DESERT TORTOISE COUNCIL
3807 Sierra Highway #6-4514
Acton, CA 93510
www.deserttortoise.org
eac@deserttortoise.org

Via email only

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Attn: Angelica Rose, Erica Stewart, Derek Eysenbach
Bureau of Land Management, Lower Sonoran Field Office
2020 E. Bell Road
Phoenix, AZ 85022
adrose@blm.gov, estewart@blm.gov, deysenbach@blm.gov, BLM_AZ_SFO_Solar@blm.gov

RE: BLM Arizona Solar Variances 2023 for Caballero Solar and Southwest Crossroads Solar Projects (DOI-BLM-AZ-C000-2023-0001-OTHER_NEPA)

Dear Bureau of Land Management,

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 to receive emails for 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 projects in habitats potentially occupied by Sonoran desert tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise), our comments include recommendations intended to enhance protection of this species and its habitat during activities authorized by the Bureau of Land Management (BLM), which we recommend be added to project terms and conditions in the authorizing document (e.g., right of way grant, etc.) as appropriate. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

We appreciate that Chris Bowman-Prideaux of the BLM contacted the Council on August 2, 2023, which allowed us to attend the virtual public meeting later that evening. During that meeting, we were informed that the two projects being considered are for the proposed Caballero Solar and Southwest Crossroads Solar Projects and that these scoping comments may be directed to both projects in this one letter. The structure of this letter is to provide specific comments on each project first, followed by general comments that are intended to be applied to both projects.

We note that the BLM's National NEPA [National Environmental Policy Act] Register indicates that a Draft Variance Factors Analysis Report (DVFAR) will be provided but does not commit to producing a Draft Environmental Impact Statement (DEIS), which is typical for large solar projects like these two. Although it is our assumption that DEISs will be developed, we believe that the comments given herein will inform the BLM for either the DVFAR or DEIS analyses, with the DEIS being referenced throughout this letter.

SPECIFIC COMMENTS

Caballero Solar Project

In its draft Plan of Development (POD) for the Caballero Solar Project, dated August 22, 2023, BLM states that "307PW 8me LLC (Applicant), a subsidiary of 8minute Solar Energy, proposes to construct, operate, maintain, and decommission the Caballero Solar Project (Project, or Caballero), which would consist of an up-to 200-megawatt (MW) alternating current (ac) solar photovoltaic (PV) power generating and energy storage system facility (collectively, the solar facility) on approximately 1,231 acres of land managed by the Bureau of Land Management (BLM) Lower Sonoran Field Office (LSFO) in Maricopa County, Arizona. The Project would be located on a combination of lands managed by the BLM, Arizona State Trust Lands, and privately owned land. The Applicant would also construct, operate, maintain, and decommission a 500 kilovolt (kV) electrical generation interconnection (gen-tie) transmission line that would connect the Project to the regional electricity grid at the Pinal West Substation in unincorporated Pinal County, Arizona."

Furthermore, "[t] BLM has assessed Sonoran desert tortoise habitat potential on BLM-administered lands throughout Arizona. Based on that assessment, BLM developed three habitat categories: I, II, and III [sic][1]. There are no Category I, II, or III habitats in the Project area. The closest Sonoran desert tortoise identified habitat is approximately 0.3 mile southeast of the Project in Booth Hills. That habitat [is] classified as Category II."

If these categories were developed following BLM (1988) and Desert Tortoise Management Oversight Group (1991), we note that the criteria definitions recognize that Category 1 habitats are not necessarily synonymous with high tortoise density areas. If they are not of high density, they have other characteristics that make them important to the long-term viability of desert tortoise populations. We ask if BLM, when categorizing tortoise habitat for the Sonoran desert tortoise, included habitat needed for connectivity between populations to maintain population viability? Thus, habitat that is unoccupied by the tortoise most of the time may be Category 1 habitat because it is needed to maintain connectivity between two or more tortoise populations to ensure long-term viability.

