Thank you for your comment, Sophie Hayes.

The comment tracking number that has been assigned to your comment is SolarD11840.

Comment Date: May 2, 2011 17:58:36PM
Solar Energy Development PEIS
Comment ID: SolarD11840

First Name: Sophie
Middle Initial:
Last Name: Hayes
Organization: Utah Clean Energy
Address: 1014 2nd Avenue
Address 2:
Address 3:
City: Salt Lake City
State: UT
Zip: 84103
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Solar DPEIS comment letter - UCE FINAL.doc

Comment Submitted:

UTAH CLEAN ENERGY
We Partner to Build the New Clean Energy Economy

To: Linda Resseguie, BLM Solar PEIS Project Lead, Argonne National Laboratory
From: Utah Clean Energy
Subject: Comments on Solar Energy Development Draft Programmatic Environmental Impact Statement
Date: May 2, 2011

Introduction

Utah Clean Energy is a non-profit, non-partisan organization committed to creating a future where Utahans significantly decrease our carbon-based energy consumption, become more energy efficient, and increase our use of renewable energy. We partner with diverse stakeholders to build the new clean energy economy, focusing on policy, regulatory, and educational initiatives aimed at removing barriers to the adoption of clean energy technologies. Utah Clean Energy works closely with both renewable energy developers and land and wildlife conservation advocates to facilitate collaboration as we seek to increase the amount of renewable energy developed in Utah.

We are simultaneously mindful of the catastrophic consequences of global climate change and our overreliance on finite and volatile fossil fuels along with the potentially undesirable impacts of new energy development on critical habitat, species, and wildlife. In developing solar (and other renewable energy) on public lands, it is imperative to strike a balance between addressing the near-term impacts of utility-scale solar development with the long-term impacts of climate change on biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we support smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and wild lands.

We assert that the development of appropriately sited utility-scale renewable energy (coupled with increased adoption of energy efficiency and on-site distributed generation) can help mitigate the risks, uncertainties, and damaging impacts of our current energy system, while also minimizing negative impacts on other species and valuable open space.

We commend the BLM and DOE for their efforts to facilitate solar energy development on public lands in a responsible manner that takes into account impacts on the environment, land use, and wildlife. We are grateful for the opportunity to advocate that solar energy development be directed to the most appropriate and suitable locations by developing and maintaining a process for identifying and designating solar energy development priority zones.

Summary of Comments

Utah Clean Energy is not a land-use focused organization; therefore, our comments include recommendations aimed at reducing conflict between developers and conservationists while facilitating expedited development of solar energy in appropriate locations on public lands in Utah. Utah Clean Energy makes the following recommendations:

1. Analyze an Alternative that focuses on the development of solar photovoltaic technology over concentrating solar technologies by reviewing and adjusting

screening to ensure that sites appropriate for economic solar PV development are not inadvertently screened out by the solar isolation criteria. Such screening is appropriate given the current and projected price trends for the different utility-scale solar technologies along with the nature of Utah's solar resource.

2. Clearly designate and describe the process for identifying and designating new solar energy zones (SEZ) throughout the planning horizon.

3. Specify the process for prioritizing development in SEZs. Furthermore, prioritizing solar development in previously disturbed lands and areas near existing transmission and supporting infrastructure could facilitate solar development while minimizing conflict.

4. Screen potential solar development zones for roadless areas with wilderness characteristics (citizen-proposed wilderness areas) that have not been officially designated as Wilderness or Wilderness Study Areas. This additional screening process may help forestall future development conflicts with the conservation community.

Solar Photovoltaic (PV) Alternative

Although generally impressed with the screening criteria established by BLM for designating areas suitable for solar energy development, we are discouraged by the apparent priority given concentrating solar technologies over solar photovoltaic technologies. In its stated objectives for the programmatic EIS for solar energy development on public lands, BLM lists "facilitating *near-term* utility-scale solar energy development on public lands" as one of its priorities.[1] According to our conversations with solar energy developers, as well as recent solar industry reports, it is far more likely that solar PV technology will be prioritized by developers and end-users over other utility-scale solar technologies in the foreseeable future.

The dramatic and rapid decline in the installed cost of solar PV technology, combined with the fact that solar PV requires little to no water, is shifting the utility-scale market away from concentrating solar power (CSP). The Solar Energy Industries Association and GTM Research (SEIA and GTM) report that installed utility-scale solar PV capacity in the U.S. more than doubled in 2010[2] and is expected to double again in 2011.[3] Additionally in 2010, the installed price of utility-scale PV dropped 16%.[4] Because of this price decline, utilities are selecting PV over CSP.[5]

---

[1] Draft Solar PEIS at 1-8, ln. 3 (emphasis added).

[2] U.S. solar capacity went from 113 MW in 2009 to 242 in 2010. *U.S. Solar Market Insight™ 2010 Year in Review* 7 (Solar Energy Industries Association and DTM Research 2010) *available at* http://www.seia.org/galleries/pdf/SMI-YIR-2010-ES.pdf.

[3] *Id.* at 13.

[4] *Id.* at 10.

