change: We request that the DEIS address the effects of the proposed action on climate change warming and the effects that climate change may have on the proposed action. For the latter, we recommend including: an analysis of habitats within the project area 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 require the project proponent 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 the project area and eliminate/reduce the likelihood of human-caused fires. The plan should integrate vegetation management with fire prevention and fire response.

Hydrology and Water Quality: Regarding water quality of surface and ground water, the DEIS should include an analysis of the impacts of water acquisition, use, and discharge for panel washing, potable uses, and any other uses associated with this proposed project, and cumulative impacts from water use and discharge on native perennial shrubs and annual vegetation used for forage by the Mojave desert tortoise, including downstream and downslope impacts. The DEIS should analyze how much water is proposed to be used during construction, operations, maintenance, decommissioning, and restorations; how any grading, placement, and/or use of any project facilities 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 Sonoran desert tortoise, for which washes are of particular importance for feeding, shelter, and movements.

Therefore, we request that the DEIS include an analysis of how water use during construction, operations and maintenance, decommissioning, and habitat restoration will impact the levels of ground water in the region. These levels may then impact surface and near-surface flows at springs, seeps, wetlands, pools, and groundwater-dependent vegetation in the basin. 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).

**Alternatives analyses:** We are continually dismayed that BLM's "alternatives analyses" rarely require project proponents to consider alternative locations for solar projects. For every project we are aware of on our public lands managed by the BLM, a single fixed location is identified; the impact area may be slightly smaller or larger, but there is never a second location. The DEIS should consider alternative sites in its analysis, and document why this particular site was chosen. For example, was it chosen because these lands are brown fields, old agriculture, or other human use-impaired habitats, which are biologically-based determinations, or was it selected in intact habitats for solely financial or technical reasons?

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. 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 National Environmental Policy Act (NEPA), and mitigation costs for direct, indirect, and cumulative impacts; monitoring and adaptive management costs; and habitat restoration costs following decommissioning. The DEIS 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 DEIS 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 ask that a realistic analysis of rooftop solar be developed in the DEIS 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.

These two alternatives are important to consider to minimize or avoid the loss of vegetation that sequesters carbon. Studies around the world have shown that desert ecosystems can act as important carbon sinks. 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 Arizona. 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 proposed 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 proposed project not result in the loss of vegetation.

**BLM compliance and cooperation with pertinent regulations and agencies, respectively:** We fully expect that BLM will comply with all applicable statutes, regulations, Executive and Departmental Orders, BLM manuals, and other requirements as they pertain to this project. BLM should demonstrate in the DEIS that the proposed project meets all these requirements with respect to the tortoise, that:

- The proposed project will be in conformance with decisions in current land use plan(s) and the Federal Land Policy and Management Act (FLPMA) with respect to sustained yield;
- the proposed project will be consistent with priority conservation, restoration, and/or adaptation objectives in the best available landscape-scale information (e.g., for tortoise population connectivity, management of native land species and reduction/elimination of non-native, invasive species, etc.);
- the applicant has coordinated with governments and agencies, including consideration of consistency with officially adopted plans and policies (e.g., conservation plans);

- the proposed project is in an area with low or comparatively low resource conflicts and where conflicts can be resolved;
- the proposed project will be located in, or adjacent to, previously contaminated or disturbed lands;
- the proposed project will minimize adverse impacts on important fish and wildlife habitats and migration/movement corridors including the desert tortoise;
- the proposed project will minimize impacts on lands with wilderness characteristics and the values associated with these lands, with particular focus on the nearby Eagletail Mountains Wilderness Area;
- the proposed project will not adversely affect lands donated or acquired for conservation purposes, or mitigation lands identified in previously approved projects such as translocation areas for desert tortoise;
- significant cumulative impacts on resources of concern should not occur as a result of the proposed project (i.e., exceeding an established threshold such as population viability for the tortoise and connectivity between tortoise populations); and,
- BLM's analysis would use current data on the tortoise for the project area, population, and range wide, as population numbers and densities have substantially declined in many areas along with the recent destruction of habitat from fires, so environmental documents should publish the data/knowledge currently available.

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). We ask that as the Federal Lead Agency, the BLM ensure that provisions given in the following documents be conscientiously considered and implemented if this project is developed:

- 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](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](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.

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).

#### **Pertinent plans and programs to be implemented:**

Translocation Plan - Translocated Tortoises & Translocation Sites: How many tortoises will be displaced by the proposed project? How long will translocated tortoises be monitored? Will the monitoring report show how many of those tortoises lived and died after translocation and over time? Are there any degraded habitats or barren areas that may impair success of the translocation? Are there incompatible human uses in the new translocation area that need to be eliminated or managed to protect newly-translocated tortoises? Were those translocation areas sufficiently isolated that displaced tortoises were protected by existing or enhanced land management? How will the proponent minimize predation of translocated tortoises and avoid adverse climatic conditions, such as low winter rainfall conditions that may exacerbate translocation success? Were tortoises translocated to a site where they would be protected from threats (e.g., off-highway vehicles, future development, etc.)? These questions should be answered in the Environmental Consequences section of the DEIS.

The project proponent should implement the USFWS' Translocation Guidance (USFWS 2020) and coordinate translocation with BLM and AGFD. In addition, the proponent's project-specific translocation plan should be based on current data and developed using lessons learned from earlier translocation efforts (e.g., increased predation, drought). The Translocation Plan should include implementation of a science-based monitoring plan approved by the USFWS and AGFD that will accurately assess these and other issues to minimize losses of translocated tortoises and impacts to their habitat. For example, the health of tortoises may be jeopardized if they are translocated during drought conditions, which is known to undermine translocation successes (Esque et al. 2010). If drought conditions are present at the time of project development, we request that the proponent confer with the USFWS/AGFD immediately prior to translocating tortoises and seek input on ways to avoid loss of tortoises due to stressors associated with drought. One viable alternative if such adverse conditions exist is to postpone site development until which time conditions are favorable to enhance translocation success.