[1] Important reference documents like the Candidate Conservation Agreement (USFWS et al. 2015) reference Category 1, 2, and 3 habitats, not Roman numerals. So, the only places where Roman numerals appear are in quotes.

Page 7-4 indicates, "Desert Tortoise Survey. In Category 2 and 3 Sonoran desert tortoise habitat in Arizona, all project areas and access roads would be surveyed by a qualified biologist to delineate burrows or individuals for protection. Burrows near construction sites would be clearly delineated on the ground. Where tortoise burrows would be unavoidably destroyed, they would be excavated carefully using hand tools by a field biologist with a valid scientific collecting permit for this species from the Arizona Game and Fish Department." Given that this project is located within 0.3 miles of Category 2 habitat, we request that tortoise surveys (AZGFD 2010) be performed. Such surveys will ascertain the potential impacts to Sonoran desert tortoise so that meaningful mitigation measures can be identified and implemented.

The next section on page 7-4 states, "Sonoran Desert Tortoise Protection. In Category 2 and 3 Sonoran desert tortoise habitat in Arizona a biologist permitted by the Arizona Game and Fish Department [AZGFD] would be present during earth moving and other construction activities that involve earth moving to survey areas prior to disturbance, monitor for the presence of desert tortoises in construction sites, and move tortoises from harm's way." Again, given the proximity of the project to Category 2 habitat and depending on the findings of the focused desert tortoise survey, we recommend that authorized biologist(s) and biological monitor(s) be present to perform clearance surveys (USFWS 2009), which unlike the protocol survey recommended above, require two consecutive surveys without finding animals before a site is deemed clear of tortoises. If tortoises are found, they should be translocated following the USFWS guidance (2020) for translocating desert tortoises. This guidance has considered the biological and ecological needs of the species, so when implemented, it would result in a greater level of success.

Southwest Crossroads Solar Project

The Southwest Crossroads Solar POD, dated July 23, 2023, authored by Kimley Horn, describes the project as follows: "Southwest Crossroads Solar, LLC ("Applicant"), a wholly owned subsidiary of Longroad Energy Holdings, LLC, is requesting a 30-year right-of-way grant (the "ROW") for approximately 1,189-acres to construct, operate, maintain, and decommission a portion of the Southwest Crossroads Solar Project ("Project"), a photovoltaic (PV) solar power generation facility with a battery energy storage system (BESS) proposed on approximately 2,434 acres of private, state and BLM-administered lands in Maricopa County, Arizona."

Page 23 indicates, "The Sonoran desert tortoise (*Gopherus morafkai*) is the primary BLM sensitive species of concern in the Project area… According to AZGFD OERT [Online Environmental Review Tool Report], the nearest documented occurrence of the Sonoran desert tortoise is approximately 3.7 miles to the west of the Project area and 3.1 miles east of the Project area. They are found throughout the area in the rocky bajadas and foothills." Given Figure 1 on page 6 of this POD, there is no likelihood of tortoise immigration from the west but there is the real possibility of immigration from the east where Category 1 habitats occur. Given this information, we recommend that tortoise presence-absence surveys (AZGFD 2010) and clearance surveys (USFWS 2009) also be performed on this site, and if tortoises are found, the USFWS (2020) guidance for translocating tortoises be implemented.

Page 3 of Appendix C states, "There is no suitable shelter habitat; however, there is suitable dispersal habitat within the project limits; therefore, a mitigation measure is required." The mitigation measure is then given as follows:

> "Contractor Responsibility:
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> • If any Sonoran desert tortoises are encountered during construction, the contractor shall adhere to the Arizona Game and Fish Department 'Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects revised September 22, 2014."