[5] Syanne Olson, *New GTM Research report examines concentrating solar power technology, costs, and markets* (PV Tech, January 13, 2011) *available at* http://www.pv-tech.org/news/new_gtm_research_report_examines_concentrating_solar_power_technology_costs (reporting on

Illustrative of this is the fact that two of six CSP plants approved by the BLM were later sold to PV developers. According to SEIA and GTM, 2011 is expected to be a light year for CSP development, with CSP facing increasing uncertainty regarding financing, siting, and permitting after 2013.[6] Moreover, PV is expected to maintain a cost advantage over CSP through 2020.[7]

Given that PV is the technology that is most likely to be developed in the *near term*, it is appropriate that the BLM should adjust its screening criteria to reflect resource areas where solar PV is likely to be viable. Solar PV can harness solar power at insolation levels lower than CSP, yet the Draft Solar PEIS methodology screened out resources with direct normal irradiances of less than 6.5 kWh/m2/day. BLM explained, "The rationale for restricting the available lands based on the solar insolation level is to maximize the efficient use of BLM-administered lands and meet the multiple use intent of FLPMA by reserving for other uses lands that are not ideal for solar energy development."[8] We are sensitive to the complications of complying with a multiple use mandate; nevertheless, the "ideal" threshold for PV development is lower than that for CSP, and PV development should not be implicitly preempted because the screening criteria assumes the resource assessment needs of a more demanding and less economically feasible technology.

Another of the stated objectives of the BLM's PEIS for solar development on public lands is "providing flexibility to consider a variety of solar energy projects (location, facility, size, technology, and so forth."[9] BLM should take this objective seriously and consider the likelihood and viability of utility-scale solar PV installations in areas that are not as ideal for CSP.

The Draft Solar PEIS does not assess reasonable DNIs for different solar technologies in justifying its "ideal" standard. BLM stated that the threshold of 6.5kWh/m2/day was based on "the assumption that at insolation levels below 6.5 kWh/m2/day, utility-scale development would be less economically viable given current technologies."[10] Current PV technology works well at insolation levels below 6.5. For example, the *Utah Renewable Energy Zones Task Force Phase I Report*, which focused on CSP in assessing Utah's solar resource included areas with an insolation value of 6.0 kWh/m2/day in its consideration of solar energy zones.[11]

Under clear sky conditions, about 85% of sunlight is DNI and 15% is scattered light that comes in at all different angles. DNI can be harnessed by all solar technologies, but only PV can utilize scattered light to produce electricity.[12] Additionally, the maps for solar PV

---

a GTM Research report on CSP, which can be purchased here: http://www.gtmresearch.com/report/concentrating-solar-power-2011-technology-costs-and-markets); *see also* Isabella Kaminski, *CSP Market Threatened by PV* (Renewable Energy Focus.com, January 18, 2011) *available at* http://www.renewableenergyfocus.com/view/15198/csp-market-threatened-by-rise-of-solar-pv/.

[6] *Id.* at 14-15.

[7] *Id.*

[8] Draft Solar PEIS at 2-28, ln. 34-37.

[9] Draft Solar PEIS at 1-8, ln. 7.

[10] Draft Solar PEIS at 2-7, ln. 19-21.

[11] *Utah Renewable Energy Zones Task Force Phase I Report: Renewable Energy Zone Resource Identification* (Utah Geological Survey, a division of Utah Department of Natural Resources 2009).

[12] http://teeic.anl.gov/er/solar/restech/dist/index.cfm

resource potential developed by the National Renewable Energy Laboratory indicate that PV resource potential is greater at lower DNI's, as compared with CSP (see figures 1 and 2).

Figure 1. Concentrating Solar Resource of the United States. National Renewable Energy Laboratory. 2008. (DNI scale: 1.3 kwh/m2/day to 8.3 kwh/m2/day)

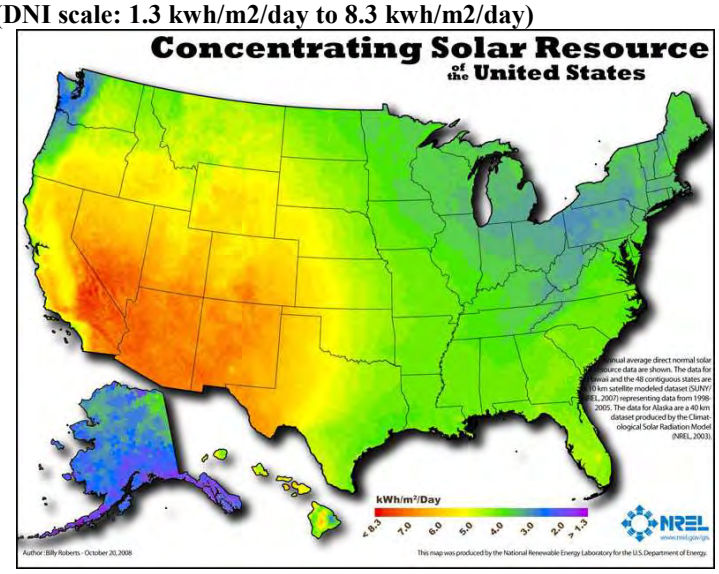
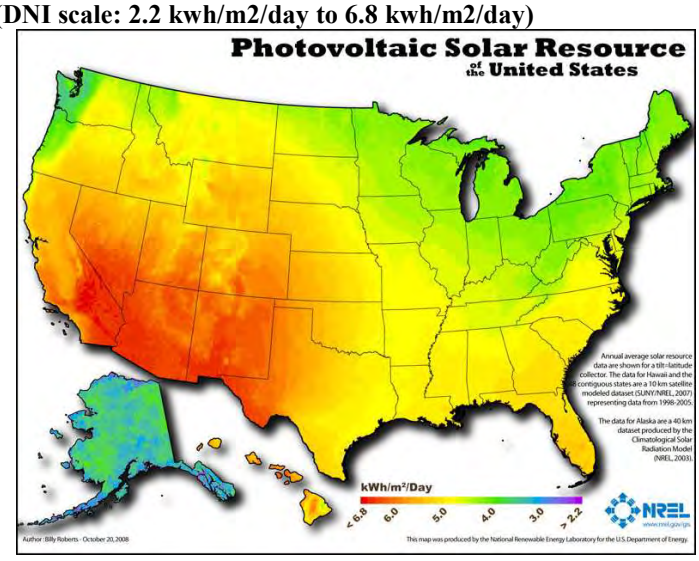


