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Via BLM NEPA ePlanning portal and email only

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RE: Redonda Solar Project Public Scoping (DOI-BLM-CA-D060-2025-0014-EA)

Dear Ms. Woods, Mr. Kasang, and Mr. Gonzalez,

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

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

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats likely occupied by 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 authorized by the Bureau of Land Management (BLM), which we recommend be added to project terms and conditions in the authorizing document (e.g., right-of-way grant, etc.) as appropriate. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

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 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. In its status review, California Department of Fish and Wildlife (CDFW) (2024a) stated: "At its public meeting on October 14, 2020, the Commission considered the petition, and based in part on the Department's [CDFW] petition evaluation and recommendation, found sufficient information exists to indicate the petitioned action may be warranted and accepted the petition for consideration. The Commission's decision initiated this status review to inform the Commission's decision on whether the change in status is warranted."

Importantly, in their April 2024 meeting (CDFW 2024b), 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 California Endangered Species Act based on the scientific data provided on the species' status, declining trend, numerous threats, and lack of effective recovery implementation and land management. In June 2025, the Commission approved the uplisting the tortoise to endangered.

Description of the Proposed Project

BLM is requesting scoping comments on the following proposed project. Redonda PV LLC (Applicant), a wholly-owned indirect subsidiary of Clearway Energy Group LLC, proposes to develop and construct a 200-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generating facility, and approximately 250-MW battery energy storage system (BESS) known as the Redonda Solar Project (proposed project/project). The project right-of-way (ROW) request, for 40 years, is for up to approximately 887 acres of federal lands in Riverside County allocated as a Development Focus Area (DFA) by the BLM's Desert Renewable Energy and Conservation Plan (DRECP). The project site is comprised of two areas for solar panels and associated facilities.

The perimeter of the locations for the solar panels and support facilities will be secured with chain link metal-fabric security fencing along with desert tortoise exclusion fencing.

In addition, the project will include a new, approximately 2.1-mile-long, 230 kV generation tie (gen-tie) line to the approved Arica and Victory Pass substation. Approximately 0.5 mile of the gen-tie route is on private land, 0.2 mile is within the solar facility footprint, and 1.4 miles of the gen-tie route would be on BLM land and outside the solar facility site.

The project is approximately 8 miles east of the unincorporated community of Desert Center. BLM Open Routes DC 511 and DC 950 run through the project area and would remain open. The southeast project area is bordered by a solar project and undeveloped land on the west and east sides, agricultural development on the north side, and I-10 on the south side. The northwest project area is bordered by undeveloped land and a nearby solar project or agricultural development on the north, east, and south sides and a solar project and proposed gen-tie line on the west side (Figure 1).

The project site is located within the Colorado Desert Recovery Unit for Mojave desert tortoise. The southern portion of the westernmost project area overlaps with the Chuckwalla critical habitat unit for the tortoise/Chuckwalla Tortoise Conservation Area (Figure 2).

Comments on the Proposed Project and Recommendations for the NEPA Document and Mitigation Plans

The Council appreciates that BLM promptly notified us about the public scoping period and the availability of documents associated with the proposed project. We thank BLM for this timely notification.

In addition, we thank BLM for including the results of biological surveys of the project site and some of the draft plans to mitigate impacts to natural resources including the tortoise and natural resources that affect the tortoise. Supplying these documents early in the National Environmental Policy Act (NEPA) process facilitates better communication between BLM, the Applicant, and the public and increases the ability of BLM and the Applicant to modify the draft mitigation plans to more effectively minimize the impacts including indirect impacts to the tortoise and tortoise habitat. In the past, BLM has not provided this information until the draft or final NEPA documents are prepared and released to the public. The Council views this early availability to the public is an improvement.

We request that BLM continue this practice of providing natural resources information and draft mitigation plans early in the NEPA planning process to the public.

From information provided on the BLM NEPA ePlanning webpage, it appears that BLM plans to prepare an environmental assessment for the proposed project, not an environmental impact statement. The Council requests that the NEPA document include a comprehensive analysis of the direct, indirect, and cumulative impacts from the implementation of all phases of the proposed project to the tortoise and tortoise habitat.

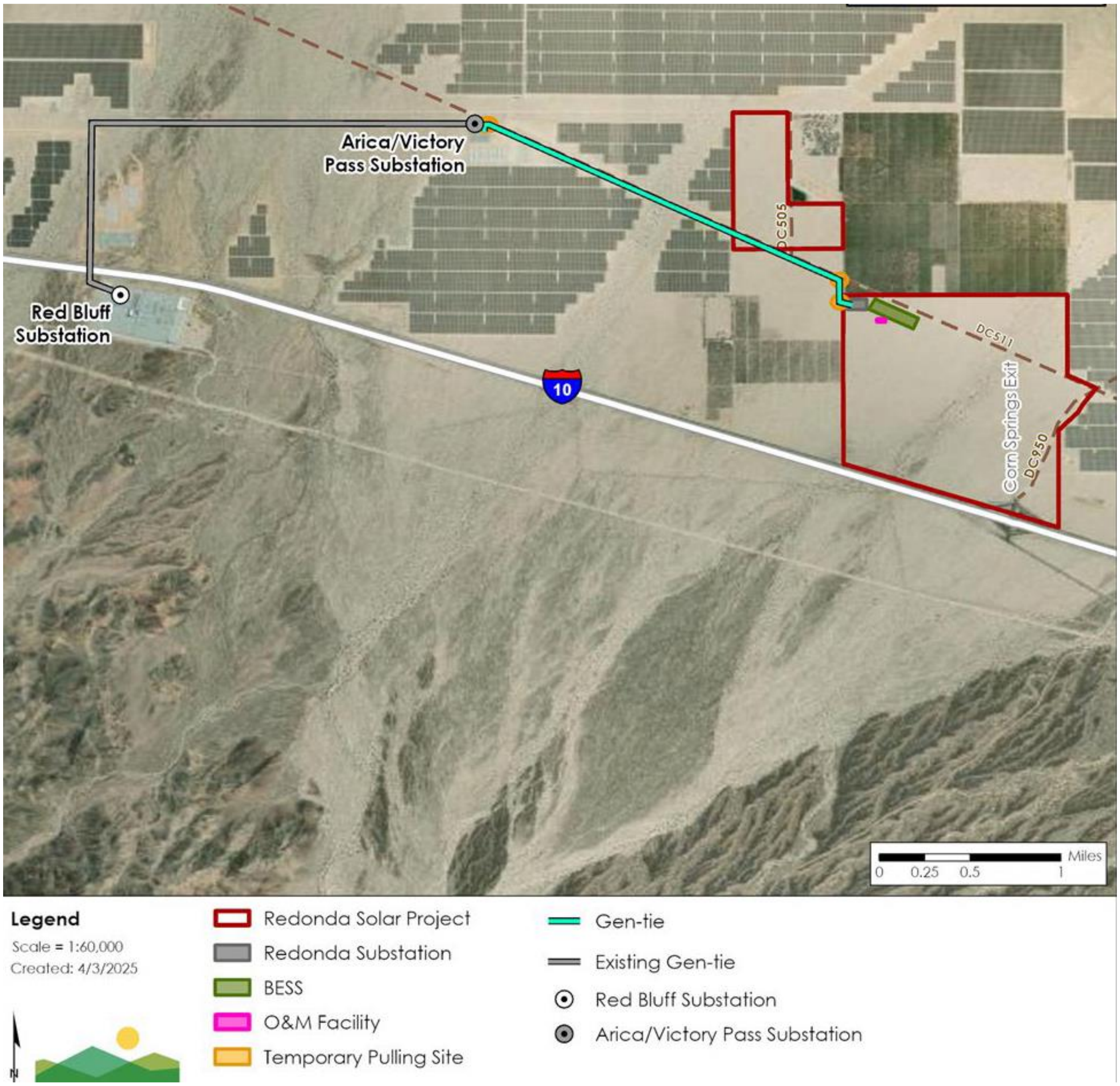


Figure 1. Location of proposed Redonda Solar Project and gen-tie line and nearby development.