GENERAL COMMENTS

The purpose of scoping is to allow the public to participate in an "early and open process for determining the scope of issues to be addressed, and for identifying the significant issues related to a proposed action" [40 Code of Federal Regulations (CFR) 1501.7]. The DEIS should discuss how these proposed Projects fit within the management structure of the current land management plan for the area, particularly the Solar Programmatic Impact Statement [Solar PEIS, BLM and Department of Energy (2012)]. It should provide maps of Areas of Critical Environmental Concern (ACECs) and the desert tortoise category habitats shown in the PODs for both Projects, among others.

Please be sure that both Projects for all phases adhere to and implement measures and regulations given in the following documents or their most recent versions:

• 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 instructional memoranda on Mitigation (BLM 2021a), Mitigation Handbook (BLM 2021b), and Mitigation Manual (BLM 2021c).
• 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.

Proposed Action and Alternatives Considered

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 these Projects. BLM should demonstrate in the DEIS that the proposed Projects meet all these requirements with respect to the tortoise, that:

- The proposed Projects 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 Projects 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 plant 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 Projects are in an area with low or comparatively low resource conflicts and where conflicts can be resolved;
- the proposed Projects will be located in, or adjacent to, previously contaminated or disturbed lands, which it seems to be given extensive agricultural areas to the west;
- the proposed Projects will minimize adverse impacts on important fish and wildlife habitats and migration/movement corridors including the desert tortoise;
- the proposed Projects will minimize impacts on lands with wilderness characteristics and the values associated with these lands;
- the proposed Projects 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 Projects (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 have serious concerns about BLM's commitment to manage effectively for the sustained yield of the tortoise. These concerns include past actions regarding:

- Mitigation to improve conditions within the connectivity areas, and if these options do not exist, mitigation may be applied toward the nearest tortoise conservation area (e.g., an ACEC for which tortoise has been identified in the Relevant and Important Criteria); and
- a plan included in the DEIS that would effectively monitor desert tortoise impacts, including verification that desert tortoise connectivity corridors are functional.

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.

Mitigation in the form of compensation 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. 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 National Environmental Policy Act (NEPA) Handbook H-1790-1 BLM (2008a) is needed to ensure this occurs.

We note that a federal appellate court has previously ruled that 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 Projects, along with adequately addressing the proposed Projects' 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 these Projects and develop and analyze other viable alternatives, such as rooftop solar, 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 tortoise habitats in the Sonoran Desert. 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 proponents permission to install solar panels on their roofs and covered 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; carbon sequestration lost from degrading/destroying thousands of acres of native vegetation for decades or longer to construct and operate these Projects; the number of affected resources in the desert that must be analyzed under the NEPA; and mitigation costs for all 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 these Projects 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 DEA 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.

In addition, BLM should include another 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.

The latter 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 Projects 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 proposed Projects not result in the loss of vegetation.

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. This could be an *option* for the currently described project alternative. 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 (see *Desert Tortoise Habitat Linkages/Connectivity among Populations and Recovery Units* below). Long-term monitoring for the life of the Projects would need to be included to accurately evaluate the effectiveness of this strategy.

Connected Actions

Pursuant to Section 1508.25 of the Council on Environmental Quality's (CEQ) regulations (40 CFR 1508.25), any DEA must cover the entire scope of a proposed action, considering all connected, cumulative, and similar actions in one document. Pursuant to Section 1506.1(a) of these regulations, an agency action cannot "[l]imit the choice of reasonable alternatives" before reaching a final decision in a published [Record of Decision] (ROD). These regulations ensure agencies will prepare a complete environmental analysis that provides a "hard look" at the environmental consequences of all proposed actions instead of segmenting environmental reviews (Novack 2015). Please explain whether any current proposed actions within the region are connected and if not, why.

Standardized Surveys – Desert Tortoise and Other Species

For the DEIS to fully analyze the effects and identify potentially significant impacts, the following surveys must be performed to determine the extent of rare plant and animal populations occurring within areas to be directly and indirectly impacted.

