



National Headquarters

1130 17th Street, N.W. | Washington, D.C. 20036-4604 | tel 202.682.9400 | fax 202.682.1331
www.defenders.org

September 14, 2009

VIA ELECTRONIC MAIL

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Solar Energy PEIS

Argonne National Laboratory

9700 S. Cass Avenue—EVS/ 900

Argonne, IL 60439

Re: Notice of Availability of Maps and Additional Public Scoping for Programmatic Environmental Impact Statement To Develop and Implement Agency-Specific Programs for Solar Energy Development. 74 Fed. Reg. 31307 (June 30, 2009)

Introduction

Thank you for the opportunity to comment on the Solar Energy Study Area maps and Programmatic Environmental Impact Statement (“PEIS”). These comments are submitted on behalf of Defenders of Wildlife (“Defenders”), a non-profit public interest conservation organization with over 500,000 members nationally.

Defenders is dedicated to the protection of all native wild animals and plants in their natural communities. We work with local communities, land owners and government leaders to encourage common-sense solutions that protect the interests of wildlife and people.

On June 30, 2009, the Department of Energy and the Bureau of Land Management (“BLM”) (collectively “agencies”) announced the availability of maps depicting 24 solar energy study areas to be analyzed in their joint Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development (“Solar PEIS”). The scope of the Solar PEIS is limited to six states with the highest solar potential: Arizona, California, Colorado, Nevada, New Mexico and Utah. The PEIS must include detailed analyses of the lands within the SESAs, for once the PEIS is finalized, solar projects in the study areas will be permitted on a fast-track basis.

As we transition toward a clean energy future, it is imperative for our future and the future of our wild places and wildlife that we strike a balance between addressing the near-term impact of large scale solar development with the long-term impacts of climate change on our biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is

achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and wild lands. These projects should be placed in the least harmful locations, near existing transmission lines and on already disturbed lands.

We are supportive of BLM's approach to this planning process, and support the dual objectives of creating an efficient process for authorizing energy development and conserving sensitive resource areas and minimizing environmental impacts. We applaud programmatic-level planning for the designation of study areas, as well as for the development and implementation of mitigation policy. Given the magnitude of development being considered, strategic planning at this scale has a higher likelihood of leading to sustainable decisions and optimal conservation outcomes as compared to piecemeal decision-making processes at the project or site scale. And while we do have questions about the comparative environmental benefits and risks of zonal versus non-zonal planning, as well as concerns over the analysis of cumulative impacts of multiple-use activities at landscape scales, we appreciate BLM's approach to operate at this scale of analysis.

These comments address and analyze: (1) the use of science-based management to structure solar energy study area decision criteria; (2) the statutory requirements under the National Environmental Policy Act, the Endangered Species Act, and the Forest Land Policy and Management Act; (3) water quality and quantity issues; and (4) state specific criteria used for study area selection.

I. Using science-based management to structure SESA decision-criteria

Defenders supports the effort of the Bureau of Land Management ("BLM") to identify lands that are "best-suited" and "appropriate" for large-scale solar energy development, as well as the statutory policy goal, expressed within the Federal Register Notice of Availability ("FR NOA") of "minimizing environmental impacts."¹ When considering the relatively intense development of some 670,000 acres of solar study areas (we expect that the PEIS will assess a range of development scenarios within the zones) on BLM lands, there will certainly be impacts to biological resources, including sensitive habitat types and associated fish, wildlife and plant populations. The degree of those impacts rests a great deal on how BLM structures siting and mitigation decisions. Given the magnitude of the development and the range of biological resources at risk, it is of utmost importance that BLM clearly define a science-based planning strategy to first avoid, then minimize, and, for truly unavoidable impacts, mitigate impacts to biological resources.

Defenders looks forward to working closely with BLM, as well as other policymakers, to develop a comprehensive conservation planning strategy that will support smart renewable siting decisions, within the context of the Solar PEIS and SESA process, and beyond to other energy production types. The key to building an environmentally sound, legitimate solar development program will be through the consistent and transparent application of science-based planning and decision-making processes, along with well-articulated policy objectives, decision and

¹ The Federal Land Policy and Management Act states that BLM shall "minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved." 43 U.S.C. § 1732(d)(2)(a).

evaluation criteria that permit stakeholders and the public to understand and support the rationale behind BLM zoning, siting, and mitigation decisions.

According to science in the field of decision-making, there are three essential “ingredients” to science-based management, a concept which BLM appears to embrace:

- Well-defined, measurable standards (i.e. wildlife population or habitat condition targets), developed via public involvement processes
- The employment of science-based analytical tools to evaluate compliance with the standards (e.g. population viability analysis, or the spatially explicit Decision Support System recommended by the Western Governor’s Association)
- Consistent implementation of science-based analysis and decision-making (i.e. dedicated funding for monitoring and science-based adaptive management processes).²

The FR NOA uses qualitative expressions of policy objectives; lands to be developed should be “best-suited” and “appropriate” for solar development. Science-based management of natural resources encourages the development of policy objectives and standards that will give shape to these aspirational goals, as well as the construction of effective and efficient methods to evaluate whether or not the objectives are being met. A second example exists with the statutory objective to “minimize” impacts to the environment. Decisions that are based on clear criteria, including threshold criteria, both for the avoidance and mitigation of impacts to biological resources, are likely to be more structured than decisions that are made absent clear decision criteria. Structured decisions are those where stakeholders can agree upon clear policy objectives, as well as the means of measuring those objectives.

BLM should take the opportunity to avoid controversy and conflict from the outset in this planning and development process. One suggested method, and one that the BLM appears to be using, is to avoid designation and development of land types with known high-conflict values, and instead prioritize low-conflict areas (substantive detail on high-conflict and low-conflict land types are described below). Threatened, endangered and sensitive species habitat; unique habitat features; high integrity terrestrial and aquatic ecosystems; wildlife movement corridors – all should be considered high-conflict land types. On the other hand, disturbed lands (including non-Federal lands) located in proximity to existing infrastructure including road networks and transmission facilities, will enjoy much higher probability of project success and sustainable energy production. Of course, land management decisions are often most challenging for the “places in between,” where values collide and there is not a clear path to avoid conflict. Having a structured decision-making process, with clear criteria that can guide tradeoff decisions, in place for these types of scenarios is essential to achieving sustainable conservation outcomes. We hope that the PEIS analysis and decision-making process will be structured along these lines.

The FR NOA outlines an approach to conserving biological resources that is premised upon the use of incentivized, concentrated development zones (“pushing” development into the study areas, yet not barring it from outside the zones), avoidance of sensitive land types, and

² D.J. Rohlf, *Science, Law, and Policy in Managing Natural Resources: Toward a Sound Mix Rather than a Sound Bite*, 127-142 (2004) in K. Arabas and J. Bowersox, eds. *Forest futures: science, politics, and policy for the next century*. Rowman and Littlefield, Lanham, Maryland, USA.

“comprehensive” mitigation measures. We submit that while this appears to be a logical approach to the conservation of biological resources, the FR NOA is limited in the detailed expression of how this approach will achieve conservation policy goals. Nor do we see an overt expression of how this approach is grounded in sound science, as opposed to the standard application of applying the limited biological information the agency has on hand to zoning decisions. Science-based planning not only applies information to a structured decision-making framework, it recognizes uncertainty and provides methods to fill information gaps and reduce uncertainty concerning the relationship between development and biological resources. The PEIS should clearly articulate the BLM’s measurable conservation policy objectives, the approach to using science to make “smart” policy decisions, as well as the logical relationship between policy objectives, the FR NOA avoidance strategy composed of the withdrawn “sensitive resource areas”, and mitigation strategies.

A primary question is whether the approach of incentivizing development within the zones will actually lead to optimal conservation outcomes. At a landscape level, BLM appears to be assuming that concentrated, incentivized development leads to less impact to biological resources, yet there are many perturbations of development scenarios one could imagine that may lead to more optimal outcomes for biological resources. In fact, there is robust discussion within the conservation science field regarding the relative costs and benefits of concentrated versus dispersed development at these types of planning scales. For example, it is possible that the targeted development of disturbed sites, across BLM planning areas, may yield more optimal conservation outcomes than concentrated development. Naturally, the magnitude of development within the zones is a variable that needs to be assessed in the development of policy options. A robust discussion within the PEIS of how a zoned approach is preferable to a dispersed development program will help in the clarification and understanding of BLM’s conservation policy objectives at the landscape scale. A clear articulation of how the zonal approach will lead to good conservation outcomes should be provided in the PEIS, particularly describing the relationship between development within and outside the zones, assuming that solar development will continue outside of the zones.

Challenges associated with the application of biological information to decision-making are significant. While we applaud the BLM for recognizing sensitive resource areas, we understand that knowledge of BLM managed ecosystems and the components of those ecosystems are limited, as is our understanding of how large-scale energy development will impact the structure, composition and function of desert ecosystems. We note, and applaud the fact, that the BLM is embarking on comprehensive science-driven “ecoregional assessments” of the ecosystems of interest to this planning effort. The need for these assessments validates the fact that biological data, information, and knowledge of these ecosystems is limited. For this reason, we expect the BLM to not only provide information on known biological resources (*e.g.* sensitive species population/habitat conditions) within the study areas, but also a comprehensive discussion of uncertainty (both of baseline biological conditions, as well as in relationships between solar development and biological resources), known information gaps, and processes to collect and apply information future decision-making processes. We expect, for example, a complete inventory of sensitive species population/habitat conditions for all solar study areas, based on our research.

In order to be successful in meeting its conservation objectives, BLM should develop clear, measurable conservation goals that go beyond the FLPMA statutory objective of “minimizing” impacts to biological resources. And while we fully understand that thresholds of acceptable risk to biological resources are often expressions of social values, Defenders has suggestions regarding the use of established affirmative policy goals at BLM’s disposal that can help add structure and science to the SESA decision-making process, and thus lead to better, more sustainable solar policy decisions.

In addition to the statutory guidance provided by the Federal Land Policy Management Act, 43 U.S.C. § 1763, *et seq.* (“FLPMA”), the Endangered Species Act, 16 U.S.C. §1531, *et seq.* (“ESA”), and the National Environmental Policy Act, 42 U.S.C. § 4321, *et seq.* (“NEPA”) (discussed in detail below), Defenders believes that the BLM has clear, affirmative policy direction to conserve biological resources, including fish and wildlife populations and their habitats, beyond the rather narrow statutory objective of “minimizing” impacts to the environment. Conservation objectives and strategies are found within BLM policy guidance in Special Status Species and Fish and Wildlife policy. Additional guidance for science-based planning and decision-making is found in the Land Use Planning Handbook.

a. BLM Manual – Fish, Wildlife and Special Status Species

The BLM manual establishes objectives and policies for the management of Special Status Species (SSS/6840) and Fish and Wildlife (FW/6500) on BLM lands. It has been our experience that the policy objectives found within these two manuals, although quite useful in terms of providing added direction to BLM decisions, has not been consistently applied.

From the outset it is important to note that Defenders does not support the revisions to the SSS/6840 policy undertaken under the previous administration. On December 15, 2008, the U.S. Department of the Interior, BLM, issued revised guidance on the management of “special status species” under its jurisdiction. The purpose of the SSS/6840 policy is to provide guidance to the BLM personnel regarding the management and conservation of species protected under the Endangered Species Act (ESA), as well as BLM-designated “sensitive species.” Unfortunately, the revised SSS/6840 policy falls far short of this purpose, and instead results in the elimination or diminishment of protections for over 2000 imperiled species, including the Grizzly bear, bighorn sheep, cutthroat trout, and the three-toed woodpecker. Defenders has suggested that the revised manual be rescinded and the previous SSS/6840 policy reinstated.

The objectives of the SSS/6840 policy are twofold: 1) To conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species; 2) To initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing these species under the ESA.

The objective of the FW/6500 policy provides clear, measurable criteria to the BLM as well: “It is BLM policy to manage habitat with emphasis on ecosystems to ensure self-sustaining populations and a natural abundance and diversity of wildlife, fish, and plant resources on the public lands.” Ensuring self-sustaining fish and wildlife populations provides a measurable,

affirmative conservation objective to the BLM that should be used to help structure SESA decisions as well as associated mitigation strategies.

The use of measurable conservation targets and thresholds (*e.g.* self-sustaining populations, minimize the likelihood of listings) adds structure to decision-making processes, and is very much in line with BLM's desire to practice science-based management in solar development policy, as expressed by Department of the Interior leadership, including Assistant Secretary for Land and Minerals Management Wilma Lewis.³ The use of baseline biological information concerning target fish and wildlife population condition (the BLM Land Use Planning Handbook H-1601, discussed below, provides direction for incorporation of wildlife population and habitat goals and objectives into land use plans), along with the forecasting and monitoring of population trends/habitat conditions over time following development decisions, provides a science-based means of evaluating solar development policy within an adaptive management framework.

