

DESERT TORTOISE COUNCIL

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Via email only

September 3, 2025

Lisa Worrall
California Energy Commission
715 P Street
Sacramento, CA 95814
STEPsiting@energy.ca.gov

RE: Environmental Scoping Comments for Preparation of a Draft Environmental Impact Report
for the Soda Mountain Solar Project (Docket No. 24-OPT-03)

Dear Ms. Worrall,

The Desert Tortoise Council (Council) is a non-profit organization comprising 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 northern 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 project in habitats known to be occupied by the Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments include recommendations intended to enhance protection of this species and its habitat during activities that may be authorized by the California Energy Commission (CEC), which we recommend be added to project terms and conditions in the authorizing documents [e.g., issuance of right-of-way (ROW) grants, management plan and decision document, etc.] as appropriate. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed action.

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

This status, in part, prompted the DTC to join Defenders of Wildlife and the Desert Tortoise Preserve Committee (DTPC) to petition the California Fish and Game Commission in March 2020 to elevate the listing of the Mojave desert tortoise from Threatened to Endangered under the California Endangered Species Act (CESA) (Defenders of Wildlife et al. 2020). Importantly, following California Department of Fish and Wildlife's (CDFW) (2024a) status review, in their April 2024 meeting the California Fish and Game Commission voted unanimously to accept the CDFW's petition evaluation and recommendation to uplist the tortoise from threatened to endangered under the CESA based on the scientific data provided on the species' status, declining trend, numerous threats, and lack of effective recovery implementation and land management (CDFW 2024b). On July 15, 2025, the tortoise was officially uplisted to endangered status under the CESA.

We appreciate that the CEC contacted the Council directly via email on 8/22/2025, which enabled Ed LaRue to attend the public meeting in Barstow on 8/29/2025. The Notice of Information and Environmental Scoping Meeting for the Proposed Soda Mountain Solar Project (NoI) attached to the email indicated that the public meeting would occur between 1 and 5 p.m. With about 20 people in the room and 60 on Zoom (as announced by a CEC member during the meeting), there were only 10 public comments during the meeting, which was adjourned at about 2:30 p.m. We note that one of our Board members entered the room at about 3:00 p.m. to find CEC personnel there but the meeting to have ended. It would have been more appropriate for CEC to run the meeting as announced until 5:00 p.m. so that members of the public who could not be there until later would still be able to comment.

According to CEC's website (<https://www.energy.ca.gov/powerplant/solar-photovoltaic-pv-battery-energy-storage/soda-mountain-solar-project>), "Soda Mountain Solar, LLC (applicant), proposes to construct, operate, and maintain a utility-scale solar photovoltaic (PV) electrical generating and storage facility and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The Soda Mountain Solar Project (project) would generate up to 300 megawatts (MW) of renewable energy and include up to 300 MW of battery storage. The project also includes future decommissioning, which is anticipated to occur after 30 years of operation. The project is located on approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management, California Desert District, within the jurisdiction of the Barstow Field Office in San Bernardino County.

“The project components are as follows: 1) The solar plant site (i.e., all facilities that create a footprint in and around the field of solar panels, including the solar field consisting of solar power arrays), operation and maintenance buildings and structures, stormwater infrastructure, and related infrastructure and improvements. 2) A substation and switchyard for interconnection to the existing transmission system. 3) Approximately 300 MW of battery energy storage system across 18 acres.

“The project would operate year-round and would generate electricity during daylight hours. The project would generate and deliver solar-generated power to the regional electrical grid through an interconnection with the existing Marketplace-Adelanto 500-kilovolt (kV) transmission line operated by the Los Angeles Department of Water and Power.”

The Council has formally opposed this project since 2012 in a series of formal comment letters to the Bureau of Land Management (BLM), CDFW, and San Bernardino County Supervisors, with three of these letters included in Attachment A (Desert Tortoise Council 2012, 2014, and 2023). Although the proposed project design has changed since its initial conception (e.g., there are no longer project areas proposed north of I-15), many of our comments are still pertinent and are submitted herein to the CEC for the first time. Whereas we believe that most of the information given in these letters is still applicable, we have taken the time to highlight in green those pertinent outstanding issues that we believe should be addressed in the CEC’s current draft environmental impact report (DEIR).

Available information for the current proposal that was reviewed by the Council included the CEC’s website for which the link is given above, the 7-page NoI dated 8/20/2025, the 43-page Revised Project Description dated 7/18/2025, the Power Point presentation given by the CEC during the public meeting in Barstow on 8/29/2025, and numerous posts on the CEC’s Docket Log. Of particular interest to the Council, is the letter submitted by Defenders of Wildlife (Defenders 2025) dated 8/29/2025. In their letter, Defenders references a desert bighorn sheep study completed by Dudek (2024); a SWCA Environmental Consultants (2024) report titled “Desert Bighorn Sheep Literature Review and Technical Report;” a February 2025 “revised biological resources report;” a July 2025 “revised impact and compensatory mitigation report;” a protocol survey for desert tortoises performed in April and May of 2023; and a burrowing owl survey performed in the spring and summer of 2023.

Several of these documents appear in the CEC’s Docket Log¹ that we accessed on 8/31/2025, but were mostly confidential and could not be reviewed. We ask that these recent documents, particularly biological survey reports, be included as appendices to the DEIR so that we and the public can review them as information for our future comments on the DEIR. So that they are all available in one place to allow comparisons between current and previous conditions, we ask that the following and any other pertinent biological resource reports be included in the DEIR: AMEC (2001), Epps et al. (2013), Kiva Biological Consulting (2013), and Panorama Environmental, Inc. (2012, 2013).

¹ <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03>

Again, we expect the three attached letters to be entered into the current public record, and, without reiterating them here, that the issues highlighted in green be specifically addressed in the DEIR. In addition to these outstanding concerns, we provide the following issues and comments that were identified by attending the public meeting, given in the order in which they were revealed:

1. We understand that the CEC, serving as the California Environmental Quality Act (CEQA) lead agency, is necessarily confining its impacts analyses to the DEIR. This has been a highly controversial, contested project, and we expect that the associated draft environmental impact statement (DEIS) may be even more complicated given the regulations identified in the Desert Renewable Energy Conservation Plan (DRECP, BLM 2016) and the recently issued programmatic solar energy EIS (BLM 2024). Given this interplay between federal- and state-related issues, we ask that the DEIR include a detailed description of the federal process that must also occur for this project to be approved. In its consultation with the BLM, has a date been identified for the release of the new DEIS (or perhaps supplemental EIS) by the BLM?

The project description includes construction, operation and maintenance, and decommissioning. It should also include restoration. BLM is obligated under the Federal Land Policy and Management Act (FLPMA) “to manage public lands for multiple uses that consider the long-term needs of future generations for renewable and non-renewable resources.” Also, under FLPMA, BLM is required to “take any action necessary to prevent unnecessary or undue degradation of the lands.” While these are federal requirements and the current process that the CEC is implementing to analyze the proposed project is a State requirement, this is another example of why a combined EIR/EIS is appropriate for this project.

2. During the public meeting, the CEC identified outstanding or “key issues” that have been identified in previous planning efforts. We note that there was no mention of the physical, visual, and aesthetic impacts of this project on the adjacent Mojave National Preserve. We understand that the National Park Service formally opposed this project and note that CEC did not identify this as a key impact, which the Council believes it is. For example, when the Eagle Mountain Landfill project was proposed adjacent to Joshua Tree National Park in the 1990s, it was revealed in public comments that the perception and idea that a large landfill would be located adjacent to the National Park would adversely affect the public’s experience in visiting the park. The DEIR should consider similar perception impacts on visitors to Mojave National Preserve.

3. Please indicate the destination for the electricity that would be generated by this proposed project. Will the electricity be transported north and/or south or used locally? The answer to this question is important; unless the energy is being provided to Baker or Barstow, which are the two nearest human communities, it seems counterintuitive that solar fields would be developed in such an isolated area far from degraded human developments that are more proximate to the targeted destination.

4. Although there is brief mention of one of our concerns in the attached letter (bottom of page A-18 herein, Desert Tortoise Council 2023), we feel it is important enough to reiterate it here: the DEIR must clearly outline the conditions that have changed for this failed project to now be resurrected. What is different now that a fatally-flawed, much-opposed project in pristine desert habitats is being pursued again, particularly since the plight of the tortoise is worse now than it was in 2016 (see Appendix A to Desert Tortoise Council 2023, pages A-39 through A-45) when the project failed to be developed?

5. Based on the testimony by an off-highway vehicle (OHV) proponent at the public meeting, it appears that the recreation community expects to benefit from development of the solar field, expressing hope that picnic tables and shade structures could be developed in conjunction with project development. Our experience with BLM-designated open areas is that they disturb native soils and result in windblown dust affecting desert habitats many miles distant from the disturbance source. We do not recall that any of the previous environmental documents considered the potential impairment of the efficacy of the solar facilities by placing them adjacent to the Razor Open Area. Have there been any studies to show the dust generated by this particular open area compared to a control area where unrestricted OHV activities are prohibited, and where does that dust travel? Will the fugitive dust created by the adjacent Razor Open Area require heightened use of water to clean solar panels to promote maximum electricity generation?

6. Please be sure that growth-inducing impacts are addressed in the DEIR. There are many examples, including southern Nevada, eastern Riverside County, and eastern Kern County that show once a solar field is developed, it is likely that other solar fields will be developed in adjacent and nearby areas. Much of this development is driven by the designation of those areas for solar development, which does not apply to the current location of the proposed project. We note that in DRECP terms, the site is not identified as a Development Focus Area; rather it would require development in the context of a Variance Area. (It is issues like this one that cause us to question why this project is not being addressed in a combined EIR/EIS to cover all important state and federal contingencies in one place.) Are there any other currently-proposed solar fields in the area between Barstow and Baker?

7. We echo the concerns of a member of the Baker Fire Department during the public meeting, who indicated that their small staff of emergency responders covers the largest fire district in the U.S.A. He indicated that if the staff is called simultaneously to another emergency, it could be hours before they could respond to a fire-related emergency at the solar facility. This reality should be addressed in the Fire Management Plan drafted specifically for this project, if it goes forward.

8. The project would have substantial negative impacts on desert bighorn sheep, as indicated in an analysis by Dr. Christina Aiello and Dr. Clinton Epps at Oregon State University (Aiello, C. and C. Epps. 2023), and would interfere with an effort to restore habitat connectivity via construction of a wildlife overcrossing on the Interstate 15 transportation corridor. Implementing their three mitigations is essential for maintaining the Soda Mountain movement corridor intact: (a) maintain a minimum buffer of 0.62 miles, and ideally 1.24 miles between the solar installation and desert bighorn sheep habitat; (b) if not deny, delay construction of the solar installation until after the wildlife overpass has been constructed and adopted by desert bighorn sheep; and, (c) impacts of the project and mitigations must be re-assessed once the wildlife overpass becomes functional.

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

Please 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.
Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

Cc: Ann McPherson, Environmental Review, U.S. Environmental Protection Agency,
mcpherson.ann@epa.gov
Brian Croft, Assistant Field Supervisor, Palm Springs Fish and Wildlife Office, U.S. Fish
and Wildlife Office, brian_croft@fws.gov

Literature Cited

- Aiello, C. and C. Epps. 2023. Potential impacts of the proposed Soda Mountain Solar development on desert bighorn sheep. A report prepared for the National Park Service and California Department of Fish and Wildlife. Oregon State University, Department of Fisheries, Wildlife, and Conservation Sciences.
<https://www.dropbox.com/scl/fi/ld44iat30jyrffxee7qi/Aiello-and-Epps-2023-Soda-Mtn-impacts-on-sheep.pdf?rlkey=4ugzevf6p723z7wwnx37clnua&dl=0>
- AMEC. 2001. Desert Tortoise Survey of the Opah Ditch Mine. Unpublished report prepared by AMEC.
- Averill-Murray, R.C., P.C. Rosen, C.A. Jones, T.R. Jones, R.A. Lara-Resendiz, T. Edwards, A. Karl, & K.H. Berry. 2023. *Gopherus morafkai*. The IUCN Red List of Threatened Species 2023: e.T97246109A97246177.
<https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T97246109A97246177.en>
- Berry, K.H., L.J. Allison, A.M. McLuckie, M. Vaughn, and R.W. Murphy. 2021. *Gopherus agassizii*. The IUCN Red List of Threatened Species 2021: e.T97246272A3150871.
<https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T97246272A3150871.en>
- [CDFW] California Department of Fish and Wildlife. 2024a. Status Review for Mojave Desert Tortoise (*Gopherus agassizii*) Report to the Fish and Game Commission, February 2024.
<https://nrm.dfg.ca.gov/documents/ContextDocs.aspx?cat=CESA-Listing>
- [CDFW] California Department of Fish and Wildlife. 2024b. 2022-2024 News Releases. California Fish and Game Commission Holds Hybrid Meeting, April 23, 2024.
<https://wildlife.ca.gov/News/Archive/california-fish-and-game-commission-holds-hybrid-meeting11>
- [Defenders et al.] Defenders of Wildlife, Desert Tortoise Preserve Committee, and Desert Tortoise Council. 2020. A Petition to the State of California Fish And Game Commission to move the Mojave desert tortoise from listed as threatened to endangered.
https://defenders.org/sites/default/files/2020-03/Desert%20Tortoise%20Petition%203_20_2020%20Final_0.pdf

[Defenders] Defenders of Wildlife. 2025. Jeff Aardahl Comments - Comments on Notice of Preparation of a Draft Environmental Impact Report for the Soda Mountain Solar Project. Letter TN# 265827 submitted to Lisa Worrall, dated 8/29/2025. Folsom, CA.
<https://www.dropbox.com/scl/fi/5f11wuzpthmrmgs2yh7xy/Soda-Mt-Solar-Project-Comments-by-Defenders-of-Wildlife.8-29-2025.pdf?rlkey=lsjlt2yk6e0rcvvn20as7nhu5&dl=0>

[Council] Desert Tortoise Council. 2012. Public scoping comments on the proposed Soda Mountain Solar project (CACA 49584). Comment letter submitted to Mr. Jeffrey Childers of the BLM on 12/13/2012. Ridgecrest, CA. Pages A-1 through A-6.

[Council] Desert Tortoise Council. 2014. Formal comments on the Draft Environmental Impact Statement for Soda Mountain Solar project (CACA 49584). Comment letter submitted to Mr. Jeffrey Childers of the BLM on 3/1/2014. Ridgecrest, CA. Pages A-7 through A-13.

[Council] Desert Tortoise Council. 2023. Soda Mountain Solar Project, San Bernardino County, California – Notice of Preparation (NOP) of a Draft Environmental Impact Report. Comment letter submitted to Dr. Shankar Sharma of the CDFW on 2/16/2023. Acton, CA. Pages A-15 to A-68.

Dudek. 2024. Desert Bighorn Sheep Study - Soda Mountain Solar Project. Prepared for the California Department of Fish and Wildlife, Inlands Deserts Region, Ontario, California. 121 pp.

Epps, C.W., J.D. Wehausen, R.J. Monello, and T.G. Creech, 2013. Potential impacts of proposed solar energy development near the South Soda Mountains on desert bighorn sheep connectivity, Report to the California Department of Fish and Wildlife, National Park Service, and Bureau of Land Management by Oregon State University, University of California and the National Park Service., 25, February 2013.

Kiva Biological Consulting. 2013. Protocol Desert Tortoise Survey for Soda Mountain Solar Project, Spring 2013. Prepared for Bureau of Land Management Barstow Field Office. June 12, 2013.

Panorama Environmental, Inc. 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California. An unpublished report prepared by Susanne Heim and Laurie Hietter, dated July 2012. San Francisco, CA.

Panorama Environmental, Inc. 2013. Biological resources technical report, Soda Mountain Solar Project, San Bernardino County, CA, BLM Case Number CACA 49584. Submitted by Solar Mountain LLC. Frederick, MD.

[BLM] U.S. Bureau of Land Management. 2016. Record of Decision for the Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan for the Desert Renewable Energy Conservation Plan (DRECP). Dated September 2016. Sacramento, CA.

[BLM] U.S. Bureau of Land Management. 2024. Final Programmatic Environmental Impact Statement for Utility Scale Solar Energy Development, DOI-BLM-HQ-3000-2024-0001-RMP-EIS.

**Attachment A. Formal Comment Letters Submitted by the Council
On the Proposed Soda Mountain Solar Project**

Desert Tortoise Council. 2012. Public scoping comments on the proposed Soda Mountain Solar project (CACA 49584). Comment letter submitted to Mr. Jeffrey Childers of the BLM on 12/13/2012. Ridgecrest, CA. Pages A-1 through A-6.

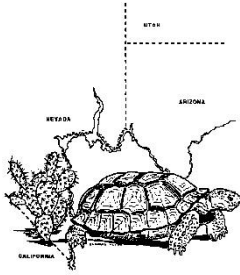
<https://www.dropbox.com/scl/fi/ingb7rp1h8itq44oatkr/Soda-Mountain-Desert-Tortoise-Council-Scoping-Comments.12-13-2012.pdf?rlkey=uj6xar4ri0pw97hiomlm2eb6d&dl=0>

Desert Tortoise Council. 2014. Formal comments on the Draft Environmental Impact Statement for Soda Mountain Solar project (CACA 49584). Comment letter submitted to Mr. Jeffrey Childers of the BLM on 3/1/2014. Ridgecrest, CA. Pages A-7 through A-13.

<https://www.dropbox.com/scl/fi/dyuhk8vrbc8cjxak4uupx/Soda-Mountain-Comment-Letter.3-1-2014.pdf?rlkey=2iw350060qplbtq2zhmjcn1rx&dl=0>

Desert Tortoise Council. 2023. Soda Mountain Solar Project, San Bernardino County, California – Notice of Preparation (NOP) of a Draft Environmental Impact Report. Comment letter submitted to Dr. Shankar Sharma of the CDFW on 2/16/2023. Acton, CA. Pages A-15 to A-68.

<https://www.dropbox.com/scl/fi/0n30cj81lvua4gl138v3q/Soda-Mountain-Solar.2-16-2023.pdf?rlkey=4qs53z0gxv0xre8hksnj8nrmd&dl=0>



DESERT TORTOISE COUNCIL

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Date: 13 December 2012

To: Mr. Jeffery Childers, Soda Mountain Solar Project Manager
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553
sodamtnsolar@blm.gov

From: Ed LaRue, Ecosystems Advisory Committee

RE: Public scoping comments on the proposed Soda Mountain Solar project (CACA 49584)

Dear Mr. Childers,

The Desert Tortoise Council (Council) is a private, 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 this species. Established in 1976 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council regularly provides information to individuals, organizations and regulatory agencies on matters potentially affecting the desert tortoise within its historical range.

Herein the Council formally requests to be considered an "Affected Party," and asks that all correspondence regarding analysis of this potential project be sent to the address given above, attention Ed LaRue.

It was my pleasure yesterday to spend about eight hours in the field on the proposed project site to become familiar with biological resources, then to attend the public scoping meeting held in Lenwood, California between 4:00 and 6:00 p.m. During those eight hours, I walked approximately 11 miles through the three proposed array areas, referred to on a project map (Panorama Environmental, Inc., dated 9/14/2012) as "North Array," "South Array," and "East Array." The Council also appreciates the time and effort spent by Mr. Michael Radakovich, tortoise biologist, who accompanied LaRue on those surveys.

I was able to review the following documents before visiting the site:

- Panorama Environmental, Inc. July 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California (herein, "Panorama")
- RMT, Inc. March 2011. Plan of Development, Soda Mountain Solar Project (herein "RMT")
- Soda Mountain Solar, LLC. 9 August 2012. Comments from Ms. Adriane Wodey representing this subsidiary of Bechtel Development Company, Inc. (herein "Ms. Wodey")

All three documents extensively reference 2009 focused desert tortoise surveys of the 4,400 acres± performed by URS (2009). However, when I asked for a copy of that document during the public scoping meeting, Mr. Childers indicated that the document was currently under internal review and not available to the public. This is unfortunate, as all documents I reviewed before visiting the site refer to URS results that the Council cannot review for an independent assessment of those results. If there are problems with that document, the Bureau of Land Management (BLM) should be forthcoming with that information, or publicly reject the report. In the meantime, the limited information available to the Council comes from third parties citing the URS 2009 document as if it is good science. As described below, we have good reason to believe that it is not good science.

Furthermore, when Mr. Childers was asked if there had been any recent surveys performed, he was hesitant and noncommittal. We are aware that there have been additional surveys, but it is not clear why these materials are being withheld. The Council would be much better informed if existing materials had been made available. It is important that the BLM remain independent in its assessment of this project, and not become a project proponent.