The Project proponents should fund focused surveys for all rare plant and animal species reported from the vicinity of the proposed Projects. Results of the surveys will determine appropriate permits from AZGFD and USFWS and associated avoidance, minimization, and mitigation measures. Focused plant and animal surveys should be conducted by knowledgeable biologists for respective taxa (e.g., rare plant surveys should be performed by botanists), and to assess the likelihood of occurrence for each rare species or resource (e.g., plant community) that has been reported from the immediate region. Focused plant surveys should occur only if there has been sufficient winter rainfall to promote germination of annual plants in the spring. Alternatively, the environmental documents may assess the likelihood of occurrence with a commitment by the proponents to perform subsequent focused plant surveys prior to ground disturbance, assuming conditions are favorable for germination.

Burrowing owl: Since Arizona does not have a specified protocol, surveys for western burrowing owl (*Athene cunicularia*) should be coordinated with the USFWS as the species is protected under the Migratory Bird Treaty Act. BLM should consider implementing available survey methods (CDFG 2012). In addition to the Project footprints, the protocol requires that peripheral transects be surveyed at 30-, 60-, 90-, 120-, and 150-meter intervals in all suitable habitats adjacent to the subject properties to determine the potential indirect impacts of the Projects on this species. If burrowing owl sign is found, CDFG (2012) describes appropriate minimization and mitigation measures that would be required. Also note that BLM should demonstrate in the DEIS how it will comply with "E.O. 13186 – Responsibilities of Federal Agencies To Protect Migratory Birds." If burrowing owl sign is found, BLM and the Project proponents should develop a science-based relocation/mitigation/monitoring/adaptive management plan with the USFWS and AZGFD and ensure that this plan is implemented.

Sonoran Desert Tortoise Surveys: Although the proponents for the Caballero site state in their POD that they will perform tortoise surveys, we could not find a similar commitment by the proponents of the Southwest Crossroads site to perform them. Please be sure that the action areas (described below) identified for both projects are subject to focused desert tortoise surveys (AZGFD 2010). Because USFWS (2009) requires that only experienced biologists perform protocol surveys, USFWS and AZGFD biologists should review surveyors' credentials prior to initiating the surveys. If any tortoise sign is found, the Project proponents should coordinate with USFWS and AZGFD to determine potential impacts of the proposed Projects.

It is appropriate that enlisted consultants confer with the USFWS to determine the action area for these Projects. The USFWS defines "action area" the Code of Federal Regulations and their Desert Tortoise Field Manual (USFWS 2009) as "all areas to be affected directly or indirectly by proposed development and not merely the immediate area involved in the action (50 CFR §402.02)." Although the tortoise is not listed under the Federal Endangered Species Act (FESA), we believe coordination with the USFWS will help BLM determine the extent of direct and indirect impacts to the tortoise from the proposed Projects.

The Council's persisting concern is that proponents of solar projects continue to identify a single site for development without any attempt to identify alternative sites. As such, when focused studies reveal significant accumulations of tortoises on the proponent's selected site, because there is only one site identified for the project, there is no opportunity to select an alternative site where impacts would be minimized.

Too often, a single impact footprint is identified, all surveys are restricted to that site, and no alternative sites are assessed, as required by NEPA. We are concerned that these Projects have already pre-determined the Project footprints. As such, there may be other areas of lower tortoise densities where impacts could be minimized. However, those areas would not be considered if the Project footprints are predetermined before survey data are available. As such, we request that more than one site, preferably three, be identified and analyzed for each Project in the DEIS and that the alternatives with the fewest impacts to tortoises be adopted for development.

If that is not feasible, we ask that the "action area" of the proposed Projects be several times larger than the Project footprints so that those portions of the sites with fewer tortoises could be selected. Proponents of the Gemini Solar Site in southern Nevada, for example, ignored these recommendations, and displaced more than 100 tortoises, when based on their presence-absence tortoise surveys, a shift of the site to the east would have avoided many of those animals.