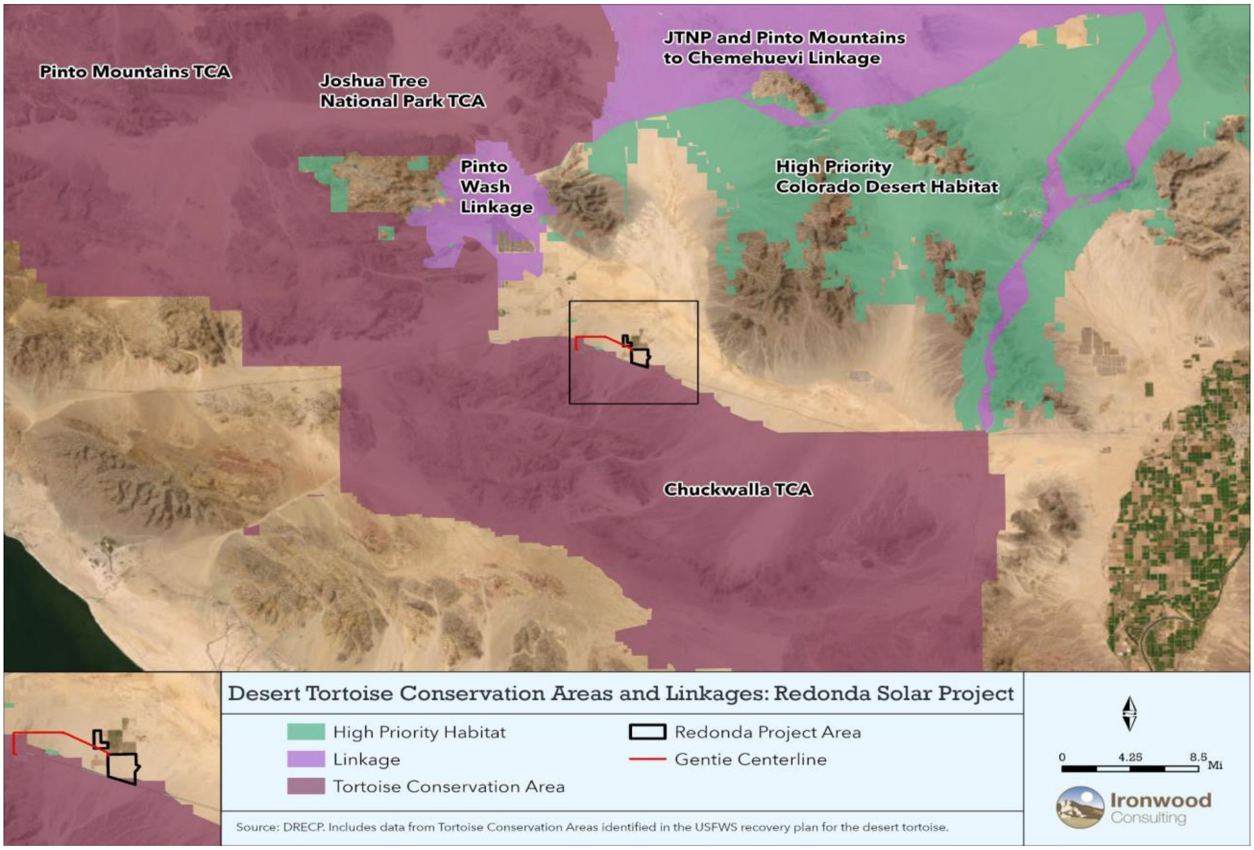


Figure 2. Location of proposed Redonda Solar Project and tortoise critical habitat/Tortoise Conservation Area/BLM Area of Critical Environmental Concern for the Mojave desert tortoise.

The primary reason for the substantial decline of population density, abundance, and recruitment for the tortoise with most population densities below the threshold for population viability (Allison and McLuckie 2018, USFWS 2022) has been from increased mortality caused by indirect impacts from human activities. These include human activities that result in the destruction, degradation and/or fragmentation of tortoise habitat; surface disturbance and introduction of non-native invasive plant species via construction equipment, vehicles, and other sources; replacement of native forbs with high nutritional and water value with low nutritional non-native invasive grasses (Drake et al. 2016); increased occurrence of fire size, intensive, and frequency of human-caused wildfires from fuels provided by non-native invasive plant species (Brooks and Esque 2002); increased predation from substantially increased numbers of predators that utilize subsides of food, water, and nesting locations (Boarman 2003); and increased human access that provides opportunities for vandalism and collecting tortoises for pets. Major sources of surface disturbance include residential, commercial, and industrial development projects and associated roads/highways (such as the proposed project); military training; and off-highway vehicle use (USFWS 2011, Tuma et al. 2016). Consequently, most of our comments on the documents that BLM provided during the public scoping period are about indirect impacts to the tortoise/tortoise habitat from implementation of the proposed project and how BLM and the Applicant should implement activities to avoid or substantially reduce these impacts to tortoises in the Chuckwalla Critical Habitat Unit/TCA.

Redonda Solar Project Plan of Development

A small area of the proposed project is located on private land. In the NEPA document, BLM should discuss how the private portion of the proposed project will be addressed under the Federal Endangered Species Act (FESA). If BLM does not have management authority to enforce the conservation measures in the DRECP and the reasonable and prudent measures and terms and conditions in the applicable biological opinion, the Applicant would need to obtain other authorization to take federally listed species if take is likely to occur as a result of project implementation. Please discuss this issue in the NEPA document and whether BLM will obtain authority to enforce these federal requirements on the project's private lands.

Page 1-15: There is a photograph of a microwave tower that is a three-dimensional lattice pole. From the photograph this pole appears to provide a substrate for common ravens to construct nests. The Council requests that a single pole or monopole be used to provide vertical support for all transmission lines, communication towers, lights, and other features that require vertical support. Please see our comment below under Draft Raven Management Plan regarding subsidies for nests and hyper-predation.

Page 1-16: "Gen-tie poles would be approximately 400-900 feet apart and will likely be steel monopole structures."

Please ensure that monopole structures or similar structures that do not provide nest location subsidies for common ravens are used for gen-tie poles.

Page 1-17: "The O&M area will be equipped with exterior lighting."

Please ensure that the lighting selected and installed does not provide nesting substrates for common ravens.

Pages 1-18 and 1-19: For access roads "Improvements would include removing vegetation to meet the appropriate width of road needed (generally 30 feet wide), contour grading to level and compact the road, low water crossings to stabilize the road in areas where it crosses desert washes or other stabilization in excessively sandy areas, and potentially some use of gravel or other stabilizing material. Grading will be completed in a manner that ensures no obstruction to the movement of desert tortoises across the off-site access roads." The Council appreciates this consideration for tortoise movements but is concerned that the low water crossings through washes may adversely impact the availability of surface water down-gradient from these "improved" wash crossings.

Devitt et al. (2022) reported that "[c]onstruction of roads, transmission lines and utility scale solar photovoltaic facilities can decouple up-gradient washes from down-gradient locations." They reported that the decoupling of the wash system at the solar site "led to a significant decline in soil moisture, canopy level NDVI values and mid-day leaf xylem water potentials." Over time especially combined with climate change, this impact may result in reduced plant reproduction, growth, and survival for plants down-gradient of the decoupling sites including plants not on the project site.