All three documents reviewed thus far come across as being subjectively one-sided, first reporting published results of other studies then, without good scientific basis, rejecting those results. For example, Ms. Wodey's assertion on page 16 that the site be reclassified from "High Biological Sensitivity – Public" to "Unclassified Land" is self-serving and not supported by any data. Similarly, there is no evidence that the site should be removed from its current designation as a "High Conflict Development Focus Area," as identified in the Desert Renewable Energy Conservation Plan. We sincerely hope and expect that the draft EIS will not be fraught with preconceived conclusions promoting development of this project in the current location.

The Council strongly feels that the following issues must be pursued and resolved in the draft EIS:

1. The Bechtel representative at the meeting indicated that this was one of five potential sites, that the other four had been rejected, and that this one was the preferred alternative. The draft EIS should clearly report the data behind this decision, both the reasons the other sites are not suitable and the reason this site is preferred. How have these sites already been rejected in the absence of rigorous analyses that would presumably result from an EIS-level review?

2. The Council would like to see additional sites (not just those already rejected) analyzed in the draft EIS. We support the determination that this particular site at Soda Mountains be identified as an alternative considered but rejected.

3. All three documents suggest that the three arrays are substantially affected by their proximity to the BLM's Razor Open Area. This is simply not true. The North Array is separated from the open area by Interstate 15. According to the odometer on my GPS unit, I walked 4.72 miles of transects on the southern half of the North Array area. I observed only 15 cross-country vehicle tracks along those 4.7 miles of transects. The substrates are dissected by numerous washes and far too cobbly to accommodate most off-road vehicles. I also walked 6.97 linear miles of transects through the South Array, which is on the same side of I-15 and contiguous to the open area. There I tallied 45 tracks alongside the eastern hills and 88 tracks throughout the property. Most of these were along the south side of my survey area, adjacent to Razor Road. In any case, these numbers are not indicative of degraded habitats.

4. Rather than make unsubstantiated statements about habitat degradation due to the proximity to the open area, additional studies should assess the levels of impacts in all three array areas and situate a few transects inside the Rasor open area for comparison. We are confident that such a comparison will reveal that the proposed sites are not nearly degraded as Ms. Wodey and Panorama would have us believe.

5. As per U.S. Fish and Wildlife Service (USFWS 2010) survey protocol, which states that survey results will remain valid for the period of one year, the 2009 tortoise surveys are now outdated. Assuming the site is not rejected based on scoping comments, new surveys should be performed to see if tortoises are truly absent. There should be complete disclosure of surveyor qualifications. If tortoises do occur in low densities, inexperienced surveyors should not be employed. The current tendency given the USFWS four-month survey period is to have hydrologists, geologists, ornithologists, even office staff and secretaries perform tortoise surveys. We strongly believe that only qualified tortoise biologists should perform any new surveys.

6. Based on what I saw yesterday, particularly throughout the North Array, which is very cobbly, the new survey should tighten up the survey intervals from the proposed 10-meter intervals to perhaps 5-meter intervals. It would also be prudent to orient transects in an east-west direction to facilitate detection in washes. I and Radakovich visually inspected about 150 wood rat middens for tortoise scat and carcass pieces on surveyed portions of the North Array. There must be thousands of such middens, which should be individually checked for tortoise signs. If tortoises occur at low densities as Ms. Wodey and Panorama suggest, this heightened survey methodology would be warranted.

7. Prior to beginning any new surveys, project proponents and intended biologists should confer with USFWS biologists to determine an affected “action area” (see definition in USFWS 2010) for this project. In 2009, only the project footprint was surveyed. Had a larger action area encompassing both direct and indirect impact areas been surveyed, we are certain that tortoises or their signs would have been detected in the hills immediately adjacent to the project footprint. Failure to survey the action area for this project would violate the USFWS 2010 protocol.

8. Even if new surveys do not find tortoises within the North Array area, the BLM should conclude that the project “May Effect” tortoises based on the 2001 AMEC findings at the Opah Ditch Mine, which is located within a half-mile to the west (see Figure 10 in Panorama 2012). During that survey, 5 burrows, 3 rock cover sites, 9 scat, and 3 carcasses were found, demonstrating that tortoises are in the immediate vicinity of the proposed project. Based on this information, the Council believes that the “May Effect” determination is warranted. As such, there should also be formal consultation with USFWS as required on page 6 of the survey protocol (USFWS 2010).

9. Although Ms. Wodey (apparently referring to the URS 2009 survey on page 11 in her letter) concludes that there is no habitat for Mojave fringe-toed lizard, I believe that there are suitable habitats within the eastern portions of both the East and South arrays, in sand fields against the west slopes of Soda Mountains. If not already, the Council believes that additional surveys are warranted for this species.

10. The Council did not have access to the URS 2009 document, so we are not sure what information sources were used therein to determine tortoise occurrence, but Ms. Wodey's letter cites only the AMEC 2001 study. The draft EIS must review additional materials to determine the potential local and regional impacts to tortoises. At the very least, this should include reviews of the Fort Irwin expansion data, any findings associated with the proposed high-speed rail line, and any data Caltrans may have.

11. Radakovich found burrowing owl sign in three locations on the northern portion of the North Array. This species was not identified in the RMT assessment. There should be focal surveys for burrowing owl and the results presented in the draft EIS.

12. Although not mentioned in any of the materials reviewed, both LaRue and Radakovich found evidence of American badger in all three array areas. The draft EIS should analyze the extent of impacts to this species, which is a California Species of Special Concern.

13. Citing the URS 2009 survey, which was not available to the Council for review, Ms. Wodey (page 9) states "...that conditions are not likely to support populations of desert tortoise because: the elevation of the area (less than 1,600 feet) is low for desert tortoise; vegetation is sparse with low diversity; soils are very rocky; habitat is fragmented by Interstate-15; and disturbance from off-highway vehicle use and construction of two transmission lines, a cellular tower, a distribution line, a fiber optic cable, and two fuel pipelines." Similarly on page 38, Panorama (2012) states: "The presence of surrounding mountains, abundant rocks and cobbles, sparse vegetation, low vegetation diversity, low elevation (below 470 meters), sand and gravel soils, and level of human disturbance indicate that the habitat is fragmented and not highly suitable for desert tortoise."

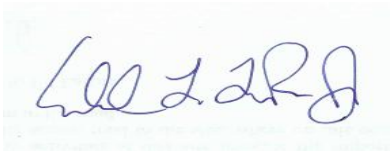
In fact, none of these conditions preclude tortoises from the three arrays. Though not common at very low elevations, I have observed tortoises at 500-foot elevation. Elevations ranging from about 1,200 to 1,600 feet throughout the three arrays are entirely suitable for tortoise occurrence. Though as I observed yesterday the creosote bushes *are* sparse, this represents a natural condition; I have observed tortoises in these exact same conditions. The sites are not too rocky for tortoises to occur. Though, regionally, habitats are fragmented by Interstate 15, this does not mean that some 4,000 acres of adjacent habitats are not capable of supporting tortoises. As mentioned above, the impacts associated with the adjacent open area are likely minimal compared to those occurring inside the open area. From what I saw yesterday, habitats have not been compromised by their proximity to the open area. Nor has serious habitat fragmentation occurred as a result of the transmission lines and other linear impacts; habitats within several hundred feet of these existing developments are intact and entirely capable of supporting tortoises.

14. As stated in their abstract, Nussear et al. (2009) indicate that their habitat modeling exercise is intended to provide "...output of the statistical probability of habitat potential that can be used to map potential areas of desert tortoise habitat." Both Ms. Wodey and Panorama report that Nussear's analysis produced a habitat rating of 0.6 to 0.8, where 1.0 is the most suitable habitat. Both then go on to say that this estimate is too high because no tortoise sign was found by URS in 2009. Nussear is not predicting the likely occurrence of tortoises, he is predicting habitat suitability. Just because tortoises are not abundant onsite does not dismiss Nussear's relatively high habitat suitability index for this site.

In conclusion, there is a real concern that the environmental documents reviewed thus far are subjective in favor of the proposed project. Claiming that the Opah Ditch Mine is better tortoise habitat than adjacent undisturbed lands is an example. All three documents claim that low elevations, existing disturbances, cobbly substrates, and sparse vegetation warrant the development of this site. That was not my impression yesterday. Although the arrays are not “crawling with tortoises,” none is considered unsuitable or highly disturbed. Had I not visited the site, I would have assumed from the three documents I reviewed that low shrub cover is due to excessive impacts from cross country vehicle travel. In fact, shrub cover is naturally sparse and vehicle impacts seem minimal.

We sincerely hope that the draft EIS does not continue to interpret biological baseline data in such a skewed, subjective manner so as to present to the public the impression that this is an ideal location to destroy about 4,000 acres of an intact, functioning habitat.

Regards,

A handwritten signature in blue ink, appearing to read "Ed L. LaRue, Jr.", is centered within a light blue rectangular box.

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

Literature Cited:

AMEC. 2001. Desert Tortoise Survey of the Opah Ditch Mine.

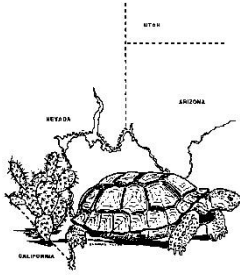
Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

Panorama Environmental, Inc. 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California. An unpublished report prepared by Susanne Heim and Laurie Hietter, dated July 2012. San Francisco, CA.

RMT, Inc. 2011. Plan of Development, Soda Mountain Solar Project. Unpublished report prepared for BLM, submitted by Caithness Soda Mountain, LLC, dated 15 March 2011. San Mateo, CA.

Soda Mountain Solar, LLC. 2012. Comments on DRECP July 25 and 26, 2012 Stakeholder Meeting Materials, Docket Number 09-RENEW EO-01 to California Energy Commission from Ms. Adriane Wodey, Soda Mountain Solar, LLC.

U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). USFWS Desert Tortoise Recovery Office. Reno, NV.



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1 March 2014

To: Mr. Jeffery Childers, Soda Mountain Solar Project Manager
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553
sodamtnsolar@blm.gov

RE: Formal comments on the Draft Environmental Impact Statement for Soda Mountain Solar project (CACA 49584)

Dear Mr. Childers,

The Desert Tortoise Council (Council) is a private, 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 this species. Established in 1976 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council regularly provides information to individuals, organizations and regulatory agencies on matters potentially affecting the desert tortoise within its historical range.

Herein, we provide formal comments on the Draft Environmental Impact Statement (Draft EIS) for Soda Mountain Solar project (CACA 49584):

1. Measure 71 in Table 2-5, page 2-32 of the Draft EIS states: "An adequate number of trained and experienced monitors must be present during all construction and decommissioning activities in unfenced areas, depending on the various construction tasks, locations, and season. The approved biologist shall be on site from April 1 through May 31 and from September 1 through October 31 (active season) during ground-disturbing activities in areas outside the exclusion fencing, and shall be on-call from November 1 to March 14 (inactive season)." This particular measure implies that only active tortoises found aboveground are subject to impacts. In fact, ground-disturbing activities are just as likely to impact tortoises in their burrows, regardless of the season. Additionally, both adult and subadult tortoises may be active and out of their burrows year-round, which is facilitated by warmer temperatures in the winter months and rainfall in the summer months.

We strongly recommend that authorized biologists be onsite for **all** ground-disturbing activities, throughout the year. The wording in APM 71 on page 3.4-29 should require that authorized biologists and/or environmental monitors be onsite whenever ground-disturbing activities occur, regardless of the time of year; excepting those fenced areas that have already been cleared of tortoises during previous clearance surveys. We also note that none of these seasonal restrictions are reiterated in Section 3.4.8, where detailed descriptions of tortoise mitigation measures are presented.

2. Measure 73 in Table 2-5, page 2-32 states: “Compensatory habitat mitigation shall be provided at a 1:1 ratio for impacts to suitable desert tortoise habitat during construction. A habitat compensation plan will be prepared to the approval of CDFW, USFWS, and BLM.” Whereas the BLM is likely to assess a per-acre compensation fee for development, California Department of Fish and Wildlife (CDFW) will require habitat compensation, endowment funds, and enhancement fees. It is extremely unlikely that CDFW will accept only 1:1 habitat compensation. Rather than state the compensation ratio will be 1:1, it is advisable to state that the compensation ratio will be determined in consultation with CDFW and other agencies. We suggest that AMP 73 given on page 3.4-29 be modified to reflect this reality. Discussions under Mitigation Measure 3.4-2d on pages 3.4-60 and -61 may also need to be modified.

3. Under **Alternative E**, the No Action Alternative, “The BLM would continue to manage the land consistent with the site’s multiple use classification as described in the CDCA Plan. Based on the CDCA Plan amendments made in the Solar PEIS ROD, for future applications the site would be identified primarily as variance areas open to future applications for solar development, subject to the procedures identified in the Solar PEIS, and some exclusion areas in the southeast portion of the site that would be closed to such applications. In the case of variance areas, future projects would still require a CDCA Plan Amendment to move forward. These projects would be subject to applicable laws and land use plans” (Section 2.6.1., page 2-36). Although the Council appreciates that this alternative would result in no project at this site, we prefer Alternative G, since Alternative E would leave the site open to future solar development.

4. Under **Alternative G**, “The BLM would continue to manage the land consistent with the site’s multiple use classification as described in the CDCA Plan with the exception that solar development would be precluded on the site” (Section 2.6.3., page 2-37). As such, Alternative G has the advantage of specifically excluding this particular site from future solar development, and is the Council-preferred alternative.

5. It is not clear in the Section 2.8.1 discussion of site alternatives that the proponent considered thousands of acres of biologically-impaired habitats east of Barstow, between Interstate-15 and Interstate-40, for example, although there is one mention of the Barstow Marine Corps Logistics Base on page 2-41. In a number of places, it seems that if the alternative site does not occur between Las Vegas and Barstow, it is unacceptable, which dismisses thousands of acres of impaired private lands in the Victor Valley, for example. It seems as if all potential alternatives had the same regional restriction that the site must occur along I-15 between Vegas and Barstow, which eliminates many other, better suited alternative sites outside this corridor.

6. Section 2-7, page 2-38 concludes, “The CEQA Guidelines define the environmentally superior alternative as that alternative with the least adverse impacts to the project area and its surrounding environment; therefore, Alternative E [No Action Alternative] is considered the environmentally superior alternative for CEQA purposes because it would not create any of the localized impacts of the Project, even though would have a less beneficial impact than that of the Project on greenhouse gases.” Although Alternative G is preferred, Alternative E is also an acceptable alternative to the Council.

7. The proponent hired Peter Woodman to conduct protocol tortoise surveys, which are reported in Kiva Biological Consulting (2013). Therein, Woodman recommends that the eastern half of the East Array be excluded from development to avoid occupied tortoise habitat. Which of the alternative configurations follow this considered recommendation? It is not clear from the alternatives presented in the Draft EIS that Woodman’s recommendations were followed. We recommend that such an alternative be included in the Final EIS and that it be fully analyzed for its reduced impacts to tortoises compared to the proponent’s preferred alternative.

8. Contrary to the statements in Section 3.3.3.1 on page 3.3-17, the West Mojave Coordinated Management plan (WEMO Plan) was not adopted as a habitat conservation plan, was not implemented by either San Bernardino County or the City of Barstow, and does not provide for streamlined approaches for private entities to satisfy endangered species act requirements. Its prescriptions do apply to public lands managed by the BLM, as stated in the Draft EIS. These inaccuracies are repeated in Section 3.4.3.1 on page 3.4-21.

9. On page 3.4-9, the Draft EIS reports the following with regards to tortoise distribution in the study area: “Tortoise activity on the Project site *seems to be limited to the East Array area* [emphasis added], where sign was moderately wide-spread, particularly at the foot of the mountains to the east. Carcasses of two tortoises were detected in the North Array study area, but south of the North Array site, and tortoise sign was not detected in the South Array study area.” The statement is somewhat misleading with regards to tortoise activity northwest of Interstate 15, as the presence of carcasses is still indicative of tortoise activity, even if only historical, in the North Array study area. This is critically important when the amount of compensable habitat is determined; all portions of all arrays, including those with only carcasses, are compensable.

10. Importantly, the descriptions referenced above fail to recognize that 5 tortoise burrows, 3 rock cover sites, 9 scat, and 3 carcasses were found at the Opah Ditch Mine in 2001 by AMEC, which is in the vicinity of the North Array study area, as reported in Panorama’s 2012 report and depicted in Figure 10, therein. We note that these tortoise sign are presented in Figure 3.4-1 of the Draft EIS, but are not mentioned in the text, and provide evidence that tortoise sign is not limited to the East Array area as stated on page 3.4-9. Survey Results presented in the text on pages 3.4-8 and 3.4-9 must be augmented by results depicted in the appendices to be comprehensive in the Final EIS, particularly when known, published data clearly show that more than two dead tortoises occur (or have recently occurred) within the North Array study area, all of which must be considered compensable habitat.

11. On page 3.4-15, the Draft EIS fails to acknowledge that on 26 June 2013, Townsend's big-eared bat was identified as a candidate species for endangered species listing in California by the Fish and Game Commission. Whereas the state and federal statuses are given for all other animals in Section 3.4.2.3., State and federal statuses are omitted for Townsend's big-eared bat in this discussion. This may be explained by the date of the comprehensive biological report of March 2013 (Panorama Environmental Inc. 2013), but since the Draft EIS is dated November 2013, the June 2013 designation should have been acknowledged in the Draft EIS and impacts to this candidate species must be analyzed in the Final EIS.

12. Since Townsend's big-eared bat is currently designated as a candidate for State listing, we feel that the analysis in the Final EIS must be substantially greater than that given in the Draft EIS. As above, the Final EIS also needs to divulge this recent designation, which may warrant more mitigation than is currently provided for in the Draft EIS. The significance discussion given under Section Impact Wild-7 on page 3.4-69 should be expanded to discuss impacts to this new candidate species.

13. On page 3.4-19, the Draft EIS indicates that only one burrow with American badger digs was found. During our brief reconnaissance surveys on 12/12/2012, LaRue and Radakovich found 11 diagnostic badger digs within the North Array area and 8 digs within the East and South Array areas. We note that there are no mitigation measures identified in Table 2-5 for this species. Given our survey observations on only a fraction of the project area, we suggest that **American badger is far more common than the Draft EIS suggests, and that mitigation measures are warranted to minimize impacts to this California Species of Special Concern.** Although Kiva Biological Consulting (2013) indicates that badger sign was recorded (page 2 in Methods), it is not mentioned in the Results section. We cannot tell in Figures 7 and 8 which digs were attributed to badgers versus canids, as they are depicted with the same symbol.

14. Although we understand that the raven management plan is still to be submitted to the regulatory agencies, the **Council believes that the proponent should commit to providing funds to the U.S. Fish and Wildlife Service (USFWS) for raven control and management.** In a February 2011 biological opinion (8-8-10-F-66) to the Joshua Basin Water District, the USFWS (2011) required that the water district provide \$105/acre of impact to this raven control program. As a recent standard applied to other projects in the West Mojave, the Council feels that this fee should also apply to this project.

15. With regards to impacts, it is not clear why on page ES-1 of the Executive summary, the Draft EIS indicates that **2,557 acres** would be disturbed; on page 3.4-31, **2,455.57 acres** are identified as being permanently lost; and in the biological technical report (page E.1-12 in Appendix E), Table 1.3-1 reports that **2,968.5 acres** would be permanently lost. As the Draft EIS indicated in footnotes to several tables and on page E.1-10 in Volume 2, all impacts are considered permanent, so it's not clear why there are so many discrepancies among reported impact acreages. We strongly suggest that the estimated compensable habitat be identified in the Final EIS under Mitigation Measure 3.4-2d, which currently describes compensable impacts without ever estimating the acreage to be compensated.

16. Although the fourth paragraph on page 3.4-33 indicates there is an undisclosed estimate of the number of tortoises that may be present on the Project site, the Draft EIS never reveals this number. Assuming the biologists used the USFWS formula for estimating the number of tortoises that may occur based on survey findings, this estimated number must be included in the Final EIS to accurately determine the level of anticipated take, and to allow the regulatory agencies to determine how accurate that estimate is, if the project is developed.

17. Although the Draft EIS was circulated in November 2013, it never refers to Peter Woodman's (Kiva Biological Consulting 2013) April and May 2013 surveys of the three arrays, a North Translocation Area, South Relocation Area, and Burrowing Owl Buffer Areas. In fact, translocation areas are not specifically discussed in the Draft EIS, as they must be in the Final EIS. Many of the results given in the Draft EIS are corroborated by Woodman's findings, which are never divulged. Woodman also reports the estimated tortoise density of two adult animals, but this is not in the Draft EIS. The Final EIS must fully divulge the results of Woodman's survey results for it to be complete and acceptable.