Figure 2. Photovoltaic Solar Resource of the United States. National Renewable Energy Laboratory. 2008. (DNI scale: 2.2 kwh/m2/day to 6.8 kwh/m2/day)



If the purpose of the screening criteria is to "allow time and effort to be directed to those projects which have the greatest chance of success,"[13] BLM should consider the availability of the solar resources applicable to the solar technology with the greatest chance of development. Therefore, we recommend consultation with solar developers and the National Laboratories to develop an appropriate insolation screening level in order not to preclude cost-effective PV development.

[13] Draft Solar PEIS at 2-7, ln. 5-6.

Solar Energy Zones and Other Procedural Issues

The process of identifying Solar Energy Zones (SEZ) in six Western states is an important effort that will help prevent and minimize conflict between solar energy developers and the conservation community. The identification of priority areas for utility-scale solar energy development is imperative to guiding development to suitable areas (and preventing development in unsuitable areas).

As lower conflict areas for solar energy development, SEZs should be prioritized over non SEZ areas (as BLM indicates will happen under its preferred alternative). While the Draft Solar PEIS discusses general approaches for directing development to SEZs (*see* Draft Solar PEIS at 2-11-2-13), there is insufficient description of how BLM will ensure that development in SEZs will in fact be prioritized by developers. Because the Draft Solar PEIS leaves out critical details with regard to implementation of the Solar Energy Program, the program is very difficult to evaluate.

Prioritizing development within the three SEZs is a good starting point for development of solar energy on public lands, but it is neither sufficient nor optimal for satisfying changing conditions. Therefore, in order to guide utility-scale solar energy development to the most appropriate public lands, BLM should establish a well-defined, robust, and efficient process for practically prioritizing development in SEZs and for identifying and designating new and expanded priority SEZs. Such processes should take into consideration the solar resource necessary for both solar PV and concentrating solar, improvements in solar technology, transmission availability or constraints; proximity to loads; previously disturbed or degraded lands, including abandoned mines and brownfields; and adjacent private lands. Such a process should also provide meaningful incentives to locate projects in designated SEZs and previously degraded areas.

Both the SEZ Alternative and the Preferred Alternative commit to prioritizing development in SEZs and provide for the expansion, addition, removal, or reduction of SEZS in light of new information and lessons learned.[14] Therefore, further defining the processes by which additional SEZs will be designated and prioritized is critical as well as consistent with both action alternatives. Key elements of these processes would include the following:

- a specifically delineated process by which development in SEZs would be prioritized over non-SEZs;
- frequent and periodic re-assessment of the need for additional or expanded SEZs;
- a public process for identifying and designating additional or expanded SEZs; and
- specific criteria, additional to the PEIS screening criteria, to avoid conflicts and prioritize previously-disturbed lands.

The commitment to reexamine SEZ designations in light of changing circumstances on a regular basis will provide valuable information to decision makers and will create opportunities for BLM to learn from its experiences and improve its solar development practices, thereby better facilitating solar development.

With the development of a robust and efficient process for adjusting, identifying, designating, and prioritizing SEZs going forward, the BLM can use its solar energy development program as a roadmap to our clean energy future. Without a process for designating and prioritizing

[14] Draft Solar PEIS at 2-14, ln. 25-26.

SEZs, BLM risks facing the same problems that have plagued its oil and gas program: projects scattered across the West, damage to wildlife and wild lands, and expensive and protracted litigation. Such conflicts jeopardize both our clean energy future and our Western wild lands.

Categories of Land to Prioritize and Exclude from Prioritized SEZs

We recognize that BLM has included an extensive list of exclusionary screens as part of the Draft Solar PEIS process, detailed in Table 2.2-2.[15] We applaud BLM's decision to include in this list Areas of Critical Environmental Concern and areas with applicable land use plan decisions to protect lands with wilderness characteristics. Nevertheless, we are concerned that some areas, that may be similarly inappropriate for solar development, have been left out of the screening process. Additionally, it appears that the Agency has not placed sufficient emphasis on prioritizing disturbed lands and other priority development areas.

Provided that SEZs are prioritized and that permitting is streamlined, BLM should screen for and provide maps of citizen proposed wilderness areas found to have "wilderness characteristics," including naturalness, solitude, and the opportunity for primitive recreation. Beyond those core values, citizen proposed wilderness areas also provide important wildlife habitat, cultural and scientific resources, invaluable ecosystem services such as clean air and water, and important economic benefits. Although these proposed wilderness areas have not been formally designated, screening these sensitive areas will reduce conflict between solar developers and sensitive land and wildlife issues, thereby facilitating solar permitting and development. Furthermore, providing a visual screen of proposed wilderness areas will assist developers in choosing sites with the least conflict.