Sonoran Desert Tortoise Impacts Analysis:

Analysis of Direct and Indirect Impacts: The alternatives analysis should include an economic analysis that provides the total cost of constructing the proposed Projects versus other alternatives, so the public can see how much the total cost of each alternative is. This would include an analysis of the costs of replacing all public resources that would be lost from granting the proposed Projects including direct, indirect, and cumulative impacts. Please note, this analysis would include habitat replacement or restoration costs including the time needed to achieve full replacement, not just acquisition, management, monitoring, and adaptive management costs.

The DEIS should include a thorough analysis of the status and trend of the tortoise in the action area and rangewide. Tied to this analysis should be a discussion of all likely sources of mortality for the tortoise and degradation and loss of habitat from implementation of solar development including construction, operation and maintenance, decommissioning, and restoration of the public lands. The DEIS should use the data from focused plant and wildlife surveys in their analysis of the direct, indirect, and cumulative impacts of the proposed Projects on the Sonoran desert tortoise and its habitat, any listed species, and species of concern/special status species.

We expect that the DEIS will document how many acres would be impacted directly by solar arrays, access roads to the site, administration/maintenance buildings, parking areas, transmission towers, switchyards, laydown areas, internal access roads, access roads along gen-tie lines, a perimeter road, perimeter fencing, substations, battery storage (e.g., the Project footprints). We also request that separate calculations document how many acres of desert tortoise habitats would be temporarily (both long-term and short-term) and permanently impacted both directly and indirectly (e.g., "road effect zone," etc.) by the proposed Projects. As given below, these acreages should be based on field surveys for tortoises not just available models.

Road Effect Zone: We request that the DEIS include information on the locations, sizes, and arrangements of roads to the proposed Projects and within them, who will have access to them, whether the access roads will be secured to prevent human access or vandalism, and if so, what methods would be used. The presence/use of roads even with low vehicle use has numerous adverse effects on the desert tortoise and its habitats that have been reported in the scientific literature. These include the 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.

Vehicle use on new roads and increased vehicle use on existing roads equates to increased direct mortality and an increased road effect zone for desert tortoises. Road construction, use, and maintenance adversely affect wildlife through numerous mechanisms that can include mortality from vehicle collisions, and loss, fragmentation, and alteration of habitat (Nafus et al. 2013; von Seckendorff Hoff and Marlow 2002).

In von Seckendorff Hoff and Marlow (2002), they reported reductions in Mojave desert tortoise numbers and sign from infrequent use of roadways to major highways with heavy use. There was a linear relationship between traffic level and tortoise reduction. For two graded, unpaved roads, the reduction in tortoises and sign was evident 1.1 to 1.4 km (3,620 to 4,608 feet) from the road. Nafus et al. (2013) reported that roads may decrease tortoise populations via several possible mechanisms, including cumulative mortality from vehicle collisions and reduced population growth rates from the loss of larger reproductive animals. Other documented impacts from road construction, use, and maintenance include increases in roadkill of wildlife species as well as tortoises, creating or increasing food subsidies for common ravens, and contributing to increases in raven numbers and predation pressure on the desert tortoise.

Please include in the DEIS analyses, 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). These analyses should be at the population, recovery unit, and rangewide levels.

In summary, road establishment/increased use is often followed by various indirect impacts such as increased human access causing disturbance of species' behavior, increased predation, spread of invasive species that alters/degrades habitat, increased human-caused wildfires, and vandalism and/or collection. The analysis of the impacts from road establishment and use should include cumulative effects to the tortoise with respect to nearby occupied tortoise habitats, areas identified as important linkage habitat for connectivity between occupied habitats as these linkage areas serve as corridors for maintaining genetic and demographic connectivity between populations and rangewide (see *Desert Tortoise Habitat Linkages/Connectivity among Populations* below). These and other indirect impacts to the Sonoran desert tortoise should be analyzed in the DEIS from project construction, operations and maintenance, decommissioning, and habitat restoration.