18. The Final EIS needs to assess Woodman's (Kiva Biological Consulting 2013) findings to determine if the South Relocation Area and North Translocation Area are appropriate to receive displaced tortoises. On page 4, Woodman reports that five tortoise carcasses were found in the North Translocation Area. Does this indicate that the North Translocation Area may not be acceptable if only dead tortoises are found there? Similarly, tortoise sign had a "limited distribution" in the South Relocation Area; as such, is it still appropriate to receive displaced tortoises? The Final EIS needs to consider these data and determine if these translocation areas will or will not be appropriate. If not, does the proponent plan to survey new translocation areas?

19. Please note in Section 3.4.8 on page 3.4-51 that the Designated Biologist and field contact representative are not synonymous. Whereas the Designated Biologist serves to implement all protective measures and minimize impacts to tortoises and occupied habitats, the field contact representative serves as the liaison among the many involved parties, particularly in regards to compliance reporting. In practice, the Designated Biologist and field contact representative are rarely the same person.

20. We strongly recommend that Mitigation Measure 3.4-2b on page 3.4-58 be modified to indicate that the agency-approved Desert Tortoise Translocation Plan (DTTP) must be finalized and approved before any ground-disturbance activities occur or any tortoises are handled. As written, the Draft EIS indicates that a draft DTTP has been written (see page 3.4-33) but the formal mitigation measure fails to indicate a timeframe in which the DTTP must be completed. As above, will the proponent choose new translocation areas and analyze them in the Final EIS? We strongly discourage displacing tortoises into areas where only dead or no evidence of tortoises are found. How will potential for disease transmission among translocated and host tortoises be considered in the DTTP?

21. Under Mitigation Measure 3.4-2c-4b on page 3.4-59, in the event a tortoise is found dead, the Final EIS should reference any restrictive measures that may be required by either USFWS or CDFW. If that mortality results in exceeding the mortality take limit identified in the federal biological opinion, for example, project construction may need to be halted until formal consultation is reinitiated. This and any other remedial actions should be documented in the Final EIS.

22. Mitigation Measure 3.4-2d on pages 3.4-60 through 3.4-63 provides extensive, detailed information about acquiring compensation lands but only indirectly refers to habitat management without requiring that an agency-approved habitat management plan is drafted by the approved management entity. The Final EIS must specify that a habitat management plan will be written for acquired lands, address threats to those lands based on field surveys identifying those threats, and state that the compensatory lands will be managed in perpetuity and not be subject to future development.

23. We suggest that Mitigation Measure 3.4-5a on page 3.4-64 be amended with a fourth stipulation that indicates emergency measures to be implemented if a tortoise is accidentally injured or killed during routine operations and maintenance. This amended measure should also indicate that BLM, USFWS, and CDFW will be contacted immediately to provide input into how future injuries and mortalities can be avoided. It should also assess whether incidental take statements in the biological opinion or State 2081 permit have been met or exceeded by the particular event.

24. Mitigation Measure 3.4-5b on pages 3.4-64 and -65 fails to mention that the Worker Education Awareness Program (WEAP) should be administered on, at least, an annual basis to all facility employees, which is the industry standard for all other public agencies whose employees provide routine operation and maintenance activities in occupied tortoise habitats.

In conclusion, we appreciate that the Draft EIS dealt with most of the points the Council raised in our scoping letter (Desert Tortoise Council 2012), including points 1 and 2 (alternative sites are discussed); 3 and 4 (no longer emphasizing how badly disturbed the habitats are); 5, 6, and 7 (survey quality increased with detection of tortoises, where the proponent formerly asserted no impacts would occur); 8 (incidental take permits are being solicited); 9 (fringe-toed lizards were found in the area like we had suggested); 10 (better reference to existing studies); 11 (like we found in December 2012, burrowing owls are known to be on the site); 12 (similarly, American badger occurs, though the Draft EIS still fails to determine the level of impact); and 13 and 14 (the Draft EIS is more accurate regarding tortoise occurrence rather than referring to inferior tortoise habitats). Finally, we are still in support of Alternative G, as the location of the proponent's preferred alternative site was poorly chosen and would result in the loss of good-to-pristine habitats.

Submitted by,



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

Literature Cited

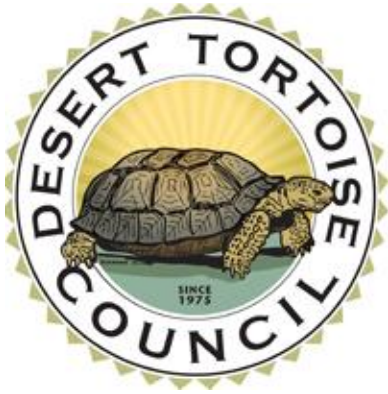
Desert Tortoise Council. 2012. Public scoping comments on the proposed Soda Mountain Solar project (CACA 49584). Scoping comments prepared by Ed LaRue on behalf of the Council and submitted to Jeffrey Childers of the BLM on 12/13/2012. Ridgecrest, CA.

Kiva Biological Consulting. 2013. Protocol desert tortoise survey for Soda Mountains Solar Project, Spring 2013. Unpublished report produced by Peter Woodman on behalf of Panorama Environmental and BLM. Ridgecrest, CA.

Panorama Environmental, Inc. 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California. An unpublished report prepared by Susanne Heim and Laurie Hietter, dated July 2012. San Francisco, CA.

Panorama Environmental, Inc. 2013. Biological resources technical report, Soda Mountain Solar Project, San Bernardino County, CA, BLM Case Number CACA 49584. Submitted by Solar Mountain LLC. Frederick, MD.

U.S. Fish and Wildlife Service. 2011. Biological Opinion on the Joshua Basin Water District, Water Recharge Basin and Pipeline, San Bernardino County, California (8-8-10-F-66). Formal biological opinion issued by the Ventura Office of the USFWS to Charlotte Ely of the Environmental Protection Agency. Ventura, CA.



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Via email only

16 February 2023

CDFW Inland Deserts Region Office
Attention: Dr. Shankar Sharma
3602 Inland Empire Boulevard, Suite C-220
Ontario, California 91764
shankar.sharma@wildlife.ca.gov

RE: Soda Mountain Solar Project, San Bernardino County, California – Notice of Preparation
(NOP) of a Draft Environmental Impact Report

Dear Dr. Sharma,

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 California Department of Fish and Wildlife (CDFW) email to us future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an “environmentally friendlier way” of receiving correspondence and documents rather than “snail mail.”

We appreciate this opportunity to provide comments on the above-referenced project. Further, we appreciate CDFW contacting the Council about this proposed project and making us aware of the opportunity to provide comments through the public comment process under the California Environmental Quality Act (CEQA).

Given the location of the proposed project in habitats occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments include recommendations that will enhance protection of this Federally and State-listed species and its habitat, including habitat needed for connectivity among tortoise populations but not continuously occupied by tortoises. We request that these recommendations be added to all authorizing documents, (e.g., permit, grant, right-of-way, agreement, etc.), as appropriate, if the project is authorized. Please accept, carefully review, and include in the project file the Council's following comments and attachments for the proposed project.

The Mojave desert tortoise is among the top 50 species on the list of the world's most endangered tortoises and freshwater turtles. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021), as it is a "species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), population size fewer than 50 individuals, or other factors." It is one of three turtle and tortoise species in the United States to be critically endangered. This status, in part, prompted the Council to join Defenders of Wildlife and the Desert Tortoise Preserve Committee (Defenders of Wildlife et al. 2020) to petition the California Fish and Game Commission in March 2020 to elevate the listing of the Mojave desert tortoise from threatened to endangered in California.

Description of Proposed Action

Original Project

The Original Soda Mountain Solar Project from 2007 included the construction, operation, maintenance, and decommissioning of a 358-megawatt photovoltaic (PV) solar energy generating plant and related facilities on approximately 4,179 acres of land managed by the BLM in San Bernardino County (County). It included installing and using ground water that required a groundwater well permit from the County. BLM and the County jointly prepared a draft EIR/EIS for the original project under the National Environmental Policy Act (NEPA) and CEQA, respectively (BLM and County 2013).

Revised Project

BLM and the County published the final Plan Amendment and EIS/EIR document on June 12, 2015. In 2016, BLM issued a Record of Decision (ROD) approving a Revised Project that included several changes to the Original Project. The changes to the Revised Project included:

- The construction, operation, maintenance, decommissioning, and reclamation of the East Array as a single, larger array block. In the reconfigured design, solar panels would cover an area previously avoided for drainage needs, but upon further analysis, does not require avoidance.
- Reconfiguration of the proposed South Array (=South Arrays 1, 2, and 3) including the array fence line, to avoid encroachment on 52 acres of the Rasor Off-highway Vehicle (OHV) Open Area and avoiding construction of solar arrays within the existing alignment of Rasor Road.

- Relocation of the proposed flood control berms between the southernmost array blocks to an area just outside of the array fence line to coincide with the revised boundaries of the East and South Arrays.
- Reconfiguration of the East Array and South Array (=South Arrays 1, 2, and 3) to provide greater acreage (1,726 acres) for solar arrays than described in the Final EIS/EIR (1,594 acres).
- Increases from 150 to 200 feet for corridor width to install the collector circuits and allow for sufficient spacing between the collector lines.
- Removal of groundwater treatment features, including the brine ponds from the Original Project.
- Change in the construction schedule from 30 months to an 18-month to 5-year period depending on Revised Project phasing. The arrays and array blocks could be installed in phases where the substation/switchyard, buildings, and groundwater wells would be installed with the first phase.
- Change in temporary and permanent disturbance to 1,767 acres for permanent disturbance and 292 acres of temporary disturbance = total of 2,059 acres of disturbance.
- Total permanent disturbance of the Project in the amended plan of development would be 1,767 acres. The total disturbance, including temporarily disturbed areas, would be 2,059 acres.

BLM posted the NEPA and CEQA documents on the Original and Revised Projects at <https://eplanning.blm.gov/eplanning-ui/project/66043/570>.

Description of Proposed Project:

The current proposed project (Proposed Project) is similar to the Revised Project described above and approved in BLM's ROD. However, the Proposed Project does not rely on groundwater wells, so constructing new wells is not part of the Proposed Project. The County completed CEQA compliance because it would need to issue a permit for the groundwater well(s). Because the Proposed Project no longer requires a permit from the County, CEQA compliance is being done by CDFW, as it anticipates it will need to issue an Incidental Take Permit under the California Endangered Species Act (CESA) and/or a Lake and Streambed Alteration Agreement under California Fish and Game Code. However, these proposed actions in combination do not include or involve the proposed approval by CDFW of the full scope of activities proposed by the Applicant. The permits, if issued, will simply condition how the Applicant implements certain activities subject to CDFW's related regulatory authority under the California Fish and Game Code. Accordingly, the proposed approval requiring CDFW to comply with CEQA as a lead agency does not include the approval of the Applicant's activities overall.

According to CDFW, the Proposed Project is the construction, operation, maintenance, and future decommissioning of a 300-megawatt photovoltaic (PV) solar facility (East Array and South Arrays 1, 2, and 3), and related facilities (e.g., operation and maintenance buildings and structures, stormwater infrastructure, battery energy storage systems across 16 acres, and substation and switchyard, etc.) on approximately 1,490 acres of land administered by BLM (Figure 1) . The Proposed Project would generate and deliver solar-generated power to the regional electrical grid via an interconnection (gen-tie) line following a zigzag path approximately 1.5-miles long to the existing Mead-Adelanto 500-kilovolt transmission line north of Interstate (I)-15. The transmission line is operated by the Los Angeles Department of Water and Power (LADWP).

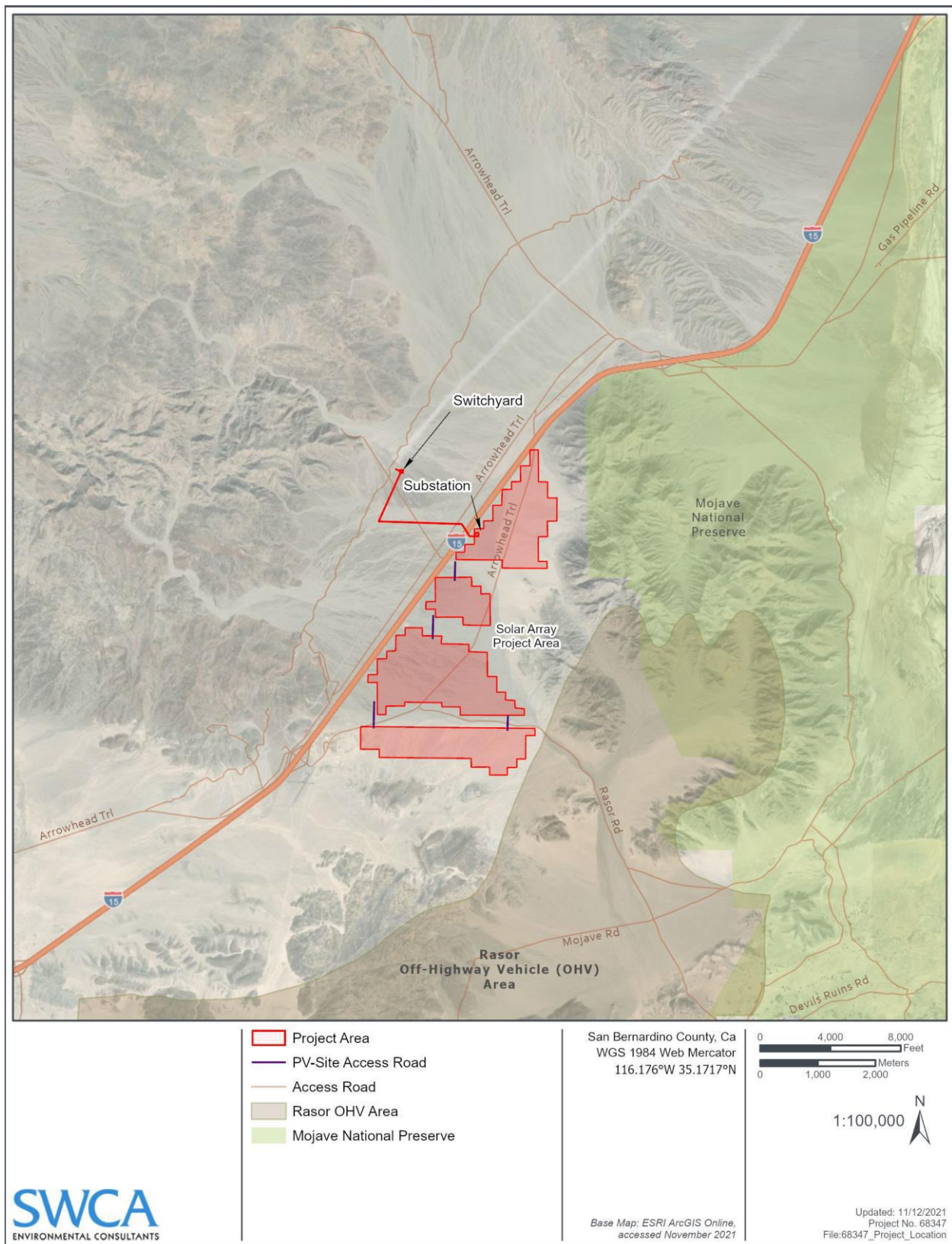


Figure 1. Location and layout of Soda Mountain Solar Project.

Access to the Proposed Project south of I-15 would be from Razor Road via a gated entrance. A California Department of Transportation access road to the Opah Ditch pit mine would be used for access to the gen-tie line to the substation and for project site access north of I-15.

The Proposed Project is located approximately 6 miles southwest of the town of Baker, California, 50 miles northeast of the city of Barstow, and 0.5 mile from the western boundary of the Mojave National Preserve. It is bounded on the east by Mojave National Preserve and on the south and southeast by the Razor Off-highway Vehicle (OHV) Open Area managed by BLM.

Scoping Comments

In considering the following comments, we ask an overarching question: **Why is this project, which would be developed on public lands managed by BLM, not being analyzed in a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS), which we feel is the appropriate level of review?** We ask this as the Project Description has changed three times. The Original Project Description was analyzed in a DEIS/DEIR and FEIS/FEIR. The Revised Project that was approved by BLM under was changed in the ROD and included a description but no analysis of the changes on the resource issues and was not circulated for public review and comment. Now there is the Proposed Project that will undergo analysis under CEQA but not NEPA.

In addition, since BLM issued the ROD for Soda Mountain Solar Project, the demographic status of the tortoise has changed with the release of USFWS documents on the results of rangewide monitoring that show a trend of substantial declines in tortoise numbers and densities especially in the Western Mojave Recovery Unit (please see Appendix A. Demographic Status and Trend of the Mojave Desert Tortoise including the Western Mojave Recovery Unit). [Note: the appendix that appears at the end of this letter has been updated to provide current data as of June 2025]. Given these ongoing changes, we note the requirements of NEPA's implementing regulations are "to ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA (40 Code of Federal Regulations 1500.1(b)). **Consequently, we request that BLM issue a revised NEPA document for public review and comment on the Proposed Project with updated analyses on impacts to the human environment including the tortoise and other Special animals and special status plants.**

Project Description

In comparing the acreage that would be impacted by the Proposed Project in the NOP (1,490 acres) and the Revised Project described by BLM (2,059 acres), the acreages obviously differ. Please explain this difference. **One way would be to provide a list of the acres impacted for each component of the solar facility (including access roads) and whether the impacts would persist throughout the construction and operation and maintenance of the project (= long-term permanent impacts) or be restored (= long-term temporary impacts).**

We note, too, that this project has already failed once to be developed, and received substantial resistance from environmental groups, including the Council (see Appendix C). Rumors include that LADWP was not willing to buy the Power Purchase Agreement. Others are that the project would have had a significant enough impact to the environment, and particularly to the proximate Mojave National Preserve, that it was abandoned in the response to the public's opposition. We ask that the DEIR address these issues, and document the reasons the earlier project failed. And, in so doing, please explain which conditions have changed that the project is now being reconsidered.

In the NOP under Section D, Potential Environmental Effects, CDFW provided a link to an Environmental Checklist Form to assist the public and agencies in preparing written comments. Unfortunately, when we tried to access it, we received an error message. Consequently, the Council is providing comments following our past practices of commenting on NEPA and CEQA documents without the benefit of seeing the checklist.

Alternatives to Analyze in the DEIR

In the NOP CDFW says, “[t]he Draft EIR will describe and evaluate the effects of a reasonable range of alternatives to the proposed project, including a no-project alternative” and “any environmentally superior alternative(s). The alternatives analyzed in the Draft EIR will be developed during the environmental review process, including consideration of public comments received during the public comment period.”

The Council supports alternatives to reduce the need for additional solar energy projects in relatively undisturbed habitats in the Mojave Desert. The Council’s persisting concern is that proponents of solar projects continue to identify a single site for development without identifying other viable alternative sites. As such, when focused surveys reveal significant numbers 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 substantially reduced. The Council requests that the following alternatives be evaluated in the DEIR:

- **Urban/Suburban Solar Alternative** – “rooftop solar” or solar placed in already developed areas (= urban/suburban solar), which we believe constitute other reasonable courses of actions. 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.

This alternative puts the generation of electricity where the demand is greatest, in populated areas. It may also reduce:

- Transmission construction costs;
 - greenhouse gas emissions from constructing energy projects far from the sources of power demand and materials for construction;
 - loss of plants from construction and for the life of the project that sequester carbon;
 - the loss/degradation of numerous natural and cultural resources in the desert that must be analyzed under the CEQA; and,
 - mitigation costs for all direct, indirect, and cumulative impacts; monitoring and adaptive management costs; and habitat restoration costs following decommissioning.
- **Previously Used Lands Alternative** – locating solar projects on bladed or highly degraded tracts of land (e.g., abandoned agricultural fields, etc.). 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. There are large areas of land near Barstow and farther west in the Antelope Valley with previously used, degraded lands.