Moving tortoises from harm's way, the focus of the Translocation Guidance, does not guarantee their survival and persistence at the translocation site, especially if it will be subject to increased human use or development. In addition to the Translocation Guidance and because translocation sites are mitigation for the displacement of tortoises and loss of habitat, these sites should be managed for the benefit of the tortoise in perpetuity. Consequently, a conservation easement or other durable legal designation should be placed on the translocation sites. The project proponent should fully fund management of the site to enhance it for the benefit of the tortoise in perpetuity. In addition, we request that BLM develop a geographic information system that maps/tracks all locations of mitigation/compensation for projects authorized by BLM so these areas can be easily identified and not be developed for other uses in the future. This would apply for the tortoise and all special status species in Arizona. This map would be updated for each new BLM project and included in the BLM's NEPA document.

Tortoise Predators and a Predator Management Plan: Common ravens are known predators of the Mojave desert tortoise and their numbers have increased substantially because of human subsidies of food, water, and sites for nesting, roosting, and perching to hunt (Boarman 2003). Coyotes and badgers are also predators of tortoises. Because ravens can fly at least 30 miles in search of food and water daily (Boarman et al. 2006) and coyotes can travel an average of 7.5 miles or more daily (Servin et al. 2003), this analysis should extend out at least 30 miles from the proposed project site. However, in the Sonoran Desert, there has been limited scientific investigation on the impacts of ravens on tortoises.

The DEIS should analyze if this new use would result in an increase in common ravens and other predators of the desert tortoise in the action area, particularly given the proximity to occupied desert tortoise habitats in the adjacent mountains. During construction, operations and maintenance, decommissioning, and restoration phases of the proposed project, the BLM should require science-based management of common raven, coyote, and badger predation on tortoises in the action area. This would include the translocation sites.

For local impacts, the Predator Management Plan should include reducing/eliminating human subsidies of food and water, and for the common raven, sites for nesting, roosting, and perching to address local impacts (footprint of the proposed project). This includes buildings, fences, and other vertical structures associated with the project site. In addition, the Predator Management Plan should include provisions that eliminate the pooling of water on the ground or on roofs.

The Predator Management Plan should include science-based monitoring and adaptive management throughout all phases of the project to collect data on the effectiveness of the Plan's implementation and implement changes to reduce/eliminate predation on the tortoise if existing measures are not effective. For regional and cumulative impacts, the BLM should require the project proponent to participate in efforts to address regional and cumulative impacts.

We request that for any of the transmission options, the project use infrastructure (particularly towers) that prevent raven nesting and perching for hunting. For example, for gen-ties/transmission lines the tubular design pole with a steep-pointed apex and insulators on down-sloping cross arms is preferable to lattice towers, which should not be used. New fencing should not provide resources for ravens, like new perching and nesting sites.

Fire Prevention/Management Plans: The proposed project could include numerous infrastructure components that have been known to cause fires. Lithium-ion batteries at the project site have the potential to explode and cause fires and are not compatible with using water for fighting fires. Photovoltaic panel malfunctions have caused vegetation to burn onsite. We request that the DEIS include a Fire Prevention Plan in addition to a Fire Management Plan specifically targeting methods to deal with explosions/fires produced by these batteries/panels as well as other sources of fuel and explosives on the project site.

Miscellaneous monitoring plans. The DEIS should clearly identify that monitoring plans will (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) is needed to ensure this occurs.

Cumulative effects analysis: In the cumulative effects analysis of the DEIS, please ensure that the CEQs “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 DEIS should include data on the estimated number of acres of tortoise habitats degraded/lost and the numbers of tortoises that may be lost to growth-inducing impacts in the region.

For federal projects where the lead agency funds, authorizes, or carries out some part of the project, CEQs guidance on how to analyze cumulative environmental consequences is given in the 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, 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 the resource.

Note that CEQ recognizes that synergistic and interactive impacts as well as cumulative impacts should be analyzed in the NEPA document for the resource issues. We request that the DEIS (1) include these eight principles in its analysis of cumulative impacts to the Sonoran desert tortoise; (2) address the sustainability of the tortoise in proximate mountain ranges; and (3) include

mitigation along with monitoring and adaptive management plans that protect desert tortoises and their habitats during both construction and operation of approved facilities. The DEIS 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 Sonoran desert tortoise habitat....and using offsite mitigation (compensation) for unavoidable residual habitat loss.”

We appreciate this opportunity to provide comments on this project and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the BLM that may affect species of desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. 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,



Edward L. LaRue, Jr., M.S.  
Ecosystems Advisory Committee, Chairperson  
Desert Tortoise Council

Cc. Jeffrey Humphrey, Field Supervisor, Arizona Ecological Services Field Office (Phoenix), U.S.  
Fish and Wildlife Service, [jeffrey\\_humphrey@fws.gov](mailto:jeffrey_humphrey@fws.gov)  
Raymond Suazo, Arizona State Director, Bureau of Land Management, [rsuazo@blm.gov](mailto:rsuazo@blm.gov)

### **Literature Cited**

[AGFD] Arizona Game and Fish Department. 2010. Desert Tortoise Survey Guidelines for Environmental Consultants.

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