Desert Tortoise Habitat Linkages/Connectivity among Populations: The DEIS should analyze how these proposed Projects will impact the movement of tortoises relative to linkage habitats/corridors. We strongly request that the environmental consequences section of the DEIS include a thorough analysis of this indirect effect (40 Code of Federal Regulations 1502.16) and appropriate mitigation to maintain the function of population connectivity for the Sonoran desert tortoise and other wildlife species. Similarly, please document how these Projects may impact proximate conservation areas, such as BLM-designated ACECs.

Mitigation Plans

The DEIS should include effective mitigation for all direct, indirect, and cumulative effects to the tortoise and its habitats. The mitigation should use the best available science with a commitment to implement the mitigation commensurate to impacts to the tortoise and its habitats. Mitigation should include a fully-developed desert tortoise translocation plan, including protection of tortoise translocation area(s) from future development and human disturbance in perpetuity; raven management plan; non-native plant species management plan; fire prevention plan; compensation plan for the degradation and loss of tortoise habitat that includes protection of the acquired, improved, and restored habitat in perpetuity for the tortoise from future development and human use; and habitat restoration plan when the lease is terminated and the proposed Projects are decommissioned.

All plans should be provided in the DEIS so the public and the decisionmaker can determine their adequacy (i.e., whether they are scientifically rigorous and would be effective in mitigating for the displacement and loss of tortoises and degradation and loss of tortoise habitat from project implementation). Too often, such plans are alluded to in the draft environmental document and promised later, which does not allow the reviewers to assess their adequacy, which is unacceptable. If not available as appendices in draft documents, all indicated plans must be published in the final environmental documents. Their inclusion is necessary to determine their adequacy for mitigating direct, indirect, and cumulative impacts, and monitoring for effectiveness and adaptive management regarding the desert tortoise. If these plans are not provided, it is not possible for BLM, other decisionmakers, and the interested public to determine the environmental consequences of the Projects to the tortoise.

These mitigation plans should include an implementation schedule that is tied to key actions of the construction, operation, maintenance, decommissioning, and restoration phases of the Projects so that mitigation occurs concurrently with or in advance of the impacts. The plans should specify success criteria, include an effectiveness monitoring plan to collect data to determine whether success criteria have been met, and identify/implement actions that would be required if the mitigation measures do not meet the success criteria.

BLM Manual 6840: Special Status Species Management includes the following BLM directives (BLM 2008b) 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 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 2008b).

Tortoise Predators and a Predator Management Plan: Common ravens are known predators of the Sonoran 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 et al. 2006). 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 sites.

The DEIS should analyze if this new use (e.g., construction, operations and maintenance, decommissioning, and restoration) would result in an increase in common ravens and other predators of the desert tortoise in the action area. During construction, operations and maintenance, decommissioning, and restoration phases of the proposed Projects, the BLM should require science-based management of common raven, coyote, and badger predation on tortoises in the action areas. 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 Projects). This includes buildings, fences, and other vertical structures associated with the Project sites. 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 Projects 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.

We request that for any of the transmission options, the Projects 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 Projects could include numerous infrastructure components that have been known to cause fires. Lithium-ion batteries at the Project sites 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 sites.

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."

Climate Change and Non-native Plants

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 areas that may provide refugia for tortoise populations; an analysis of how the proposed actions 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 actions may affect the likelihood of human-caused fires. We strongly urge that the BLM require the Project proponents 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 within the Project areas and eliminate/reduce the likelihood of human-caused fires. The plans should integrate vegetation management with fire prevention and fire response.

Impacts from Proliferation of Nonnative Plant Species and Management Plan: The DEIS should include an analysis of how the proposed Projects 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 the frequency and size of human-caused fires); and how the proposed Projects may affect the frequency, intensity, and size of human-caused and naturally occurring fires. For reasons given in the previous paragraph, we strongly urge that the BLM require the Project proponents to develop and implement management and monitoring plans for nonnative plant species. The plans should integrate management/enhancement of native vegetation with fire prevention and fire response to wildfires.