Finally, as discussed previously in these comments, the BLM should place emphasis on prioritizing previously disturbed lands and lands in close proximity to loads, transmission and other necessary infrastructure.

[15] Draft Solar PEIS at 2-8.

Thank you for your comment, Donna Lamm.

The comment tracking number that has been assigned to your comment is SolarD11841.

Comment Date: May 2, 2011 18:01:04PM
Solar Energy Development PEIS
Comment ID: SolarD11841

First Name: Donna
Middle Initial:
Last Name: Lamm
Organization: Amargosa Conservancy
Address: PO Box 63
Address 2:
Address 3:
City: Shoshone
State: CA
Zip: 92384
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: PEIScomments_Amargosa Conservancy.pdf

Comment Submitted:

Please refer to attached pdf document: "PEIScomments_Amargosa Conservancy".

Thank you.

To: Bureau of Land Management
Fr: Donna Lamm, Executive Director Amargosa Conservancy
Re: PEIS

May 2, 2011

Comments by the Amargosa Conservancy on the Draft Programmatic Environmental Impact Statement

The Amargosa Conservancy (The Conservancy or AC) is a bi-state conservation organization devoted to preserving the land, water and beauty of the Amargosa region. We are pleased to offer these comments on BLM's Draft Solar Programmatic Environmental Impact Statement (DPEIS) to supplement those we previously submitted during the initial scoping process.

Generally, the Conservancy believes that BLM's preferred alternative would open far too many acres of lands with high conservation value in our region; that the proposed Amargosa solar energy zone (SEZ) (in the SEZ alternative) should be significantly pared back due to the potential effect of solar development on groundwater resources; and that avoidance and compensatory mitigation requirements are not adequately described or mandated. We are also concerned that applications filed prior to the completion of the Record of Decision for this PEIS will not be subject to conditions that adequately protect water and other resources. Lastly, we believe strongly that BLM offices in Nevada and California need to jointly process applications using unified regulatory standards in the Amargosa region where development on both sides of the state line may have effects on regional groundwater systems. The potential for future groundwater impacts are made clearer by the results of a recent State of the Basin Report commissioned by the AC that describes the current hydrologic knowledge of the Amargosa River Basin.

The AC is especially concerned about groundwater pumping from the already over-allocated Amargosa basin that is likely to have long term adverse effects on the springs, seeps and perennial surface flow in the Amargosa River upon which all life in the area depends. The region's biodiversity is incredibly rich, home of dozens of water-dependent listed, endemic and sensitive species, a unique desert Wild and Scenic River, BLM areas of critical environmental concern (ACECs), and a national park--all of which would disappear were pumping of the region's groundwater to significantly reduce surface flows and groundwater dependent vegetation.

Because of the importance of water in our region, we will focus these comments on groundwater provisions in the DPEIS. Initially, we should note that a strong federal interest and authority exists to limit harmful groundwater withdrawals from public lands, and should be asserted in the

DPEIS. First, federal ownership of the land offers in many locations a basis to assert control over how groundwater is pumped and used, even where state water laws are regarded as paramount. For example, in California, that ownership interest extends to overlying water rights, and, as proprietor, the BLM, as the overlying land owner, can limit the use of those rights. Even where state water laws do not provide for federal ownership of water rights, federal ownership of the surface and mineral rights provides BLM the right to permit and control surface activities such as the drilling and operation of wells, and the use of water in facilities located on federal land.

Second, where the existence of listed or other species governed by the Endangered Species Act may be jeopardized by groundwater withdrawals—even over a very long time interval-- the federal government has the statutory obligation to ensure that development not cause harm to protected species or their habitats. Moreover, it is not clear why that protective role should not extend to yet unlisted—but rare, sensitive, and other special status species and their habitats. This role further extends to probing and limiting adverse effects on other federally protected interests, such as Wild and Scenic Rivers and ACECs (both of which exist in the area that would be influenced by water withdrawals in the Amargosa SEZ.

Despite the authority vested in the federal government, the DPEIS proposes transferring primary regulatory control over the use of groundwater by solar facilities located on federally owned public lands substantially to state and local regulatory authorities and, thus, would abandon important sources of federal control and regulation of groundwater. The AC believes that this is a mistake.

The DPEIS recognizes that siting and operation of utility scale solar generation facilities in desert environments can have far reaching direct and indirect adverse effects on water resources and water dependent species and habitats:

> *A utility scale solar energy project can affect surface water and groundwater in several ways, including the use of water resources, modification of the natural surface water and groundwater flow systems, alterations of the interactions between groundwater and surface waters, contamination of aquifers, wastewater treatment either on or off site, and water quality degradation by runoff or excessive withdrawals, as well as from leaks and spills of chemicals used for the project.*
> DPEIS, 5-37

In sections dealing with water resources and companion water dependent ecological resources, the DPEIS details potential harms and proposes a wide range of potentially applicable measures to avert, minimize, and, in some limited cases, compensate, for harm to those resources where harm is unavoidable. For the most part, we believe the description of possible effects on water

resources to be reasonably comprehensive. However, the proposed menu of mitigation steps is unduly circumscribed, especially with respect to compensatory mitigation. And, the match between adverse effects and specific, mandatory mitigation measures is most frequently missing.