In addition to listed species (covered in a separate section on ESA policy), Defenders has a strong interest in developing policies and supporting conservation and development decisions that avoid ESA listings and sustain the fish and wildlife populations found on federal lands. For this reason we were very encouraged to read that the FR NOA stated that the study areas avoided "sensitive resource areas" including "areas where the BLM has made a commitment to take certain actions with respect to sensitive species habitat."

However, it is unclear from the FR NOA, as well as from our research into the baseline RMPs that we assumed would clearly articulate the right-of-way avoidance and exclusion areas, precisely how SSS/6840 and FW/6500 policy was applied to the study area decisions. It is similarly unclear what types of "certain actions" were taken with respect to sensitive species habitat. The criterion in the FR NOA implies that information from existing RMPs was applied to screen out sensitive species habitat, but not all sensitive species habitat. This confusion is compounded by a BLM Washington Office internal Solar PEIS document, "Guidelines for Identifying Solar Energy Zones", dated April 1, 2009, that asks BLM managers designing zones to "Screen out areas with the following conflicts: h) Sensitive species habitat."

The public must therefore assume and trust that either the baseline RMP decisions concerning Bureau sensitive species and fish and wildlife populations (the ROW exclusion and avoidance areas) are sufficient to meet the objectives of the SSS/6840 and FW/6500 policy for the designation of the study areas, or, that the BLM has applied a sensitive species habitat screen to the zones pursuant to the Guidelines document. Our investigations into the RMPs did not yield a great deal of information concerning the management of SSS/6840 and the application of FW/6500 policy objectives.⁴ For this reason we continue to question whether the SESA

³ Wilma Lewis, Assistant Secretary for Land and Minerals Management, Keynote Address at the 2009 BLM Renewable Energy Summit (Aug. 31, 2009).

⁴ Defenders sought information from the relevant RMPs to assess the application of this criterion. Unfortunately, most existing BLM RMPs provide limited wildlife information and associated management direction. Further, substantial variation in RMPs exists across states and even among BLM districts within the same state. There is considerable variation in quality and quantity of wildlife information (including maps) as well as the degree to which wildlife management is addressed and incorporated in RMPs. Relying on RMPs to determine a method of handling wildlife management issues is therefore inadequate and incomplete and does not provide for wildlife needs.

designations have been screened using sensitive species criteria and if their designation will “minimize the likelihood” of listing Bureau sensitive species under the ESA and will “ensure self sustaining populations...of wildlife, fish and plant resources.” BLM should clearly articulate within the PEIS whether this is the case.

b. Assessment of BLM screening methods

Based on our assessment of BLM methods employed to select the study areas, it appears that a variety of methods were used by the states, and in general, Defenders applauds the BLM’s application of criteria. We commend BLM for issuing guidance to all of the study area state offices that all sensitive species habitat should be screened out of the proposed study areas. We ask that BLM clearly confirm within the PEIS that all sensitive species habitat was in fact removed from the designated areas, including a discussion on the completeness of that set of information (e.g. information gaps in sensitive species habitat data). The use of a variety of screening and decision criteria will naturally lead to a variety of outcomes, including conservation outcomes.

- For example, California performed a “multi-criteria analysis, relying heavily on the state’s Renewable Energy Transmission Initiative (RETI).” The RETI process ranks zones based on the “environmental and economic costs of bringing energy to market from each of the zones.” In addition to this criterion, CA BLM applied the screens provided by the Washington Office, including the sensitive species habitat screen we presume, as well as data provided by stakeholder groups active in the CA desert.
- Nevada avoided all sensitive species occurrences, special designations, as well as “habitat restricted endemics that could result in Federal listing.”
- Utah also noted the conflict associated with sensitive species habitat, but stated “the boundaries chosen represent those areas with the lowest predictable probability of resource conflicts based on the best available resource and GIS data accessible to our staff at the time of analysis. Areas chosen could still contain T&E, cultural resource, grazing or habitat conflict that are not predictable without on-the-ground Environmental Studies or Ecological Assessments.”
- Arizona refers to places “that had the lowest known conflict” by conducting a BLM Renewable Energy Conflict Analysis.

Recommendation: BLM should articulate and assess how the SESA designations, along with mitigation activities, will impact SSS/6840 and FW/6500 policy objectives. All lands where solar energy development would contradict these policies should be excluded from further consideration or addressed within the mitigation provisions. We ask that BLM make available

(cont.) The general lack of biological resources occurrence and planning-related designations for public lands affected by the proposed 24 study areas significantly limited our ability to provide meaningful, site-specific comments on issues that should be addressed in the Solar PEIS. Based on our review of the information provided within the relevant RMPs, there is little means for the public to verify that solar development will adequately consider biological resources, including wildlife and habitat protections.

detailed information on right-of-way avoidance and exclusion areas designated in land use plans associated with the conservation of wildlife movement corridors and sensitive species.

Please also clarify if the study areas were selected based on application of *all* the criteria contained in the FR NOA or if it is BLM's intent to determine at a later time if the public lands within each of the 24 study areas are consistent with the criteria. We urge BLM to provide the supporting documentation that any proposed study areas are consistent with the stated criteria contained in the FR NOA. We strongly urge BLM and DOE to expand the criteria to extend greater protection to functioning natural plant and animal communities, special status species and their habitats and other important biological resources as noted above. Such expansion would necessitate the refinement of the study areas and, in some cases result in the elimination of some and designation of new areas.

Only one proposed set of study areas was offered for consideration based on a limited number of criteria that were developed in the absence of public involvement. Thus, we strongly urge BLM to offer a full range of alternatives designed to meet the goals for renewable energy generation and transmission, including alternatives, based on more restrictive criteria with regard to lands containing significant biological resources, as well those that would limit the consideration of public lands containing naturally occurring plant and animal communities and maximize the potential for using degraded private lands.

c. BLM Land Use Planning Handbook (H-1601)

As discussed above, the FR NOA is structured to imply that study area designation decisions are clearly tied to decisions made in the baseline RMPs. It is unclear to Defenders whether the BLM Land Use Planning Handbook will be applied to the study area designation decisions, or whether the handbook is not considered at this stage, given that it was used to create the baseline RMPs. We thank the BLM for providing a clear explanation within the PEIS of the relationship between the 1601 Handbook and the study area designation decision-making process.

Either way, the planning requirements and guidance found in the 1601 Handbook have the potential to add significant structure to study area designation decisions and the development of a robust and meaningful mitigation policy. We strongly recommend that all solar study areas and associated mitigation policies be subjected to strategic planning processes using tools found in the 1601 Handbook. For example, consider that a mitigation goal may be to ensure self-sustaining fish and wildlife populations associated with solar energy development, as directed by the FW/6500 policy. The Planning Handbook provides the BLM with the ability to designate priority species, to describe desired population conditions (*i.e.* self-sustaining), and to identify actions to achieve those desired population conditions. We believe that this type of strategic policy direction, as well as the direction found within the SSS/6840 and FW/6500 policy, including tools to monitor biological resources and conduct adaptive management, allow BLM to make robust science-based study area designation and mitigation decisions.

d. Defenders recommendations on areas to avoid

In addition to designating study areas and mitigation policies that minimize the need to list sensitive species, that sustain populations of fish and wildlife populations, and that use targeted baseline conditions and monitoring strategies to evaluate success, we strongly recommend that BLM exclude from consideration public lands with the following biological resources and values. These areas are biologically significant, and their development will lead to unnecessary conflicts:

- Landscape-level corridors providing opportunities for natural movement of plant and animals species, and especially corridors linking subpopulations that comprise a metapopulation, such as bighorn sheep and desert tortoise.
- T&E critical habitat—designated and proposed
- Habitat for BLM designated sensitive species
- BLM-designated Areas of Critical Environmental Concern (ACECs) and Desert Wildlife Management Areas (DWMAs)
- Zones around wetlands that provide adequate corridors for wildlife movements to and from these invaluable habitats.
- Upland habitat located within two miles of any seep, spring, stream or wetland.
- National Landscape Conservation System (NLCS) lands (National Conservation Areas, National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails)
- Special Recreation Management Areas
- Areas allocated in existing Land Use Plans with wilderness characteristics
- Areas allocated in existing Land Use Plans as wildlife habitat management areas.
- Zones around known raptor nesting sites adequate to provide protection for essential foraging areas
- Mohave Ground Squirrel Habitat Management Area (aka Mohave Ground Squirrel Conservation Area)

While the criteria listed are not ranked, they are intended to inform planning processes and were designed to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the undeveloped core of the CDCA.

Using the above criteria, Defenders and the other environmental organizations identified and mapped potentially suitable solar energy development zones that warrant further, inn-depth study. We strongly recommend these areas be included in the PEIS for further study. The map of these potentially suitable areas is attached.

e. Recommended Criteria to Prioritize Siting

Defenders supports identification and further study of areas we believe are potentially suitable for solar energy development, as well as development of mitigation strategies to be employed where impacts cannot be avoided. In order to sustain fish and wildlife populations, to minimize the risk of listing sensitive species, and to conserve ESA listed species, we strongly recommend

using the following criteria as a means of identifying potentially suitable lands for solar energy development.

- Lands that have been mechanically disturbed, *i.e.*, locations that are degraded and disturbed by mechanical disturbance
- Lands that have been “type-converted” from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use)
- Public Lands of comparatively low resource value located adjacent to degraded and impacted private lands and which might allow for expansion of renewable energy development onto private lands.
- Lands with existing transmission capacity and infrastructure
- Lands adjacent to urbanized areas
- Locations adjacent to federally designated corridors with existing major transmission lines.
- Areas proximate to sources of municipal wastewater for use in cleaning.
- Locates proximate to load centers
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.
- Isolated or scattered lands
- Abandoned mine sites
- Already developed transportation corridors
- Producing oil and gas fields
- Abandoned/damaged agricultural lands

II. Statutory Requirements

a. National Environmental Policy Act (NEPA)

1. Range of Alternatives

The range of alternatives analysis is “the heart of the environmental impact statement.” 40 C.F.R. § 1502.14. NEPA requires BLM to “rigorously explore and objectively evaluate” a range of alternatives to proposed federal actions.” See 40 C.F.R. §§ 1502.14(a) and 1508.25(c).

Recommendation: The DEIS must include alternatives that incorporate avoidance of environmentally harmful options, as discussed in this comment letter.

2. Cumulative Impacts Analysis

Cumulative impact is defined as the impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future action regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 C.F.R. § 1508.7.

a. Landscape Level Analysis

A landscape level analysis of the proposed solar energy zones is supported by NEPA guidance on cumulative impacts, which requires that the entire area potentially affected be included in a cumulative analysis and holds that a failure to include an analysis of actions within a larger region will render NEPA analysis insufficient. *See, e.g., Kern v. United States Bureau of Land Management*. 284 F.3d 1062, 1078 (9th Cir. 2002). Therefore, in order to accurately evaluate the potential environmental consequences of Solar Energy Zones (“SEZ”), the cumulative impact analysis must look at the cumulative impacts on all of the directly and indirectly affected landscapes.

Recommendation: Solar projects, with the accompanying roads and other infrastructure, present a particular challenge to wildlife in the form of habitat fragmentation. Continued habitat fragmentation forces wildlife to live on ever-shrinking islands of habitat, where it is more difficult for them to find food, water, shelter, mates, and protection from predators. Genetic problems such as inbreeding appear, and populations become more susceptible to catastrophic events such as wildfire. The resulting fragmented habitat inevitably leads to smaller populations of wildlife, and extinction of populations or species becomes more likely. Defenders strongly urges that the PEIS analyze the impacts of the placement of solar projects on public lands at the “landscape” level. We do not believe that a general discussion of the various types of lands and species impacts provide sufficient “ecosystem” focused analysis. Instead, we urge that PEIS analyze impacts across geographic ranges, including wildlife corridors and river corridors.

b. Utility Scale Energy Analysis

The environmental analysis must address the cumulative impacts of both the development of utility-scale solar energy projects and other foreseeable utility scale energy development, including siting and transmission facilities, within the same areas. The impact of the large scale energy development may affect wildlife habitat and linkages that are critical to the survival of wildlife and vegetation in the affected areas.