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 these proposed Projects, and cumulative impacts from water use and discharge on native perennial shrubs and annual vegetation used for forage by the Sonoran desert tortoise, including downstream and downstream impacts. The DEIS should analyze how much water is proposed to be used during construction and operation; 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).

Federal Land Policy and Management and Federal Endangered Species Act

Federal Land Policy and Management Act (FLPMA): In 1976, Congress passed the FLPMA and wrote a lengthy definition of "multiple use" for the management of public lands and their various resource values. The definition included "… the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."

Congress defined "sustained yield" as the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use. The Sonoran desert tortoise and its habitats are renewable resources.

The definition of "environmental quality" is a set of properties and characteristics of the environment, either generalized or local, as they impinge on human beings and other organisms. It is a measure of the condition of an environment relative to the requirements of one or more species and or to any human need or purpose. Thus, BLM must consider the quality or condition of the environment of the Sonoran desert tortoise with respect to the species' requirements for persistence and must maintain this habitat quality.

Cumulative Effects

With regards to cumulative effects, the DEIS should list and analyze all Project impacts within the region including future state, federal, and private actions affecting sensitive species on state, federal, and private lands. The Council asks that the relationship between these proposed Projects and the Solar PEIS (BLM and DOE 2012) be analyzed. We also expect that the environmental documents will provide a detailed analysis of the "heat sink" effects of solar development on adjacent desert areas and particularly Sonoran desert tortoise in addition to climate change.

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 proposals 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 DEA 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.

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 need 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.

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 tortoises in the region; 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.

In addition, we request that BLM add this project and its impacts to a database and geospatial tracking system for special status species, including Sonoran Desert tortoises, that track cumulative impacts (e.g., surface disturbance, paved and unpaved routes, linear projects, invasive species occurrence, herbicide /pesticide use, wildfires, etc.), management decisions, and effectiveness of mitigation for each project. Without such a tracking system, BLM is unable to analyze cumulative impacts to special status species (e.g., desert tortoises) with any degree of confidence. Without such a tracking system, BLM is unable to determine whether its management for the tortoise complies with its commitment in the Candidate Conservation Agreement for the Sonoran Desert Tortoise (USFWS et al. 2015) to implement landscape level conservation measures (Section 9.1.1), local conservation measures (Section 9.1.2), and Agency-Specific Species and Habitat Conservation Actions (Section 9.2.1 for BLM). Please add these proposed Projects to this data base and geospatial tracking system and explain in the DEIS how the proposed Projects with required mitigation will adhere to these commitments in the CCA including in section 9.2.1 "[r]enewable energy projects have been sited to avoid all occupied SDT [Sonoran Desert tortoise] habitat. Roads, pipelines and transmission lines have been designed to minimize impacts to SDT habitat or mitigated to achieve no net 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 DEIS for these Projects, we have included a map of some of these multiple threats and their relationships to other threats (Tracy et al. 2004) (please see Figure 1).