Implementation of any grading or compaction at the proposed project would likely affect existing surface flows such that they may be decoupled or disrupted and the existing surface flows that convey surface water through the project site and farther down-gradient surface flows would be altered. Disruption of existing surface hydrology would likely impede the already slow growth rate of desert perennial vegetation or may result in plant mortality both on the project site and down-gradient.

In addition, when plants die, they release carbon from their roots, stems, and leaves into the atmosphere and contribute to climate change (Devitt et al. 2022). Given the current climate change conditions, there is an increasing need for carbon sequestration, not carbon release, therefore, an increasing need to, as a minimum, maintain native plants and not disrupt the surface hydrology of the project site. These indirect impacts should be analyzed in the NEPA document with respect to impacts on vegetation, wildlife and special status species including the tortoise and the impacts avoided to prevent the degradation/loss of vegetation, wildlife and special status species down-gradient from these roads.

From the information provided in the Plan of Operations and the Biological Resources Technical Report, some of the designated critical habitat for the tortoise/TCA may be down-gradient from the project site (Figure 3). Please ensure that this analysis and mitigation to avoid these impacts to the tortoise/tortoise habitat is included in the NEPA document.

Pages 1-19 and 1-20, Lighting, Facility Power, and Communication Lines: Please ensure that these facilities do not provide nesting substrates for common ravens.

Page 1-22, Fire Protection: “The Applicant would prepare and implement a Fire Protection and Prevention Plan.”

This is a mitigation plan that was not provided by BLM to the public during the public scoping period. The proposed project includes 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 NEPA document include both a Fire Prevention Plan and 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. In addition, if the fire travel to area beyond the project site, the Applicant should be responsible for replacing the functions and values of the natural resources that were damaged or lost to a fire that originated at their facility (e.g., mortality or injury to tortoises and damaged habitats).

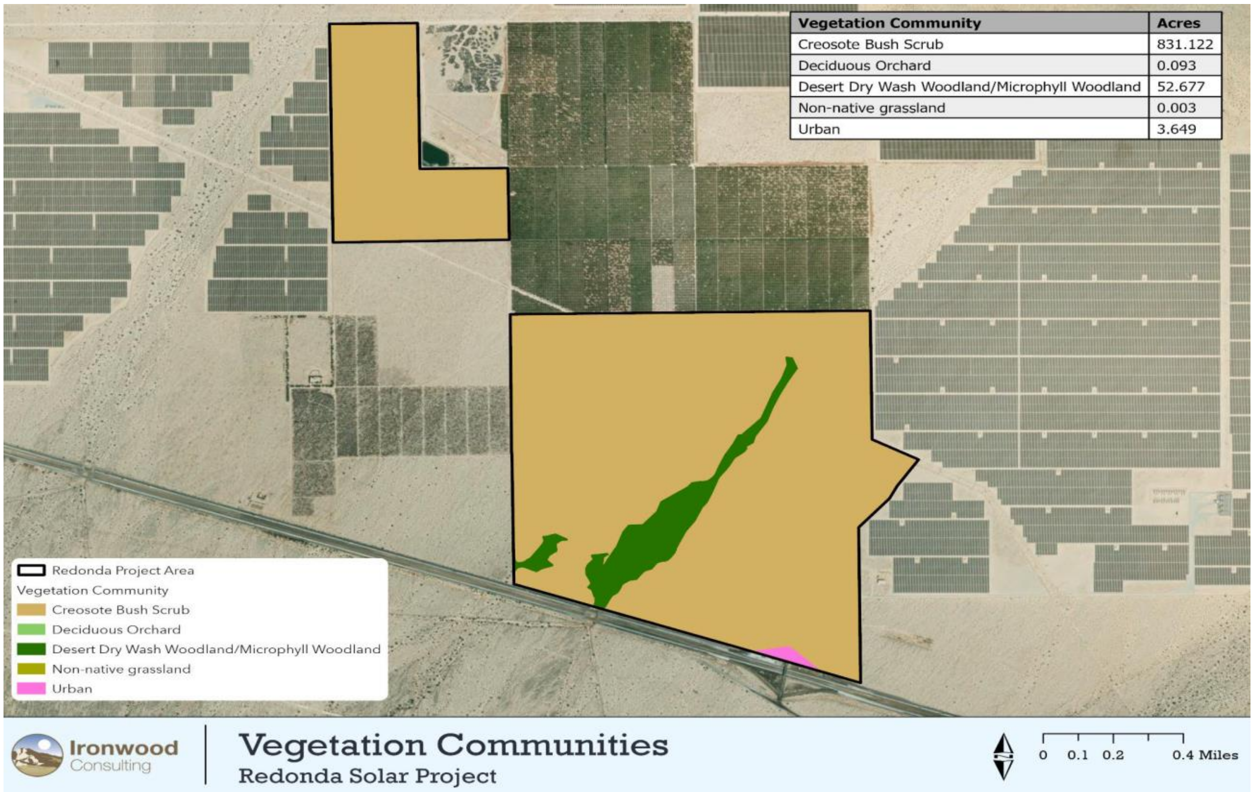


Figure 3. Location of proposed Redonda Solar Project and vegetation communities including dry washes.

Other mitigation plans that should be included with the NEPA document for this solar project but that we were unable to find on the BLM NEPA ePlanning webpage for the proposed project include, but are not limited to, a Tortoise Predator Management Plan (other predators of the tortoise include coyotes and badgers and coyote number have increased from human-provided subsidies), Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, Habitat Compensation Plan that include translocations sites, and Habitat Restoration Plan when the lease is terminated and the project is decommissioned. Regarding the last mitigation plan on page 1-23, the Applicant mentions that they would address operational and post construction vegetation management including management of native species, and control of non-native and noxious weeds as part of a BLM approved Site Restoration Plan. However, we found no mention of implementing a site restoration plan following the decommissioning of the project. Please include these mitigation plans with the draft NEPA document for public review and demonstrate how they comply with the Federal Land Policy and Management Act (FLPMA). Please see our comments below on the Draft Vegetation Management Plan, Success Criteria below.

Page 2-2: "All tortoises found would receive health assessments according to the guidelines in the USFWS's [U.S. Fish and Wildlife Service's] 2016 Health Assessment Procedures for the Mojave Desert Tortoise (*Gopherus agassizii*): A Handbook Pertinent to Translocation (USFWS, 2016)."

This document was revised in 2019 and the Desert Tortoise Recovery Office (DTRO) may have recently revised the 2019 edition. Please coordinate with the DTRO to ensure that the most recent health assessment methods would be implemented.

BLM should ensure that it complies with its policies and as discussed in our comments below under the Draft Vegetation Resources Management Plan, compliance with the Federal Land Policy and Management Act**.** For example, in the draft NEPA document, BLM should clearly demonstrate how it is complying with BLM's Mitigation Policy, Handbook and Manual (BLM 2021a, 2021b, 2021c) with respect to mitigating the direct, indirect, and cumulative impacts to the tortoise and tortoise habitat. In section 6.2 of the BLM Mitigation Manual, BLM says "[a]mong the reasons that the BLM might deny a discretionary public land use are the inability to mitigate effectively the reasonably foreseeable impacts from a proposed public land use." This wording suggests that for BLM to approve a discretionary land use, BLM should have sufficient information and assurances that an applicant will mitigate effectively the reasonably foreseeable impacts from a proposed land use. The Council requests that in the NEPA document for the proposed project that the Applicant provide sufficient information and assurances that they will mitigate effectively the reasonably foreseeable impacts from implementation of the project. In addition, BLM should demonstrate compliance with its Mitigation Handbook.