The protection of groundwater and groundwater-dependent ecosystems is, in our view, the most important water resource issue addressed by the solar DPEIS. Most desert utility scale solar plants will rely on pumping groundwater. Unlike many of the other potential adverse water resource impacts, groundwater pumping from desert basins raises a series of very particular concerns: effects can extend widely, be very long lasting, difficult to predict and detect, and can potentially cause irreparable harm to aquifers and surface ecosystems. Additionally, as articulated in the DPEIS, reliance on state and local groundwater regulation--which varies considerably--often results in placing a lower priority on protection of ecosystem uses of groundwater.

We believe the DPEIS should provide greater focus on methods to provide more adequate protection of this scarce, at-risk resource, in view of the fact that desert groundwater plays such a critical role in maintaining desert biodiversity--as well as human life and enterprise.

The DPEIS recognizes the important role of desert groundwater plays in most solar development, and describes some of the more likely and insidious impacts:

> *Considerable volumes of water may be required for the operation of a solar energy facility...Groundwater use for facility operation may result in the alteration of groundwater flow in project areas, which may affect wetlands and riparian habitats that directly receive groundwater discharge, such as at springs or seeps (citation omitted.) Streamflows that are supported by groundwater discharge could be reduced in the vicinity of the project, resulting in impacts on associated wetlands and riparian habitats. Wetlands and riparian communities at considerable distances from a solar facility may be affected by reduced flows. Groundwater withdrawals in alluvial or basin-fill aquifers may cause water level declines that result in reduced discharges to wetlands or riparian communities. Wetland or riparian habitats could be eliminated or reduced in distribution or extent by reductions in groundwater discharge resulting from groundwater withdrawals, and plant communities (including terrestrial phreatophytes) could be degraded by changes in community composition.* DPEIS, 5-69, 70
>
> *Groundwater withdrawals cause a cone of depression around a pumping well to expand until groundwater inflow is balanced by the rate of water extraction. Reaching an equilibrium between groundwater inflow and water extraction may take more than a millennium to achieve, depending upon the rate of extraction, distances to potential*

> *groundwater capture sources, other groundwater pumping sources in the basin, and the size and properties of the groundwater aquifer. (citation omitted) Groundwater surface elevations in the region surrounding a pumping well or wells decrease during this pre-equilibrium phase, which can have adverse effects on phreatic vegetation, other groundwater users, land subsidence, loss of groundwater storage capacity, and groundwater flow processes throughout the basin.* DPEIS 5-41

Using reasonably anticipated levels of facility construction and operation, BLM reaches the overall conclusion that the adverse individual and cumulative effects of desert solar development on water resources and water-related ecosystems would in most cases be alleviated after application of proposed siting and technology limitations, design features and other mitigation requirements. The analysis does concede that, due to water usage levels, impacts to aquatic, wetland and phreatophytic communities "may be difficult to mitigate for all but PV systems." E.g., DPEIS 5-57. Even for projects using photovoltaic technology, at least in some desert groundwater basins, that optimism is not justified. In the already over-allocated Amargosa River Basin, the additional pressure of even relatively modest groundwater withdrawals could have substantial impacts on the environment of the basin, and more specifically could seriously affect the ability of the DPEIS described "cones of depression" to come to an equilibrium point.

We believe BLM's conclusion--that desert groundwater resources and groundwater-dependent ecosystems will not be adversely affected by withdrawals--to be warranted only where the agency can assure that stringent and clearly defined siting and mitigation requirements will be uniformly applied and enforced, with due regard for site-specific characteristics.

Requirements--beyond limitations to ensure cumulative withdrawals do not exceed the sustainable yield of the groundwater basin--include a thorough understanding of basin and surface water hydrology and linkages, modeling to predict even very long term effects, active monitoring, and specified trigger conditions that require action to avert adverse effects. These and additional requirements are included in the "*Best Management Practices and Guidance Manual: Desert Renewable Energy Projects*" prepared jointly by the BLM, California Energy Commission, U.S. Fish and Wildlife Service and California Department of Fish & Game (November, 2010). Where limited exceptions, site-specific allowances or variances from generally applicable rules are authorized, the burden of proof should lie on the project applicant to demonstrate the absence of harm when proposing an alternative course of action.

The DPEIS does include many recommendations related to groundwater, including the cardinal need to understand groundwater basins and surface/groundwater interactions as well as likely effects on associated water dependent ecosystems--presumably before any commitments are made to site approval. The DPEIS proposes that developers will provide detailed hydrologic studies and plans—and that project proponents demonstrate a clear understanding of the local

surface water and groundwater hydrology. These plans are to include, among other things, identification of applicable basins and aquifers, groundwater-surface water connectivity, effects on surface waters, climatic limitations, and the sustainable yield of proposed sources of water that includes consideration of the needs of aquatic, riparian, and other water dependent resources. Monitoring of groundwater and surface water is also required. (DPEIS, Design Features for Water Resources and Ecological Resources, Appendix A at 45-63).

We recommend that instead of having the applicants conduct the groundwater modeling, that the applicants be required as part of their applications fee to pay sufficient funds to the BLM so that the BLM can contract with the United States Geological Survey or another impartial agency or organization to conduct the groundwater modeling.