- **Distributed Generation Alternative** – Distributed Generation installs smaller scale PV facilities at or near the point of energy use, i.e., metropolitan/urban areas. Distributed Generation Alternatives may include BLM-land only and a combination of BLM land and land owned/managed by others (e.g., private and State lands).
- **Vegetation Left In Place Alternative** – 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 grow 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 Proposed 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 Mojave 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 project would need to be included to accurately evaluate the effectiveness of this strategy.**
- **Other Locations in the Mojave Desert** – CDFW [CEC] should use the results of research conducted by Cameron et al. (2012) in the Mojave Desert to determine initial locations that would be potentially suitable for solar energy projects and reduce impacts to biodiversity. In addition, CDFW [CEC] should incorporate climate change into conservation planning and include strategies for building adaptive capacity, ameliorating the threat posed by climate, and accounting for future changes in human land usage (Smith et al. 2023). Combining these three strategies with genomic and ecological studies of the tortoise and other target species will have the greatest success (Smith et al. 2023).
- **Options to the Proposed Project** – CDFW should eliminate the arrays in habitats used by tortoises [e.g., Kiva Biological Consulting (2013) surveyed the project area and recommended the eastern half of the East Array be excluded from development to avoid occupied tortoise habitat]. Other options should include reducing/eliminating impacts to desert bighorn sheep movement areas and following existing roads for the gen-tie line.

Evaluating these alternatives in the DEIR is important to minimize or avoid the loss of vegetation that sequesters carbon and to reduce adverse impacts to biodiversity. Studies around the world have shown that desert ecosystems can act as important areas to capture and store carbon. For example, the California deserts account for nearly 10 percent of the state’s carbon sequestration; below ground in soil, in root systems, and above ground in biomass. Protecting this biome can contribute to securing carbon stores in the state (MDLT 2021). Given the current climate change conditions, there is an increasing need for carbon sequestration. Vascular plants are a primary user of carbon and the Proposed Project would result in the loss/degradation of thousands of acres of plants that would (1) release stored carbon currently stored in these plants, and (2) prevent carbon from being captured and held because of the loss of plants from about 1500 acres during the construction, operations and maintenance, and decommissioning phases of the Proposed Project until the vegetation is restored. This time of lost carbon sequestration would be several decades or longer (Abella 2010), longer than the time of production of solar energy. **It is imperative that the Proposed Project not result in the loss of native vegetation.** Please see “Climate Change” below.

Environmentally superior alternatives would include the No Action Alternative, the Urban/Suburban Alternative, and Previously Used Land Alternative.

Environmental Setting/Affected Environment

The Endangered Mojave Desert Tortoise: The Council believes that the Mojave desert tortoise meets the definition of an endangered species. In the Federal Endangered Species Act (FESA), Congress defined an “endangered species” as “any species which is in danger of extinction throughout all or a significant portion of its range...” Because most of the populations of the Mojave desert tortoise were non-viable in 2014, most are declining, and the threats to the Mojave desert tortoise are numerous and have not been substantially reduced throughout the species’ range, the Council believes the Mojave desert tortoise should be designated as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and CDFW.

The summary of data included in “Appendix A – Demographic Status and Trend of the Mojave Desert Tortoise including the Western Mojave Recovery Unit” indicates that recovery actions are not obviously recovering the desert tortoise. As the primary land manager of tortoise habitat, BLM has been ineffective in halting population declines, which has resulted in non-viable populations. The available data support the conclusion that current management actions are inadequate in preventing the extirpation of the Mojave desert tortoise in California and Nevada.

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

Standardized Surveys – Desert Tortoise and Other Species

Species designated as Special Animals (= Species of Special Concern or Species at Risk) by CDFW (CNDDDB 2023) occur or use lands at/near the Proposed Project. These include the Mojave desert tortoise, Mohave tui chub (*Siphateles bicolor mohavensis*), desert bighorn sheep (*Ovis canadensis nelsoni*), Western burrowing owl (*Athene cunicularia*), American badger (*Taxidea taxus*), Mohave fringe-toed lizard (*Uma scoparia*), and kit fox (*Vulpes macrotis*).

For the Draft EIR, the following surveys should be performed to determine the extent of rare plant and animal populations occurring within the impact area. The impact area extends beyond the Project footprint and differs for each species. The survey methodologies and survey results should be provided in the DEIR, are needed to fully assess the effects and identify potentially significant impacts of the Proposed Project and alternatives, will determine appropriate permits/authorizations required from CDFW, USFWS, and perhaps others, and will help develop effective mitigation measures to fully offset the impacts. Because of the wetter than average rainfall in much of the Western Mojave Desert this winter, we strongly suggest conducting these surveys during the upcoming survey season as drought conditions may have subsided, and animal species may be more active and plant species may have germinated. This is important as, to the best of our knowledge, there have been no protocol surveys (USFWS 2019) since 2013, and the impact footprint of the Proposed Project has changed sufficiently that new surveys are warranted.

Prior to conducting surveys, a knowledgeable biologist should perform a records search of the California Natural Diversity Data Base (CNDDDB 2023) for rare plant and animal species reported from the region. The results of the CNDDDB review would be reported in the Draft EIR with an indication of suitable and occupied habitats for all rare species reported from the region based on performing species specific surveys described below.

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.

Mojave Desert Tortoise Surveys: Formal protocol surveys for Mojave desert tortoise (USFWS 2019) must be conducted at the proper times of year and by biologists determined to be qualified by USFWS and CDFW. Per this protocol, if the impact area is larger than 500 acres, the surveys must be performed in the time periods of April-May or September-October so that a statistical estimate of tortoise densities can be determined for all areas to be affected directly or indirectly by the Proposed Project and not merely the immediate area involved in the action area/project footprint. If any tortoise sign is found, an incidental take permit from CDFW and federal authorization from USFWS must be obtained prior to ground disturbance.

To determine the full extent of occurrence and impacts to tortoises and to facilitate compliance with the FESA, qualified biologist(s) should consult with the Palm Springs Office of the USFWS to determine the action area for this project. The USFWS defines “action area” in 50 Code of Federal Regulations 402.2 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).”

We request that protocol-level surveys be performed at the area of the proposed project *and the alternatives that are being considered* in the DEIR. The results of these surveys, including tortoise sign encountered, should be published in the DEIR and should include density estimates for each alternative assessed.

Too often, a single impact footprint is identified, all surveys are restricted to that site, and no alternative sites are assessed. We are concerned that this project has pre-determined the project footprint. 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 footprint is pre-determined before survey data are available. As such, we request that more than one site, preferably three, be identified and analyzed in the DEIR and that the alternative with the fewest impacts to tortoises be adopted for development.

If that is not feasible, we ask that the “action area” of the proposed project be several times larger than the project footprint so that those portions of the site with fewer tortoises could be selected for development. 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.

Current practice is to require desert tortoise protocol surveys (USFWS 2019) on a proposed development site, but all too often potential translocation sites are ignored. We assert that protocol surveys should occur on all proposed translocation sites (USFWS 2020), assuming tortoises will be translocated.

Desert Bighorn Sheep Surveys: CDFW has designated desert bighorn sheep (*Ovis canadensis nelsoni*) in California as “S3: Vulnerable – At moderate risk of extirpation in the state due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.” Chapter 11 section 4900 of California Fish and Game Code says. “[t]he Legislature declares that bighorn sheep are an important wildlife resource of the state to be managed and maintained at sound biological levels.”

Bighorn sheep scat, tracks, and live sheep were observed on the Project site in 2012 and 2013 (Kiva Biological Consulting 2013). This and the results of past and current surveys should be included in the DEIR.

Mohave Fringe-toed Lizard Surveys: Focused surveys for Mojave fringe-toed lizards should be performed, preferably using the methodology from the University of California Riverside, Center for Conservation Biology (2005). Results and effective mitigation measures, as needed, should be published in the Draft EIR.

Western Burrowing Owl Surveys: Protocol surveys for western burrowing owl (*Athene cunicularia*) (CDFG 2012) should be completed. Note that the protocol (CDFG 2012) requires that peripheral transects be surveyed at 30-, 60-, 90-, 120-, and 150-meter intervals in all suitable habitats adjacent to the subject property to determine the potential indirect impacts of the project on this species. If burrowing owl sign is found, CDFG (2012) describes appropriate mitigation measures that would be required. Survey results should be reported in the DEIR and all appropriate mitigation measures listed that would be implemented.

Special Status Plant Surveys: There are likely special status plant species found in the Project area as determined by a CNDDDB (2023) literature review. These species should be surveyed for during field surveys and their presence/absence/abundance discussed in the Draft EIR. Surveys should be completed at the appropriate time of year by qualified biologists (preferably botanists) using the latest acceptable methodologies (CDFG 2009).

California Department of Fish and Game (CDFG 2010) lists hundreds of plant communities occurring in California, including those that are considered Communities of Highest Inventory Priority, or “CHIPs.” Biologists completing surveys on behalf of the Proponent should document such communities where they occur and indicate how impacts to them will be minimized.

Migratory Birds Surveys: CDFW should ensure that all actions it authorizes are implemented in compliance with the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and California Fish and Game Code to avoid mortality or injury to migratory birds and harassment of eagles.

Special Land Management Designations: The DEIR should discuss how this Proposed Project fits within the management structure of the current land management plans for the area [e.g., California Desert Conservation Area Plan (CDCA Plan) (BLM 1980 as amended), Desert Renewable Energy Conservation Plan (DRECP; BLM 2016), Mojave Preserve General Management Plan, etc.]. It should provide maps of critical habitat for the Mojave desert tortoise (USFWS 1994), Areas of Critical Environmental Concern (ACECs), and other areas identified for special management by BLM; National Park Service lands; other lands with special management designation/use (e.g., Desert Studies Center, etc.); State lands; and any private lands. Similar maps of occurrence/habitat for other special animal species mentioned above should be included in the DEIR.

Analysis of Direct, Indirect, and Cumulative Impacts

Economic Analysis of Resources Degraded/Destroyed: The alternatives analysis should include an economic analysis that provides the total cost of constructing the Proposed Project 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 resource issues, including biological resources, that would be adversely impacted from implementing the Proposed Project – direct, indirect, and cumulative impacts. Please note, this analysis would include habitat replacement or restoration costs including the time needed to achieve full replacement (i.e., the temporal loss), not just acquisition, management, monitoring, and adaptive management costs.

Mojave Desert Tortoise: The Proposed Project is in the Western Recovery Unit for the Mojave desert tortoise (USFWS 2011). The DEIR should include a thorough analysis of the status and trend of the tortoise in the action area, tortoise conservation area(s), recovery unit(s), and range wide (see Appendix A). 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 DEIR should use the data from focused plant and wildlife surveys in their analysis of the direct, indirect, and cumulative impacts of the proposed project on the Mojave desert tortoise and its habitat, other listed species, and species of concern/special status species.

We expect that the DEIR 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, perimeter roads, perimeter fencing, substations, battery storage, etc., which comprise the project footprint. We also request that separate calculations document how many acres of desert tortoise habitats would be temporarily and permanently impacted both directly and indirectly (e.g., “road effect zone,” etc.) by the proposed Project. As given below, these acreages should be based on field surveys for tortoises not just available models.

The DEIR should include a description and analysis of “heat sink” impacts on the tortoise from solar arrays.

Road Effect Zone: We request that the DEIR include information on the locations, sizes, and arrangements of roads to the proposed project and within it, 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. We provide Appendix B into the record as an accumulation of pertinent literature so that the CDFW may thoroughly analyze the impacts of vehicles on tortoises and their habitats.

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 DEIR 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, 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 critical habitat and other Tortoise Conservation Areas (TCAs), areas identified as important linkage habitat for connectivity between nearby critical habitat units/TCAs as these linkage areas serve as corridors for maintaining genetic and demographic connectivity between populations, recovery units, and rangewide (see *Desert Tortoise Habitat Linkages/Connectivity among Populations and Recovery Units* below). These and other indirect impacts to the Mojave desert tortoise should be analyzed in the DEIR from project construction, operations and maintenance, decommissioning, and habitat restoration.

Desert Tortoise Habitat Linkages/Connectivity among Populations and Recovery Units: The DEIR should analyze how this proposed project will impact the movement of tortoises relative to linkage habitats/corridors. The DEIR should include an analysis of the minimum linkage design necessary for conservation and recovery of the desert tortoise (e.g., USFWS 2021; Averill-Murray et al. 2013, 2021; Hromada et al. 2020), and how the project, along with other existing projects, would

impact the linkages between tortoise populations and all recovery units that are needed for survival and recovery. We strongly request that the environmental consequences section of the DEIR include a thorough analysis of this indirect impact and appropriate mitigation to maintain the function of population connectivity for the Mojave desert tortoise and other wildlife species. Similarly, please document how the Proposed Project would impact proximate conservation areas, such as BLM-designated ACECs and the National Park Service's Mojave National Preserve.

Desert Tortoise Translocation: The Draft EIR should include an analysis of the effectiveness of tortoise translocation. Although viewed as a mitigation measure, tortoise translocation has adverse impacts on the resident and translocated tortoises including failure of translocated males to mate during the years they were monitored (Mulder et al. 2017). These impacts should be analyzed in the DEIR. Review of past translocation efforts, their successes and failures, and modifications to avoid future failures should be presented in the DEIR.

Cumulative Impacts: The DEIR should list and analyze all project impacts within the region including future state, federal, and private actions affecting listed species on state, federal, and private lands. 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 Mojave desert tortoise in addition to climate change.

To help CDFW and the public understand the complexity of the cumulative and interactive nature of multiple anthropogenic threats to desert tortoise populations and to help develop an accurate analysis of cumulative impacts in the DEIR, we have included a map of some of these multiple threats and their relationships to other threats (Tracy et al. 2004) (please see Figure 2 below).

Mohave Tui Chub (MTC): Although new groundwater wells would not be constructed and operated for the Proposed Project, will existing wells near the Proposed Project/in the Soda Lake Valley Groundwater Basin be used? If so, the amount of water needed for each of the three phases of the Proposed Project should be provide in the EIR and an analysis of the potential impacts to water quality and quantity at MC Spring, Lake Tuendae, and West Pond located about 3 miles away and in the Soda Lake Valley Groundwater Basin, the likely source of the water for the Proposed Project. We are concerned about possible indirect impacts to the ground water and the spring that supplies water to the Mohave tui chub (*Siphatales bicolor mohavensis* = *Gila bicolor mohavensis*), an endangered species under FESA and CESA and a fully protected species under California Fish and Game Code.

The DEIR should provide data and an analysis of the direct, indirect, and cumulative impacts to the ground water and water bodies that the MTC relies on. MC Spring is the only natural water body – it is about 8 feet in diameter – where the MTC occurs. All other water bodies that support MTCs are man-made and intensively managed or located outside the Mojave River system, which is the historic range of the species. We suggest coordinating with the Science and Natural Resources Advisor at Mojave National Preserve and the Desert Studies Center in Zzyzx as a starting point to obtain data; also, the California State Water Resources Control Board and U.S. Geological Survey for groundwater data, models, and modeling expertise.

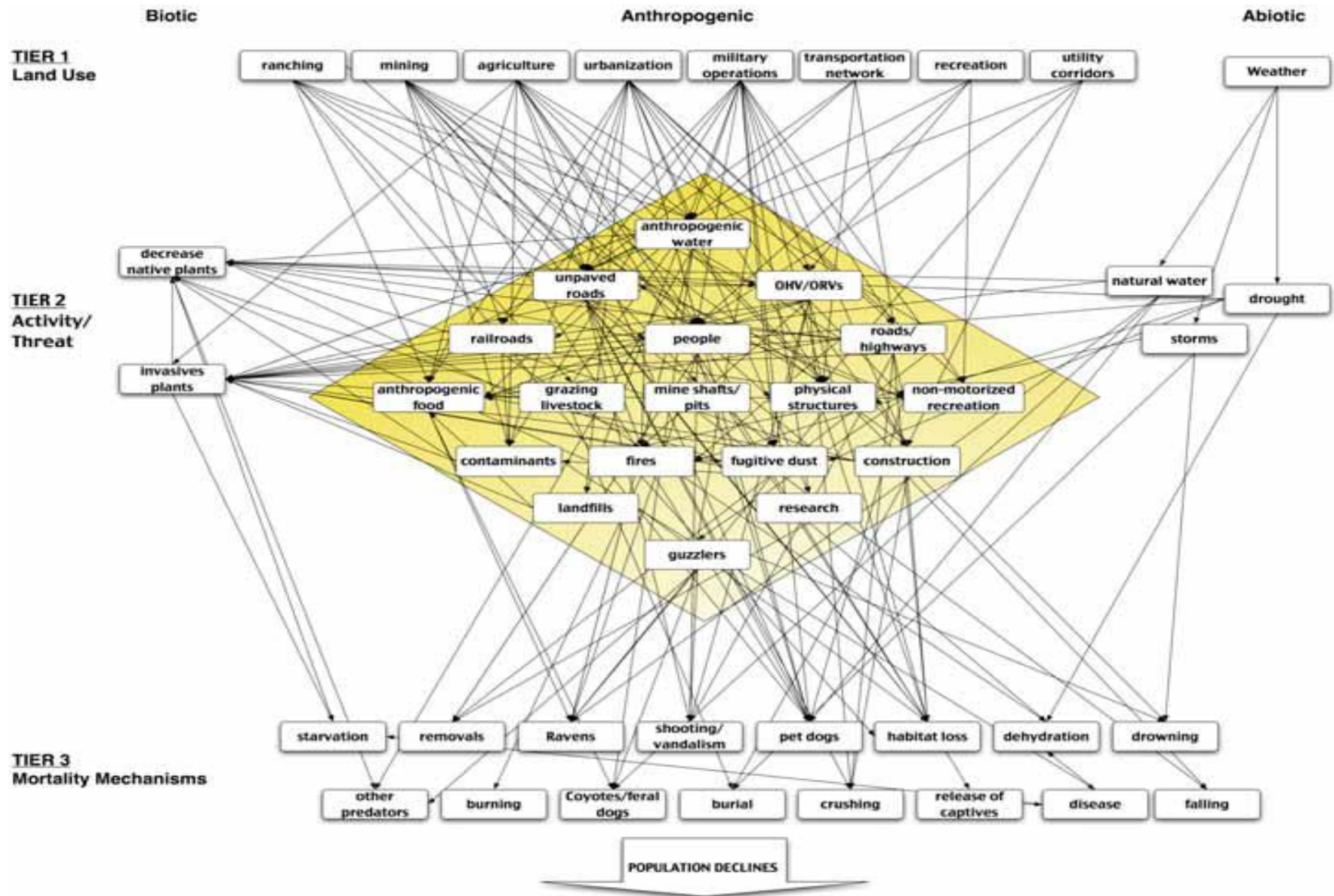


Figure 2. Network of threats demonstrating the interconnectedness between multiple human activities that interact to cause mortality and prevent recovery of tortoise populations. Tier 1 includes the major land use patterns that facilitate various activities (Tier 2) that impact tortoise populations through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

Desert Bighorn Sheep: The three water bodies – MC Spring, Lake Tuendae, and West Pond – located near the Project site also provided crucial waters for desert bighorn sheep in the area. The occurrence of perennial water means that bighorn sheep occur during the dry season at/near these water bodies and near the Proposed Project.

The DEIR should include an analysis of the impacts of increased human presence, noise, use of motorized vehicle and equipment, and other actions that may disturb or prevent bighorn sheep from accessing these water bodies or population movements especially during the construction and decommissioning phases of the Proposed Project when the number of people, operational equipment, and noise will be greatest.

Regarding future management and persistence of desert bighorn sheep, Epps et al. (2013) conducted an analysis of the impacts of the Proposed Project in 2013. The findings of that report were the Original Project would preclude the reestablishment of a critical bighorn sheep movement corridor. The “North-South Soda Mountain Connection is the most important restorable corridor for long term demographic potential across the entire southeastern Mojave Desert of California as it would provide the best and only opportunity for movement of bighorn populations in the Mojave National Preserve and the large complex of populations to the north of Interstate 15, and would facilitate gene flow as well as resulting in long term connections with bighorn sheep populations in Death Valley National Park” (Epps et al. 2013). We contend that this conclusion has not changed, would still be applicable to the Proposed Project, and is a solid reason why this project should not be developed.

Mitigation Plans and Mitigation Implementation

In the NOP, CDFW says, “the Draft EIR will describe feasible mitigation measures to avoid or substantially reduce the proposed project’s significant adverse environmental impacts.”

The DEIR 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 to be implemented when the lease/right-of way is terminated and the Proposed Project is decommissioned.

All mitigation plans should be provided in the DEIR 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. 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 the decisionmaker and the interested public to determine the environmental consequences of the project 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 project 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.

The monitoring plan should (1) be scientifically and statistically credible; (2) be implementable; and (3) require the Project proponent to implement adaptive management to correct land management practices if the mitigation is not accomplishing its intended purposes. Mitigation should be applied only in areas where the lands are effectively managed for the benefit of the tortoise for both the short-term and long-term. For example, as currently managed, BLM ACECs in Nevada and in the CDCA are not meeting this criterion. Consequently, mitigation should be implemented on lands with a durable conservation designation, or on privately owned lands with a conservation easement or other legal instrument that ensures conservation in perpetuity.