Another policy that BLM should clearly show compliance with for the implementation of the proposed project is the recently revised Special Status Species Management Manual (BLM 2024). For the tortoise, BLM should demonstrate how they are contributing to the objectives to "incorporate proactive recovery efforts into proposed action" and are using "science and adaptive management to advance conservation and recovery."

Draft Desert Tortoise Protection and Translocation Plan (Translocation Plan)

<u>Page 4, 1.3 Management Approach and throughout the documents</u>: "The intent of this Plan is to ensure that all ground-disturbing activities would minimize the take of desert tortoise . . ."

We remind BLM that the section 7(a)(4)(C)(i) and (ii) of the Federal Endangered Species Act (FESA) directs federal agencies to minimize and mitigate *the impacts of* the taking, not just the taking. We recommend that all documents related to this project be revised to include this statutory requirement and appropriate actions to ensure compliance with the FESA. For example, if the biological opinion did not analyze the impacts of the taking to the survival and recovery of the tortoise including indirect impacts, section 7 consultation may need to be reinitiated.

<u>Pages 5 and 6, 1.4 Mitigation Requirements</u>: Will any monitoring of relocated tortoises at their new locations or of resident tortoises before and after relocation occurs?

Please see our comments below under page 11, Control Site.

<u>Page 8, 1.6 Exclusion Fencing</u>: "Fencing will include a desert tortoise exclusion gate and/or grating."

Please contact the DTRO regarding the use of grating at roads to prevent tortoises from entering a site, because we believe their policy may have changed regarding the use of grating.

Page 9, 1.6.1 Linear Components: "Work activities will be stopped by the biological monitor if any target species or other special-status species, such as desert tortoise, enters the work area."

This wording suggests that a tortoise or other special status species must be observed walking onto the work area before work would be stopped. We suggest that this wording be revised to read "Work activities will be stopped by the biological monitor if any target species or other special-status species, such as desert tortoise, enters the work area *or is observed in the work area*."

Page 10, 2.1 Over the Fence Translocation: "The Applicant will identify, in advance, suitable release areas within the action area, but no more than 300 meters away (generally within existing home range)."

From the information provided by BLM, the proposed project is bordered by existing solar projects, agricultural development, and Interstate 10 (I-10). Please see our comments about the suitability of sites for translocations adjacent to solar fields below under Page 10, "2.2 Recipient Site." Consequently, there appears to be no suitable location within 300 meters of the locations where a tortoise may be found that would provide suitable habitat for a lifetime home range for a tortoise for the fenced solar facilities. We recommend that information that analyzes the likelihood of this option being successfully implemented and providing a high probability of long-term survival for the tortoise be added to this document.

In addition, moving tortoises to areas adjacent to a solar facility may not provide the habitat requirements needed by tortoises for survival. Utility-scale PV facilities have significant impacts on local air and ground temperatures. Utility-scale PV solar projects produce increased heat. PV panels create a solid black barrier between the ground and the atmosphere, which alters heat flux dynamics by restricting movement of warm air up into the atmosphere similar to a greenhouse effect (Barron-Gafford et al. 2016). PV solar panels raise ambient air temperatures by as much as 3-4 degrees C in the summer, creating a "Photovoltaic Heat Island Effect." A PV "heat island" effect refers to the temperatures in and around PV solar facilities increasing from the ambient temperature due to replacement of native land cover with solar panels that absorb heat. This is similar to the "urban heat island" effect, where native cover is replaced with pavement and concrete buildings.

PV solar panels convert solar radiation into heat, which can alter the air flow, energy flux dynamics, and temperatures near the panels (Fthenakis and Yu, 2013, Barron-Gafford et al. 2016). Soils, vegetation, and wildlife may be affected by such changes and increases in temperature in and around utility-scale solar facilities.

Devitt et al. (2022) reported that large photo voltaic facilities similar to the proposed Redonda Solar Project raised the air and soil temperatures not only on the project site but significant heat was moving from the solar facility into the plant community, especially in the first 200–400 m (656 to 1,312 feet) off the project site. This rise in temperature also impacts the availability of soil moisture and the ability of burrowing animals such as the tortoise in nearby areas to reduce their body temperatures at night to conserve energy and moisture. The impacts of elevated soil and air temperatures to areas adjacent to the proposed project should be analyzed in the NEPA document including impacts to the survival, growth, and recruitment of native vegetation if this area is to be managed for wildlife use including use by tortoises.

Photovoltaic facilities can also alter the energy balance by generating heat (Broadbent et al. 2019). Nighttime temperatures over photovoltaic plants are regularly 3–4 degrees C warmer than over wildlands, representing a heat island effect (Devitt et al. 2022). As the warmer air was displaced down gradient, the temperature front advanced into the creosote—bursage plant community with values 5 to 8 degrees C warmer at the 1-meter height.

Similarly, Broadbent et al. (2019) found increased temperatures during the day, with an average 1.3 degrees C increase in air temperature in the solar field at a height of 1.5 meters (5 feet). The nighttime soil temperatures at the solar site were warmer than the reference site. The study demonstrated that shading from solar panels causes warmer soil temperatures at night.

Barron-Gafford et al. (2016) monitored three study sites (natural desert ecosystem, traditional built environment (parking lot with commercial buildings), and PV power plant), measuring air temperature at 2.5 meters (8 feet) off the ground. The average annual air temperature was greater at the PV power plant, increasing 2.5 degrees C during the day. Contrary to other studies, a delayed cooling of ambient temperatures was detected in the evenings, with average annual midnight temperatures increasing 3.5 degrees C, compared with the natural desert ecosystem. The authors hypothesized that by removing vegetation, heat-dissipating transpiration from vegetation is decreased, and compared to natural systems, the greater amount of exposed ground surfaces absorbs more solar radiation during the day, which may increase soil temperatures (Barron-Gafford et al. 2016). During the night, stored heat is reradiated, where warming under the panels may be due to the heat trapping of reradiated heat flux (Barron-Gafford et al. 2016).

Devitt (2022) evaluated a large solar facility in the Mojave Desert and the effect it had on adjacent down-gradient creosote communities. The study monitored changes in soil and plant water status over a 900-meter transect where a built service road resulted in decoupling of up-gradient washes from down-gradient locations leading to a decline in soil water in storage. Similar to other studies, air temperatures were significantly warmer near the solar facility compared to a reference point. Consistent with Barron-Gafford et al. (2016), night temperatures were found to be higher closest to the solar facility.

The results of these studies indicate that PV solar projects increase air temperatures in the vicinity of the solar field, change soil temperatures, and reduce soil moisture.

How would these heat island effects affect the tortoise? Slade (2023) found that solar arrays significantly altered the surface-level thermal environment for tortoises and other reptilian species. Beside increased daytime temperatures when compared to undisturbed desert areas, Slade (2023) reported that solar arrays create a shade-warming effect; artificial shade under solar panels have significantly greater temperatures than natural shade. In addition, both fixed, shorter and the taller, sun-tracking panels of solar arrays exhibited warmer nighttime air temperatures than undisturbed sites (Slade 2023). The shade-warming effect from solar panels was most pronounced during the hottest, most thermally challenging months for reptiles.