The DPEIS provides the following explicit mandatory operational limitations, making clear what adverse effects are to be avoided:

> *The use of water shall not contribute to the significant long- term decline of groundwater levels or surface water flows or volumes. Any project-related water use shall not contribute to withdrawals that exceed the sustainable yield of the surface water or groundwater source.* DPEIS, Appendix A at 54
>
> *Projects shall be sited and designed to avoid direct and indirect impacts on important, sensitive, or unique habitats in the project vicinity, including, but not limited to, waters of the United States, wetlands (both jurisdictional and non-jurisdictional), springs, seeps, streams, (ephemeral, intermittent, and perennial), 100 year floodplains, ponds and other aquatic habitats, riparian habitat....For cases in which impacts cannot be avoided, they shall be minimized and mitigated appropriately...* DPEIS Appendix A at 56
>
> *Projects shall avoid surface water or groundwater withdrawals that affect sensitive habitats (e.g., aquatic, wetland and riparian habitats) and any habitats occupied by special status species. Applicants shall demonstrate, through hydrologic modeling, that the withdrawals required for their project are not going to affect groundwater discharges that support special status species or their habitats.* DPEIS, Appendix A at 57.

While the DPEIS thus proposes goals for protection of groundwater and associated surface water and ecological resources, the document lacks clarity in implementation strategies defining how those goals will be reached. When the DPEIS deals with groundwater-specific requirements applicable to projects located in particular zones, the gaps between goals and practices are clear. For example, the proposed Amargosa Desert SEZ in Nevada is located in the Amargosa Desert groundwater basin, the home of the endangered Devil's Hole pupfish and Ash Meadows National Wildlife Refuge (AMNWR) which hosts the second highest number of endemic

species in North America and numerous other listed and sensitive species. As the DPEIS recites, water levels are declining in Devil's Hole, probably due to regional groundwater pumping and lower recharge rates, risking extirpation of the species. And effects can extend far beyond the SEZ:

> *Withdrawal of groundwater for power plant cooling, mirror washing, or other needs could affect water levels in surface water features outside of the SEZ and area of indirect effect, and as consequence, potentially reduce habitat size, connectivity, and create more adverse environmental conditions for aquatic organisms in those habitats. Water withdrawals are particularly important given the proximity of the SEZ to the Amargosa River ACEC and Ash Meadows NWR, both of which contain spring-fed aquatic habitat of national significance. DPEIS at 11.1-145*

The perennial—or sustainable—yield in this groundwater basin is estimated to be 24,000 acre feet per year (AF/Y), of which only 7,000 AF/Y is available for withdrawal because the remaining water rights are held by Ash Meadows National Wildlife Refuge. Yet approved basin allocations exceed that 7000 AF/Y by over 18,000 AF/Y. In 2009, more than double the perennial yield of the basin was withdrawn.

After noting that the water requirements of the likely number of dry cooled concentrating solar plants (2000 to 7600 AFY) might well cause adverse ecological effects, and that developers may have difficulty obtaining water rights, and expressing the need to develop better understanding of the hydrology of the basin to avert harm, the DPEIS simply states:

> *Given...constraints of limited water resources and over-allocated water rights, solar energy developers will need to limit water requirements through whatever means are available, which could potentially include any combination of the following: choosing low water demanding dish engine and PV technologies, implementing water conservation measures including the use of recycled water sources, and by purchasing water rights in excess of the needed requirements in order to retire over-allocated water rights.* DPEIS 11.1-66

In this setting, where a groundwater basin is seriously over allocated, existing withdrawals are well beyond perennial yields, and new groundwater withdrawals by solar plants could significantly worsen the long term chances for the survival of listed, endemic, and sensitive species in aquatic habitats of national significance--and where those adverse effects will in all probability cross state borders--the DPEIS offers vague and inadequate prescriptions to avert that harm. The DPEIS specifies "if groundwater is used, the amount withdrawn should not

affect aquatic habitat in the Amargosa River ACEC and Ash Meadows NWR." DPEIS at 11.1-145. However, the means to accomplish that goal is not set forth.

Rather, the DPEIS appears to invest authority in state and local agencies to avoid adverse groundwater effects--arguing that the principal thrust of federal regulation of water resources is directed only toward controlling floodplain development, water quality, and waste disposal (DPEIS at 5-37), that water laws are primarily a matter of state law, and that regulatory complexity further precludes taking a strong federal preventive and remedial stance : "The myriad of applicable laws and agencies regulating water resources is complex and often needs to be assessed on a case-by-case basis." DPEIS 5-37, 38

As previously stated, a strong federal interest and authority exists to limit harmful groundwater withdrawals from public lands, and should be asserted in the DPEIS. First, federal ownership of the land offers in many locations a basis to assert control over how groundwater is pumped and used, even where state water laws are regarded as paramount. For example, in California, that ownership interest extends to overlying water rights, and, as proprietor, the BLM can limit the use of those rights. Even where state water laws do not provide for federal ownership of water rights, federal ownership of the surface and mineral rights provides BLM the right to permit and control surface activities such as the drilling and operation of wells, and the use of water in facilities.