Recommendation: The BLM’s obligation to analyze the cumulative impacts must encompass not only the proposed and projected solar energy projects, but also the cumulative impacts of the projects, taken together with the impacts of existing, proposed, or reasonably foreseeable projects, on the environment. Thus, the BLM must analyze the impacts not just of the solar development projects, but also of other projects that will impact resources in common with this proposed actions.

b. Federal Land Policy and Management Act (FLPMA)

The Federal Land Policy and Management Act (“FLPMA”) mandates that “management be on the basis of multiple use and sustained yield” 1701 U.S.C. § 102(a)(7). Multiple use is defined as:

. . . a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values . . . [and] management of the various resources without permanent impairment of the productivity of the land and the quality of the environment

1701 U.S.C. § 103(c). The statute further requires that:

public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values . . . [and] that, where appropriate, will preserve and protect certain public lands in their natural condition . . . [and] [] will provide food and habitat for fish and wildlife

1701 U.S.C. § 102(a)(8).

Recommendation: We urge consideration be given to the requirement that multiple use not result in the permanent impairment of the productivity of the land and quality of the environment. Essentially all of the solar energy project proposals we have reviewed entail the scraping of the land surface to produce a level building sit that is void of all vegetation. This development will cause a long lasting, if not permanent, impairment of the certain public lands with respect to their ability to support naturally occurring plant and animal communities.

c. Endangered Species Act (ESA)

The BLM has a duty under the Endangered Species Act to consult with the U.S. Fish and Wildlife Service to ensure that the impacts from solar development will not “jeopardize the continued existence of threatened and endangered species . . . or . . . destroy or adversely modify their designated critical habitat.” 16 U.S.C. § 1536(a)(2).

The ESA “is the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.” *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 180 (1978). The Supreme Court’s review of the ESA’s “language, history, and structure” convinced the Court “beyond a doubt” that “Congress intended endangered species to be afforded the highest of priorities.” *Id.* at 174.

Under section 7(a)(2) of the ESA, every federal agency “shall . . . insure that any action authorized, funded, or carried out by such agency (“action agency”) is not likely to jeopardize the continued existence of the endangered or threatened species or result in the destruction or adverse modification of habitat of such species . . . determined . . . to be critical” 16 U.S.C. § 1536(a)(2) (Section 7 consultation). Agency “action” is defined in the ESA’s implementing regulations to include “all activities or *programs* of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: (a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-

of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air.” 50 C.F.R. § 402.02.

Recommendation: BLM should exclude from the study areas habitat for listed species for which critical habitat has not been designated. As of 2005, critical habitat had been designated for approximately 37 percent of all listed species, leaving approximately two-thirds of such species without the benefit of designated critical habitat.⁵ Accordingly, we recommend that all habitats within the study areas that support threatened and endangered species be excluded from consideration as solar study areas regardless of whether critical habitat has been designated. BLM should identify how many acres of threatened or endangered species habitat in each preliminary study area would be affected by potential solar energy developments, the listed or proposed species involved, and information about the known abundance of each species.

III. Water

Water sustainability must be one of the guiding principles for siting solar energy development. The agencies cannot “implement agency-specific programs that would facilitate environmentally responsible utility-scale solar energy development,” 73 Fed. Reg. 30908, 30909 (May 29, 2008), without ensuring water sustainability for power production. Solar power is not environmentally responsible if it is reliant on unsustainable water use.

To ensure sustainable water use on BLM lands, the agencies must take all aspects of water resources into account when evaluating solar energy development on our nation’s lands. We cannot plan for future energy production, energy security and energy reliability without considering how water requirements will be met over time. “[I]t is crucial that the United States develop new policies that integrate energy and water solutions so that one resource does not undermine the use of the other.”⁶

The agencies must analyze and acknowledge the limits that water availability will place on solar development on BLM lands. The 24 SESAs alone use up to 1.3 million acre-feet/year of water, more than the state of Colorado uses in one year. Before it can permit utility-scale development, BLM must gather the baseline data necessary for a meaningful assessment of water resources and potential impacts from solar development.

a. Water Resources-Water Quantity

BLM must also assess the water quality impacts as a result of the siting, design and operation of a Concentrated Solar Plant (“CSP”) plant. The construction and placement of thousands of acres of CSP may degrade water quality through the addition of sediments from cleared desert lands. The operation and maintenance of CSP plants will further degrade water quality the addition of dissolved substances from surface water runoff troughs and collectors, including the heat-collecting elements.

⁵ Suckling, K. and M. Taylor. *The Endangered Species Act at Thirty: Renewing the Conservation Promise* (2005).

⁶ ___ Cong. Rec. S2830 (daily ed. March 5, 2009) (statement of Sen. Bingaman) (noting that “neither resource is routinely considered in developing management policies for the other”).

Recommendation: The agencies must describe any necessary water storage and treatment facilities for CSP plants using wet cooling and for water disposal associated with these activities, including chemicals and chemical storage associated with CSP plants.⁷

b. Water Usage

Recommendation: BLM solar development criteria must express preference for CSP plans that minimize water use

Recommendation: CSP's can use an enormous amount of water—amounts similar to fossil fuel power plants—for cooling, steam cycle make-up, hotel load, and mirror wash. Parabolic trough and power tower CSP plants that use dry cooling or hybrid cooling, on the other hand, minimize water use and are preferable in desert environments. Dry cooling eliminates 90% of the water use. Hybrid wet/dry cooling systems can reduce water consumption by half with only 1% drop in electricity output and as much as 85% with a 3% drop. The hybrid system designed to maximize water conservation—a dry/wet peaking cooling system—cuts water use by 80% with modest performance penalties. We recommend BLM consider requiring dry cooling or hybrid systems to conserve water

Recommendation: We also recommend that BLM explore the availability of alternatives to freshwater for use in thermal power plants, with appropriate safeguards for avoiding pollution from such use. This may be necessary to avoid conflicts with state law and policy.⁸ Alternative sources of water include municipal effluent, mine pool water, brackish groundwater, agricultural runoff, industrial wastewater, and produced water.

Recommendation: Parabolic trough plants use highly flammable heat transfer fluids in their heat collecting elements. Use of these fluids in heat-collecting elements and/or for heat storage is a fire hazard. We recommend BLM assess the need for and availability of water for fire suppression as well as the likelihood and effects of human-caused fires in arid ecosystems.

c. Water Availability

The agencies must ensure solar development does not further stress streams and aquifers already stressed by overuse. Each of the six states with solar energy study areas administers water rights and waters of the state belong to the public.⁹ These waters, however, may be subject to appropriation and any person who wishes to appropriate such waters or change the place of diversion, place of use, or manner of use, must apply to the State Engineer for a permit to do so.¹⁰ State water plans, water rights permitting and other policies for the protection

⁷ See generally *California Energy Commission, Comparison of Alternate Cooling Technologies for California Power Plants Economic, Environmental and Other Tradeoffs* (2002) at ch.6.

⁸ See 40 C.F.R. § 1502.16(c) (environmental effects section shall include discussions of possible conflicts between the proposed action and federal, state, local or tribal plans, policies or controls for the area.).

⁹ See generally BLM National Science & Technology Center, *Western States Water Laws*, <http://www.blm.gov/nstc/WaterLaws.abstract1.html>.

¹⁰ See 40 C.F.R. § 1508.27 (measuring the significance of environment effect by both the context and intensity of the action, and an action that may violate federal or state law or other requirements for environmental protection,

of water resources may conflict with large-scale solar development that does not conserve water.

Recommendation: BLM must assemble information regarding existing water use and permitting in basins containing study areas so that it may avoid those areas that are within overappropriated or fully appropriated basins.

Recommendation: Solar energy zones must not be located in areas where there is no unappropriated water available for energy development, where the use of water for this purpose will conflict with existing water rights or where the use of water for this purpose is not a reasonable one.

Recommendation: BLM must assess the reliability of water supplies for solar power given the potential for shortage sharing arrangements and priority calls by senior water users. Furthermore, BLM must investigate the impacts of climate change and drought, and the subsequent potential for impacts of shortage sharing and priority calls on water resources.

Recommendation: BLM must include in the environmental impact analysis a robust attempt to consider the impacts of all alternatives in the context of climate change. BLM must assess the current and future water supplies in the SESAs and other study areas.

d. Water Impacts

Water usage on the scale of widespread utility-size CSP plants will have adverse effects on wildlife.

Recommendation: The agencies must examine the potential for adverse effects to rare, endemic, threatened and endangered aquatic and riparian wildlife and their habitats.

Each state has the authority to deny water applications or condition permits if granting the application is not in the public welfare or public interest.¹¹

Recommendation: The agencies should not facilitate solar energy development where the resulting water use would threaten public trust resources such as national wildlife refuges, national parks or monuments, federal reserved water rights and federally protected or state managed wildlife.

Due to the fluid nature of surface and ground water resources, CSP plants may be located some distance from national wildlife refuges, national parks, national monuments, critical habitat and other sensitive lands and waters, yet have adverse downstream effects on these resources. We appreciate BLM's initial effort to protect sensitive resource areas in removing those areas from

see id. § 1508.27(b), may have a significant impact). *See also id.* § 1502.16(c) (environmental effects section shall include discussions of possible conflicts between the proposed action and federal, state, local or tribal plans, policies or controls for the areas); *id.* § 1506.2(d) (requiring discussion of any inconsistency with state or local plans or laws and the of the extent to which the proposed action will be reconciled with the plan or laws).

¹¹ *See, e.g., Nev. Rev. State. § 553370(4)* (if use “threatens to provide detrimental to the public interest” the State Engineer “shall reject the application”).

proposed SESAs, but those sensitive resource areas remain vulnerable unless BLM also eliminates from consideration those areas where CSP water use might adversely affect national wildlife refuges, national monuments, threatened and endangered species, or impair reserved water rights for the maintenance of fish and wildlife habitat for listed species or refuge purposes.¹²

e. Groundwater

Recommendation: BLM must assess the potential for changes in surface runoff patterns, aquifer storage and recharge and in water quality due to the presence of tens to hundreds of thousands of acres of land dedicated to solar development. Similarly, BLM must assess the potential for changes in groundwater recharge as a result of these solar facilities.

Recommendation: BLM must also assess the effects of groundwater withdrawals. Groundwater withdrawal greater than the perennial yield mines the aquifer and contributes to adverse effects such as water quality degradation, storage depletion, diminished well yield, land subsidence and possible reversibility of groundwater gradients. BLM must project groundwater decline if CSP water requirements are to be met with groundwater pumping and consider that decline in the context of the basin's water budget and perennial yield.

Recommendation: BLM must examine the impacts of groundwater level decline on any nearby springs and spring features. BLM should perform a similar analysis for nearby surface water features, to determine if groundwater pumping at quantities necessary for CSP plants would affect streams, creeks or other features.

IV. State Analyses

a. California

Four study areas were identified in California totaling 351,049 acres. At the time of the release of the FR Notice, BLM had received 24 solar energy project right of way applications within three of the study areas totaling 231,664 acres. One study area, Imperial East, had no such right of way applications.

In addition, a recent study conducted by graduate students at the Donald Bren School of Environmental Science and Management developed scenarios that examine the cumulative effects of habitat loss and fragmentation (impacts to movement and gene flow) from renewable energy development upon desert tortoise and desert bighorn sheep in the West Mojave. Spatially-explicit modeling of habitat quality and connectivity for these species was conducted and is now available. One key recommendation from this study is to:

¹² See., e.g., James E. Deacon et al., *Fueling Population Growth in Las Vegas: How Large-scale Groundwater Withdrawal Could Burn Regional Biodiversity*, 57 *BioScience* 688 (Sept. 2007); Defenders of Wildlife, *Gambling on the Water Table: the High-Stakes Implications of The Las Vegas Pipeline for Plants, Animals, Place and People* (2007).

[i]ncorporate connectivity analyses more specifically into regional and local planning processes. Because this network of large-scale projects will span across a vast area, analyzing the cumulative impacts that renewable energy development might have on ecological processes— such as connectivity— over long time horizons is an important consideration. Incorporating an analysis such as the one developed by this project can help inform decision-makers about which locations are ideal to develop or to conserve.¹³

Because the draft solar energy study areas in the West Mojave region *did not incorporate the important consideration of habitat connectivity or movement corridors*,¹⁴ we urge the BLM to acquire this new data and to utilize it to inform the location and configuration of solar energy study areas.

California Desert Conservation Area Plan (CDCA)

Section 601(b) of the California Desert Conservation Area states: “It is the purpose of this section to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality.”

We question the compatibility of large scale solar energy projects in the California Desert Conservation Area with the mandate to manage on the basis of multiple use, and especially with regard to sustained yield and maintaining environmental quality. We believe that the proposed large scale solar energy projects entailing a 100 percent conversion of the land surface to an industrial site will result in a permanent change in the character of the land, essentially rendering it useless for any future multiple use except as an industrial site.