These altered thermal environments could have unintended physiological and behavioral consequences for ectotherms such as the tortoise, given the tortoise's innate dependence on appropriate environmental temperatures for physiological function and activity. These negative consequences include extended exposure times of clutches of eggs at temperatures above thermal maximum for embryo development resulting in reproductive failure, an upward shift in their resting body temperatures that increase metabolic expenditure and water loss, negatively affecting energy balance (Nagy and Medica 1986, Sowell 2001) and therefore survival, among other physiological and behavioral concerns. Tortoises are already living on the upper edge of their thermal limits and could be pushed closer toward extinction by an additional heating effect created by utility-scale solar arrays (Sinervo 2014). Thus, allowing federally protected species such as the tortoise access to certain areas inside solar arrays post-construction in the hopes that they can persist and move through their native home ranges beneath a newly-installed canopy of solar panels appears to be problematic based on the results of Slade's (2023) research. Until demonstrated otherwise, this treatment of solar projects as providing possible value/mitigation to the tortoise for movement and other life history requirements should be considered experimental and not mitigation for the impacts to the tortoise and tortoise habitat.

Desert tortoises are herbivores with low and narrow thermal tolerance ranges relative to other desert reptiles (Berry et al. 2021, Zimmerman et al. 1994). As their environment warms and drought periods increase, their ability to meet their increasing energetic requirements may be thwarted by decreased periods of potential activity time (e.g., reduced time for foraging) and lack of plant food and water availability, pushing them to the brink of their physiological limits (Lovich and Ennen 2011). Under current climate change scenarios without a reduction in carbon dioxide emissions, models predict that Mojave desert tortoises could approach extinction by 2080. When a 0.4 to 0.75 degrees C increase in air temperatures created by a photovoltaic heat island is included, these models indicate an even more rapid decline (Slade 2023).

In addition, Slade (2023) reported that "species richness is lowest in a solar array and increases with distance into natural desert habitat" and "solar arrays decrease vertebrate species richness on their edge habitats." Thus "solar arrays have a deleterious effect on species richness, with extremely few species detected compared to adjacent and control habitats."

Similar changes to the below-ground thermal environment at a solar array could be similarly problematic to the tortoise and other wildlife species. Slade (2023) reported that soil temperatures directly influence the body temperatures of burrowing reptiles (e.g., desert tortoise.). Any increase in underground temperatures could heighten water loss and resting metabolic rates for dormant reptiles and compromise their fitness and survival. This impact would be more severe for hatchling and juvenile tortoises than adults because of their small body size and larger surface to volume ratio. Thus, recruitment of young tortoises into the population would be adversely affected.

Desert tortoises, like most other turtles, exhibit temperature-dependent sex determination. Soil temperatures directly influence the incubation temperatures of tortoise nests, which affect hatchling survival and sex ratios (Slade 2023). Proper soil temperatures during incubation are critical to the survival of tortoises. With warmer ambient and soil temperatures from solar arrays, eggs laid in nests located in heat island areas of solar arrays would likely result in more hatchling female tortoises and fewer hatchling male tortoises. In addition, long-term exposure to higher temperatures results in deformities and high levels of clutch mortality (Spotila et al. 1994). Climate change would exacerbate this heat island impact on clutch survival and sex determination. Because desert tortoises depend on the suitability and reliability of their thermal environment, this makes them extremely vulnerable to temperature increases imposed by climate change, a photovoltaic heat island, or both (Slade 2023).

Parandhaman (2023) reported that temperature, precipitation, and soil conditions are very important factors in determining habitat suitability for the desert tortoise

Karban et al. (2024) described wildlife responses to utility-scale solar energy disturbance with three response strategies: avoid, tolerate, and exploit. Avoidant species avoid the disturbance, partially or entirely, to forestall negative effects of utility-scale solar energy disturbance. These species are not persistent in solar energy areas and decline if disturbance cannot be avoided. Avoidant wildlife typically has narrow or inflexible ecological niches that make them vulnerable to disturbance, such as specific habitat requirements and specialized diets. Karban classified tortoises as disturbance avoiders, possessing a number of traits (e.g., diet of diverse forb species, susceptibility to road mortality) that make them vulnerable to disturbance (Karban et al. 2024).

Based on these studies, impacts to vegetation, soils, and tortoises at solar facilities related to the PV heat island effect include increased air temperatures in the vicinity of the solar field during the day and at night as well as higher soil temperatures. Increased temperatures would impact the species composition of vegetation and wildlife at and in the vicinity of the solar facility, where temperatures could be too high and soil moisture too low for certain plant and animal species, including the tortoise to persist. Wildlife species would be displaced as they are forced to vacate the area of increased temperatures. Changes in surface hydrology at and down-gradient from features of utility scale PV solar projects may reduce water availability for vegetation communities, and increases or decreases in soil temperatures could affect persistence of vegetation and habitat suitability for burrowing wildlife forcing some species to avoid solar facilities. Consequently, plans to move tortoises over the fence of up to 300 meters would place tortoises within the areas experiencing heat island effects and likely adversely affect their behavior, physiology, reproduction, and forage availability, that is, their ability to survive. These impacts to the tortoise should be analyzed in the NEPA document. Based on the results of these studies, the Council recommends not translocating tortoises to areas experiencing heat island effects from utility-scale solar PV projects. Thus, the proposed "over the fence translocations" of tortoises up to 300 meters as described in the USFWS's Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance Translocation should not occur using this recent scientific information published after issuance of this guidance.

Page 10, 2.1 Over the Fence Translocation: "Any tortoise that is moved out of harm's way will be monitored visually and tracked through marking."

Please add information on how long and how frequently this monitoring would occur for each tortoise that is moved "over the fence" and whether USFWS and CDFW would be promptly notified if any problems occur (e.g., mortality, injury, evidence of predation, unusual behavior, etc.).

Page 10, 2.2 Recipient Site: "If more tortoises are observed than are expected, the Applicant will consult with BLM, USFWS, and CDFW and use the most current information to identify a suitable translocation site."

We were unable to locate in this document the expected number of tortoises to occur on site. In the Biological Resources Technical Report (Ironwood Consulting 2025), the authors state that using the Nussear et al. (2009) model for the probability of an area containing tortoise habitat, "[t]he majority of the Project site has a predicted occupancy level of 0.4 and does not meet the threshold for suitable desert tortoise habitat (value = 0.5)." "No live desert tortoises or active signs were observed on the Project site – likelihood of desert tortoise occurring would be low to moderate due to the lack of sign and modelling." In addition, page 51 of the Biological Resources Technical Report displays a map of tortoise habitat probabilities for the project site and nearby areas. This map indicates that tortoise habitat with a rating of 0.5 or greater for the predicted occupancy level is along the southern boundary of the southern solar field adjacent to I-10 and along the western portion of the gen-tie line. In addition, the map of habitat values for the tortoise combined with the existing land uses/development next to/near the project site indicates that the only potential locations to place tortoises "over the fence" are along the west portion of the gen-tie line (Figure 4). Otherwise, the next closest location would be south of I-10 in tortoise critical habitat. Moving tortoises south of I-10 would likely place tortoises outside of their home range because of the long-term barrier created by I-10.

Page 11, Control Site: "Translocating a small number of tortoise will negligibly increase the density of a recipient site and will minimally disrupt resident-tortoise social dynamics and contact rates (USFWS 2020). Monitoring a small number does not provide a robust analysis of tortoise needed to evaluate translocation effectiveness, so identifying a control site is unnecessary in this situation."

From a statistical perspective, these statements are correct. However, the proposed project is in a DFA with other solar projects located nearby and in tortoise habitat (Figure 5). If tortoises are translocated from several solar projects to the same recipient site, then we expect that USFWS would require BLM to conduct monitoring. Therefore, we request that this document provide relevant information on this issue, that is, information on the number of tortoises that have been removed from this DFA and the locations(s) where they have been moved. If the recipient locations are the same or adjacent and the number of tortoises sufficient to provide statistical analysis, then we request that the translocation plan be amended to require monitoring of the resident and translocated tortoises and tortoises at a control site.

