United States Department of the Interior

NATIONAL PARK SERVICE
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March 3, 2014

Memorandum

To: BLM Project Manager, Proposed Soda Mountain Solar Project
Bureau of Land Management, California Desert District

From: Stephanie R. Dubois, Superintendent, Mojave National Preserve Stephanie R Dubois

Subject: Draft Soda Mountain Solar Project Plan Amendment/Environmental Impact Statement/Environmental Impact Report CACA049584/LLCAD0800

The National Park Service (NPS) appreciates the opportunity to comment on the Draft Plan Amendment to the California Desert Conservation Area Plan, Draft Environmental Impact Statement and Environmental Impact Report (DEIS/DEIR) for the Soda Mountain Solar Project. The NPS supports renewable energy projects on public lands that are constructed and operated in an environmentally responsible manner, serve the public interest, and protect the natural and cultural resources and treasured landscapes of the American people. We have reviewed the Bureau of Land Management (BLM) document, "A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners," and we have studied our responsibilities as a cooperating agency on this project. While we recognize the differences between the NPS and BLM missions, we must also, as sister bureaus in the Department of the Interior, actively share pertinent information and expertise.

We have organized our comments on the DEIS/DEIR in accordance with our responsibilities as a cooperating agency. They identify several resource concerns presented by this project and encourage meaningful mitigation strategies to address these significant adverse impacts to the cultural and natural resources of Mojave National Preserve.

General Comments

The BLM identifies the purpose and need for this action as a response to the Applicant's application, where the Applicant has defined the needs and objectives of the Soda Mountain Solar Project (hereafter referred to as the project). The DEIS/DEIR has accurately analyzed some of the project's environmental impacts for Alternatives A through F, namely:

- Maximum daily construction-related emissions would exceed Mojave Desert Air Quality Management District (MDAQMD) thresholds. These include nitrous oxide (NOx), carbon monoxide (CO), and particulate matter less than 10 micrometers in diameter, also known as coarse dust particles (PM_{10}). Construction would generate air pollutants that could contribute to an air quality violation.
- The project would disturb 2,456 acres of vegetation and habitat for a period of at least 30 years, with full restoration requiring a much longer time frame in this arid environment.
- The project would have significant adverse impacts to the natural topography, hydrology, native plant communities, and special-status plants.

- The project would have significant adverse direct and indirect impacts on desert tortoise and long-term impacts to desert tortoise critical habitat.
- The project would have significant substantial unavoidable impacts to special-status birds.
- The project would have significant substantial unavoidable adverse impacts on desert bighorn sheep.
- The project would cause cumulative long-term adverse impacts to, and degradation of, unique visual resources that characterize the Mojave Desert. These resources include, but are not limited to, scenic vistas, cultural landscapes, character and values of adjacent wilderness areas, and dark night skies.

The project presents numerous potentially significant adverse impacts beyond those currently identified in the DEIS/DEIR.The analysis needs to consider more completely the impacts to adjacent lands, including the cultural and natural resources of Mojave National Preserve. NPS is particularly concerned with the project's potential impacts to the hydrology, threatened and endangered species, scenic landscapes, and wilderness character. Analysis of alternatives A, B, and C should address these impacts comprehensively. These alternatives should be revisited with greater consideration of the proximity of the project site to the Preserve and the subsequent heightened risk of adverse impacts to its resources.

"Under Alternative G, the BLM would not authorize a ROW grant for the project and would amend the CDCA Plan to identify the site as unsuitable for a utility-scale solar development; and the County would not approve the Groundwater Well Permit application." NPS maintains that Alternative G thoroughly considers the long-term needs of future generations for renewable and non-renewable resources. In contrast, analyses of Alternatives A through D conclude significant levels of irreversible, unavoidable impacts to the cultural and natural resources of the project area and surrounding lands, which includes resources managed and protected by Mojave National Preserve.

The DEIS/DEIR rejected a private land alternative, in part, due to proximity to the "Mojave River wildlife linkage corridor, Superior-Cronese DWMA (USFWS-designated critical habitat for desert tortoise), [and] Afton Canyon Area of Critical Environmental Concern (ACEC)." Similarly, the proposed location of this project is immediately adjacent to Mojave National Preserve, which, as a unit of the National Park System, also contains wildlife linkage corridors between habitat islands for desert bighorn sheep (*Ovis canadensis nelsoni*) and designated critical habitat for the desert tortoise (*Gopherus agassizii mohavensis*) plus designated wilderness. It is also adjacent to the aquatic habitat of the endangered Mohave tui chub (*Siphateles bicolor mohavensis*). We ask the BLM to analyze the Soda Mountain location with the same level of prudence and scrutiny that was given the private lands alternative. Moreover, we urge the BLM to reconsider the potential for this project to be sited on other BLM lands, private lands, or other degraded lands where renewable energy projects would present fewer adverse impacts to natural and cultural resources.