The Plan, as amended, has guided the use and management of public lands in the CDCA since it was approved in 1980. It has been amended on numerous occasions, with significant modifications made during the period from approximately 2002-2006. Most notable changes were desert-wide conservation commitments for the threatened desert tortoise and its habitat, and multi-species conservation measures in the western Mojave and eastern Colorado Deserts.

It appears the preliminary study areas in California avoid all of the designated Desert Tortoise Recovery ACECs as well as newly established ACECs for other biological resources such as the Pisgah Lava Flow in the western Mojave region. We find, however, that the study areas include portions of BLM-designated sensitive habitats in the Riverside East and Iron Mountain study areas. BLM has established a 3:1 habitat loss compensation requirement, apparently as a tool to deter or limit projects in these areas. These areas should be excluded from consideration so that they are not affected by large-scale, single-use solar energy projects and turned into Intensive Multiple Use Class under the provisions of the CDCA Plan. These sensitive habitats include the following:

¹³ Hannah, L., L Bare, et. al., Cumulative Impacts of Large-scale Renewable Energy Development in the West Mojave: *Effects on habitat quality, physical movement of species, and gene flow* (2009), http://fiesta.bren.ucsb.edu/~westmojave/images/Wemo_Final.pdf

¹⁴ BLM staff, personal communication (Aug. 24, 2009).

- Desert Dry Wash Woodland
- Desert Chenopod Scrub
- Sand Dune and Playa Communities that are designated closed to ORV use

The issue of wildlife movement corridors was addressed in the CDCA Plan amendments with the goal of providing connectivity between desert tortoise populations within desert tortoise recovery ACECs (a.k.a. Desert Wildlife Management Areas) as a means of sustaining healthy populations within the primary recovery areas. Bighorn sheep subpopulation connectivity was also a goal as a means of sustaining health Sonoran and Southern Mojave metapopulations. The plan objectives with regard to Bighorn sheep populations included the identification and protection of essential habitat, including movement corridors, as a means of maintaining viable metapopulations. The issue of wildlife movement corridors and biological connectivity between subpopulations is of great concern with respect to the Pisgah, Iron Mountain and Riverside East preliminary study areas. We recommend deletion of Iron Mountain; reduction in size of the Pisgah; and significant reduction in the size of the Riverside East.

There are other conservation requirements for various species in the CDCA as a result of amendments stemming from the Northern and Eastern Colorado Coordinated Management Plan process. They include the following:

- Activities or projects authorized at or within 1 mile of a significant bat roost site would have applicable mitigation measures. Mitigation might include seasonal restrictions, light abatement, etc.
- Within suitable habitat within the distribution of flat-tailed horned lizard, all applicable actions in the Flat-tailed Horned Lizard (FTHL) Conservation Strategy would be applied.
- During project construction, special effort would be made to avoid disturbance of populations of any special status plant. Avoidance would be strongly encouraged, but where plants cannot be avoided, the effects of the project on the species as a whole would be assessed. If the project is not likely to jeopardize the species or lead to the need to list a candidate or sensitive species, the project may be approved. Disturbance of a listed plant species would not be allowed. Consideration would be given to transplanting; seed collection and propagation; seed-bed removal and replacement; and long-term, rigorous post-project monitoring of plant population recovery. Where a project approaches a population of a special status plant, permanent or temporary fencing would be strongly considered.

Pisgah

The Pisgah study area consists of 26,282 acres of public land adjacent to Interstate 40 and between the Cady Mountains and the Pisgah Lava Flow. Four right of way applications for solar energy development involving 17,568 acres have been received by BLM. One application for the proposed Solar I project using Stirling dish engine technology is currently being processed by BLM and the California Energy Commission. It involves approximately 8200 acres of public land where 32,000 Stirling dish engines would be sited with a total power output of approximately 750 MW.

Defenders believes this study area, if fully developed, would significantly reduce or eliminate certain species from being able to move through the creosote bush habitat located between the base of the Cady Mountains and the railroad located north of Interstate 40. This habitat is currently occupied by the threatened desert tortoise and is within the Western Mojave Recovery Unit but not within designated critical habitat. However, area supports a relatively high number of tortoises based on recent biological surveys conducted in the area in support of the environmental review for the proposed Solar I project. Based on a review of the Desert Tortoise Recovery Plan¹⁵ and the Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise,¹⁶ we believe this solar study area overlaps a significant portion of a desert tortoise movement corridor that provides biological connectivity between the Western Mojave, Eastern Mojave and perhaps the Northern Colorado Recovery Units. In addition it appears this biological connectivity involves the following designated Critical Habitat Units; Ord-Rodman, Fenner, Chemehuevi, and perhaps the Superior-Cronese Lakes. These areas are identified as Desert Wildlife Management Areas in the recovery plan.

The Cady Mountains, a Wilderness Study Area, is immediately north of the solar study area. The solar study area may include a portion of the Cady Mountains Wildlife Habitat Management Area for desert bighorn sheep (W-30), and to a larger extent the Pisgah Lava Flow Special Attention Area which was also designated a Research Natural Area by BLM.¹⁷ The Cady Mountains are a known raptor nesting area and we believe it is prudent to maintain a viable raptor foraging area on south slope and bajada of the Cady Mountains.

Recommendation: To substantially reduce the biological issues associated with this solar study area, Defenders recommends the following:

- Reduce the size of the study area by recognizing a wildlife movement corridor zone between the Cady Mountains and the existing railroad, and eliminating the portion of the study overlapping with the Pisgah Lava Flow Research Natural Area. Generally we believe the northern boundary of the study area should extend approximately one-half mile north of the railroad.
- In partnership with the State of California and County of San Bernardino, extend the study area to the west to the vicinity of Daggett to include all of the brownfields, abandoned industrial sites, and generally degraded land. Maximum use of lands and facilities at the U.S. Marine Corps Supply Centers at Yermo by including these areas within a new solar study area.

Iron Mountain

The Iron Mountain study area consists of 109,642 acres of largely pristine or undeveloped public land in the North-Central Colorado Desert portion of the CDCA.¹⁸ Four right of way applications

¹⁵ Desert Tortoise Recovery Plan, U.S. Fish and Wildlife Service (1994).

¹⁶ Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise, U.S. Fish and Wildlife Service (2008).

¹⁷ Bureau of Land Management (1980).

¹⁸ Bureau of Land Management (1980).

for solar energy development involving 167,211 acres have been received by BLM, although none have applied for certification from the California Energy Commission and, thus, the administrative review process has not been initiated.

Vegetation in the area consists of low diversity creosote bush scrub. Notable wildlife in the study area includes desert tortoise, nesting and foraging raptors, and desert bighorn sheep.

Desert Tortoise: The study area is within the Northern Colorado Recovery Unit and is part of a likely habitat linkage that biologically joins the Western Mojave, Northern Colorado and Eastern Colorado Recovery Units. The Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise includes lands meeting the criteria for inclusion in the Draft USGS Desert Tortoise habitat model. These lands suggest that biological linkage or continuity potentially exists between the Joshua Tree and Chemehuevi Critical Habitat Units.¹⁹ Furthermore, the U.S. Fish and Wildlife Service state that “Patchy habitat southeast of the Cadiz Valley appears to provide some linkage between the northern and southern halves of this recovery unit. As a result, we merged these two recovery units.”

Joshua Tree and Chemehuevi located within a landscape-level corridor that provides biological linkage between the Joshua Tree and Chemehuevi Critical Habitat Units a landscape that provides biological connectivity for the Desert Tortoise in the

Desert Bighorn Sheep: Desert bighorn sheep, a BLM-designated Sensitive Species, occurs in the Iron Mountains in addition to a number of other isolated desert ranges separated by vast undeveloped valleys. Bighorn sheep have persisted in the California Desert because their individual subpopulations were biologically linked by movement corridors across the valleys in-between ranges having habitat conducive to supporting permanent bighorn sheep populations. Iron Mountain is one of those ranges linked with others such as the Eagle, Coxcomb, Palen, Old Woman, and Turtle Mountains.

Raptors: The Iron Mountains are used by nesting and foraging raptors such as golden eagles, according to BLM planning data.²⁰

Recommendation: We strongly encourage that the Iron Mountain study be eliminated from further consideration because its isolation, extensive natural plant and animal communities and its location within wildlife movement corridors for the desert tortoise and desert bighorn sheep.

Riverside East

This extremely large study area consists of 202,295 acres in eastern Riverside County and stretches from Blythe on the Colorado River west to approximately the town of Desert Center. There are currently 16 right of way applications covering 146,885 acres within the study area.

Recommendation: We feel portions of this study area should continue to be seriously considered for solar energy development, especially those areas adjacent to private land where the natural

¹⁹ Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise, pg. 49.

²⁰ Bureau of Land Management (1980).

plant communities have been previously removed or significantly degraded, and along a swath north of Interstate 10 basically connecting Desert Center and Blythe. The Desert Center area contains some abandoned farm lands that are no longer in production as well as industrial utilities associated with the abandoned Kaiser Mine and the Colorado River Aqueduct. In the Blythe area we recommend reducing the size of the study area so that it is adjacent to Interstate 10, the Blythe Airport and numerous abandoned agricultural lands, as well as avoiding the extensive microphyll woodland washes draining from the eastern slope of the McCoy Mountains.

Imperial East

This relatively small study area comprising 12,830 acres is sandwiched between a portion of Interstate 8 and the U.S. Border in southeastern Imperial County. There are currently no right of way applications for this area on file with the BLM. Although the area is within the range of the Flat-tailed Horned Lizard, it is outside of the designated Flat-tailed Horned Lizard Management Area. There are no designated critical habitats, ACECs or wildlife habitat management areas affected.

Recommendation: We consider this study area acceptable for further consideration.

b. Arizona

We applaud BLM for selecting SESAs located near existing infrastructure. The selected SESAs are relatively small and are primarily located outside of areas of high conservation value, although some identified areas are located directly adjacent to areas of high conservation value.²¹ The proximity could cause undesirable edge-effects for sensitive wildlife species such as the Sonoran desert tortoise—the status of which is currently under review by the U.S. Fish and Wildlife Service for possible listing under the ESA. In addition, although there is no apparent overlap with designated critical habitats, according to the USGS ReGAP models, the SESAs do contain potential distribution/habitat for multiple BLM sensitive species.

Size and Screening

When one compares the Arizona study areas against the sizes and locations of those in California and pending solar development right of way (ROW) applications on BLM lands in Arizona, numerous questions arise. First, what is driving the significant study area size difference between Arizona and California? Is this simply a function of the differing criteria used, availability of information or quality of the screening process employed? Second, in Arizona there is no overlap between the solar study areas and pending ROW applications in Arizona – why is this? Last, the amount of acreage in pending ROW applications in Arizona dwarfs the solar study areas themselves.²² This brings into question the utility of the PEIS in terms of value-added planning for solar development on BLM land in Arizona.

²¹ See Figure 1.

²² See Figure 2.

Applications outside SESAs

The BLM has recently given notice of intent to prepare an EIS to address potential effects of a proposed project by Boulevard Associates to construct and operate an electrical generating facility using concentrated solar thermal power on approximately 4,000 acres of mostly intact desert habitat located on the northern boundary of the Sonoran Desert National Monument. *See* Figure 3. It is apparent that BLM is processing applications and initiating NEPA for individual solar projects that would impact large tracts of BLM land and are outside of the solar study areas identified in the west-wide PEIS. What then is the point of the solar study areas if applications outside of these areas will continue to be processed? Why then are the same screens used to identify the solar study areas not being applied to pending solar ROW applications to inform whether they are an appropriate use of public land? Perhaps there are not regulations that require BLM to enforce a rigorous screening process – but this points to the urgent need for such regulations when the integrity of so much public land is at stake.

SESAs on degraded lands

In Arizona, the federal government has initiated the “Restoration Design Energy Project”—a pilot project that aims to identify and assess the potential of using abandoned mines and other industrial or impacted sites to house renewable energy projects – on BLM land and possibly that of other municipalities as well. It is funded with \$1.7 million of stimulus money, and if successful, could be the beginning of what could eventually be a national plan to reuse millions of acres of “brownfield” sites for wind farms, solar arrays and geothermal power plants. These sites are attractive from a conservation perspective in that most are already disturbed and located near existing transportation and electric transmission infrastructure. However, issues regarding toxic clean-up, rugged terrain, water use, multiple land ownership complications, etc. have already been raised.