These comments on mitigation and monitoring plans would apply for other Special Animal and Plant species and their mitigation plans.

Translocation Plan - Translocated Tortoises, Resident 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? Will tortoises translocated to a site be protected from threats (e.g., off-highway vehicles, future development, etc.)? These questions should be answered in the DEIR.

The Project proponent should implement the USFWS's Translocation Guidance (USFWS 2020) and coordinate translocation with CDFW and BLM. 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). (see *Desert Tortoise Translocation Bibliography Of Peer-Reviewed Publications*² in the footnote).

The Translocation Plan should include implementation of a science-based monitoring plan approved by the Desert Tortoise Recovery Office 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 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.

² https://www.fws.gov/nevada/desert_tortoise/documents/reports/2017/peer-reviewed_translocation_bibliography.pdf

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.

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.

The DEIR 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. During construction, operation, maintenance, decommissioning, and restoration phases of the Proposed Project, the Applicant should be required to implement science-based management of common ravens, coyotes, and badgers to reduce 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 Applicant should be required to participate in efforts to address regional and cumulative impacts. For example, the project proponent should be required to contribute to the National Fish and Wildlife Foundation's Raven Management Fund to help mitigate for regional and cumulative impacts. Unfortunately, this Fund that was established in 2010 has not revised its per acre payment fees to reflect increased labor and supply costs during the past 13 years to provide for effective implementation. The National Fish and Wildlife Foundation should revise the per acre fee.

We request that for any gen-tie lines, the project use infrastructure (particularly towers) that prevent raven nesting and perching for hunting. For example, for gen-tie/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 result in new raven perching and nesting site opportunities.

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 DEIR 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. The purpose of these Fire Plans is to prevent a fire, but if one occurs, to ensure there are sufficient resources to immediately detect the fire and extinguish it before it spreads to desert vegetation/habitat.

Restoration Phase Implemented After/Concurrent with Decommissioning Phase: The Proposed Project should include a Restoration Phase – restore the lands impacted by the Proposed Project to their pre-construction condition to the extent feasible (i.e., soils, soil crust, vegetation, etc.). We provide Abella and Berry (2016)³ as an excellent resource to be implemented as best management practices for arid lands restoration.

Kiva Biological Consulting (2013) also recommended tortoise exclusion fencing. If the Vegetation Left in Place Alternative is selected, we recommend that tortoise exclusion fencing be installed and maintained only during the construction and decommissioning phases and removed at the completion of these phases.

Climate Change and Non-native Plants: The Council finds it ironic that BLM is proposing to destroy hundreds of thousands of acres of native vegetation on BLM land for several decades or longer when this native vegetation sequesters carbon so that we can reduce our emissions of carbon from fossil fuel burning, especially when other viable alternatives are available (see Cameron et al. 2012, Smith et al. 2023). The irony of converting wild lands in the Mojave Desert to energy production is that it threatens the biodiversity in the Mojave Desert (Parker et al., 2018, cited in Smith et al. 2023). Fifty-eight Mojave Desert species are now recognized as rare, threatened, or endangered under Federal and California Endangered Species Acts (Smith et al. 2023).

We request that the DEIR address the effects of the Proposed Project on climate change and the effects that climate change may have on the Proposed Project. For the latter, we recommend including: an analysis of habitats in the Project area that may provide connectivity for tortoise populations; an analysis of how the Proposed Project 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 CDFW to require the 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 during all phases of the Proposed Project.

³ <https://www.dropbox.com/s/nx1b5m2b5ehya12/%23Abella%20and%20Berry%202016.pdf?dl=0>

Proliferation of Nonnative Plant Species and Management Plan: The DEIR 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 the frequency and size of human-caused fires) and other Special Animal and Plant species; 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 CDFW to require the Project Proponent to develop and implement a management and monitoring plan for nonnative plant species. The plan should integrate management for and enhancement of native vegetation, substantial reduction of non-native plant species, and fire prevention and fire response to wildfires.

Water Quality, Water Quantity, and Surface Hydrology: Regarding water quality of surface and ground water, the DEIR should include an analysis of the impacts of water acquisition, use, and discharge for construction and decommissioning, panel washing, potable uses, dust suppression, any other uses associated with the 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 and other Special Animals and Plants in the vicinity of the Proposed Project, including downstream and downslope impacts. The DEIR should analyze how much water is proposed to be used during construction, operation, maintenance, decommissioning, and restoration phases; how 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 Special Animals including the Mojave desert tortoise, for which washes are of particular importance for feeding, shelter, and movements (Jennings and Berry 2015, Todd et al. 2016). In addition, any impacts to downstream channels and washes will need to be monitored long-term to ensure that the stormwater plan is successful and both washes and habitats are protected during potential project operation.

The description of the Revised Project in the ROD (BLM 2015) stated that certain drainages would now have solar panels as these drainages would no longer need to be avoided. Consequently, a jurisdictional waters analysis should be performed for all potential impacts to washes, streams, and drainages. This analysis should be reviewed by the CDFW as part of the permitting process and a Streambed Alteration Agreement acquired.

The Proposed Project has a stormwater plan. Details of this plan should be provided along with an analysis of how these structures may adversely impact both hatchling and adult tortoises, including entrapment and drowning.

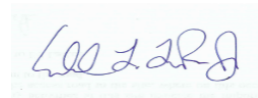
We request that the DEIR include an analysis of how water used during construction, operation, maintenance, decommissioning, and habitat restoration will impact the levels of ground water in the region. These levels may then impact surface and near-surface flows at springs, seeps, wetlands, pools, and 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 by avoidance.

Restoration Plan: The Proposed Project should include a restoration phase that occurs with decommissioning. The DEIR should include a restoration plan with (1) the measurable objectives that would be required to be met before restoration was determined to be completed and (2) monitoring to restore that all areas impacted by the Proposed Project to their pre-Project condition. Given the important role that native vegetation plays in sequestering carbon and reducing the impacts of climate change, the development, implementation, monitoring, and adaptive management of a restoration plan should be a major component of the Proposed Project.

Previous Comments on Soda Mountain Solar Project: Previously, the Council provided comments on the Soda Mountain Solar Project to BLM and Senator Dianne Feinstein. A summary of these comments is provided in Appendix C. Synopsis of Comments Submitted by the Desert Tortoise Council from 2012 to 2016 for the Soda Mountain Solar Project. These persisting comments are entered into the Scoping Record and should also be addressed in the DEIR.

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 CDFW 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

Attachments:

Appendix A: Status and Trend of the Mojave Desert Tortoise (*Gopherus agassizii*)
Appendix B: Bibliography on road impacts in desert ecosystems
Appendix C. Synopsis of Comments Submitted by the Desert Tortoise Council from 2012 to 2016 for the Soda Mountain Solar Project

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Literature Cited

- Abella, S.R. 2010. Disturbance and plant succession in the Mojave and Sonoran Deserts of the American Southwest. *International Journal of Environmental Research and Public Health* 7.4 (2010): 1248-1284.
- Abella S.R. and K.H. Berry. 2016. Enhancing and restoring habitat for the desert tortoise (*Gopherus agassizii*). *Journal of Fish and Wildlife Management* 7(1):255–279.
<https://doi.org/10.3996/052015-JFWM-046>
- Averill-Murray, R.C., C.R. Darst, N. Strout, and M. Wong. 2013. Conserving Population Linkages for the Mojave Desert Tortoise (*Gopherus agassizii*). *Herpetological Conservation and Biology* 8(1):1 – 15.
- Averill-Murray, R.C., T.C. Esque, L.J. Allison, S. Bassett, S.K. Carter, K.E. Dutcher, S.J. Hromada, K.E. Nussear, and K. Shoemaker. 2021. Connectivity of Mojave Desert tortoise populations—Management implications for maintaining a viable recovery network. U.S. Geological Survey Open-File Report 2021–1033, 23 p., <https://doi.org/10.3133/ofr20211033>
- Berry, K.H. and P.A. Medica. 1995. Desert tortoises in the Mojave and Colorado deserts. In: *Our Living Resources – A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems*. Edward T. LaRoe, Gaye S. Farris, Catherine E. Puckett, Peter D. Doran, and Michael J. Mac Editors. U.S. Department of the Interior, National Biological Service. <https://www.webharvest.gov/peth04/20041019015728/http://biology.usgs.gov/s+t/index.htm>
- Berry, K.H., L.J. Allison, A.M. McLuckie, M. Vaughn, and R.W. Murphy. 2021. *Gopherus agassizii*. The IUCN Red List of Threatened Species 2021: e.T97246272A3150871. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T97246272A3150871.en>
- [BLM] U.S. Bureau of Land Management. 2016. Record of Decision for the Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan for the Desert Renewable Energy Conservation Plan (DRECP). Dated September 2016. Sacramento, CA.
- [BLM and County] Bureau of Land Management and San Bernardino County. 2013. Soda Mountain Solar Project Draft Plan Amendment/Environmental Impact Statement/Environmental Impact Report. November 2013.
- Boarman, W. 2003. Managing a Subsidized Predator Population: Reducing Common Raven Predation on Desert Tortoises. *Environmental Management* 32, 205–217 (2003).
<https://doi.org/10.1007/s00267-003-2982-x>

- Boarman, W.I., M.A. Patten, R.J. Camp, and S.J. Collis. 2006. Ecology of a population of subsidized predators: Common ravens in the central Mojave Desert, California. *Journal of Arid Environments* 67 (2006) 248–261.
<https://www.sciencedirect.com/science/article/abs/pii/S0140196306003016>
- Cameron, D.R., B.S. Cohen, and S.A. Morrison. 2012. An approach to enhance the conservation-compatibility of solar energy development. *PLoS One* 7.
<https://doi.org/10.1371/journal.pone.0038437>
- [CDFG] California Department of Fish and Game. 2009. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities. California Natural Resources Agency, Department of Fish and Wildlife, 24 November 2009. Sacramento, CA.
- [CDFG] California Department of Fish and Game. 2010. List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, California Department of Fish and Game, September 2010. Sacramento, CA.
- [CDFG] California Department of Fish and Game. 2012. Staff report on burrowing owl mitigation. The 7 March 2012 memo replacing 1995 staff report, State of California Natural resources Agency, Department of Fish and Wildlife. Sacramento, CA.
- [CDFW] California Department of Fish and Wildlife. 2022. Electronic database of rare plant and animal species reported to The State Resources Agency, Natural Heritage Division, California Natural Diversity Data Base. Sacramento, CA.
- [CNDDB] California Natural Diversity Database. January 2023. Special Animals List. Special Plants List. California Department of Fish and Wildlife. Sacramento, CA.
- Defenders of Wildlife, Desert Tortoise Preserve Committee, and Desert Tortoise Council. 2020. A Petition to the State of California Fish And Game Commission to move the Mojave desert tortoise from listed as threatened to endangered. Formal petition submitted 11 March 2020.
https://defenders.org/sites/default/files/2020-03/Desert%20Tortoise%20Petition%203_20_2020%20Final_0.pdf
- Epps, C.W., J.D. Wehausen, R.J. Monello, and T.G. Creech, 2013. Potential impacts of proposed solar energy development near the South Soda Mountains on desert bighorn sheep connectivity, Report to the California Department of Fish and Wildlife, National Park Service, and Bureau of Land Management by Oregon State University, University of California and the National Park Service., 25, February 2013.
- Esque, T.C., K.E. Nussear, K.K. Drake, A.D. Walde, K.H. Berry, R.C. Averill-Murray, A.P. Woodman, W.I. Boarman, P.A. Medica. J. Mack, and J.H. Heaton. 2010. Effects of subsidized predators, resource variability, and human population density on desert tortoise

- populations in the Mojave Desert, U.S.A. *Endangered Species Research*, Vol. 12-167-177, 2010, doi: 10.3354/esr00298
- Hromada, S.J., T.C. Esque, A.G. Vandergast K.E. Dutcher, C.I Mitchell, M.E Gray, T. Chang, B.G. Dickson, and K.E. Nussear. 2020. Using movement to inform conservation corridor design for Mojave desert tortoise. *Movement Ecology* 2020 8/38 doi: 10.1186/s40462-020-00224-8 <https://pubmed.ncbi.nlm.nih.gov/33042548/>
- Jaeger, J., L. Fahrig, and K. Ewald. 2005a. Does the configuration of road networks influence the degree to which roads affect wildlife populations? *International Conference on Ecology and Transportation 2005 Proceedings*, Chapter 5 - Integrating Transportation and Resource Conservation Planning - Landscapes and Road Networks, pages 151-163. August 29, 2005.
- Jaeger, J., J. Bowman, J. Brennan, L. Fahrig, D. Bert, J. Bouchard, N. Charbonneau, K. Frank, B. Gruber, and K. Tluk von Toschanowitz. 2005b. Predicting when animal populations are at risk from roads: an interactive model of road avoidance behavior. *Ecological Modelling* 185 (2005) 329–348
- Jennings, W.B. , and K.H. Berry 2015. Desert tortoises (*Gopherus agassizii*) are selective herbivores that track the flowering phenology of their preferred food plants. *PLoS ONE*, 10, e0116716. <https://doi.org/10.1371/journal.pone.0116716>.
- Kiva Biological Consulting. 2013. Protocol Desert Tortoise Survey for Soda Mountain Solar Project, Spring 2013. Prepared for Bureau of Land Management Barstow Field Office. June 12, 2013.
- [MDLT] Mojave Desert Land Trust. 2021. Climate change. <https://www.mdlt.org/climate-change/>
- Mulder, K.P., A.D. Walde, W.I. Boarman, A. P. Woodman, E.K. Latch, and R.C. Fleischer. 2017. No paternal genetic integration in desert tortoises (*Gopherus agassizii*) following translocation into an existing population. *Biological Conservation*, June 2017 210A:318-324
- Nafus, M.G., T.D. Tuberville, K. A. Buhlmann, and B.D. Todd. 2013. Relative abundance and demographic structure of Agassiz's desert tortoise (*Gopherus agassizii*) along roads of varying size and traffic volume. *Biological Conservation* 162 (2013) 100–106.
- Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K.A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona. U.S. Geological Survey Open-File Report 2009-1102, 18 p.
- Roedenbeck, I., L. Fahrig, C. Findlay, J. Houlahan, J. Jaeger, N. Klar, S. Kramer-Schadt, and E. van der Grift. 2007. The Rauischholzhausen Agenda for Road Ecology. *Ecology and Society* 12(1): 11. [online] URL: <http://www.ecologyandsociety.org/vol12/iss1/art11/>
- Servin, J., V. Sanchez-Cordero, and S. Gallina. 2003. Distances traveled daily by coyotes, *Canis latrans*, in a pine–oak forest in Durango, Mexico. *Journal of Mammalogy* 84(2):547–552.

- Smith, C.I., L.C. Sweet, J. Yoder, M.R. McKain, K. Heyduk, and C. Barrows. 2023. Dust storms ahead: Climate change, green energy development and endangered species in the Mojave Desert. *Biological Conservation* 277 (2023) 109819. https://www.researchgate.net/profile/Cameron-Barrows/publication/365925179_Dust_storms_ahead_Climate_change_green_energy_development_and_endangered_species_in_the_Mojave_Desert/links/6388e3fd7d9b40514e045c01/Dust-storms-ahead-Climate-change-green-energy-development-and-endangered-species-in-the-Mojave-Desert.pdf
- Todd, B.T., B.J. Halstead, L.P. Chiquoine, J.M. Peaden, K.A. Buhlmann, T.D. Tuberville, and M.G. Nafus. 2016. Habitat selection by juvenile Mojave desert tortoises. *Journal of Wildlife Management* 80: 720– 728. <https://escholarship.org/content/qt0q26w9jk/qt0q26w9jk.pdf>
- Tracy, C.R., R. Averill-Murray, W. I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, and P. Medica. 2004. Desert Tortoise Recovery Plan Assessment. Technical Report. Prepared for USFWS. January 2004. https://www.researchgate.net/publication/241835929_Desert_Tortoise_Recovery_Plan_Assessment
- University of California Riverside, Center for Conservation Biology. 2005. Coachella Valley Multiple Species Habitat Conservation Plan Monitoring Program (Final Report). 2002-2005 unpublished progress report to Coachella Valley Association of Governments. Riverside, CA. 164 pp. (Coachella Valley fringe-toed lizard survey protocol; revised in 2007).
- [USFWS] U.S. Fish and Wildlife Service. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California. <https://www.fws.gov/sites/default/files/documents/Desert-Tortoise-Field-Manual.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, California. <https://www.fws.gov/sites/default/files/documents/USFWS.2011.RRP%20for%20the%20Mojave%20Desert%20Tortoise.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2012. Connectivity of Mojave Desert Tortoise Populations. Desert Tortoise Recovery Office, USFWS, Reno, NV. March 2012.
- [USFWS] U.S. Fish and Wildlife Service. 2019. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). USFWS Desert Tortoise Recovery Office. Reno, NV. October 8, 2019.
- [USFWS] U.S. Fish and Wildlife Service. 2020. Revised Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance and Attachments. 52 pp. <https://www.fws.gov/media/revised-usfws-dt-translocation-guidance>

<https://www.fws.gov/media/translocation-guidance-attachment-1-clearance-survey-protocol-0>
<https://www.fws.gov/media/translocation-guidance-attachment-2-temporary-captive-care-wild-mojave-desert-tortoises>

von Seckendorff Hoff, K., and R. Marlow. 2002. Impacts of vehicle road traffic on desert tortoise populations with consideration of conservation of tortoise habitat in southern Nevada. *Chelonian Conservation and Biology* 4: 449–456.

Appendix A

Demographic Status and Trend of the Mojave Desert Tortoise including the Western Mojave Recovery Unit

Status of the Population of the Mojave Desert Tortoise: The Council provides the following information for resource and land management agencies so that these data may be included and analyzed in their project and land management documents and aid them in making management decisions that affect the Mojave desert tortoise (tortoise).

There are 17 populations of Mojave desert tortoise described below that occur in Critical Habitat Units (CHUs) and Tortoise Conservation Areas (TCAs); 14 are on lands managed by the BLM; 8 of these are in the California Desert Conservation Area (CDCA).

As the primary land management entity in the range of the Mojave desert tortoise, the Bureau of Land Management's (BLM's) implementation of a conservation strategy for the Mojave desert tortoise in the CDCA through implementation of its Resource Management Plan and Amendments through 2014 has resulted in the following changes in the status for the tortoise throughout its range and in California from 2004 to 2014 (**Table 1, Table 2**; USFWS 2015, Allison and McLuckie 2018). The Council believes these data show that BLM and others have failed to implement an effective conservation strategy for the Mojave desert tortoise as described in the recovery plan (both USFWS 1994a and 2011), and have contributed to tortoise declines in density and abundance between 2004 to 2014 (**Table 1, Table 2**; USFWS 2015, Allison and McLuckie 2018) with declines or no improvement in population density from 2015 to 2024 (**Table 3**; USFWS 2016, 2018, 2019, 2020, 2022a, 2022b, 2025).

Important points from these tables include the following:

Change in Status for the Mojave Desert Tortoise Range-wide

- Ten of 17 populations of the Mojave desert tortoise declined from 2004 to 2014.
- Eleven of 17 populations of the Mojave desert tortoise are below the population viability threshold. These 11 populations represent 89.7 percent of the range-wide habitat in CHUs/TCAs.

Change in Status for the Western Mojave Recovery Unit – California

- This recovery unit had a 51 percent decline in tortoise density from 2004 to 2014.
- Tortoise populations in all three TCAs in this recovery unit have densities that are below viability.

Change in Status for the Superior-Cronese Tortoise Population in the Western Mojave Recovery Unit.

- The population in this recovery unit experienced declines in densities of 61 percent from 2004 to 2014. In addition, there was a 51 percent decline in tortoise abundance.
- This population has densities less than needed for population viability (USFWS 1994a).

Table 1. Summary of 10-year trend data for the 5 Recovery Units and 17 CHUs/TCAs for Mojave desert tortoise. The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km² and standard errors = SE), and the percent change in population density between 2004 and 2014. Populations below the viable level of 3.9 breeding individuals/km² (10 breeding individuals per mi²) (assumes a 1:1 sex ratio) or showing a decline from 2004 to 2014 are in red.

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

¹ U.S. Fish and Wildlife Service. 1994b. Endangered and threatened wildlife and plants; determination of critical habitat for the Mojave population of the desert tortoise. Federal Register 55(26):5820-5866. Washington, D.C.