Planning & Environmental Analysis

We have found several instances in the DEIS/DEIR of our previous comments being misquoted or misinterpreted. The credibility of the NEPA analysis could be compromised by this misinformation; we request revisions in the FEIS/FEIR accordingly. Specific examples include:

Page	Misquote/Misinterpretation
H.3-7 (Appendix H-3)	**DEIS/DEIR**: The DEIS/DEIR referenced our November 21, 2012, scoping comments: "NPS suggested one potential source from which Soda Springs at Zzyzx might derive significant flow is a potential preferential groundwater flow path extending from known fracture traces north and south of the Soda Springs at Zzyzx."

Page	Misquote/Misinterpretation
	NPS Comment: The letter, which is included in Appendix B, states: "[o]ne possible flow path for this recharge is through the location of the proposed pumping, along the northerly edge of the Soda Mountains, and then along the westerly edge of Soda Dry Lake following the permeable beach and colluvial sediments at the playa margin."
H.3-27 (Appendix H-3)	**DEIS/DEIR:** "NPS suggested using the Maxey-Eakin method for estimating recharge would determine zero recharge and this should be used as the model input for the site", and in the next paragraph, "NPS's assertion that the Maxey-Eakin method should be used to estimate recharge has been questioned by other researchers."
	NPS Comment: Our original comments read, "These assumptions likely substantially overestimate the actual recharge rate for the project area… [f]or example, the Maxey-Eakin method commonly used for estimating recharge in this arid region would predict about zero recharge at this low of an elevation." We were pointing out that recharge was likely overestimated; we were not suggesting that the Maxey-Eakin method should be used.
	NPS Comment: We also suggest that the BLM evaluate published literature such as Scanlon et al. 2006, who, in a summary of groundwater recharge in arid regions, have found recharge ranges from 0.1% to 5% of precipitation. These findings suggest the DEIS/DEIR analysis should consider a scenario with a lower recharge rate.
pages 3.4-18, 3.4-29	**DEIS/DEIR:** "[F]our box culverts and two bridges were identified in the BRTR†, that occasionally may be used by sheep (Panorama Environmental, Inc, 2013a; Epps et al., 2013)."
	NPS Comment: Epps et al. (2013) correctly identify "four existing underpasses in or near the affected area and… two specific locations where overpass structures might be built." Moreover, the DEIS/DEIR does propose the installation of additional wildlife watering facilities (APM 75, page 3.4-29) under the assumption that the watering facilities would draw sheep towards the proposed crossing locations, but the DEIS/DEIR does not demonstrate a scientific justification or provide research that indicates that this option, as a mitigating measure, would be beneficial. In addition, there have been several responses that indicate a basic misunderstanding of this system. For example, BLM recently responded that: "The cause of desert bighorn sheep absence in the north Soda Mountains is largely the absence of resources that support this species. While the highway barrier is considered a contributing factor to species' absence in this area, if the area could support sheep, they likely would be there." One might have said the same about the South Soda Mountains prior to the relatively recent arrival of bighorn inhabiting this area. The bighorn in the Mojave Desert act as a true meta-population, with populations occasionally becoming extirpated while other areas are recolonized (Epps et al. 2010). These processes rely on connectivity between bighorn herds in this region, and we have specific strategies that we have proposed that will overcome the highway barrier and allow sheep to use the North Sodas. However, this will be particularly difficult or impossible if the proposed solar array is installed with the current speculative mitigation measures.

†Biological Resources Technical Report. 2013. California BLM Case No. CACA 49584.

Identification of Significant Issues

Groundwater Analysis

While we agree with several findings of significant and unavoidable impacts caused by this project, we also find the environmental analysis to be incomplete in many instances. Consumptive use of groundwater

during construction and operation in an area of limited recharge, for instance, may threaten nearby natural spring discharge. The DEIS/DEIR does not consider potential impacts to small seeps and springs along Zzyzx Road on the north end of the Soda Mountains. These surface features are frequently and heavily used by desert bighorn sheep; if drawdown from the groundwater table adversely impacts these features, desert bighorn will also be negatively affected. We reiterate here our prior comments with regard to groundwater monitoring and project impacts to the surface waters along Zzyzx Road. Piezometers would need to be specifically located for the purpose of monitoring aquifer drawdown from the groundwater pumping being proposed for the Soda Mountain Solar Project.The DEIS mentioned this wate-monitoring technique in Mitigation Measures 3.19-3 and 3.19-4, largely due to the San Bernardino County Groundwater Ordinance No. 3872 and Memorandum of Understanding with BLM. It also, in a proposed mitigation, delegated San Bernardino County and the BLM to determine project impacts to other water resources, such as Soda Spring, with no reference to the land owner or land management agency responsible for protecting these resources in perpetuity.