Page 14, 4.1 Seasonal and Temperature Constraints: This section only mentions that tortoise would be released in the spring (April and May) or late summer-fall (September) and when temperatures were within certain parameters. This section does incorporate the findings of Mack and Berry (2023), Hromada et al. (2023), Henen (2024) and others. Mack and Berry (2023) monitored translocated tortoise for 10 years. They reported that 17.7 percent of the tortoises survived, 65.8 percent died, 15.2 percent were missing, and 1.3 percent were removed from the study because they returned to the original site. Mortality was high during the first three years – more than 50 percent of the tortoises died primarily from predation. A similar result occurred from translocation of tortoise from the Yellow Pine Solar Project. Thereafter, mortality declined but remained high. Although the translocation efforts by the Marine Corps at Twentynine Palms considered some of these factors, tortoise mortality from predation was high (Henen 2024). To minimize mortality to small tortoises, these animals have been brought into headstart facilities. The Marine Corps continues to monitor the translocated tortoises.

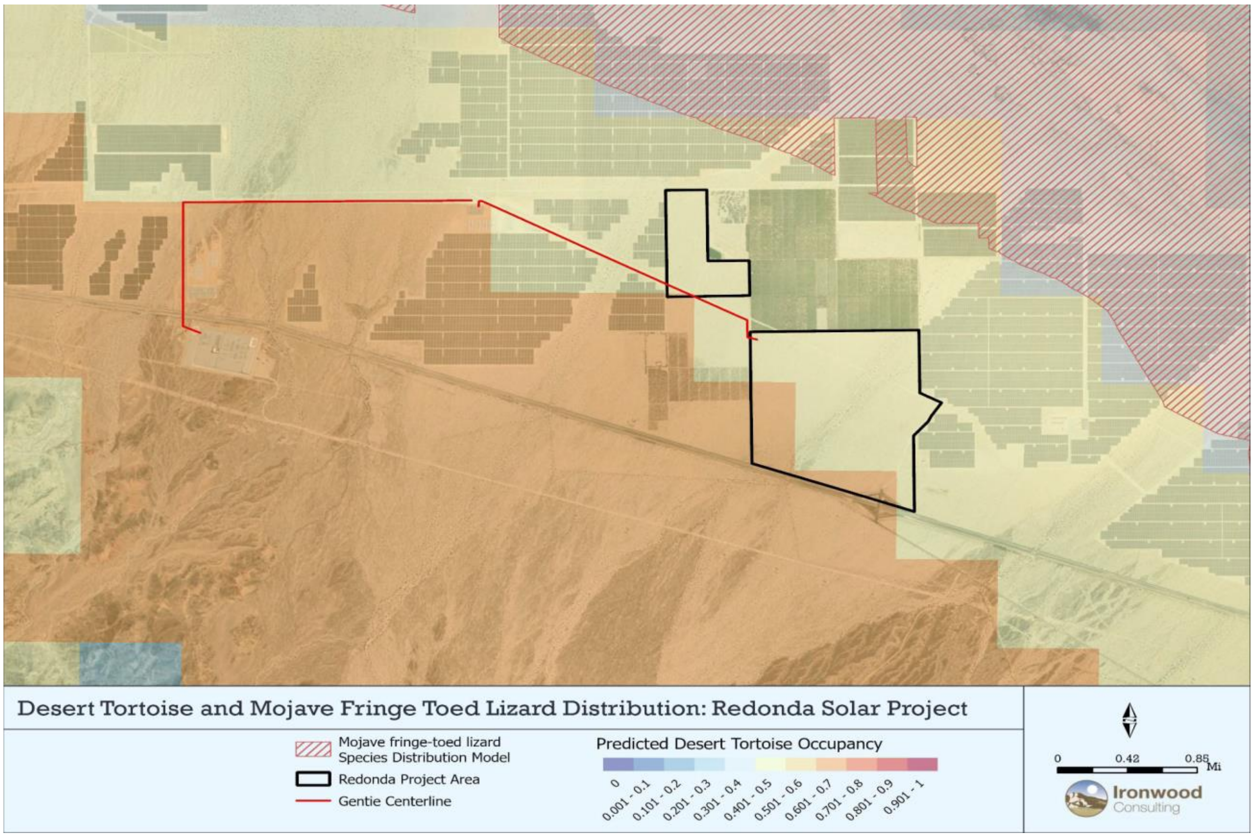


Figure 4. Location of proposed Redonda Solar Project and predicted tortoise occupancy of solar project lands and nearby areas.

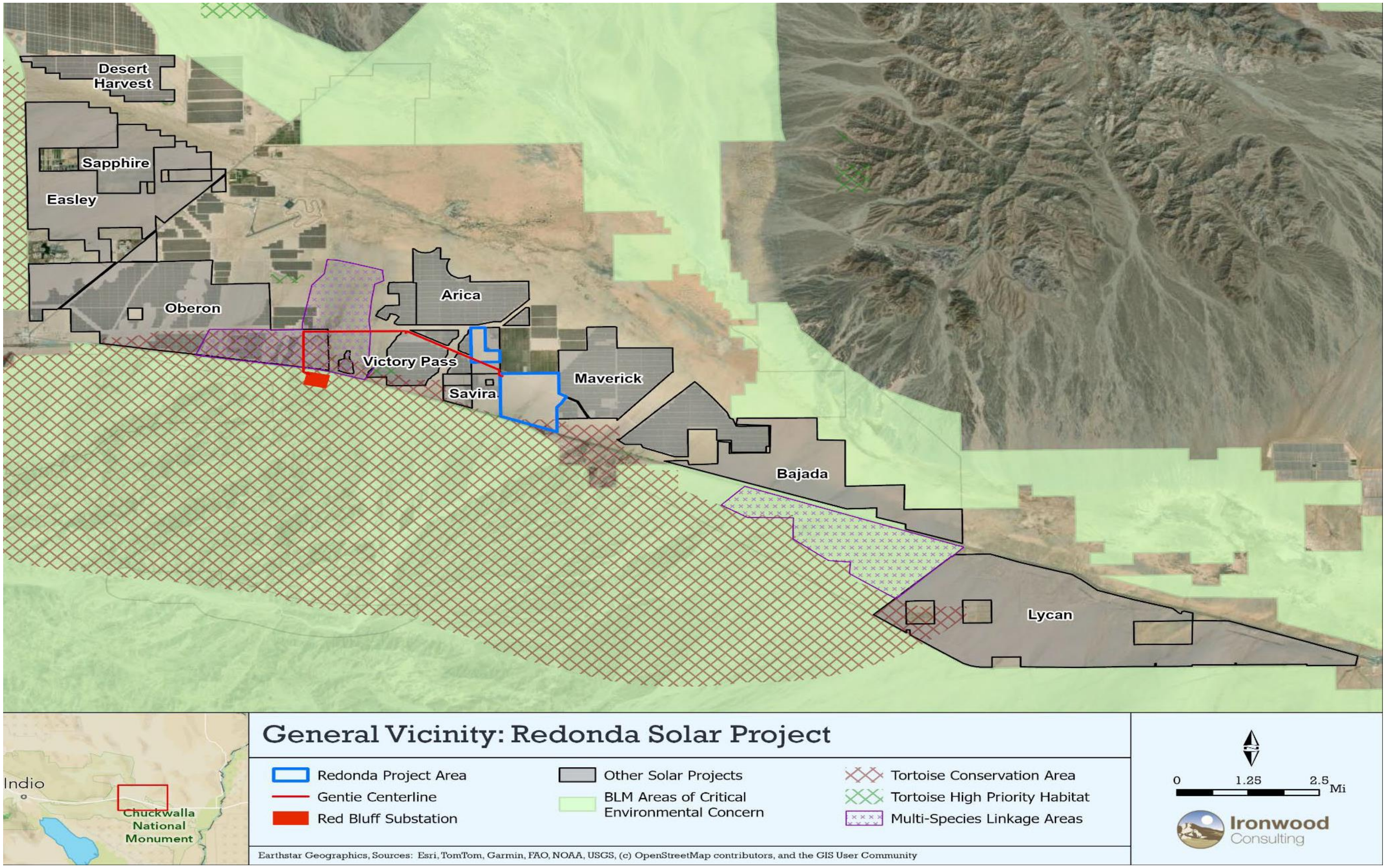


Figure 5. Locations of proposed Redonda Solar Project and other solar projects in this BLM Development Focus Area.