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

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

Table 3. Summary of data for Agassiz’s desert tortoise, *Gopherus agassizii* (=Mojave desert tortoise) from 2004 to 2024 for the 5 Recovery Units and 17 Critical Habitat Units (CHUs)/Tortoise Conservation Areas (TCAs). The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km² and standard errors = SE), and percent change in population density between 2004-2014 (USFWS 2015). Populations below the viable level of 3.9 breeding individuals/km² (10 breeding individuals per mi²) (assumes a 1:1 sex ratio) (USFWS 1994a, 2015) or showing a decline from 2004 to 2014 are in **red**.

Recovery Unit: Designated CHU/TCA &	% of total habitat area in Recovery Unit & CHU/TCA	2004 density / km ²	2014 density/ km ² (SE)	% 10-year change (2004– 2014)	2015 density / km ²	2016 density / km ²	2017 density / km ²	2018 density / km ²	2019 density / km ²	2020 density / km ²	2021 density / km ²	2024 density /km ²
Western Mojave, CA	24.51		2.8 (1.0)	–50.7 decline								
Fremont-Kramer	9.14		2.6 (1.0)	–50.6 decline	4.5	No data	4.1	No data	2.7	1.7	No data	1.8
Ord-Rodman	3.32		3.6 (1.4)	–56.5 decline	No data	No data	3.9	2.5/3.4*	2.1/2.5*	No data	1.9/2.5*	2.7
Superior-Cronese	12.05		2.4 (0.9)	–61.5 decline	2.6	3.6	1.7	No data	1.9	No data	No data	No data
Colorado Desert, CA	45.42		4.0 (1.4)	–36.25 decline								
Chocolate Mtn AGR, CA	2.78		7.2 (2.8)	–29.77 decline	10.3	8.5	9.4	7.6	7.0	7.1	3.9	7.4
Chuckwalla, CA	10.97		3.3 (1.3)	–37.43 decline	No data	No data	4.3	No data	1.8	4.6	2.6	No data
Chemehuevi, CA	14.65		2.8 (1.1)	–64.70 decline	No data	1.7	No data	2.9	No data	4.0	No data	No data
Fenner, CA	6.94		4.8 (1.9)	–52.86 decline	No data	5.5	No data	6.0	2.8	No data	5.3	No data
Joshua Tree, CA	4.49		3.7 (1.5)	+178.62 increase	No data	2.6	3.6	No data	3.1	3.9	No data	No data
Pinto Mtn, CA	1.98		2.4 (1.0)	–60.30 decline	No data	2.1	2.3	No data	1.7	2.9	No data	No data
Piute Valley, NV	3.61		5.3 (2.1)	+162.36 increase	No data	4.0	5.9	No data	No data	No data	3.9	4.0

Northeastern Mojave AZ, NV, & UT	16.2		4.5 (1.9)	+325.62 increase								
Beaver Dam Slope, NV, UT, & AZ	2.92		6.2 (2.4)	+370.33 increase	No data	5.6	1.3	5.1	2.0	No data	No data	1.7
Coyote Spring, NV	3.74		4.0 (1.6)	+ 265.06 increase	No data	4.2	No data	No data	3.2	No data	No data	2.7
Gold Butte, NV & AZ	6.26		2.7 (1.0)	+ 384.37 increase	No data	No data	1.9	2.3	No data	No data	2.4	No data
Mormon Mesa, NV	3.29		6.4 (2.5)	+ 217.80 increase	No data	2.1	No data	3.6	No data	5.2	5.2	No data
Eastern Mojave, NV & CA	13.42		1.9 (0.7)	-67.26 decline								
El Dorado Valley, NV	3.89		1.5 (0.6)	-61.14 decline	No data	2.7	5.6	No data	2.3	No data	No data	
Ivanpah Valley, CA	9.53		2.3 (0.9)	-56.05 decline	1.9	No data	No data	3.7	2.6	No data	1.8	
Upper Virgin River, UT & AZ	0.45		15.3 (6.0)	-26.57 decline								
Red Cliffs Desert**	0.45	29.1 (21.4-39.6)**	15.3 (6.0)	-26.57 decline	15.0	No data	19.1	No data	17.2	No data	No data	17.5†
Rangewide Area of CHUs - TCAs/Rangewide Change in Population Status	100.00			-32.18 decline								

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

**Methodology for collecting density data initiated in 1999.

†Results from 2023

Change in Status for the Mojave Desert Tortoise in California

- Eight of 10 populations of the Mojave desert tortoise in California declined from 29 to 64 percent from 2004 to 2014 with implementation of tortoise conservation measures in the Bureau of Land Management's Northern and Eastern Colorado Desert (NECO), Northern and Eastern Mojave Desert (NEMO), and Western Mojave Desert (WEMO) Plans.
- Eight of 10 populations of the Mojave desert tortoise in California are below the viability threshold for density. These eight populations represent 87.45 percent of the habitat in California that is in CHU/TCAs.
- The two viable populations of the Mojave desert tortoise in California are declining. If their rates of decline from 2004 to 2014 continue, these two populations will no longer be viable by about 2030.

Change in Status for the Mojave Desert Tortoise on BLM Land in California

- Eight of eight populations of Mojave desert tortoise on lands managed by the BLM in California declined from 2004 to 2014.
- Seven of eight populations of Mojave desert tortoise on lands managed by the BLM in California are no longer viable.

Change in Status for Mojave Desert Tortoise Populations in California that Are Moving toward Meeting Recovery Criteria

- The only population of Mojave desert tortoise in California that did not decline is on land managed by the National Park Service, which increased 178 percent from 2004 to 2014.

Important points to note from the data from 2015 to 2024 in Table 3 are:

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

- The density of tortoises continues to decline in the Western Mojave Recovery Unit
- The density of tortoises from 2015 to 2024 continues to fall below the density needed for population viability.

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

- Many of the populations in this recovery unit have densities that are barely above the threshold for population viability.

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

- Two of the three population with densities greater than needed for population viability declined to level below the minimum viability threshold.
- Three of the four populations in this recovery unit have densities below the minimum density needed for population viability.

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

- Both populations in this recovery unit have densities below the minimum density needed for population viability.

Change in Status for the Mojave Desert Tortoise in the Upper Virgin River Recovery Unit:

- The one population in this recovery unit is small and appears to have stable densities after declining for several years.

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

Literature Cited in Appendix on Status and Trend of the Mojave Desert Tortoise

Allison L.J. and A.M. McLuckie. 2018. Population trends in Mojave desert tortoises (*Gopherus agassizii*). *Herpetological Conservation and Biology*. 2018 Aug 1. 13(2):433–452.
http://www.herpconbio.org/Volume_13/Issue_2/Allison_McLuckie_2018.pdf

or

<https://www.fws.gov/media/allison-and-mcluckie2018mojave-desert-tortoise-population-trends>

[USFWS] U.S. Fish and Wildlife Service. 1994a. Desert tortoise (Mojave population) Recovery Plan. U.S. Fish and Wildlife Service, Region 1, Portland, Oregon. 73 pages plus appendices. https://ecos.fws.gov/docs/recovery_plan/940628.pdf

[USFWS] U.S. Fish and Wildlife Service. 1994b. Endangered and threatened wildlife and plants; determination of critical habitat for the Mojave population of the desert tortoise. Federal Register 55(26):5820-5866. Washington, D.C.

[USFWS] U.S. Fish and Wildlife Service. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, California.
<https://www.fws.gov/sites/default/files/documents/USFWS.2011.RRP%20for%20the%20Mojave%20Desert%20Tortoise.pdf>

- [USFWS] U.S. Fish and Wildlife Service. 2015. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2015%20report.%20Rangewide%20monitoring%20report%202013-14.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2016. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2015 and 2016 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2016%20report.%20Rangewide%20monitoring%20report%202015-16.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2018. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2017 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2018%20report.%20Rangewide%20monitoring%20report%202017.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2019. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2018 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2019%20report.%20Rangewide%20monitoring%20report%202018.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2020. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2019 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. 42 pages. https://www.fws.gov/sites/default/files/documents/2019_Rangewide%20Mojave%20Desert%20Tortoise%20Monitoring.pdf
- [USFWS] U.S. Fish and Wildlife Service. 2022a. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2020 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2022%20report.%20Rangewide%20monitoring%20report%202020.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2022b. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2021 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. <https://www.fws.gov/sites/default/files/documents/USFWS.2022%20report.%20Rangewide%20monitoring%20report%202021.pdf>
- [USFWS] U.S. Fish and Wildlife Service. 2025. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2024 Annual Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Las Vegas, Nevada. <https://www.fws.gov/sites/default/files/documents/2025-08/2024-range-wide-mojave-desert-tortoise-monitoring-report.pdf>

Appendix B. Bibliography on road impacts in desert ecosystems

- Aber, J.D., K.J. Nadelhoffer, P. Steudler, and J.M. Melillo. 1989. Nitrogen Saturation in Northern Forest Ecosystems. *BioScience* 39(6):8-386
- Allen, E.B., Rao, L.E., Steers, R.J., Bytnerowicz, A., and Fenn, M.E., 2009, Impacts of atmospheric nitrogen deposition on vegetation and soils at Joshua Tree National Pages, in Webb, R.H., Fenstermaker, L.F., Heaton, J.S., Hughson, D.L., McDonald, E.V., and Miller, D.M. (eds.), *The Mojave Desert: ecosystem processes and sustainability*: Reno, University of Nevada Press, .p. 78–100.
- Arnold, R. 2011. Focused desert tortoise survey, Lucerne Valley Desert View Ranch generating facility. APN 0435-083-39 & -435-132-01, San Bernardino County. RCA Associated, Hesperia, CA.
- Avery, H.W. 1997. Effects of cattle grazing on the desert tortoise, *Gopherus agassizii*: Nutritional and behavioral interactions. Pages 13-20 in J. Van Abbema (ed.), *Proceedings of the International Conference on Conservation, Restoration, and Management of Tortoises and Turtles*. New York Turtle and Tortoise Society, New York.
- Avery, H.W. 1998. Nutritional ecology of the desert tortoise (*Gopherus agassizii*), in relation to cattle grazing in the Mojave Desert. Ph.D. dissertation, University of California, Los Angeles.
- Beacon Solar. 2008. Application for Incidental Take of Threatened and Endangered Species. Application to California Department of Fish and Game by Beacon Solar, LLC, 700 Universe Boulevard, Juno Beach, FL.
- Beazley, K.F., T.V. Snaith, F. Mackinnin, and D. Colville. 2004. Road density and potential impacts on wildlife species such as American moose in mainland Nova Scotia. *Proc. N.S. Inst. Sci.* (2004) Volume 42, Part 2, pp. 339-357.
- Belnap, J. 1996. Soil surface disturbances in cold deserts: effects on nitrogenase activity in cyanobacterial-lichen soil crusts. *Biol Fertil Soils* (1996) 23:362-367.
- Berry, K.H. 1974. Desert tortoise relocation project: Status report for 1972. California Department of Transportation
- Berry, K.H. 1990. The status of the desert tortoise in California in 1989. Draft report. U.S. Bureau of Land Management, Riverside, California.
- Berry, K.H., and L.L. Nicholson. 1984b. A summary of human activities and their impacts on desert tortoise populations and habitat in California. Chapter 3 in K.H. Berry (ed.), *The status of the desert tortoise (*Gopherus agassizii*) in the United States*. Desert Tortoise Council Report to the U.S. Fish and Wildlife Service. Order No. 11310-0083-81.

- Berry, K.H., F.G. Hoover, and M. Walker. 1996. The effects of poaching desert tortoises in the western Mojave Desert; evaluation of landscape and local impacts. Proceedings of the Desert Tortoise Council Symposium 1996:45.
- Berry, K.H., K. Keith, and T. Bailey. 2008. Status of the desert tortoise in Red Rock Canyon State Park. California Fish and Game 94(2):98-118.
- Berry, K.H., J. L. Yee, A.A. Coble, W.M. Perry, and T.A. Shields. 2013. Multiple factors affect a population of Agassiz's desert tortoise (*Gopherus agassizii*) in the northwestern Mojave Desert. Herpetological Monographs, 27, 2013, 87–109.
- Berry, K.H., L.M. Lyren, J.L. Yee, and T.Y. Bailey. 2014. Protection benefits desert tortoise (*Gopherus agassizii*) abundance: the influence of three management strategies on a threatened species. Herpetological Monographs, 28 2014, 66–92.
- Berry, K.H., L.M. Lyren, J.S. Mack, L.A Brand, and D.A.Wood. 2016. Desert tortoise annotated bibliography, 1991–2015: U.S. Geological Survey Open-File Report 2016-1023, 312 p., <http://dx.doi.org/10.3133/ofr20161023>.
- Boarman, W.I. 2002. Threats to desert tortoise populations: a critical review of the literature. Unpublished Report, prepared for the West Mojave Planning Team and the Bureau of Land Management. 86 pp.
- Boarman, W.I., and K.H Berry. 1995. Common ravens in the southwestern United States, 1968-92. In: Our Living Resources: A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems. Edward T. LaRoe , Gaye S. Farris , Catherine E. Puckett , Peter D. Doran , and Michael J. Mac, editors. U.S. Department of the Interior, National Biological Service.
- Boarman, W.I., R.J. Camp, M. Hagan, W. Deal. 1995. Raven abundance at anthropogenic resources in the western Mojave Desert, California. Report to Edwards Air Force Base, California.
- Boarman, W.I., and M. Sazaki. 1996. Highway mortality in desert tortoises and small vertebrates: success of barrier fences and culverts. Proceedings: Florida Department of Transportation/Federal Highway Administration Transportation-Related Wildlife Mortality Seminar. Evink, G., Ziegler, D., Garrett, P. and Berry, J. (Eds). pp. 169–173.
- Boarman, W.I., and Sazaki, M., 2006, A highway's road-effect zone for desert tortoises (*Gopherus agassizii*): Journal of Arid Environments, v. 65, p. 94–101.
- Boarman, W.I., Sazaki, M., Jennings, B., 1997. The effects of roads, barrier fences and culverts on desert tortoise populations in California, USA. In: Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles — An International Conference, pp. 54–58.

- Boarman, W.I., M.L. Beigel, G.C. Goodlett, and M. Sazaki. 1998. A passive integrated transponder system for tracking animal movements. *Wildlife Society Bulletin* 26, 886-891.
- Boarman, W.I., W.B. Kristan, W.C. Webb, and H.D. Chamblin. 2005. Raven ecology in the Mojave Desert at Edwards Air Force Base: final report. U.S. Geological Survey, Western Ecological Research Center, Sacramento, California.
- Boarman, W.I., and W.B. Kristan. 2006. Evaluation of evidence supporting the effectiveness of desert tortoise recovery actions. *Scientific Investigations Report* 2006-5143. U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA.
- Boarman, W.I., Patten, M.A., Camp, R.J., and Collis, S.J., 2006, Ecology of a population of subsidized predators: common ravens in the central Mojave Desert, California: *Journal of Arid Environments*, v. 67, p. 248-261.
- Bouchard, J., A. T. Ford, F. Eigenbrod, and L. Fahrig. 2009. Behavioral response of northern leopard frogs (*Rana pipens*) to roads and traffic: implications for population persistence. *Ecology and Society* 14(2): 23. [online] URL: <http://www.ecologyandsociety.org/vol14/iss2/art23/>.
- Bratzel, S., and R. Tellermann. 2005. Mobilität und Verkehr. *Informationen zur politischen Bildung* 287(2):44-51.
- Brocke, R.H., J.P. O'Pezio, K.A. Gustafson. 1988 A forest management scheme mitigating impact of road networks on sensitive wildlife species. In: R.M. Degraaf and W.M. Healy (eds): *Is forest fragmentation a management issue in the northeast?* GTR-NE-140, U.S. Department of Agriculture, Forest Service, Northeastern Forest Experimental Station, Radnor, PA: 13-17.
- Brocke, R.H., J.P. O'Pezio, K.A. Gustafson. 1988 A forest management scheme mitigating impact of road networks on sensitive wildlife species. In: R.M. Degraaf and W.M. Healy (eds): *Is forest fragmentation a management issue in the northeast?* GTR-NE-140, U.S. Department of Agriculture, Forest Service, Northeastern Forest Experimental Station, Radnor, PA: 13-17.
- Brooks, M.L., 1995, Benefits of protective fencing to plant and rodent communities of the western Mojave Desert, California: *Environmental Management*, v. 19, p. 65-74.
- Brooks, M.L., 1999, Alien annual grasses and fire in the Mojave Desert: *Madroño*, v. 46, p. 13-19.
- Brooks, M.L., 2003, Effects of increased soil nitrogen on the dominance of alien annual plants in the Mojave Desert: *Journal of Applied Ecology*, v. 40, p. 344-353.
- Brooks, M.L., T.C. Esque, and J.R. Matchett. 2003. Current status and management of alien plants and fire in desert tortoise habitat. *Desert Tortoise Council Symposium*, February 21-23, 2003.

- Brooks, M.L. 2009, Spatial and temporal distribution of non-native plants in upland areas of the Mojave Desert, in Webb, R.H., Fenstermaker, L.F., Heaton, J.S., Hughson, D.L., McDonald, E.V., and Miller, D.M., eds., *The Mojave Desert—Ecosystem processes and sustainability*: Reno, University of Nevada Press, p. 101–124.
- Brooks, M.L. and K.H. Berry. 1999. Ecology and management of alien annual plants in the California deserts. *Calif. Exotic Pest Plant Newsl.* 7(3/4):4-6.
- Brooks, M.L., and Berry, K.H., 2006, Dominance and environmental correlates of alien annual plants in the Mojave Desert, USA: *Journal of Arid Environments*, v. 67, p. 100–124.
- Brooks, M.L., and Esque, T.C., 2002, Alien plants and fire in desert tortoise (*Gopherus agassizii*) habitat of the Mojave and Colorado Deserts: *Chelonian Conservation and Biology*, v. 4, p. 330–340.
- Brooks, M.L., C.M. D’Antonio, D.M. Richardson, J. B. Grace, J.E. Kelley, J. M. Ditomaso, R.J. Hobbs, M. Pellant, And D. Pyke. 2004. Effects of Invasive Alien Plants on Fire Regimes. *Bioscience/Vol. 54 No. 7*: 677-688. July 2004.
- Brooks, M.L. and B. Lair. 2005. Ecological Effects of Vehicular Routes in a Desert Ecosystem. Report prepared for the United States Geological Survey, Recoverability and Vulnerability of Desert Ecosystems Program (<http://geography.wr.usgs.gov/mojave/rvde>).
- Brooks, M.L. and B. M. Lair. 2009. Ecological effects of vehicular routes in a desert ecosystem. In: R.H. Webb, L.F. Fenstermaker, J.S. Heaton, D.L. Hughson, E.V. McDonald, and D.M. Miller (eds.). *The Mojave Desert: Ecosystem Processes and Sustainability*. University of Arizona Press. Tucson, AZ.
- Brooks, M.L., and Matchett, J.R. 2006. Spatial and temporal patterns of wildfires in the Mojave Desert, 1980–2004. *Journal of Arid Environments* Volume 67, Supplement, 2006, Pages 148-164.
- Brown, D.E., and R.A. Minnich. 1986. Fire and changes in creosote bush scrub of the western Sonoran desert, California. *American Naturalist* 116(2):411-422.
- Bureau of Land Management. U. S. Fish and Wildlife Service, and California Department of Fish and Game. 1989. Environmental assessment for selected control of the common raven to reduce desert tortoise predation in the Mojave Desert, California. Bureau of Land Management, U. S. Fish and Wildlife Service, and California Department of Fish and Game.
- Bureau of Land Management. 1993. Final Rand Mountains–Fremont Valley Management Plan. A Sikes Act Plan. Bureau of Land Management, Ridgecrest Resource Area, California.