The National Park Service manages the public lands on which these springs and seeps are located. The Organic Act of 1916 tasks the NPS with the mission and mandate to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. § 1 *et seq.*). For these reasons, we strongly urge the BLM to implement a groundwater model and monitoring plan that includes Soda Spring, the springs and seeps along Zzyzx Road south and east of Interstate 15, and the aquifer along the playa's western margin.

Air Resources

As identified in Table ES-2, environmental impacts to air resources would be significant and unavoidable. Construction of this project would degrade air quality at the Desert Studies Center, an area of the Preserve operated by the California State University system to introduce students to a pristine desert ecosystem. Air pollutants from construction could contribute to an air quality violation. On the other hand, the net reduction in greenhouse gas emissions potentially realized by this project could be obtained by development in other areas with less impact to natural and cultural resources.

Connected, Similar, and Cumulative Actions

Wildlife—Avian Species

The analysis conducted in the DEIS/DEIR on potential avian impacts was necessary, and we agree with the finding that potential avian impacts are significant and unavoidable. Although the causes of avian impacts at commercial-scale solar projects remain under investigation, this previously unknown and unsuspected aspect of large-scale development indicates that additional analyses and caution are warranted.

We are especially concerned with the project's possible attraction of migratory birds that typically utilize the spring oasis at Zzyzx. The Zzyzx complex includes springs, small wetlands, and two artificial ponds, all of which attract numerous waterfowl, avian migrants, and winter residents, including special status birds, such as the yellow-headed blackbird and least bittern. Numerous species protected under the Migratory Bird Treaty Act frequent the area. The proximity of the Soda Mountain Solar Project to Zzyzx and Soda Springs is six kilometers on the opposite side of the Soda Mountains. Because of the high number of migratory birds already known to frequent the area, NPS questions whether the project may attract much greater numbers of migratory birds than described in the DEIS/DEIR. The DEIS/DEIR references avian collision risks under investigation at both the Genesis Solar and Desert Sunlight photovoltaic solar projects, similar to the project proposed at Soda Mountain (p. 3.4-36). Weekly and monthly monitoring reports for these projects may be accessed from

http://www.firstsolar.com/en/Projects/Desert-Sunlight-Solar-Farm and https://efiling.energy.ca.gov/Lists/DocketLog.aspx.

Direct, Indirect and Cumulative Impacts

Disturbance of 2,456 acres of vegetation and habitat for a period of at least 30 years would significantly impact natural topography, hydrology, native plant communities, special-status plants, and special-status birds, especially the burrowing owl. Solar energy developments may pose significant, unknown risks to avian species—not only during construction, but also during operation. The proposed Avian Monitoring Program will only quantify the impacts and does nothing to avoid, mitigate, or offset these risks. The requirement to develop an unspecified adaptive management program of unknown duration or utility cannot be analyzed for its effect upon the level of impacts.

Wildlife—Desert Bighorn Sheep

The DEIS/DEIR currently assumes that sheep will pass through the project site. Bighorn sheep are known to avoid humans and man-made structures. Based on current literature about desert bighorn sheep populations in the Mojave Desert (Epps et al., 2013), bighorn sheep can be expected to migrate on a very limited basis around the Soda Mountain Solar location to the north and south. They would not be expected to move through the project site. The DEIS/DEIR lacks analysis of an avoidance buffer. Addressing sheep migration movements in and around Soda Mountains in the context of known infrastructure avoidance by sheep would increase the accuracy and improve the defensibility of the DEIS/DEIR. If the project moves forward as described in the DEIS/DEIR, bighorn sheep migration between the north and south areas of the project will likely be permanently impeded.