Second, where the existence of listed or other species governed by the Endangered Species Act may be jeopardized by groundwater withdrawals—even over a very long time interval-- the federal government has the statutory obligation to ensure that development not cause harm to protected species or their habitats. And it is not clear why that protective role should not extend to yet unlisted—but rare, sensitive, and other special status species and their habitats. This role further extends to probing and limiting adverse effects on other federally protected interests, such as Wild and Scenic Rivers, Areas of Critical Environmental Concern (both of which exist in the area that would be influenced by water withdrawals in the Amargosa SEZ.

Despite the authority vested in the federal government, the DPEIS proposes transferring primary regulatory control over the use of groundwater by solar facilities located on federally owned public lands substantially to state and local regulatory authorities and, thus, abandons important sources of federal control and regulation of groundwater. This is a mistake.

We believe that the final DPEIS should specify concrete requirements for use of groundwater by solar facilities. These include:

- Absolute minimum use of groundwater by facilities, including prohibitions on wet cooling anywhere in the desert, with a strongly-stated preference for photovoltaic

technology which employs state of the art dust repelling surfaces that do not require washing more than every 6 months in any basin where groundwater supplies are scarce.

- Hydrological studies, using all available date and accepted models that define groundwater basins and surface water and groundwater interactions, sustainable yields, and long term effects, including climatic change, of all existing and probable withdrawals in keeping with published best management practices.

- Prohibitions on any groundwater withdrawal by a solar facility from a groundwater basin that will cause or contribute to withdrawals over the perennial yield of the basin, even where other uses predominate, and where recent pumping does not exceed perennial yield.

- Prohibitions on groundwater withdrawals that may be likely to cause an adverse effect on a listed or other special status species or their habitats over the long term, with the burden on the developer to show, through monitoring and modeling, that no effect will occur.

- Groundwater monitoring with trigger provisions that specify automatically imposed remedies for reductions in groundwater use in the event that monitoring or modeling shows that adverse effects are likely to occur.

We appreciate the opportunity to comment on the DPEIS, and look forward to BLM significantly modifying its approach prior to issuing a final PEIS and Record of Decision.

Donna Lamm

Donna Lamm,
Executive Director
Amargosa Conservancy

May 2, 2011

Thank you for your comment, Kathleen Zimmerman.

The comment tracking number that has been assigned to your comment is SolarD11842.

Comment Date: May 2, 2011 18:04:35PM
Solar Energy Development PEIS
Comment ID: SolarD11842

First Name: Kathleen
Middle Initial:
Last Name: Zimmerman
Organization: National Wildlife Federation
Address: 2260 Baseline Road
Address 2:
Address 3:
City: Boulder
State: CO
Zip: 80302
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: NWF comments on Solar Energy Draft PEIS.pdf

Comment Submitted:

NATIONAL WILDLIFE FEDERATION

Rocky Mountain Natural Resource Center
2260 Baseline Road, Suite 100 Boulder, CO 80302 303.786.8001 www.nwf.org

May 2, 2011

Solar Energy Draft PEIS
Argonne National Laboratory
9700 South Cass Avenue -- EVS/240
Argonne, Illinois 60439

Delivered via electronic and regular mail

Re: Comments on the DRAFT Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States

To Whom It May Concern:

These comments are submitted on behalf of the National Wildlife Federation (NWF). NWF appreciates the opportunity to submit these comments to the Department of Energy and the Bureau of Land Management [hereinafter Agencies]. NWF is submitting these comments today via electronic mail and forwarding a copy separately by mail.

As an organization, NWF represents the power and commitment of four million members and supporters joined by affiliated organizations in 47 states and territories and the District of Columbia. NWF and its affiliates have a long history of working to conserve the wildlife and wild places in the West. Many members of NWF and its affiliates use the lands and resources that will be impacted by utility-scale solar energy generation facilities constructed on federal public lands; they also use and enjoy wildlife resources that may be impacted by construction of these facilities on other federal lands, as well as state, private and tribal lands.

For more than three decades, NWF has worked with tribes on wildlife conservation, habitat protection, and cultural resources preservation both on and off reservation lands. Tribal lands contain some of the best remaining fish and wildlife habitat in North America. They also contain significant potential for generation of clean, renewable energy. It is vital that the federal government conduct effective government-to-government consultation with the tribes on renewable energy generation and transmission; this is an obligation mandated by both statute and treaty.

NWF also recognizes that climate change poses an enormous threat to both the human environment and the earth's biologic diversity. For that reason, NWF has called for a rapid transition to energy sources other than fossil fuels that contribute to greenhouse gas (GHG) emissions and climate change. The generation of electricity via solar energy, including utility-scale facilities, is an important component of that transition. Without immediate and decisive steps to curb GHG emissions, the long-term survival of many wildlife species is in jeopardy.

NWF urges the Agencies to learn from their experiences with oil and gas development and other human activities in vital wildlife habitats. Development of utility-scale solar energy generation facilities will transform the lands upon which they are located and preclude most other uses. As noted by the Bureau of Land Management (BLM), other uses of these sites "are unlikely due to the intensive use of the site for PV [photovoltaic] or CSP [concentrating solar power] facility equipment." Instruction Memorandum (IM) No. 2007-097. An inappropriately sited and constructed solar energy facility has the potential to cause significant damage to the environment and to eliminate wildlife habitat. Accordingly, it is crucial that the Agencies commit to exclude sensitive wildlife habitats and maximize use of existing infrastructure in siting solar energy facilities.