- Bureau of Land Management. 1998. The California Desert Conservation Area Plan 1980, as amended. U.S. Department of the Interior, Bureau of Land Management, California.
- Bureau of Land Management. 1999. Chapter Two - Desert Tortoise (*Gopherus agassizii*). Working draft for West Mojave Plan. September 22, 1999.
https://www.blm.gov/ca/pdfs/cdd_pdfs/Ch2_9-22-99.pdf
- Bureau of Land Management. 2002. Proposed Northern and Eastern Mojave Desert management plan - Final Environmental Impact Statement – Volumes 1 and 2. California Desert District, Riverside, CA.
- Bureau of Land Management, County of San Bernardino, and City of Barstow. 2005. Proposed West Mojave Plan Final Environmental Impact Report and Statement. BLM/CA/ES-2004-005 + 1790 -1600. Moreno Valley, CA.
- Bureau of Land Management. 2006. Record of decision for the West Mojave Plan. California Desert District, Moreno Valley, CA.
- Bureau of Land Management. 2018a. West Mojave Route Network Project Draft California Desert Conservation Plan Amendment and Supplemental Environmental Impact Statement for the California Desert District. BLM/CA/DOI-BLM-CA-D080-2018-0008-EIS. January 2018. Moreno Valley, CA.
- Bureau of Land Management. 2018b. Stoddard Valley OHV Area. BLM website accessed May 30, 2018. <https://www.blm.gov/visit/stoddard-valley-ohv-area>
- Burge, B.L. 1977. Daily and seasonal behavior, and areas utilized by the desert tortoise, *Gopherus agassizii*, in southern Nevada. Proceedings of the Desert Tortoise Council Symposium 1977:59-94.
- Bury, R.B., and Luckenbach, R.A., 2002, Comparison of desert tortoise (*Gopherus agassizii*) populations in an unused and off-road vehicle area in the Mojave Desert: Chelonian Conservation and Biology, v. 4, p. 457–463.
- Caid, N., P. Crist, R. Gilbert, and P. Wiederkehr. 2002. Environmentally sustainable transport: concept, goal and strategy—the OECD’s EST Project. Proceedings of the Institution of Civil Engineers, Transport 153(4):219-226.
- California Turtle and Tortoise Club. 2002. Western Rand Mountains ACEC vehicle closure.
<https://tortoise.org/conservation/randacec.html>
- Carr, L. W., and L. Fahrig. 2001. Effect of road traffic on two amphibian species of different vagility. Conservation Biology 15(4):1071-1078.

- Charis Corporation. 2005. Supplemental Final Environmental Impact Statement - Proposed Addition of Maneuver Training Land at Fort Irwin, CA. August 2005. Prepared for the U.S. Army National Training Center, Fort Irwin, California.
- D'Antonio, C.M., and Vitousek, P.M., 1992, Biological invasions by exotic grasses, the grass-fire cycle, and global change: *Annual Review of Ecology and Systematics*, v. 23, p. 63–87.
- DeFalco, L.A., Detling, J.K., Tracy, C.R., and Warren, S.D., 2001, Physiological variation among native and exotic winter annual plants associated with microbiotic crusts in the Mojave Desert: *Plant and Soil*, v. 234, p. 1–14.
- Desert Gazette. 2018. El Paso Mountains. <http://digital-desert.com/el-paso-mountains/> (accessed 2018-5-30)
- Doak, D., P. Kareiva, and B. Klepetka. 1994. Modeling population viability for the desert tortoise in the western Mojave Desert. *Ecological Applications* 4:446–460.
- Edwards T., A.E. Karl, M. Vaughn, P.C. Rosen, C.M. Torres, and R.W. Murphy. 2016. The desert tortoise trichotomy: Mexico hosts a third, new sister-species of tortoise in the *Gopherus morafkai*–*G. agassizii* group. *ZooKeys* 562: 131– 158. doi: 10.3897/Zookeys. 562.6124.
- Esque, T.C. 1992. Diet selection of the desert tortoise in the northeast Mojave Desert – FY 1991 update. *Proceedings of the Desert Tortoise Council Symposium* 1992:64-68.
- Esque, T.C. 1994. Diet and diet selection of the desert tortoise (*Gopherus agassizii*) in the northeastern Mojave Desert. Master's Thesis. Colorado State University, Fort Collins.
- Esque, T.C., Schwalbe, C.R., DeFalco, L.A., Duncan, R.B., and Hughes, T.J., 2003, Effects of desert wildfires on desert tortoise (*Gopherus agassizii*) and other small vertebrates: *Southwestern Naturalist*, v. 48, p. 103–111.
- Estrada, J. 2017. Events. *Tortoise Tracks* 37:2 page 1, Summer 2017.
- Fahrig, L., and T. Rytwinski. 2009. Effects of roads on animal abundance: an empirical review and synthesis. *Ecology and Society* 14(1): 21. [online] URL: <http://www.ecologyandsociety.org/vol14/iss1/art21/>
- Federal Highway Administration and California Department of Transportation. 2017. Olancho/Cartago Four-Lane Project on U.S. Highway 395 in Inyo County from 2.1 miles south of LA Aqueduct Bridge (#48-068R) to 0.2 mile south of Ash Creek Bridge (#48-11). Final Environmental Impact Report/ Environmental Assessment with Finding of No Significant Impact and Section 4(f) Evaluation.
- Forman, R. T. T. 2000. Estimate of the area affected ecologically by the road system in the United States. *Conservation Biology* 14(1):31-35.

- Forman, R. T. T., D. Sperling, J. A. Bissonette., A. P. Clevenger, C. D. Cutshal, V. H. Dale, L. Fahrig, R. France, C. R. Goldman, K. Haenue , J. A. Jones, F. J. Swanson, T. Turrentine, and T. C. Winter. 2002. Road ecology—science and solutions. Island Press, Washington, D.C., USA.
- Forman, R.T.T., D.S. Friedman, D. Fitzhenry, J.D. Martin, A.S. Chen, and L.E. Alexander. 1997. Ecological effects of roads: toward three summary indices and an overview of North America. In: Canter K (ed) Habitat fragmentation and infrastructure. Minister of Transport and Public Works and Water Management, Delft, Netherlands, p 40-54.
- Gelbard, J. L., and J. Belnap. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. *Conservation Biology* 17:420-432.
- Gibbs, J.P., and W.G. Shriver. 2002. Estimating the effects of road mortality on turtle populations. *Conserv. Biol.* 16, 1647–1652.
- Goodlett, G. O. and G. C. Goodlett. 1993. Studies of unauthorized off-highway vehicle activity in the Rand Mountains and Fremont Valley, Kern County, California. *Proc. 1992 Desert Tort. Counc. Symp.* 1993:163-187.
- Gucinski, H., M. Furniss, R. Ziermer, and M. Brookes. 2001. Forest Service roads: a synthesis of scientific information. Gen Tech Rep PNW-GTR-509.1, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.
- Henen, B.T. 1992. Desert tortoise diet and dietary deficiencies that may limit egg production at Goffs, California. *Proceedings of the Desert Tortoise Council Symposium* 1992:97.
- Hessing, Mark. Botanist for Fort Irwin. E-mail sent to Connie Rutherford, U.S. Fish and Wildlife Service, Ventura Office, regarding off-road vehicle activity on Coolgardie Mesa. June 3, 2006. Cited in: U.S. Fish and Wildlife Service 2008. Lane Mountain milk-vetch (*Astragalus jaegerianus*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. June 2008.
- Jaeger, J.A.G., L. Fahrig, and K.C. Ewald. 2005a. Does the configuration of road networks influence the degree to which roads affect wildlife populations? *International Conference on Ecology and Transportation 2005 Proceedings, Chapter 5 - Integrating Transportation and Resource Conservation Planning - Landscapes and Road Networks*, pages 151-163. August 29, 2005.
- Jaeger, J.A.G., J. Bowman, J. Brennan, L. Fahrig, D. Bert, J. Bouchard, N. Charbonneau, K. Frank, B. Gruber, K. Tluk von Toschanowitz. 2005b. Predicting when animal populations are at risk from roads: an interactive model of road avoidance behavior. *Ecological Modelling* 185 (2005) 329–348.

- Jalkotzy, M.G., P.I. Ross, and M.D. Nasserden. 1997. The effects of linear developments on wildlife: a review of selected scientific literature. Arc Wildlife Services Ltd, prepared for Canadian Association of Petroleum Producers, Calgary, Alberta.
- Jennings, B. 1992. Observations on the feeding habits and behavior of desert tortoises at the Desert Tortoise Natural Area, California. Proceeding of the Desert Tortoise Council Symposium 1992:69-81.
- Jennings, W. B. 1993. Foraging ecology of the desert tortoise (*Gopherus agassizii*) in the western Mojave desert. Master's thesis. Arlington, University of Texas: 101 pp.
- Jennings, W. B. 1997. Habitat use and food preferences of the desert tortoise, *Gopherus agassizii*, in the western Mojave Desert and impacts of off-road vehicles. In J. Van Abbema (ed.), Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles-An International Conference, pp. 42-45. New York Turtle and Tortoise Society, New York.
- Karraker, N.E., and J.P. Gibbs. 2011. Contrasting road effect signals in reproduction of long-versus short-lived amphibians. *Hydrobiologia* 664, 213–218.
- Kemp, P.R., and Brooks, M.L., 1998, Exotic species of California deserts: *Fremontia*, v. 26, p. 30–34.
- Kilgo, J.C., R.F. Labisky, and D.E. Fritzen. 1998. Influences of hunting on the behavior of white-tailed deer: implications for conservation of the Florida panther. *Conservation Biology* 12:1359-1364.
- Knight, R.L., and Kawashima, J.Y., 1993, Responses of raven and red-tailed hawk populations to linear right-of-ways: *Journal of Wildlife Management*, v. 57, p. 266–271.
- Knight, R.L., Camp, R.J., Boarman, W.I., and Knight, H.A.L., 1999, Predatory bird populations in the east Mojave Desert, California: *Great Basin Naturalist*, v. 59, p. 331–338.
- LaBerteaux, D.L. 2006. Mustard removal at the Desert Tortoise Research Natural Area, Kern County, California. Report to the Desert Tortoise Preserve Committee, Inc.
- LaRue, E. 1992. Distribution of desert tortoise sign adjacent to Highway 395, San Bernardino County, California. Proceedings of the 1992 Symposium of the Desert Tortoise Council.
- LaRue, E. 1994. Follow-up monitoring report for Stoddard Valley-to-Johnson Valley Point-to-Point Corridor Run. Unpublished report prepared on behalf of the American Motorcyclists Association for the Barstow Resource Area of the Bureau of Land Management.
- LaRue, E. 2008. Latest information on tortoises and other special-status species in Morongo Basin. Morongo Tortoise Update.7-18-2008. Circle Mountain Biological Consultants, Wrightwood, CA. http://www.yucca-valley.org/pdf/general_plan/mb_tortoise_update_july2008.pdf

- LaRue, E. 2014. Mohave Ground Squirrel Trapping Results for Phacelia Wildflower Sanctuary, Los Angeles County, California. <https://www.wildlife.ca.gov/Conservation/Mammals/Mohave-Ground-Squirrel/TAG/BlogPage/4/Month/4/Year/2018>
- Lei, S. A. 2004. Soil compaction from human trampling, biking, and off-road motor vehicle activity in a blackbrush (*Coleogyne ramosissima*) shrubland. Western North American Naturalist 64:125-130.
- Loughran, C.L., J.R. Ennen, and J.E. Lovich. 2011. *Gopherus agassizii* (desert tortoise). Burrow collapse. Herpetological Review 42(4), 593.
- Lovich, J.E., and Bainbridge, D., 1999, Anthropogenic degradation of the southern California desert ecosystem and prospects for natural recovery and restoration: Environmental Management, v. 24, p. 309–326.
- Lovich, J.E., C.B. Yackulic, J. Freilich M. Agha, M. Austin, K.P. Meyer, T.R. Arundel, J. Hansen, M.S. Vamstad, S.A. Root. 2014. Climatic variation and tortoise survival: Has a desert species met its match? Biological Conservation 169 (2014) 214–224.
- McLellan, B.N., and D.M Shackleton, 1988. Grizzly bears and resource extraction industries: effects of roads on behavior, habitat use and demography. J. Appl. Ecol. 25, 451–460.
- McLuckie, A.M., M.R.M. Bennion, and R.A. Fridell. 2007. Tortoise mortality within the Red Cliffs Desert Reserve following the 2005 wildfire. Utah Division of Wildlife Resource Publication 07-05.
- Medica, P.A., R.B. Bury, and F.B. Turner. 1975. Growth of the desert tortoise (*Gopherus agassizii*) in Nevada. Copeia 1975:639-643.
- Minnich, J.E. 1970. Water and electrolyte balance of the desert iguana, *Dipsosaurus dorsalis*, in its native habitat. Comparative Biochemistry and Physiology 35:921-933.
- Minnich, J.E. 1979. Comparison of maintenance electrolyte budgets of free-living desert and gopher tortoises (*Gopherus agassizii* and *G. polyphemus*). Proceedings of the Desert Tortoise Council Symposium 1979 Pp.166-174.
- Murphy, R.W., Berry, K.H., Edwards, T., Leviton, A.E., Lathrop, A., and Riedle, J.D., 2011, The dazed and confused identity of Agassiz's land tortoise, *Gopherus agassizii* (Testudines, Testudinidae) with the description of a new species, and its consequences for conservation: ZooKeys, v. 113, p. 39–71.
- Nafus, M.G., T.D. Tuberville, K. A. Buhlmann, and B.D. Todd. 2013. Relative abundance and demographic structure of Agassiz's desert tortoise (*Gopherus agassizii*) along roads of varying size and traffic volume. Biological Conservation 162 (2013) 100–106.
- Nagy, K.A. 1972. Water and electrolyte budgets of a free-living desert lizard, *Sauromalus obesus*. Journal of Comparative Physiology 79:93-102.

- Nagy, K.A., and P.A. Medica. 1986. Physiological ecology of desert tortoises. *Herpetologica* 42:73-92.
- Nagy, K.A., Henen, B.T., and Vyas, D.B., 1998, Nutritional quality of native and introduced food plants of wild desert tortoises: *Journal of Herpetology*, v. 32, p. 260–267.
- Noss, R. F. 1993. Wildlife corridors. Pages 43-68 in D. S. Smith and P. C. Hellmund, editors. *Ecology of Greenways*. University of Minneapolis Press, Minneapolis, Minnesota.
- Noss, R. F. 1995. Maintaining ecological integrity in representative reserve networks. *World Wildlife Fund*, Canada.
- [OECD] Organization for Economic Co-operation and Development. 2002. OECD guidelines towards environmentally sustainable transport. OECD Publications, Paris, France.
- Oftedal, O.T. 2002. The nutritional ecology of the desert tortoise in the Mojave and Sonoran deserts. Pages 194-241 in T.R. Van Devender (ed.), *The Sonoran Desert Tortoise; Natural History, Biology and Conservation*. University of Arizona Press, Tucson, Arizona.
- Oftedal, O.T., L.S. Hillard, and D.J. Morafka. 2002. Selective spring foraging by juvenile desert tortoises (*Gopherus agassizii*) in the Mojave Desert—Evidence of an adaptive nutritional strategy: *Chelonian Conservation and Biology*, v. 4, p. 341–352.
- Oftedal, O.T. and M.E. Allen. 1996. Nutrition as a major facet of reptile conservation. *Zoo Biology* 15:491-497.
- Parendes, L.A., and J.A. Jones. 2000. Role of light availability and dispersal in exotic plant invasion along roads and streams in the H. J. Andrews Experimental Forest, Oregon. *Conservation Biology* 14:64.
- Rytwinski, T., and L. Fahrig. 2011. Reproductive rate and body size predict road impacts on mammal abundance. *Ecol. Appl.* 21, 589–600.
- Rytwinski, T., and L. Fahrig. 2012. Do species life history traits explain population responses to roads? A meta-analysis. *Biol. Conserv.* 147, 87–98.
- Roedenbeck, I.A., L. Fahrig, C. S. Findlay, J. E. Houlahan, J.A.G. Jaeger, N. Klar, S. Kramer-Schadt, and E. A. van der Grift. 2007. The Rauschholzhausen Agenda for Road Ecology. *Ecology and Society* 12(1): 11. [online]. <http://www.ecologyandsociety.org/vol12/iss1/art11/>
- Rudis, V.A. 1995. Regional forest fragmentation effects on bottomland hardwood community types and resource values. *Landsc. Ecol.* 10:291-307.

- Sanson, L. 2016. Marines seek plan to move tortoises from Johnson Valley. Hi-Desert Star September 8, 2016. http://www.hidesertstar.com/news/article_c51696c6-7609-11e6-847d-03224974e42a.html
- Sazaki, M., W.I. Boarman, G. Goodlett, and T. Okamoto. 1995. Risk associated with long-distance movement by desert tortoises. *Proceedings of the Desert Tortoise Council 1994 Symposium*. pp. 33–48.
- W.H. Schlesinger, and C.S. Jones. 1984. The Comparative Importance of Overland Runoff and Mean Annual Rainfall to Shrub Communities of the Mojave Desert. *Botanical Gazette* 1984 145(1): 116-124.
- Sharifi, M.R., A.C. Gibson, and P.W. Rundel. 1997. Surface Dust Impacts on Gas Exchange in Mojave Desert Shrubs. *Journal of Applied Ecology*, 34(4)(Aug., 1997):837-846.
- Sherwood, B., D. Cutler, and J. A. Burton. 2002. *Wildlife and roads—the ecological impact*. Imperial College Press, London, UK.
- Spellerberg, I. F. 2002. *Ecological effects of roads*. Land Reconstruction and Management Series, Volume 2. Science Publishers, Enfield, UK.
- Tierra Madre Consultants. 1991. Biological assessment for Lancaster City and Planning Area: Relative density surveys for desert tortoises and cumulative human impact evaluations for Mohave ground squirrel habitat. Report prepared by Ed LaRue for City of Lancaster. Tierra Madre Consultants, Riverside, CA.
- C.R. Tracy, L.C. Zimmerman, C. Tracy, K.D. Bradley, and K. Castle. 2006. Rates of food passage in the digestive tract of young desert tortoises: Effects of body size and diet quality. *Chelonian Conservation and Biology*: December 2006, Vol. 5, No. 2, pp. 269-273.
- Zimmerman, L.C., Espinoza, R.E., and Barber, A.M., 2006a, The importance of physiological ecology in conservation biology: *Integrative and Comparative Biology*, v. 46, p. 1,191–1,205.
- Tratz, W.M. 1978. Postfire vegetational recovery, productivity and herbivore utilization of a chaparral-desert ecotone. Master's Thesis. California State University, Los Angeles.
- Tratz, W.M., and R.J. Vogl. 1977. Postfire vegetational recovery, productivity and herbivore utilization of a chaparral-desert ecotone. Pages 426-430 in H.A. Mooney and C.E. Conrad (eds.), *Proceedings of Symposium on Environmental Consequences of Fire and Fuel Management in Mediterranean Ecosystems*. USDA Forest Service General Technical Report WO-3.
- Trombulak, S. C., and C. A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14:18–30.

- Turner, F.B., P. Hayden, B.L. Burge, and J.B. Roberson. 1986. Egg production by the desert tortoise (*Gopherus agassizii*) in California. *Herpetologica* 42:93-104.
- Turner, F.B., K.H. Berry, D.C. Randall, and G.C. White. 1987. Population ecology of the desert tortoise at Goffs, California, 1983-1986. Report to Southern California Edison Co., Rosemead, California.
- Turtle Conservation Coalition. 2018. Turtles in Trouble: The World's 25+ Most Endangered Tortoises and Freshwater Turtles. www.iucn-tftsg.org/trouble
- Umweltbundesamt (UBA). 2003. Reduzierung der Flächeninanspruchnahme durch Siedlung und Verkehr. Materialienband. Umweltbundesamt Texte 90/03, Berlin, Germany. Available online at: <http://www.umweltdaten.de/publikationen/fpdf-l/2587.pdf>.
- Underhill, J. E., and P. G. Angold. 2000. Effects of roads on wildlife in an intensively modified landscape. *Environmental Reviews* 8:21-39.
- U.S. District Court. 2011. Order re: remedy. Case 3:06-cv04884-SI. Center for Biological Diversity, et al., Plaintiffs v. BLM. United States District Court for the Northern District of California, USA. As cited in Berry, K.H., L.M. Lyren, J.L. Yee, and T.Y. Bailey. 2014. Protection benefits desert tortoise (*Gopherus agassizii*) abundance: the influence of three management strategies on a threatened species. *Herpetological Monographs*, 28 2014, 66–92.
- U.S. Ecology. 1989. Proponent's Environmental Assessment. California Low-Level Radioactive Waste Disposal Site. Appendices K and M, Volume II.
- U.S. Fish and Wildlife Service. 1994a. Endangered and threatened wildlife and plants; determination of critical habitat for the Mojave population of the desert tortoise. *Federal Register* 55(26):5820-5866. Washington, D.C.
- U.S. Fish and Wildlife Service. 1994b. Desert tortoise (Mojave population) Recovery Plan. U.S. Fish and Wildlife Service, Region 1, Portland, Oregon. 73 pages plus appendices.
- U.S. Fish and Wildlife Service. 2008. Lane Mountain milk-vetch (*Astragalus jaegerianus*) 5-Year Review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, California.
- U.S. Fish and Wildlife Service. 2011a. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.
- U.S. Fish and Wildlife Service. 2011b. Biological Opinion on Mojave Solar, LLC's Mojave Solar Project, San Bernardino County, California (8-8-11-F-3). Ventura Fish and Wildlife Office, Ventura, CA.