Wildlife—Mohave Tui Chub

The sole remaining source population of Mojave tui chub lives in MC Spring adjacent to the proposed Soda Mountain Solar project site at Zzyzx in Mojave National Preserve. Its fragile habitat, MC Spring and Lake Tuendae, requires active management to remain viable. There exist four remaining populations of Mohave tui chub in the world. To date, there is not enough information available regarding the groundwater table that feeds MC Spring and Lake Tuendae to know the threshold of impact by groundwater drawdown at the Soda Mountain Solar project site. The NPS disagrees with the DEIS/DEIR analysis that concludes a lack of impact because sufficient information is not available (DEIS/DEIR p. 3.4-70). Without conclusive knowledge about the hydrology of the Soda Mountain Valley aquifer, the Project risks the consequence of irreversible damage to the habitat and the viability of this highly endangered species. We suggest the project proponent characterize the hydrology of the Soda Mountain Valley aquifer and monitor groundwater pumping using a well-designed network of piezometers for early warning of potential impacts to Mohave tui chub.

Air Quality—Fugitive Dust Emissions

The project's location lies in close proximity to an active eolian transport area, evidenced by active dune systems to the south and east of the Soda Mountains. The analysis of fugitive dust emissions in the DEIS/DEIR does not consider the project's proximity to an active eolian transport area. As a result, it provides an inaccurate analysis of fugitive dust emission and underestimates the project's likelihood to exceed PM_{10} thresholds.

Mojave National Preserve is a Class II floor area as defined in the Prevention of Significant Deterioration Program under the Clean Air Act (CAA). It is also defined by the Environmental Protection Agency as a nonattainment area for ozone and PM_{10} standards. For these reasons, NPS actively works to ensure no actions within or adjacent to the Preserve will violate federal or state air pollution control laws or regulations, nor will such actions increase emissions or violate state conformity requirements.

Mojave National Preserve's General Management Plan/EIS states that "visibility is probably the most important air quality resource in the desert region, and it is the most easily affected by activities that generate dust (especially fine particulates)." Moreover, the Record of Decision for the General Management Plan states, "The proposed general management plan identifies proactive goals and strategies to inventory, document [and] protect, where possible, the air quality, visibility, night sky and natural ambient sound." (p. 136, General Management Plan, Appendix B) Disturbance during construction, such as removal of vegetation and loosening of the soil crust, will likely result in fugitive dust emissions from much lower wind velocities than current conditions because particulate matter is more easily swept up into the air from areas where the ground has been disturbed. Strong winds are common and capable of generating dust storms from native, undisturbed terrain, and the construction phase of the project could not be accomplished without creating significant ground disturbance.

Yet, Mitigation Measure 3.2-1 specifies that water will be applied only to "unpaved roads and unpaved parking areas actively used during operation and maintenance", leaving most of the disturbed construction area as a source of fugitive dust. The applicant-estimated dust emissions included a 55% reduction as a consequence of watering unpaved roads and unpaved parking areas even though the applicant has not "formally committed to implementing an operation-based watering program to control fugitive dust." We anticipate that higher estimates will likely exceed PM_{10} thresholds, and we recommend that BLM and the applicant add fugitive dust abatement measures for all disturbed areas of the project and revise estimates of PM_{10} levels within the DEIS/DEIR accordingly.

Scenic Resources and Dark Night Sky

While cumulative impacts to visual resources from the project are significant and unavoidable, it is not clear how proposed mitigation measures will reduce the adverse impact on the scenic vista caused by the construction of a large solar panel array to less than significant. NPS has identified the desert scenery as a fundamental resource for Mojave National Preserve. Congress provides specific direction for the California desert parks and wilderness areas in section 2 (b)(1) of the California Desert Protection Act, including to "[p]reserve unrivaled scenic, geologic and wildlife values associated with these unique natural landscapes." Moreover, about 700,000 of the Preserve's 1.6 million acres are designated wilderness. We are, therefore, concerned about the project's long-term degradation of the unique visual resources that define the Mojave Desert and contribute to scenic values of the area. The impact analysis in the DEIS/DEIR describes cumulative adverse impacts on the scenic vista, on the character and quality of the site, and on its surroundings that are unavoidable and significant. Project-specific sources of light and glare could degrade the scenic resources and dark night sky of the eastern Mojave Desert region. Photos of other large solar panel arrays (e.g., Silver State North and Copper Mountain) demonstrate significant, long-term, and unavoidable impacts to the scenic vista. "The Project would convert 2,222 acres of naturally appearing desert valley to an industrial facility" deploying "1.7 million flat-plate polycrystalline silicon solar panels grouped into tracking arrays" which would likely be in conflict with BLM's "VRM Class III objectives" for the site and which would negatively impact the views to and from Mojave National Preserve.