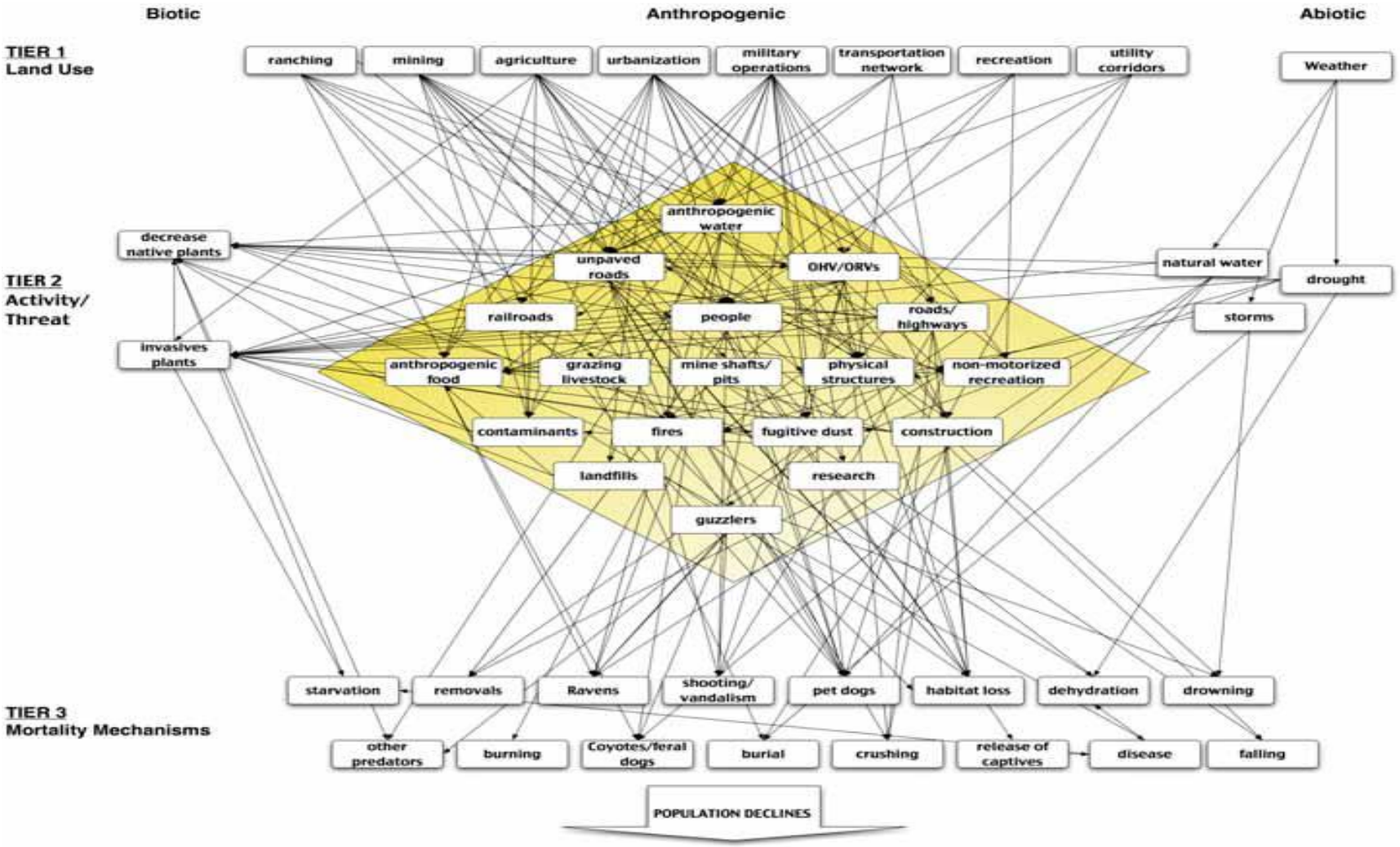
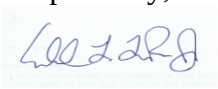


Figure 1. Network of threats demonstrating the interconnectedness between multiple human activities that interact to cause mortality and prevent recovery of tortoise populations. Tier 1 includes the major land use patterns that facilitate various activities (Tier 2) that impact tortoise populations through 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).

We appreciate this opportunity to provide scoping comments on these Projects 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 desert tortoises, and that any subsequent environmental documentation for these Projects 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 these Projects.

Respectfully,



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

cc. Heather Whitlaw, Field Supervisor, Arizona Ecological Services Field Office (Phoenix), U.S. Fish and Wildlife Service, heather_whitlaw@fws.gov
Sabra Tonn, Arizona Game and Fish Department, Project Evaluation Program Specialist, stonn@azgfd.gov
Ann McPherson, Environmental Review, U.S. Environmental Protection Agency, mcpherson.ann@epa.gov

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