The initiative plans to promulgate a NEPA process that will assess the feasibility renewable energy development on sites that are nominated by the BLM field offices, other municipalities and entities. Why has the BLM not identified already- disturbed sites within the context of the Solar PEIS? Why is the Restoration Design Energy Project on a completely separate track from the Solar PEIS? There may be disturbed sites without major environmental hazard issues that should be considered as SESAs.

Brenda²³

- Intersects the northeast corner of a potential wildlife linkage identified in the Arizona Wildlife Linkages Assessment (Ranegras Plain Linkage)
- Contains USGS SWReGAP modeled distribution for BLM Sensitive Species: Western burrowing owl (*Athene cunicularia hypugea*), Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*), Rosy boa (*Charina trivirgata*) [western half of SESA], Small – footed myotis (*Myotis thysanodes*).

Bullard Wash

²³ *See* Figure 1 for a map of conservation areas of concern in relation to Arizona SESAs.

- Located just southwest of a potential wildlife linkage identified in the Arizona Wildlife Linkages Assessment.(Tres Alamos – Prescott National Forest Linkage)
- Located on southern edge of TNC Ecoregional Portfolio Area: “Date Creek”
- Located between “Date Creek” and “Harvuar Mountains” TNC portfolio areas – would potentially disrupt habitat connectivity between these two priority conservation areas.
- Located along the edge of suitable desert tortoise habitat.

Gillespe

- Intersects northern portion of TNC Ecoregional Portfolio Area: “Buckeye Copper Mine”
- Located on the eastern edge of a proposed management area for a future second population of endangered Sonoran Pronghorn (Area “A”)
- Located along the edge of suitable desert tortoise habitat.
- Located just south of a potential wildlife linkage identified in the Arizona Wildlife Linkages Assessment.(Saddle Mountains – Gila Bend Linkage)

c. New Mexico

The three SESAs in New Mexico contain significant natural and cultural resource conflicts, including the potential to directly and indirectly impact wilderness quality lands. One positive aspect of the three New Mexico SESAs is that they are all located near existing infrastructure, and thus would require less new road building than if they were located more remotely.

We were pleased to learn that upon further review, the BLM Las Cruces Field Office has recommended dropping both the Mason Draw and Red Sand SESAs from consideration, citing conflicts that have been subsequently identified related to natural resources, cultural resources and wildlife management areas.²⁴ We concur with this recommendation. The Afton SESA appears to contain the least amount of potential conflicts with natural and cultural resources, but may contain important habitat for reptiles that should be avoided if possible.

Mason Draw

This SESA intersects southwestern corner of New Mexico Wilderness Alliance BLM Citizen’s Inventory Unit “Sleeping Lady Hills” by approx. 350 acres and also clips the “Robledos-Las Uvas” unit by approx. 480 acres.²⁵

According to the New Mexico Wilderness Alliance, the Robledos-Las Uvas complex contains a high diversity of vegetation types, especially cacti (including the State-endangered night-blooming cereus). Pronghorn, mule deer, mountain lion, bobcat, coyote, bats, rock squirrels and other rodents, quail, and numerous other birds call this area home. The grasslands found here are important to a declining grassland fauna and provide habitat for rare birds like the Aplomado falcon and Baird’s sparrow. The abundance of cliffs in the mountains provides nesting and perching sites for many raptors, including bald and golden eagles, various hawks and owls, and

²⁴ Jennifer Montoya, BLM organized discussion with interested parties (Sept. 4, 2009).

²⁵ See Figure 4.

the Federal-endangered peregrine falcon. Reptile diversity is also high; banded rock rattlers, Madrean alligator lizards, and Trans-Pecos rat snakes are all found here, as are other reptiles that reach the northern or western limits of their range.

Archaeological and historic resources are also rich in the Greater Robledo Mountains – Sierra de las Uvas Complex. At least 20 historic and prehistoric sites are known to occur within or adjacent to the Robledo Mountains WSA, including some of the earliest known prehistoric habitation sites in southern New Mexico. Also included are several undisturbed pothouse villages, two Lithic Indian sites in Horse Canyon, and at least two excellent petroglyph sites in the Sierra de las Uvas. More prehistoric sites likely exist, but no comprehensive survey has taken place. The historic Butterfield Trail also runs through the area.²⁶ Given its close proximity to this roadless area complex, it is likely that the Mason Draw solar energy study area shares many of these characteristics and values.

This SESA is located within a BLM Habitat Management Planning area for pronghorn and mule deer. Industrial solar development is not consistent with maintaining and/or improving habitat for these two species, both of which are very sensitive to roads, traffic, human development and disturbance.²⁷

The Nature Conservancy, in cooperation with the BLM and other entities, conducted a Rangeland Ecological Assessment for the southern half of New Mexico. In this assessment, there are two areas in the west and south of the Mason Draw SESA, totaling approximately 1,000 acres that may contain some grassland reference condition elements.

Recommendation: The Mason Draw SESA should be dropped or at a minimum redrawn to exclude these inventory areas. Even if redrawn to exclude these roadless, wilderness-quality lands, the development of industrial-scale solar installations would undoubtedly impair the viewsheds from inside these potential wilderness areas, and would also impair the sense of naturalness and solitude they provide to the public. Lastly, solar development in this area would impair habitat quality and connectivity for species that utilize habitat in and adjacent to the Mason Draw SESA.

Afton

Of the three SESAs in New Mexico, this unit appears to have the least conflict with sensitive natural resources, is close to existing infrastructure (Interstate 10 and an “existing designated corridor”) as well as a major metropolitan area (Las Cruces). According to USGS, Southwest ReGAP terrestrial species predicted range modeling species richness composite, this SESA has high reptilian diversity in the eastern half (45 on a scale of 0-57).²⁸

The southwest corner of this SESA is approximately 2.5 miles from the northeast corner of BLM’s Aden Lava Flow ACEC,²⁹ which was protected for, “Scenic and geologic features;

²⁶ NMWA BLM Citizen’s Wilderness Inventory.

²⁷ See BLM Las Cruces District Office Map.

²⁸ See Figure 8.

²⁹ See Figure 9.

interesting wildlife and wildlife habitat.”³⁰ How would industrial-scale development in close proximity impact the scenic and habitat values of this ACEC? Similarly, how would such development impact wilderness characteristics and values of NMWA’s Citizens “Aden Lava Flow” wilderness inventory unit, which lies 1.9 miles southeast of this SESA’s southwest corner? We anticipate industrial-scale development would undoubtedly negatively impact the viewsheds from these wilderness-quality lands and could impair the ability to achieve solitude do to an increase in human development and activities in the area.

Recommendation: The SESA should be redrawn to avoid this area of high potential reptilian diversity.

Red Sand

This SESA is located due east from White Sands National Park, and is due west of the Sacramento Escarpment, which contains numerous NMWA BLM Citizen’s Inventory Units. Industrial-scale development would undoubtedly negatively impact the viewsheds from these roadless, wilderness-quality lands and internationally known National Park Service unit.³¹ In addition, according to the Las Cruces BLM Field Office, this SESA contains extensive cultural resources that would potentially be disrupted by industrial-scale solar development.

The Nature Conservancy’s Rangeland Ecological Assessment identifies a grassland area in the northwestern portion of this SESA that contains approximately 6,400 acres of reference condition-quality grasslands.³² Reference condition Chihuahuan desert grasslands are very rare, and should be eliminated from the SESA.

Recommendation: To the extent that lands within this SESA are targeted by BLM and conservation organizations for grassland restoration, these areas should be eliminated from the SESA.³³

d. Nevada

Amargosa Valley:

The Amargosa Valley is located between two significant federal conservation areas: Death Valley National Park and Ash Meadows National Wildlife Refuge. Many sensitive and significant biological resources within these two areas are associated with surface waters derived from a complex groundwater system.

The 23,000 acre Ash Meadows Wildlife Refuge, established in 1984, supports 24 endemic species of plants and animals, the highest concentration of known rare and endemic species in the United States. Of these 24 species, 12 are federally listed as threatened or endangered, and almost all re dependent on aquatic or wetland environments within the refuge.

³⁰ Bureau of Land Management (2001).

³¹ See Figure 7.

³² See Figure 5.

³³ See Figure 6.

Recommendation: Defenders recommends that the Amargosa Valley study area be eliminated from further consideration as a solar energy zone.

Dry Lake Valley North/Delamar Valley

Recommendation: Due to the lack of groundwater supply necessary to support the construction and operation of any solar energy facility, BLM should remove these solar energy areas from consideration.

e. Lands being Considered for Solar Energy Development

Uncertainty remains as to how the “light blue” areas on the Solar PEIS maps will be treated in the Solar PEIS. In response to a query regarding these areas, we received this response:

Regarding your question on the areas identified as “BLM Lands Being Analyzed”, maps of these lands are still under development and are not available. However, it may be helpful to you to know how the BLM is defining these lands. These other BLM-administered lands that may be considered for solar energy development include all BLM lands in the 6-state study area with solar insolation levels greater than 6.5 kWh/m²/day and slopes of less than 5%, but exclude the following BLM-administered lands: Federally Designated Wilderness Areas, Wilderness Study Areas, Instant Study Areas, National Monuments, National Conservation Areas, National Trails, Wild and Scenic Rivers, Areas of Critical Environmental Concern, Critical Habitat for Threatened and Endangered Species designated by the U.S. Fish and Wildlife Service, Right-of-Way Exclusion and Avoidance Areas, No Surface Occupancy Areas, and Special Recreation Management Areas. Also, any areas of less than 1 km² after the above exclusions were applied have been excluded. The “Other BLM Lands Being Analyzed” will not be assessed in detail in the PEIS, whereas the solar energy study area assessments will include detailed information (for example, on hydrology, potential air quality impacts, surrounding land uses, endemic species).

While the “light blue” areas identified may have high solar insolation values and relatively flat terrain, these additional “BLM lands being analyzed for Solar Development in PEIS” also contain extensive conflicts with areas of high conservation and cultural values. One prime example of an area of high conflict included within these “light blue” areas is the western portion of Otero Mesa.³⁴ Otero Mesa contains the largest remaining intact and undisturbed expanses of Chihuahuan desert grassland, which supports a high degree of biological diversity. As such, The Nature Conservancy’s Rangeland Ecological Assessment identifies the majority of Otero Mesa containing “reference condition” grasslands.³⁵

According to the New Mexico Wilderness Alliance, Otero Mesa “. . . is home to over 1,000 native wildlife species, including black-tailed prairie dogs, desert mule deer, mountain lions,

³⁴ See Figure 10.

³⁵ See Figure 11.

golden and bald eagles, over 250 species of songbirds, and boasts the state's healthiest and only genetically pure herd of pronghorn antelope. Furthermore, there is evidence that the Salt Basin aquifer, which originates in Otero Mesa and travels south into Texas, is the largest untapped fresh water resource remaining in New Mexico." In addition, the New Mexico Wilderness Alliance's Citizen's Wilderness Inventory has identified more than 500,000 acres suitable for wilderness designation.³⁶

Thus, there are serious concerns regarding how industrial-scale solar development would potentially impact the integrity of this grassland system, and the abundant wildlife it supports. In addition, water use to support solar installations could potentially mine precious potable water from the Salt Basin aquifer.

In addition to Otero Mesa, there are numerous other BLM Wilderness Inventory Units with abundant natural and cultural resource values that are in conflict with the "light blue" areas, including: Robledos-Las Uvas complex, Potrillo Mountains complex, Caballo Mountains complex, Jornada del Muerto complex, Goodisight and Nutt Mountains units.

Recommendation: Defenders expects a meaningful opportunity to comment will be provided, *i.e.*, one that allows comments to be considered and areas adjusted.

Conclusion

Defenders of Wildlife recognizes the urgent need to rapidly increase the amount of energy generated by renewable energy sources in order to curb the serious environmental and socio-economic threats posed by greenhouse gas-driven climate change. Public lands are sure to play an important role in facilitating our nation's transition from fossil fuel-based energy production to renewable-based alternatives. However, such large-scale development will also come at a cost. Extensive amounts of land and water are required to facilitate utility-scale solar plants. By its nature, utility-scale solar development will preclude most other public uses of the developed lands, and has the potential to destroy, degrade and fragment vital wildlife habitats, eliminate vegetative carbon sequestration, and negatively impact water quality and availability. Therefore, we urge the application of the best available science and the inclusion of already-disturbed lands in the process of identifying areas suitable for solar development.