Mitigation Measures 3.18-2 (Construction), 3.18-3 (Operation and Maintenance), and 3.18-4 (Decommissioning and Site Reclamation) do not reverse or reduce these significant adverse visual impacts. The proposed 2,557 acres of solar panels on the landscape will create a significant visual impact that does not currently exist. None of the mitigation measures in Impact Vis-1 for either Construction (page ES-37) or Operation and Maintenance (pages ES-37 to ES-38) address the visual impacts caused by the solar panels themselves. Mitigation measures under Vis-3 refer back to the mitigation measures proposed under Vis-1 (page ES-39). Glint and glare reflected off the panels will negatively impact the visual landscape; the size of the project makes these impacts significant. Based on the DEIS/DEIR analysis, Impacts Vis-1 and Vis-3 are significant and unavoidable.

Wildlife—Desert Kit Foxes

As with avian species, other wildlife species are likely to be adversely impacted by the project. For instance, 57 desert kit fox dens were recorded during the 2012 surveys of the proposed development area, yet the DEIS/DEIR considers only direct kills and crushed burrows preventing escape and does not analyze the effects of habitat destruction or loss of connectivity. Mitigation Measure 3.4-1b addresses biological monitoring; it does not avoid or reduce impacts to kit fox habitat. As such, NPS recommends the BLM expand its analysis to better consider indirect and cumulative impacts to desert kit fox and further explore meaningful mitigation measures to reduce potential impacts.

Mitigation for Adverse Impacts

Wildlife—Desert Bighorn Sheep

The DEIS/DEIR considers a project design with an approximate 0.25-mile setback from 20% slopes, to mitigate adverse impacts to desert bighorn populations. It also concludes in its analysis that adverse impacts are significant and unavoidable. We highly recommend the BLM reconsider ongoing research (Epps et al., 2013). Dr. Clinton Epps has demonstrated in his work that the Soda Mountain Solar project would prohibit any future potential to reestablish bighorn connectivity between north and south Soda Mountains. Mitigation options include setbacks of 0.75 miles from slopes greater than 20% so that the concentration of solar arrays are placed away from these slopes, set on poorer-quality habitat to the south of the proposed location. True mitigation would also facilitate a determination of the types of structures that can facilitate bighorn movements across the highway and around the solar arrays; such strategies are suggested in Epps et al. (2013) and consist of modifying underpasses, constructing overpasses, and investigating whether water catchments will help facilitate such movement. We have submitted prior comments with specific recommendations and would welcome the opportunity to meet with BLM and help design such options and highly encourage the development of an environmentally preferred alternative that will put natural resources first and solar development second. Such an alternative also would provide the project with a full range of reasonable and realistic analyses options, a range we consider to be lacking in the current document.

Artificial Water Sources

Despite the absence of scientific evidence, the Applicant and the BLM are promoting artificial water sources as the only feasible means of mitigation for impacts to bighorn habitat and connectivity. There is no scientific literature or study supporting the notion that presence of water would overcome bighorn aversion to approaching a human-occupied construction site or power plant, and the mitigation measure erroneously attempts to substitute need for water with disruption of connectivity. Although there is circumstantial evidence that water placement can expand or improve already occupied habitat, there is no evidence that it can facilitate movements. The priority connection is between the Soda Mountains north and south of Interstate 15. Placement of water is unlikely to result in spontaneous colonization and habitat utilization as the connection between north Soda and Avawatz is a much greater distance, and the smaller probability of colonization from the south will be reduced by project construction.

Mitigation by Setbacks from 20% Slopes

Other potential mitigation measures, such as greater setbacks, concentrating development in certain areas, and improving highway crossings suggested by NPS wildlife biologists, appear to have been rejected. We suggested in our comments on the administrative draft (see discussion below) that impacts to desert bighorn sheep could be reduced by minimizing the footprint of the arrays and by maintaining setbacks of 0.75 miles from 20% slopes. Minimization of the project footprint would decrease impacts to the occupied areas of desert tortoise habitat, and the greater setbacks from mountainous areas would decrease impacts to

desert bighorn sheep. NPS requests the BLM consider and analyze additional mitigation measures with regards to desert bighorn sheep in order to ensure a thorough and accurate environmental impacts analysis.

Summary of Comments

NPS previously submitted most of these comments in its review of the administrative DEIS/DEIR for this project as a cooperating agency under NEPA. Those comments are summarized and reiterated here with slight modifications. It would be beneficial to both NPS and the BLM to meet and discuss our comments in further detail. Please contact Ms. Amee Howard, NPS Renewable Energy Speciali, at (702) 293-8645 regarding meeting coordination.

cc:

MOJA (L Whalon, D Hughson, D Burdette, D Woo)
PWR (M Lee, S Gibbons, S Quinn, T Flanagan, L Rozzell, A Howard)
BLM (T Pogacnik, T Raml, K Symons, E Meyer-Shields, G Miller, Jeff Childers)

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