In addition, Mulder et al. (2017) studied translocated tortoises during the first four years and learned that male translocated tortoises did not produce offspring with resident or translocated female tortoises. This absence of successful mating at the translocation site is concerning, because it means the genes from the male translocated tortoises were not added to the population at the translocation site. Thus, the perceived benefits of genetic diversity from translocation are not fully realized.

In another study Dickson et al. (2019) reported that several factors influence the survival of translocated tortoises. These included releasing tortoises within 500 m of their original home range, maximizing hydration (e.g., by soaking or offering drinking water) of individual tortoises just prior to their release, and not releasing tortoise during drought conditions.

The "success" of translocation depends on a myriad of factors including the absence of drought, the ability of the translocation area to support additional tortoises (e.g., availability of native nutritious forage (Drake et al. 2016, etc.), social interactions between resident and translocated tortoises (Sullivan 2015, Mulder et al. 2017, etc.), the distance translocated tortoises are moved (Mack and Berry 2023), effective management of translocation lands to eliminate human-caused threats (Berry et al. 2014, Hromada et al. 2023), the time of year tortoises are moved (Mack and Berry 2023), their physiological/hydration state (Field et al. 2018, USFWS 2019), and elevated predation (Mack and Berry 2023, Henen 2024, etc.). Translocation sites should not be managed for multiple use or any use that does not provide for the conservation of the tortoise/tortoise habitat (Berry et al. 2014).

At a minimum, a translocation plan for the tortoise should address the following questions and provide effective solutions:

- Where is the translocation site and what are the adjacent land ownership and uses (please include a map)?
- How far is the translocation site from the project area [translocation sites located close to the site from which tortoises are removed appear to contribute to higher tortoise survival than those that are farther away (Mack and Berry 2023)]?
- Who will manage the translocation site?
- How will it be managed because it is a mitigation site and no longer a multiple use site?
- Will tortoises be released in years with less than average rainfall?
- What time of year will tortoises be released?
- What are the results of tortoise surveys at the translocation site and of native vegetation surveys including annual vegetation at the translocation site?
- Are non-native invasive annual plants species present and if so, are they abundant?
- What other activities will be allowed to occur at the translocation site and adjacent areas (e.g., mining, grazing, OHV access, utility access, other activities that result in surface disturbance)?
- How will management of the translocation site, a mitigation site, be implemented and effectively enforced?
- How and when will monitoring occur (monitoring schedule) and what environmental parameters besides tortoises will be monitored?
- How long will tortoises and environmental parameters be monitored – monitoring should occur for multiple years?

- When monitoring indicates a change in management is needed, when will this change occur (adaptive management)?
- Who will fund the translocation plan and for how long?
- Will the translocation plan include management of tortoise predators?
- How will small tortoises be managed and monitored?

The Council contends the results of these studies and BLM's past inability to secure mitigation lands that are properly managed for the long-term management of translocation sites indicate that translocation of Mojave desert tortoises to date has not been an effective, successful mitigation method. Thus, avoidance of impacts to tortoises/tortoise habitat should be the preferred solution when projects that may result in the loss of tortoises are proposed. Translocation should be a last mitigation choice, not the first one.

The Council contends the translocation site is a mitigation site, and BLM is obligated to remove it from multiple use management, allow only uses that are documented to be compatible with tortoise conservation. In addition, it is unlikely that the Project site will be restored to tortoise habitat in the future. Because of this permanent loss of tortoise habitat, the translocation site should be managed in perpetuity for the tortoise.

Please revise the Translocation Plan to include a discussion of all these factors and how they will be implemented to ensure a high level of translocation success.

<u>Page 22, Operations and Maintenance Phase</u>: "If the tortoise cannot be passively relocated, it can be moved out of harm's way or translocated from within the fence line by an approved Authorized Biologist."

We presume this means that the tortoise exclusion fence will be removed following completion of the construction phase. Otherwise, this sentence suggests that that the tortoise exclusion fence was not maintained during the operations and maintenance phase and tortoises entered the project site. Please clarify.

<u>Page 25, 6 Adaptive Management</u>: "Adaptive management may be employed whenever unexpected issues occur and could happen at any time during the Project."

We request that this sentence be revised to say "Adaptive management <u>*will*</u> be employed whenever unexpected issues occur and could happen at any time during the Project."

Draft Raven Management Plan

<u>Page 3, Regulatory Background</u>: "This Raven Management Plan conforms to the U.S. Fish and Wildlife Service (USFWS) guidance for raven management planning (USFWS, 2010)." We were unable to find in the Raven Management Plan a commitment to contribute to the raven management fund that is held by the National Fish and Wildlife Foundation. Please add this requirement to the Raven Management Plan.

Page 9, 3 Potential Redonda Project Subsidies and Subsidy Control Measures, Wastewater: "The Applicant's Lead Biologist and Biological Monitors will be directed to note any standing water around project facilities, for inclusion in regular monitoring reports."

We request that wording be added that when standing water is reported, the source would be identified and the presence of standing water eliminated.

Page 9, Potential Redonda Project Subsidies and Subsidy Control Measures, Nesting, Roosting, and Perching Sites: "The Applicant will coordinate with CDFW and USFWS to remove inactive raven nests or other suitable stick nests consistent with gen-tie operation safety . . ."

This statement should say that inactive raven nests anywhere on the project site will be removed. Please add the following measures: Only monopoles will be used for gen-tie and other transmission and communication lines. Inactive raven nests will be removed. Oiling of eggs in active raven nests will be implemented if USFWS or CDFW determine this measure is needed at any time during the life of the project.

Page 10, 4.2.1 Monitoring Tasks: Food and Water Subsidies, Daily construction and decommissioning monitoring: This section describes the frequency of monitoring for raven subsidies provide by anthropogenic activities for the construction and decommissioning phases of the proposed project. Please expand this section to include monitoring activities that would occur during the restoration phase.

At the end of this section, we found one sentence that discusses monitoring during the operations and maintenance phase of the proposed project for raven subsidies. Please expand this section to include the activities that will be conducted during this phase of the proposed project and the frequency of implementation. Perhaps the discussion of monitoring and appropriate follow-up actions retarding raven subsidies and raven occurrences should occur under separate headings for the operations and maintenance phase and the restoration phase.

Page 11, Monitoring Tasks: Raven Nesting or Nest Availability, Nest Monitoring: "Project biologists will complete nest searches of Project facilities and within an [sic] up to 0.25-mile radius as part of normal site maintenance and line patrols of the gen-tie line. A 0.25-mile radius would include nearby raven nests that, although not within the Project footprint, could have impacts to desert tortoise within the Project footprint."

We found no reference to a relevant journal article that supported the 0.25-mile radius distance for monitoring for raven nests. Holcomb et al. (2021) reported that "desert tortoise juveniles in habitats within 1.72 km of the nearest previously active raven nest may experience mortality in excess of the desert tortoise's annual mortality threshold of 0.23." Applying the results of this research to the Raven Management Plan would mean that monitoring for raven nests should occur throughout the project facilities and 1.72 km or 1.07 miles from the project boundary. The proposed project is less than 1 mile from the Chuckwalla critical habitat unit for the tortoise/Chuckwalla TCA.