Defenders is supportive of creating an efficient process for authorizing solar energy development in a manner that will protect sensitive resources and minimize negative environmental impacts. Given the current lack of regulations governing the issuance of right-of-way applications for solar development on public lands, we applaud programmatic-level planning for the designation of solar energy study areas, and the development and implementation of comprehensive mitigation policies. Strategic planning at the proposed scale has a higher likelihood of leading to sustainable decisions and optimal conservation outcomes as compared to piecemeal decision-making processes at the project or site scale. However, questions remain regarding the comparative environmental benefits and risks of zonal versus non-zonal planning, as well as concerns regarding cumulative impacts of solar development and associated energy transmission.

³⁶ *Id.*

BLM must fully comply with statutory requirements under the National Environmental Policy Act, the Endangered Species Act, and the Forest Land Policy and Management Act. Furthermore, it is imperative that the screening criteria used to identify appropriate areas for development should be applied consistently from state to state, and that all available scientific information pertaining to special status species habitat (including BLM sensitive species), habitat connectivity, wilderness characteristics and values, and valuable water resources are considered in detail in the identification, configuration and analysis of solar energy study areas.

Thank you for considering our comments. If you have any questions, please contact Peter Nelson, Defenders' Director of Federal Lands, at 202-682-9400 x. 202 or via email at pnelson@defenders.org.

Respectfully,

Peter Nelson
Federal Lands Program, Director

DEFENDERS OF WILDLIFE
1130 Seventeenth Street NW
Washington, D.C. 20036
(202) 682-9400
pnelson@defenders.org

ATTACHMENTS

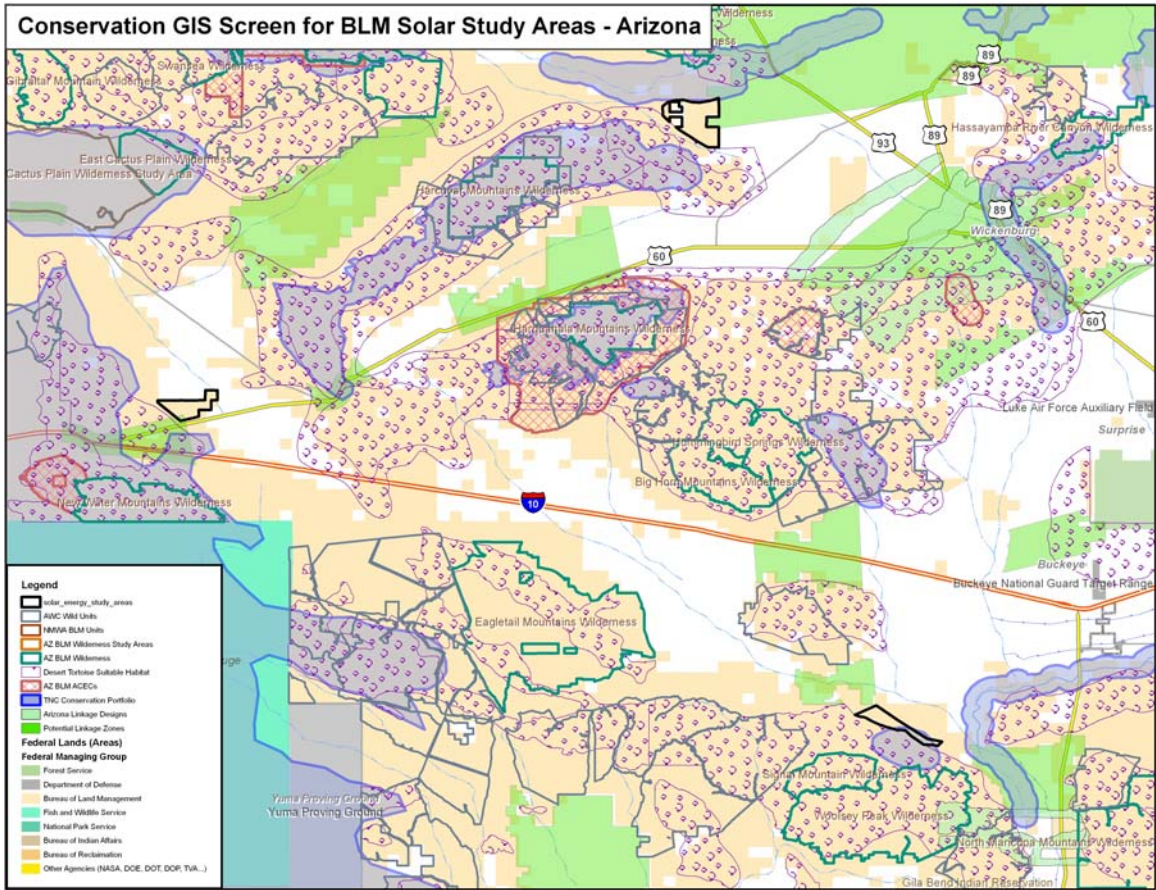


Figure 1. This map depicts the three Solar Energy Study Areas in Arizona in relation to important areas of conservation concern. Note that while the SESAs are located mainly outside of these areas, they are all located on the edge of important areas (e.g. Desert tortoise suitable habitat).



Figure 2. This map depicts solar development ROW applications on BLM lands in Arizona. Yellow polygons are BLM Wilderness Areas. Orange cross-hatched areas represent pending solar ROW applications. Red outlined/cross-hatched areas represent the 3 solar energy study areas. Blue cross-hatched areas represent National Monuments. Note there is no overlap between ROW applications and SESAs.

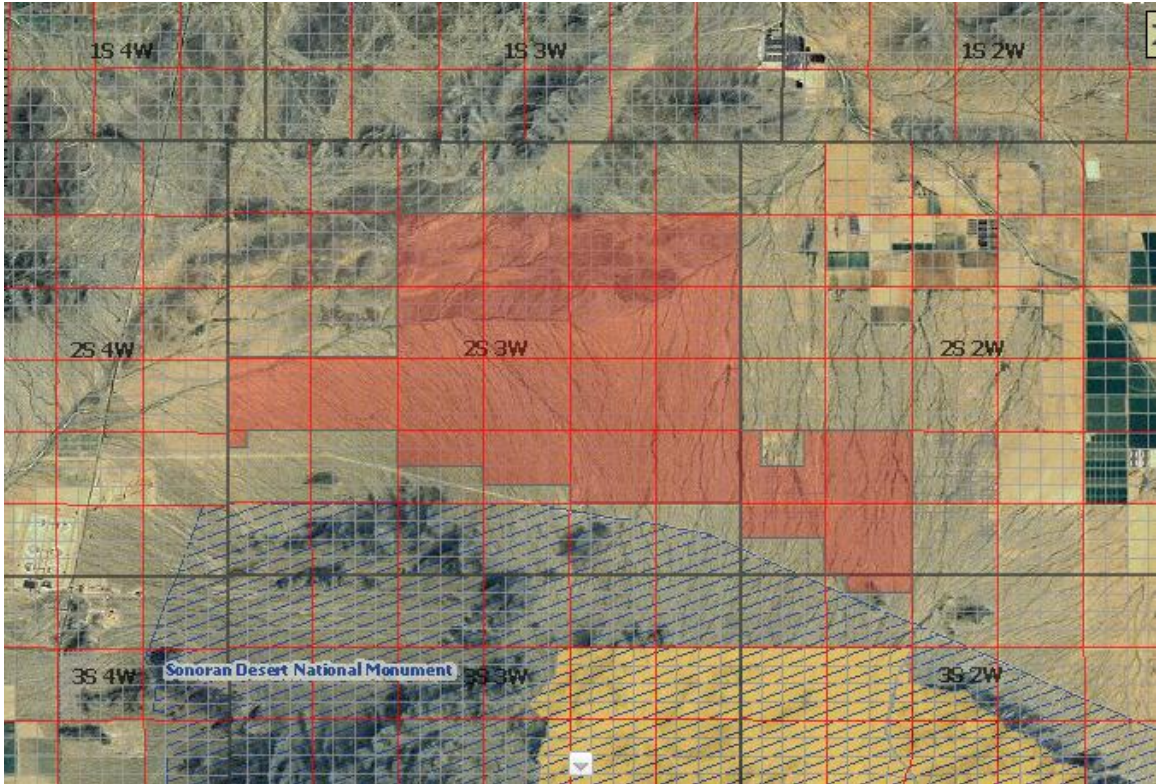


Figure 3. This map depicts the pending ROW application of Boulevard Associates on 4,000 acres of currently undisturbed desert habitat (salmon color). This is located on the northern boundary of the Sonoran Desert National Monument (blue cross-hatch), and outside of any of the 3 solar study areas.

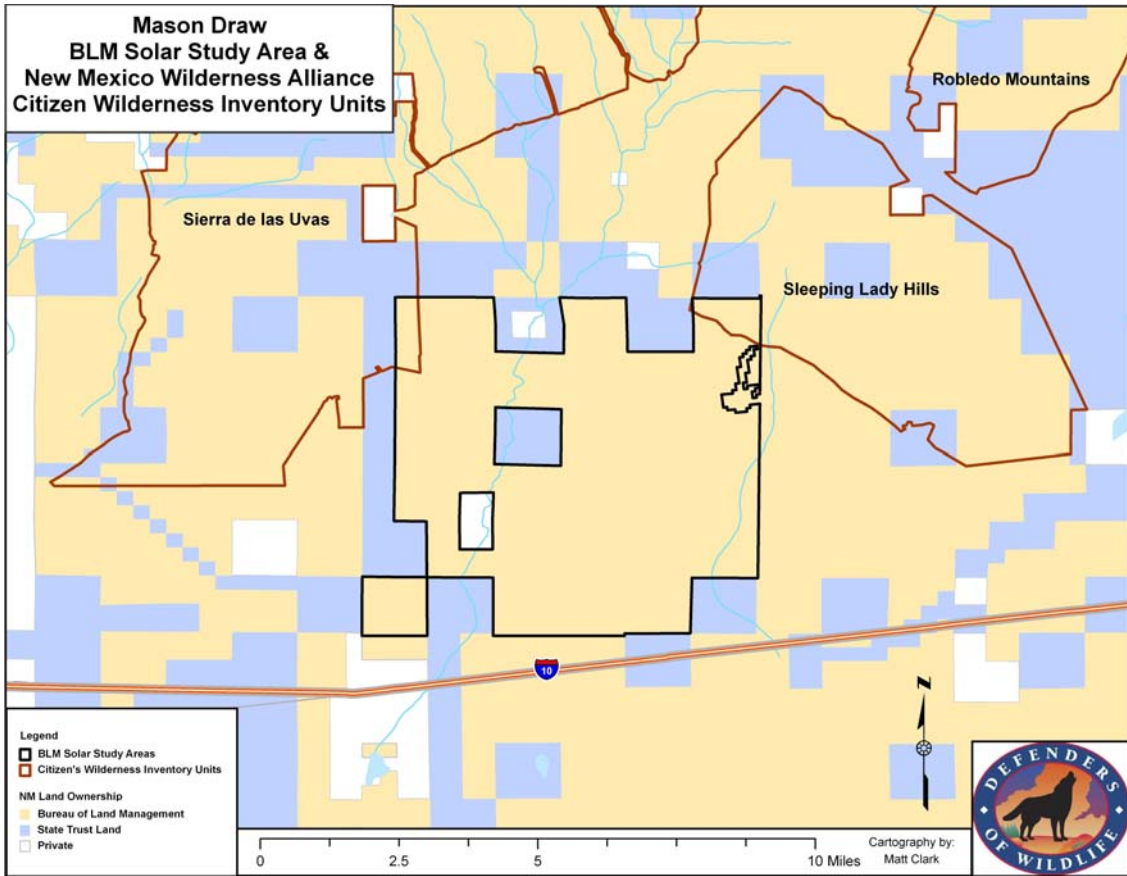


Figure 4. This map depicts overlap and conflict of the Mason Draw SESA with the New Mexico Wilderness Alliance's BLM Citizen's Wilderness Inventory Units.