- U.S. Fish and Wildlife Service 2014a. 12-month finding on a petition to reclassify *Astragalus jaegerianus* as a threatened Species. 79 Federal Register 25084-25092, Friday, May 2, 2014.
- U.S. Fish and Wildlife Service. 2014b. Determination of threatened status for the western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*); Final Rule. 79 Federal Register 59992-60038.
- U.S. Fish and Wildlife Service. 2014c. Designation of critical habitat for the western distinct population segment of the yellow-billed cuckoo; Proposed Rule. 29 Federal Register 48548-48652.
- U.S. Fish and Wildlife Service. 2015. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report prepared by Linda Allison for the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.
- van der Ree R., J. A. G. Jaeger, E. A. van der Grift, and A. P. Clevenger. 2011. Effects of roads and traffic on wildlife populations and landscape function: Road ecology is moving toward larger scales. *Ecology and Society* 16(1): 48. [online] URL: <http://www.ecologyandsociety.org/vol16/iss1/art48/>
- von Seckendorff Hoff, K., and Marlow, R.W. 2002. Impacts of vehicle road traffic on desert tortoise populations with consideration of conservation of tortoise habitat in southern Nevada. *Chelonian Conservation and Biology* 4:449–456.

**Appendix C. Synopsis of Comments Submitted by the Desert Tortoise Council
from 2012 to 2016
for the Soda Mountain Solar Project**

[Those recommendations not give above are highlighted in green here]

The Desert Tortoise Council (Council) has been involved in the proposed Soda Mountain Solar Project (Project) since the public was allowed to participate in its review during the National Environmental Policy Act (NEPA) Scoping Process in 2012. Below is a chronological compilation of comments the Council submitted on the Project to the Bureau of Land Management (BLM) and San Bernardino County (County) from 2012 to 2016. A copy of submitted letters and literature cited is available from the Council upon request. We consider each of these issues to be persisting and applicable to the current Project, so we incorporate these comments by reference, and expect them to be addressed in the DEIR.

December 13, 2012 Scoping Comments to Bureau of Land Management (BLM)

The Desert Tortoise Council (Council) formally requested of BLM to be considered an “Affected Party,” and asks that all correspondence regarding analysis of this potential project be sent to the Council’s address.

Three documents were available to review prior to the scoping meeting:

- Panorama Environmental, Inc. July 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California (herein, “Panorama”)
- RMT, Inc. March 2011. Plan of Development, Soda Mountain Solar Project (herein “RMT”)
- Soda Mountain Solar, LLC. 9 August 2012. Comments from Ms. Adriane Wodey representing this subsidiary of Bechtel Development Company, Inc. (herein “Ms. Wodey”).

The Council reviewed these documents.

Comments on Alternatives

The Bechtel representative for the Project indicated at the public scoping meeting that this was one of five potential sites, that the other four had been rejected, and that this one was the preferred alternative. The draft EIS should clearly report the data behind this decision, both the reasons the other sites are not suitable and the reason this site is preferred.

The Council would like to see additional viable sites (not just those already rejected) analyzed in the draft EIS.

Comments on Affected Environment

Tortoise Surveys: All three documents extensively reference 2009 focused desert tortoise surveys of the 4,400 acres± performed by URS (2009). When asked for a copy of the document, BLM’s response was the document was currently under internal review and not available to the public. BLM should be forthcoming with the document, or publicly reject it.

The 2009 tortoise surveys are now outdated. Assuming the site is not rejected based on scoping comments, new surveys should be performed to see if tortoises are truly absent. There should be complete disclosure of surveyor qualifications. If tortoises do occur in low densities, inexperienced surveyors should not be employed. The current tendency given the USFWS four-month survey period is to have hydrologists, geologists, ornithologists, even office staff and secretaries perform tortoise surveys. We strongly believe that only qualified tortoise biologists should perform any new surveys.

The new tortoise survey should implement transects that are closer together from the proposed 10-meter width to perhaps 5-meter width and orient transects in an east-west direction to facilitate detection in washes. Mr. Ed LaRue and Mr. Michael Radakovick, tortoise biologists, walked approximately 11 miles through the three proposed array areas, referred to on a project map (Panorama Environmental, Inc., dated 9/14/2012) as “North Array,” “South Array,” and “East Array” on December 12, 2012. They visually inspected about 150 wood rat middens for tortoise scat and carcass pieces on surveyed portions of the North Array. There must be thousands of such middens, which should be individually checked for tortoise sign. If tortoises occur at low densities as Soda Mountain Solar and their consultant suggest, this heightened survey methodology would be warranted.

When the BLM representative was asked if there had been any recent surveys performed, he was hesitant and noncommittal. We are aware that there have been surveys in addition to the 2009 surveys, but it is not clear why these materials are being withheld. The Council would be much better informed if existing materials had been made available. It is important that the BLM remain independent in its assessment of this project, and not become a project proponent.

Prior to beginning any new surveys, the project proponents and biologists should confer with USFWS biologists to determine an affected “action area” (see definition in USFWS 2010 and 50 Code of Federal Regulations 402.2) for this project. In 2009, only the project footprint was surveyed. Had a larger action area encompassing both direct and indirect impact areas been surveyed, we are certain that tortoises or their sign would have been detected.

If new surveys do not find tortoises within the North Array area, the BLM should conclude that the project “May Effect” tortoises based on the 2001 AMEC findings at the Opah Ditch Mine, which is located within a half-mile to the west (see Figure 10 in Panorama 2012). During that survey, 5 burrows, 3 rock cover sites, 9 scat, and 3 carcasses were found, demonstrating that tortoises are in the immediate vicinity of the proposed project.

Affected Environment: Tortoise Habitat - Nussear et al. (2009) indicated that their habitat modeling exercise for the tortoise is intended to provide “...output of the statistical probability of habitat potential that can be used to map potential areas of desert tortoise habitat.” Both Ms. Wodey and Panorama report that Nussear’s et al. (2009) analysis produced a habitat rating of 0.6 to 0.8, where 1.0 is the most suitable habitat. If survey results indicate tortoises are not abundant onsite, this does not dismiss Nussear’s relatively high habitat suitability index for this site.

Rather than make unsubstantiated statements about habitat degradation due to the proximity to the open area, additional studies should assess the levels of impacts in all three array areas and situate a few transects inside the Rasor open area for comparison. [In other words, use science – i.e., data collected at/near the project area and results and conclusions available from scientific literature should be used to analyze the impacts and implement appropriate mitigation.]

Mohave Fringe-toed Lizard: The project proponent concludes that there is no habitat for Mojave fringe-toed lizard, there is suitable habitat within the eastern portions of both the East and South arrays, in sand fields against the west slopes of Soda Mountains. **Additional surveys should be conducted for the occurrence of this species and its distribution.**

Western Burrowing Owl: Radakovich found burrowing owl sign at the project site. This species was not identified in the RMT, Inc. document. **There should be focal surveys for burrowing owl and the results presented in the draft EIS.**

Comments on Regional and Cumulative Impacts

Regional and Cumulative Impacts to the Tortoise: **The draft EIS should review additional materials to determine the potential local and regional impacts to tortoises including indirect impacts. At the very least, this should include reviews of the Fort Irwin expansion data, any findings associated with the proposed high-speed rail line, and any data Caltrans may have.**

Literature Cited

Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

Panorama Environmental, Inc. 2012. Analysis of habitat suitability and connectivity in the Soda Mountain area, San Bernardino County, California. An unpublished report prepared by Susanne Heim and Laurie Hietter, dated July 2012. San Francisco, CA.

RMT, Inc. 2011. Plan of Development, Soda Mountain Solar Project. Unpublished report prepared for BLM, submitted by Caithness Soda Mountain, LLC, dated 15 March 2011. San Mateo, CA.

[USFWS] U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*) . Ventura, CA. 18 pages.

March 1, 2014 Comment Letter on DEIS to BLM

Comment on Alternatives

The Council's preferred alternative is that "The BLM would continue to manage the land consistent with the site's multiple use classification as described in the CDCA Plan with the exception that solar development would be precluded on the site" also called Alternative G in the DEIS (BLM 2014, Section 2.6.3., page 2-37). As such, this alternative has the advantage of specifically excluding this particular site from future solar development.

Another alternative identified in the DEIS was the No Action Alternative. In this alternative, BLM “would continue to manage the land consistent with the site’s multiple use classification as described in the CDCA [California Desert Conservation Area] Plan. Based on the CDCA Plan amendments made in the Solar PEIS [Programmatic Environmental Impact Statement] ROD [Record of Decision], for future applications the site would be identified primarily as variance areas open to future applications for solar development, subject to the procedures identified in the Solar PEIS, and some exclusion areas in the southeast portion of the site that would be closed to such applications. In the case of variance areas, future projects would still require a CDCA Plan Amendment to move forward. These projects would be subject to applicable laws and land use plans” (BLM 2013, Section 2.6.1., page 2-36). Although the Council appreciates that this alternative would result in no project at this site, this alternative would leave the site open to future solar development.

The Council requested that there be a discussion of other site alternatives such as the thousands of acres of biologically-impaired habitats east of Barstow, between Interstate-15 and Interstate-40. In a number of places, it seems that if the alternative site does not occur between Las Vegas and Barstow, it is unacceptable, which dismisses thousands of acres of impaired private lands in the Victor Valley, for example. It seems as if all potential alternatives had the same regional restriction that the site must occur along I-15 between Vegas and Barstow, which eliminates many other, better suited alternative sites outside this corridor.

Kiva Biological Consulting (2013) surveyed the project area and recommended the eastern half of the East Array be excluded from development to avoid occupied tortoise habitat. We requested that this alternative be discussed and analyzed for its reduced impacts to tortoises compared to the proponent’s preferred alternative.

Actions to Minimize Take from Direct Impacts

If the Project is authorized, we strongly recommend that authorized biologists be onsite for all ground-disturbing activities, throughout the year. The wording in APM 71 on page 3.4-29 should require that authorized biologists and/or environmental monitors be onsite whenever ground-disturbing activities occur, regardless of the time of year; excepting those fenced areas that have already been cleared of tortoises during previous clearance surveys.

Whatever formula is used for estimating the number of tortoises that may occur based on survey findings, this estimated number must be included in the Final EIS to accurately determine the level of anticipated take, and to allow the regulatory agencies to determine how accurate that estimate is, if the project is developed.

The Designated Biologist and field contact representative are not synonymous. Whereas the Designated Biologist serves to implement all protective measures and minimize impacts to tortoises and occupied habitats, the field contact representative serves as the liaison among the many involved parties, particularly in regards to compliance reporting.

Translocation/Relocation Areas: A Desert Tortoise Translocation/Relocation Plan should be finalized and approved before any ground-disturbance activities occur or any tortoises are handled. This Plan should include the areas identified for translocation/relocation and an analysis of the proposed relocation/translocation areas to determine whether they are appropriate to receive displaced tortoises. Issues on tortoise health and disease transmission should also be discussed and analyzed for displaced and resident (host) tortoises.

In the event a tortoise is found dead, the Final EIS should include restrictive measures that may be required by U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) to prevent this from occurring again. If mortality exceeds the mortality take limit identified in the federal biological opinion or section 2081 permit, project construction may need to be halted until formal consultation is completed or the permit is amended. This and any other remedial actions should be described in the FEIS.

Actions to Minimize Take from Indirect and Cumulative Impacts

A raven management plan is still to be submitted to the regulatory agencies for their review and approval. It was not included in the DEIS. In addition, the Council believes that the proponent should commit to providing funds to the USFWS for raven control and management via a fund established at the National Fish and Wildlife Foundation.

In the DEIS, all impacts are considered permanent. The estimated compensable habitat should be tallied and identified in the Final EIS.

Rather than state the compensation ratio will be 1:1, it is advisable to state that the compensation ratio will be determined in consultation with CDFW and other agencies. This suggestion was made because CDFW will require habitat compensation, endowment funds, and enhancement fees. It is extremely unlikely that CDFW will accept only 1:1 habitat compensation.

The DEIS did not recognize that 5 tortoise burrows, 3 rock cover sites, 9 scat, and 3 carcasses were found at the Opah Ditch Mine in 2001 by AMEC, which is in the vicinity of the North Array study area. Survey results presented in the text of the DEIS must be augmented by results depicted in the appendices to be comprehensive in the Final EIS, particularly when known, published data clearly show that more than two dead tortoises occur (or have recently occurred) within the North Array study area, all of which must be considered compensable habitat.

A habitat management plan (habitat plan) will be written for lands acquired for compensation and include in the Final EIS. The habitat plan will analyze threats to those lands based on field surveys identifying those threats, and require that the compensatory lands will be fully funded and managed in perpetuity for the benefit of the compensated species and not be subject to future development or incompatible uses.

Mitigation should be required for all phases of the project including operations and maintenance and decommissioning.

American Badger: The Draft EIS indicates that only one burrow with American badger (*Taxidea taxus*) digs was found. During a brief reconnaissance survey in December 2012, LaRue and Radakovich found 11 diagnostic badger digs within the North Array area and 8 digs within the East and South Array areas. We note that there are no mitigation measures identified in Table 2-5 for this species. Given our survey observations on only a fraction of the project area, we suggest that American badger is far more common than the Draft EIS suggests, and that mitigation measures are warranted to minimize impacts to this California Species of Special Concern.

Mohave Fringe-Toed Lizard: This species was found on the Project site and impacts to this species from the proposed project should be analyzed in the EIS.

Western Burrowing Owl: Sign from burrowing owls was observed on the Project site. Impacts to this species from the proposed project should be analyzed in the EIS.

Literature Cited

AMEC. 2001. Desert Tortoise Survey of the Opah Ditch Mine.

[BLM and County] Bureau of Land Management and San Bernardino County. 2013. Soda Mountain Solar Project Draft Plan Amendment/Environmental Impact Statement/Environmental Impact Report. November 2013.

Kiva Biological Consulting. 2013. Protocol desert tortoise survey for Soda Mountains Solar Project, Spring 2013. Unpublished report produced by Peter Woodman on behalf of Panorama Environmental and BLM. Ridgecrest, CA.

October 7, 2014 Letter to California State Director Jim McKenna on BLM's Soda Mountain Solar and Silurian Valley Solar Projects

The Council and other organizations request that the BLM relocate the Soda Mountain Solar Project to an area that does not jeopardize natural, cultural, archaeological or community resources on the grounds that the project violates:

- ☐ The goals and recommendations of the formal independent scientific panel to the Desert Renewable Energy Conservation Plan (DRECP)
- ☐ The intent of the Solar Programmatic Environmental Impact Statement (Solar PEIS)
- ☐ The Secretary of the Interior's order 3330 and the public's substantial investment in trust resources.

The letter identified critical movement corridors for desert bighorn sheep for long-term demographic potential (Epps et al. 2013) and occurrence of tortoise both north and south of Interstate 15 in the Project site (Kiva Biological Consulting 2013, La Rue personal communication 2013) with a tortoise habitat rating of 0.6 to 0.8 with 1.0 being the highest rating (Nussear et al. 2009). The Department of the Interior seeks to avoid potential environmental impacts from projects through steps such as advanced landscape level planning that identifies areas suitable for development because of low or relatively low natural and cultural resource conflicts" (Department of Interior 2013).

Literature Cited

- DRECP Independent Science Advisors. 2010. Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan (DRECP). Conservation Biology Institute. October 2010.
- Epps, C.W., J.D. Wehausen, R.J. Monello, and T.G. Creech, 2013. Potential impacts of proposed solar energy development near the South Soda Mountains on desert bighorn sheep connectivity, Report to the California Department of Fish and Wildlife, National Park Service, and Bureau of Land Management by Oregon State University, University of California and the National Park Service., 25, February 2013.
- Jewell, Sally. 2013. Secretarial Order 3330 - "Improving Mitigation Policies and Practices of the Department of the Interior. October 13, 2013. Department of the Interior. Washington, DC.
- Kiva Biological Consulting. 2013. Protocol desert tortoise survey for Soda Mountains Solar Project, Spring 2013. Unpublished report produced by Peter Woodman on behalf of Panorama Environmental and BLM. Ridgecrest, CA.
- Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

November 7, 2014 Letter to Senator Dianne Feinstein on BLM's Soda Mountain Solar and Silurian Valley Solar Projects

The Council and other organizations request that the Senator take a position opposing these projects because the projects violate:

- ☐ The goals and recommendations of the formal independent scientific panel to the Desert Renewable Energy Conservation Plan (DRECP)
- ☐ The intent of the BLM's Solar Programmatic Environmental Impact Statement (Solar PEIS)
- ☐ The Secretary of the Interior's Order 3330 and the public's substantial investment in trust resources.

The letter identified critical movement corridors for desert bighorn sheep for long-term demographic potential (Epps et al. 2013) and occurrence of tortoise both north and south of Interstate 15 in the Project site (Kiva Biological Consulting 2013, La Rue personal communication 2013) with a tortoise habitat rating of 0.6 to 0.8 with 1.0 being the highest rating (Nussear et al. 2009). The Department of the Interior seeks to avoid potential environmental impacts from projects through steps such as advanced landscape level planning that identifies areas suitable for development because of low or relatively low natural and cultural resource conflicts" (Department of Interior 2013).

Literature Cited

- DRECP Independent Science Advisors. 2010. Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan (DRECP). Conservation Biology Institute. October 2010.
- Epps, C., J. Wehausen, R. Monello, and T. Creech. 2013. Potential Impacts of Proposed Solar Energy Development near the South Soda Mountains on Desert Bighorn Sheep Connectivity. Oregon State University, University of California and the National Park Service.
- Jewell, Sally. 2013. Secretarial Order 3330 - "Improving Mitigation Policies and Practices of the Department of the Interior. October 13, 2013. Department of the Interior. Washington, DC.
- Kiva Biological Consulting. 2013. Protocol desert tortoise survey for Soda Mountains Solar Project, Spring 2013. Unpublished report produced by Peter Woodman on behalf of Panorama Environmental and BLM. Ridgecrest, CA.
- Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

March 30, 2016 Letters to San Bernardino County Supervisors Lovingood and Ramos for Well Permit for Soda Mountain Solar Project

The proposed project should not be developed at this location.

Impacts include important travel corridors to desert bighorn sheep and additional impacts to the Mojave desert tortoise that has lost 50 percent of its numbers in the West Mojave Desert since 2004.

BLM rejected the recommendation by their consultant that the project be redesigned to avoid tortoises and occupied habitat.

BLM is not considering the best science in this decision and is unwilling to redesign the project to avoid tortoise impacts. The Board of Supervisors is requested to ensure that the best science is being used, that impaired and degraded habitats be targeted for solar development, and the well permit be denied.

In 2015, Los Angeles Department of Water and Power (LADWP) refused to buy power associated with this project from the Proponent because of the environmental impacts that would occur. Even the National Park Service (NPS) has been an outspoken opponent of this Project, which is within a quarter mile of the boundary of the Mojave National Preserve.

San Bernardino County's Partnership for Renewable Energy and Conservation (SPARC) may provide responsible energy development in impaired habitats and offset, in part, BLM's ill-conceived plans to develop solar energy facilities on pristine public lands in San Bernardino County. The County withdrew from the Desert Renewable Energy Conservation Plan (DRECP), which among other things, would allow for the unprecedented development of up to 8,000 acres of designated desert tortoise critical habitat in the California deserts, including much of the West Mojave Desert in San Bernardino County. Solar development should occur on thousands of acres of fallow agriculture, brown fields, and suburban areas where tortoises have already been eliminated.

**August 12, 2016 Letter on San Bernardino County
Well Permit 12 August 2016 to San Bernardino County Supervisors**

The site is comprised of pristine habitats, occupied by desert tortoises, and used as a corridor for bighorn sheep. Despite numerous recommendations and objections, we feel that the BLM has ignored all of our and other groups' science-based suggestions and approved this project.

The San Bernardino County Partnership for Renewable Energy and Conservation (SPARC) could be a better way to identify and plan for renewable energy development, in part, because it is smaller in scale than the multi-county, million-acre DRECP and route designation planning documents proposed on public lands managed by the BLM. In a phone conversation with Ms. McClain in April 2016, the Council requested that it be included in future correspondence so that we may participate in future planning efforts to revive and finalize the SPARC planning process.

We support the County's refusal to support DRECP that would develop tortoise critical habitats when so much degraded habitat would be better suited for development, and rooftop solar has never been analyzed or even considered in the DRECP planning process.