Please revise the Raven Management Plan to complete nest searches of Project facilities and within and out to a 1.0 mile radius as part of the normal site maintenance and line patrols of the gen-tie line.

Page 13, Adaptive Management: "If raven monitoring data indicate a clear increase in local raven nesting activity attributed to the Project, then the Applicant and its Lead Biologist will confer with the BLM, CDFW, and USFWS to develop and implement further raven control measures."

Raven predation on tortoises (and other species of wildlife is not limited to nesting ravens. Holcomb et al. (2021) reported "the need to manage both hyper- and spillover-predation and their combined effects in tandem to restore viable desert tortoise–raven conflict levels." "Increased predation pressure by breeding ravens as an indirect effect of anthropogenic subsidies has been referred to as "hyper-predation" (Smith and Quin 1996, Oro et al. 2013, Coates et al. 2020a)." "Non-breeding ravens can also be subsidized by anthropogenic food and water sources and may move into surrounding undeveloped areas and encounter sensitive prey, resulting in "spillover-predation (Kristan and Boarman 2003)" that affects the tortoise (Holcomb et al. 2021). Thus, the Raven Management Plan should include monitoring of both breeding and nonbreeding ravens and both should be included in the adaptive management section of the Raven Management Plan. Please revise the Raven Management Plan to make these changes.

Page 13, Education: Education of workers and contractors is an important component of this Plan. The focus of the Worker Environmental Awareness Program (WEAP) appears to be focused on food and water subsidies. We request that the WEAP be expanded and include that workers and contractors be educated about how to identify potential raven nests and report their information to the Lead Biologist and Authorized Biologist promptly. This information will be verified promptly and if confirmed to be a raven nest will be reported promptly to USFWS and CDFW and appropriate action taken to remove the nest at the appropriate time.

Draft Vegetation Resources Management Plan

Page 3, Purpose: The Draft Vegetation Resources Management Plan "addresses the revegetation of sites to be temporarily disturbed during construction or other Project activities; salvage of native cactus from BLM-administered lands prior to construction; and on-site vegetation management during Project operation and maintenance (O&M)."

This Draft Vegetation Resources Management Plan does not include information on restoration of the project site following decommissioning. Consequently, we request that a vegetation restoration plan will be included with the draft NEPA document for the restoration phase of the proposed project following the decommissioning phase.

Page 9, Site Preparation: This section discusses soil preparation but is limited to only addressing soil compaction. Other factors such as soil moisture and biological components of soils are critically important to the survival of native desert plants and successful implementation of efforts to restore native desert vegetation.

We request that this section be revised to discuss the impacts of the proposed project at temporary disturbance sites to soil resources including the physical (e.g., change in compaction, wind erosion, water erosion, organic matter, etc.), chemical (e.g., soil moisture content, etc.), and biological (e.g., soil crusts, subsurface soil biota (e.g., arbuscular mycorrhizal fungi (AMF), etc.) components of the soils in the project area. For compaction, there should be a discussion on how compaction from construction activities affects the chemical and biological properties of soils and how these effects would be corrected.

This section should discuss the effectiveness of mitigation that would be implemented such as topsoil removal, storage, and reuse; implementation of measures to eliminate water and wind erosion including inoculation of soils with soil crusts and AMF, etc. to substantially improve the success of revegetation efforts. The importance of the biological components of desert soils in the establishing/restoring native desert vegetation is documented in Belnap 1993, Belnap et al. 2008, Hernandez et al. 2023 and Chavez-Gonzalez et al. 2024. Please add this information to the Draft Vegetation Resources Management Plan an incorporate it into the site preparation methods.

Pages 12 and 13, Success Criteria: The Draft Vegetation Resources Management Plan sets success criteria as follows:

- Total vegetation cover of the temporary impact sites, including herbaceous and woody species, will be no less than 50 percent of the total vegetation cover of nearby comparable sites
- Cover and density of non-native plant species within the temporarily disturbed areas will be no more than 25 percent of total cover or no more than the cover and density in comparable adjacent lands

The Council requests that the Draft Management Plan explain why for some public lands, undue degradation is not allowed and the required level of restoration effort is 100% (e.g., National Conservation Areas), while for other public lands undue degradation of lesser amounts is acceptable. Our understanding is that the FLPMA requires BLM to take any action necessary to prevent unnecessary or undue degradation of all public lands managed by the BLM. Consequently, we believe that the Applicant of this proposed project should be required to meet the 100% designation for restoration and BLM should revise this “standard” to comply with FLPMA. This understanding also applies to the percent set for non-native plant species. We found no information to support the 25 percent or fewer total cover of plants for the revegetated sites. In addition to FLPMA, BLM is also directed under other authorities, such as Executive Order 13112 on Invasive Plant Species, that directs BLM to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species. The Draft Vegetation Management Plan should explain how its methods and success criteria are complying with these directives.

Pages 13 and 14, Monitoring, Remediation, and Reporting: “Each temporarily disturbed site will be quantitatively monitored annually to evaluate success based on the success criteria stated above. Monitoring will continue for a period of no less than three (3) years or up to five (5) years if the success criteria have not been achieved after three years.”

After severe disturbance, desert soils require long periods to recover naturally (Chiquoine et al. 2016). For example, for biological soil crusts, Belnap (2001) reported recovery rates ranging from 14 to 50 years depending on the species comprising the soil crust. Chiquoine et al. (2016) reported that for soil crusts composed of lichens or mosses, recovery time is several decades to centuries depending on the availability of the propagules. Consequently, without assistance to facilitate natural restoration of biological soil crusts, successful restoration will take much longer than the 3 to 5 years of monitoring that the Draft Vegetation Management Plan requires.

For restoration of native perennial vegetation, Abella (2010) reported recovery of vegetation lost from surface disturbance would take 200 years, and disturbances can leave scars in the desert visible for multiple human generations. We expect that this time would be reduced because of activities conducted by the Applicant to assist the vegetation restoration process. However, the monitoring times that BLM is requiring in this Plan are unsupported by references provided in this Plan. We conclude that BLM arbitrarily selected or provisionally approved these limited monitoring times. Please provide documentation from the scientific literature that these monitoring times are sufficient to ensure that native plants species cover, density, and composition are restored.

In addition, please revise the Draft Vegetation Management Plan to include the latest revegetation methods that include necessary soil conditions and components and realistic monitoring periods.

Page 15, Restoration Ecologist: "Review all temporary disturbance sites to evaluate soil compaction, vegetation condition, susceptibility to erosion, weed invasion, or as dust sources, and specify site-specific treatments such as erosion control, soil treatment, decompaction, mulch application, or re-seeding for each site."

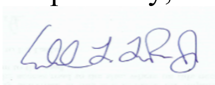
Please see our comments above under Page 9, Site Preparation. Please add requirements for the treatment of the biological components of soils (e.g., soil crusts and AMF) and analysis of soil moisture.

In reviewing the documents that BLM provided during the public scoping period for the proposed project, we found that BLM should review ad revise them to ensure that they comply with BLM's (2015) policy of Advancing Science in the BLM. It appears that recently reported findings from scientific studies on the tortoise/tortoise habitat and the impacts of utility-scale solar projects were either not known or not considered in the development of mitigation plans. Ples ensure that the NEPA document that analyzes the impacts to the tortoise/tortoise habitat especially the indirect impacts includes the results of recent scientific research and applies this research in the development and implementation of effective mitigation.

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 BLM 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.
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