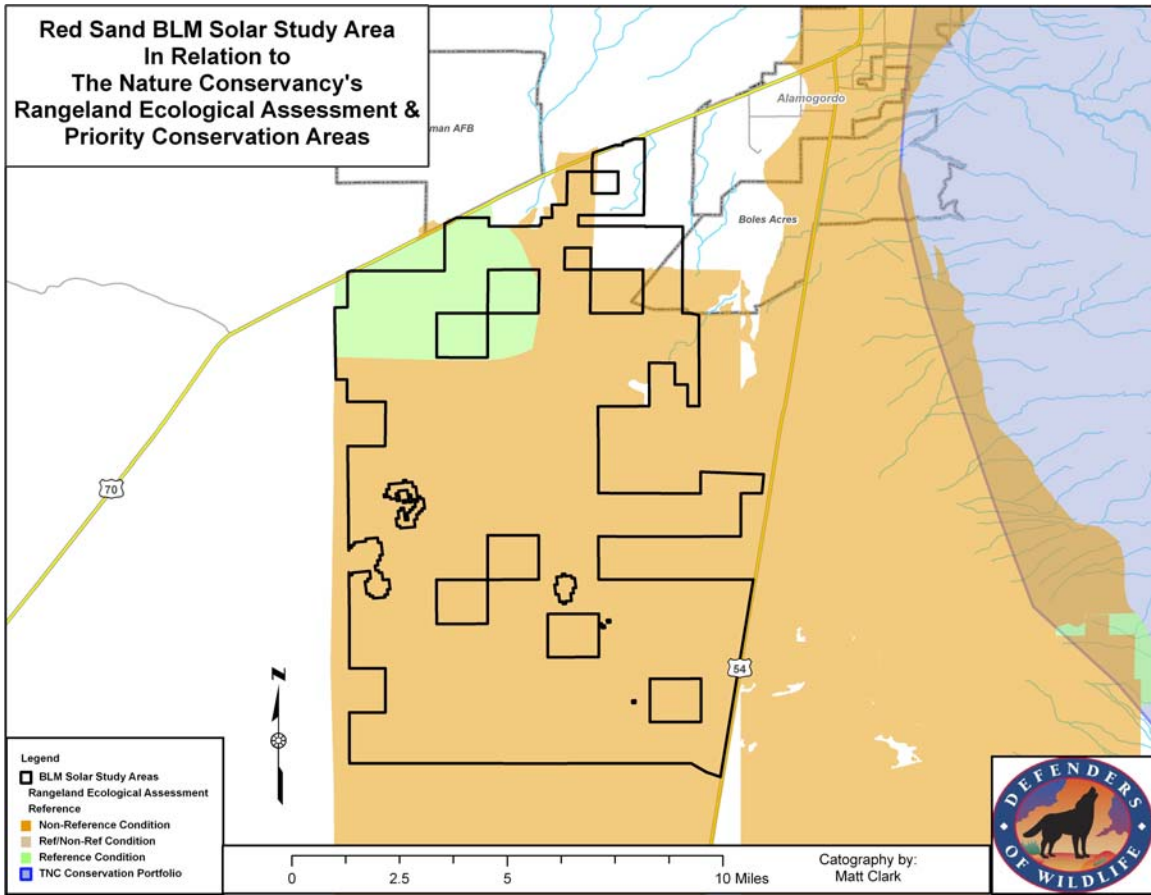


Figure 5. This map depicts the Red Sand Solar energy study area in relation to mapped units of The Nature Conservancy's Rangeland Ecological Assessment reference conditions.

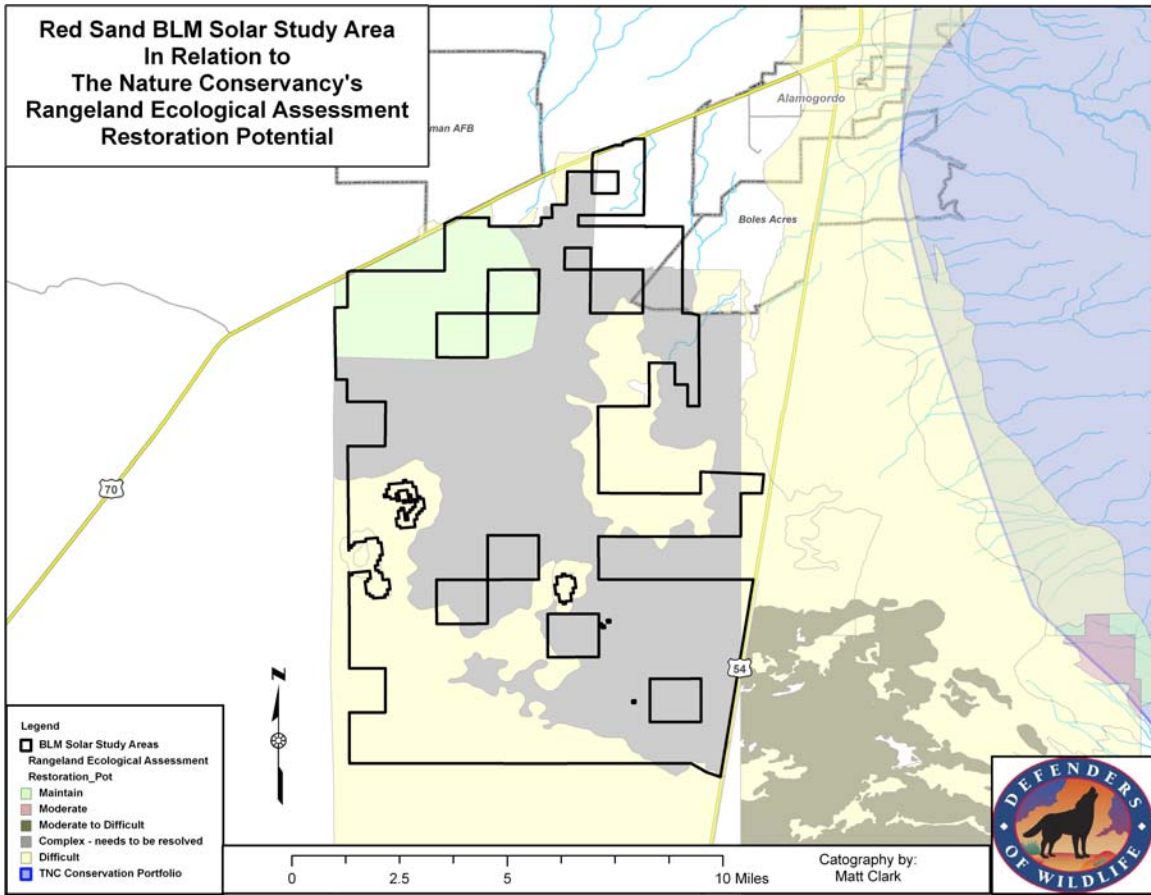


Figure 6. This map depicts the Red Sand Solar energy study area in relation to The Nature Conservancy's Rangeland Ecological Assessment restoration potential.

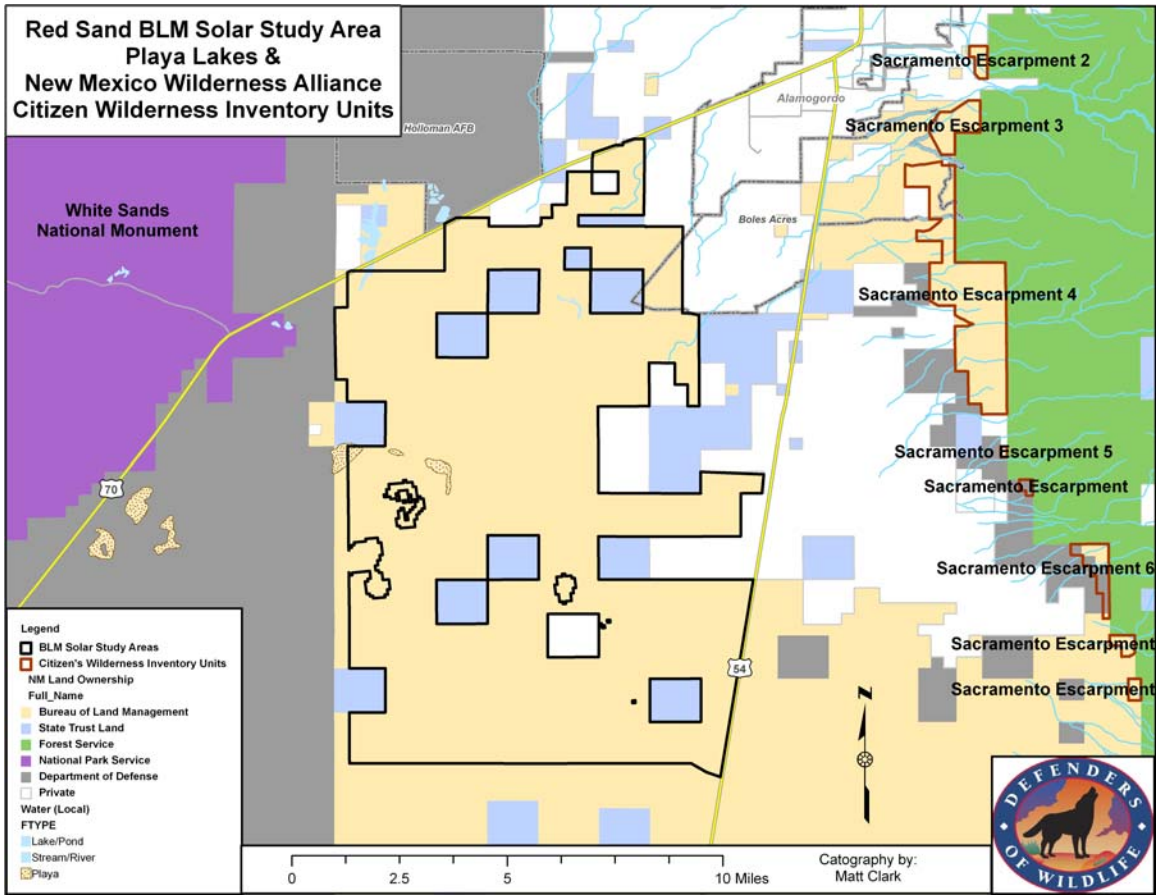


Figure 7. This map depicts the Red Sand Solar Energy Study Area in relation to the White Sands National Monument, NMWA's Citizen Wilderness Inventory Units, and playa lakes.

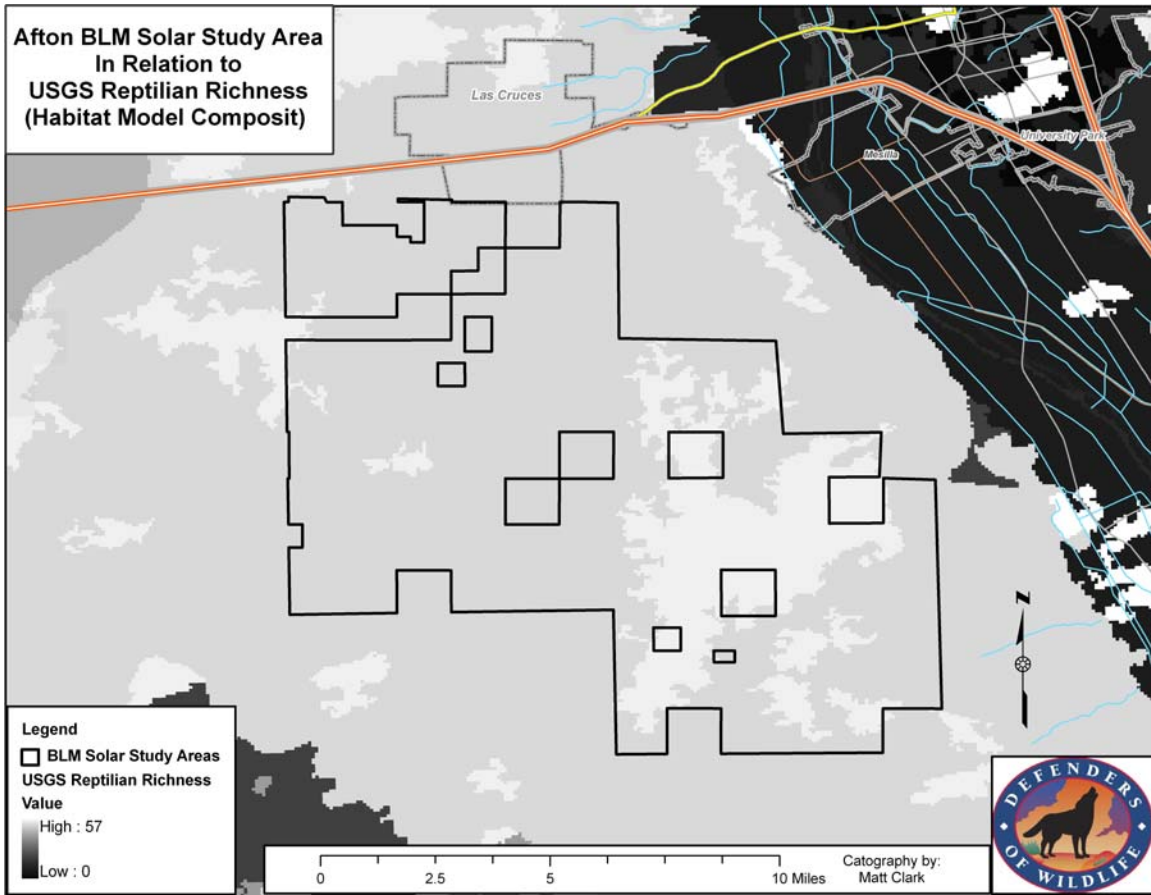


Figure 8. This map depicts the Afton Solar Energy Study Area in relation to the USGS Southwest ReGAP wildlife habitat modeling reptile richness composited. Note the area in the eastern portion of the study area that contains relatively high reptilian richness.

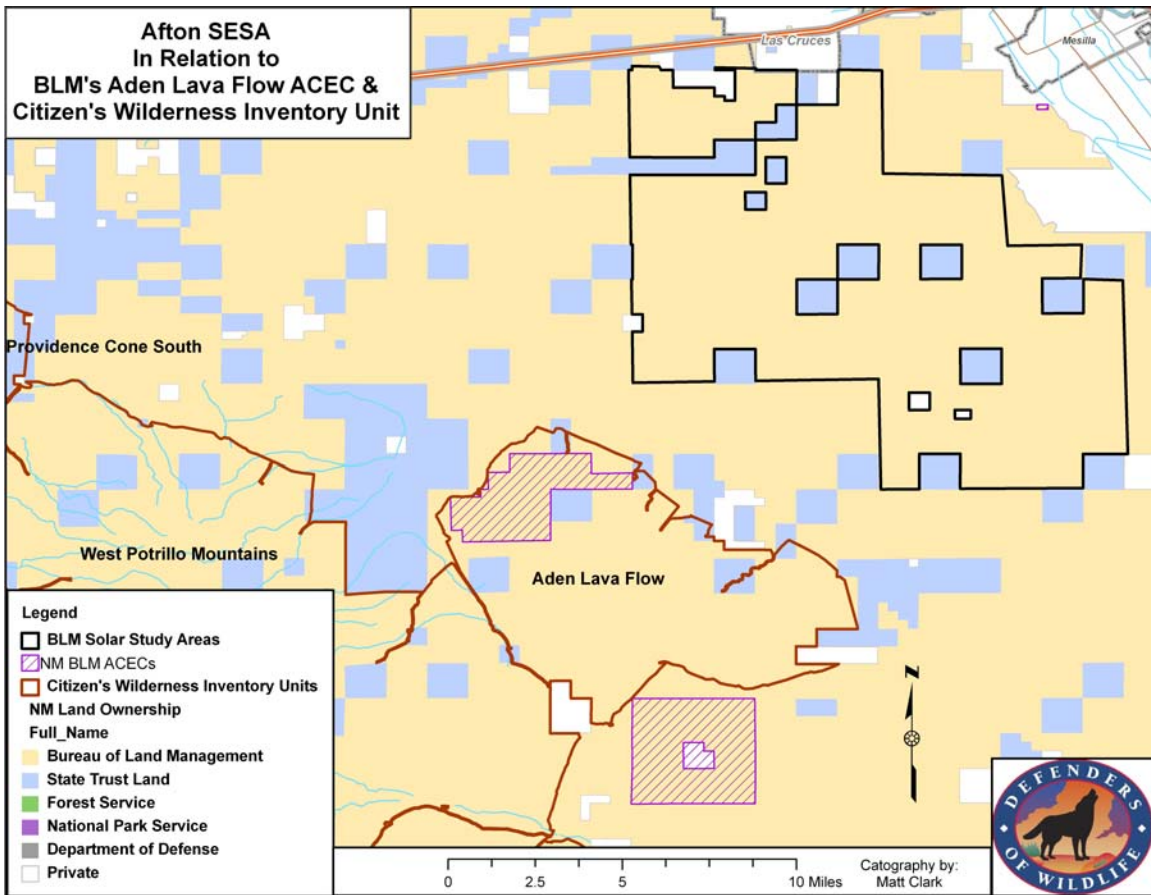


Figure 9. This map shows the close proximity of the Afton SESA to the Aden Lava Flow Area of Critical Environmental Concern and NMWA's Aden Lava Flow Wilderness Inventory Unit.

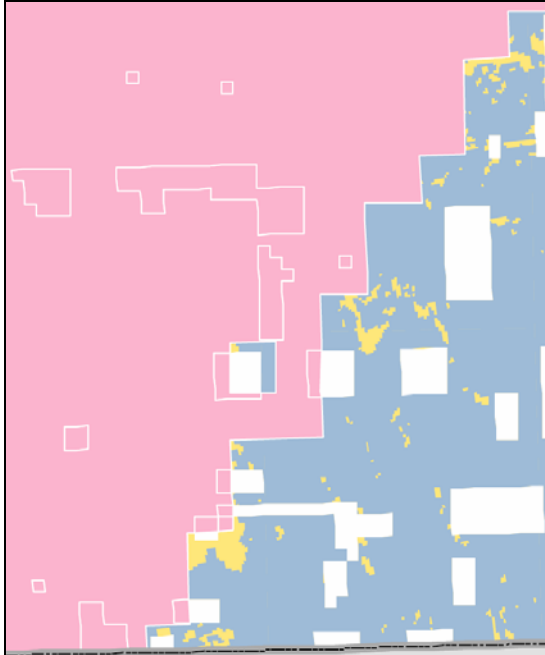


Figure 10. This is a clipped portion of the BLM’s “Solar Energy Study Areas in New Mexico” map. The light blue areas shown here on the western portion of Otero Mesa are labeled as “BLM Lands Being Analyzed for Solar Development in PEIS”.

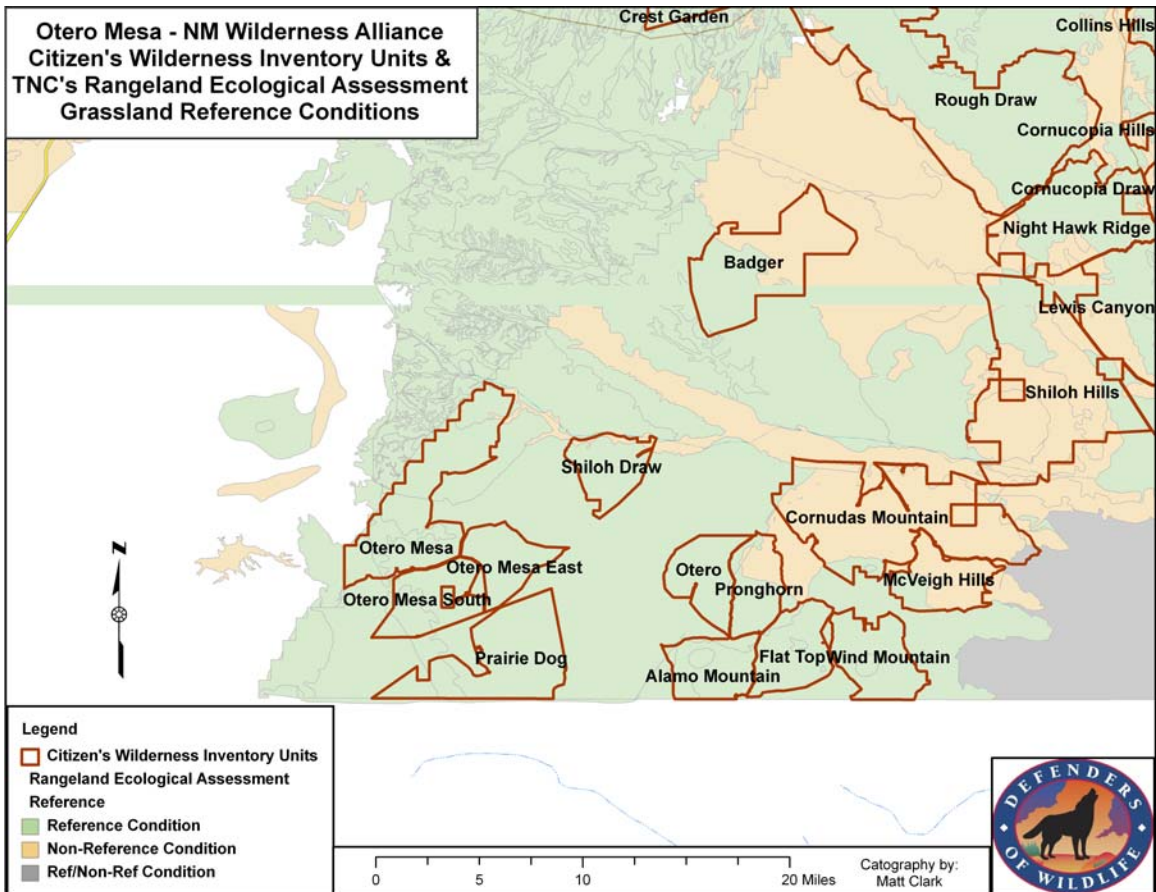
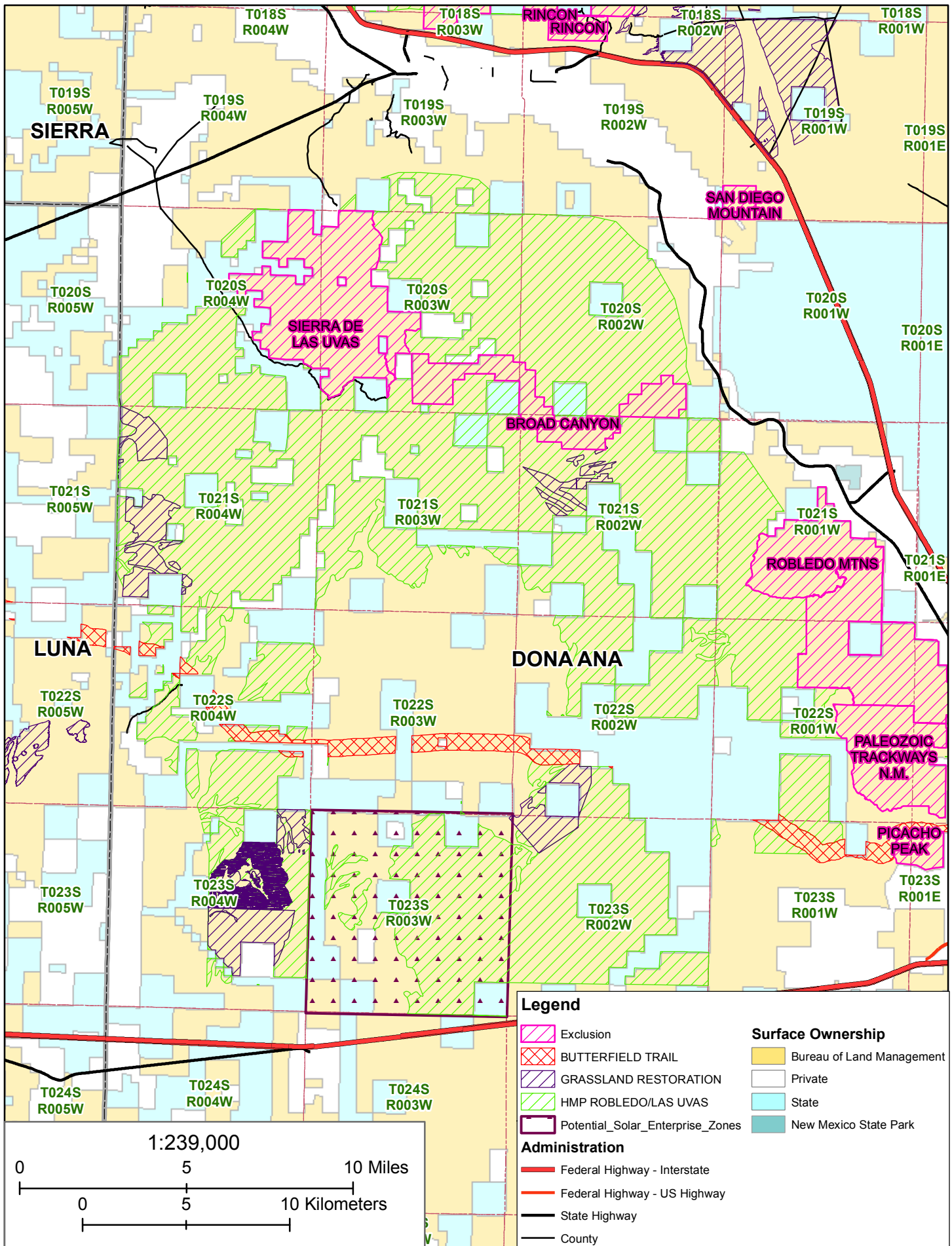


Figure 11. This map depicts Otero Mesa’s “reference condition” grasslands and wilderness potential.



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