NWF believes that America is now on the verge of an explosion in renewable energy development. Hundreds of applications for wind, solar, and geothermal projects have been filed on federal public lands. We need sustainable energy to help us reduce carbon pollution, and we need it fast. However, if we do not handle this energy development boom carefully, we will lose vital wildlife habitats and recreational lands. Wind and solar power may be carbon pollution free, but they are not impact free. They leave an industrial footprint on the land and some wildlife habitats will be forever altered by their presence. We have an opportunity to start the clean energy era off right and avoid the mistakes we have made with conventional energy development. As a founding member of Sportsmen for Responsible Energy Development (SFRED), NWF has committed to SFRED's guiding principles with respect to renewable energy development on public lands. (A copy of these principles is attached as well as a letter in support signed by 17 hunting and fishing organizations.) These principles urge BLM and other federal agencies to be "smart from the start" as our country taps the promise of wind and solar energy. These principles also reflect NWF's own mission to confront climate change while protecting wildlife, communities, and people.

The conservation of healthy fish and wildlife habitat on the federal public lands is particularly crucial now. The value of intact ecosystems in combating climate change is enormous. They are a critical link in the carbon cycle, continuously removing carbon dioxide from the air and storing it for long periods. Additionally, conserving the resiliency of fish and wildlife habitats and the linkages that connect those habitats improves the likelihood that fish and wildlife can survive changes brought on by atmospheric warming. The federal public lands, in particular, can provide both carbon storage and needed habitat but only if the ecological values of these lands are not squandered.

GENERAL COMMENTS

In its July 2008 scoping comments for this environmental review, NWF urged the Agencies to use this programmatic environmental impact statement to narrow the task of siting responsible construction of utility-scale solar energy generation facilities by delineating areas or conditions where construction of such facilities would be suitable and by establishing mandatory practices for the construction and operation of such facilities on both public and private lands. NWF is pleased to see that the *Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* [hereinafter DPEIS] addresses both of these recommendations. NWF wholeheartedly supports the designation of Solar Energy Zones (SEZs). The SEZs represent a new approach on the part of BLM, one where the agency more fully exercises its authority to promote and manage commercial activities on public lands. NWF believes that this approach will avoid the fragmentation of important wildlife habitats that has occurred as a result of other commercial activities on public lands, such as oil and gas drilling. The concentration of development in the SEZs promotes the consolidation of related infrastructure (e.g., roads, transmission lines) resulting in less total land disturbance and reduced costs to both industry and consumers. NWF also believes that this approach will increase support for renewable energy projects by reducing opposition from other public land users. *See, e.g.* http://www.nytimes.com/2011/02/24/business/energy-environment/24solar.html?_r=1&ref=todayspaper .

In addition to the SEZs, Appendix A to the DPEIS represents an impressive effort to develop a comprehensive approach to both siting and management of solar energy facilities. NWF believes the policy directives contained in Appendix A should be mandatory for development within the SEZs. They should also apply to BLM's review of existing applications to construct solar energy facilities on public lands. Should additional lands be made available in the future, these directives might be amended in response to knowledge gained from experience with projects on the ground.

Still, NWF remains concerned about the fact that many vital wildlife habitats will not be off-limits to development under any of the alternatives set forth in the DPEIS. This seems an unnecessary sacrifice in light of the DPEIS conclusion that 214,000 acres of land is required to meet projected solar energy demands for the next twenty years while the designated SEZs include over 600,000 of public land. Even if all lands with potential conflicts (*see* Table 6.1-3, DPEIS at 6-15 50 to 6-30), including important wildlife habitats, were excluded from the SEZs, public lands available for solar energy facilities would exceed projected demand.[1]

This mismatch between supply and demand is even more egregious in BLM's "Preferred Alternative" which makes 22 million acres of public land available for utility-scale solar energy generation facilities. NWF cannot support this alternative for a number of reasons. First, it undermines the goals of the SEZs. The SEZs are intended to provide a

[1] NWF also believes these exclusions should apply to both "solar energy generation facilities" and to any "required infrastructure." (*See* DPEIS at 2-7.)

path to rapid deployment of solar energy generation by delineating low conflict areas where both BLM and the industry can concentrate their efforts to develop solar energy facilities. The SEZs were chosen both because of the low potential for substantial impacts to other public resources and because of the high value of the solar resource. However, because the Preferred Alternative fails to limit development to SEZs, NWF is concerned that BLM will continue to have to respond to applications filed on millions of acres outside the SEZs. Second, opening 22 million acres to applications for rights-of-way will lead to speculative filings. Such filings essentially become a lien against other management options on public land and do nothing to meet the country's need for renewable energy. Third, "painting a target" on 22 million acres invites opposition to development that may never occur. Finally, the 22 million acres include crucial fish and wildlife habitats, including Greater sage-grouse habitat, which are inappropriate for solar energy development. It makes no sense for BLM to waste time reviewing applications for projects that are both unwise and unnecessary.

If the Reasonably Foreseeable Development (RFD) scenario provided in the DPEIS proves to be inaccurate, BLM can always identify additional SEZs.[2] By the time any additional acreage might be required, experience with the projects on the ground will provide valuable information about the impact of solar facilities on other resources that will aid in the delineation of any new SEZs.

While NWF believes that the RFD scenario in the DPEIS represents a reasonable attempt to predict demand in the West, it remains an educated guess.[3] The development of utility-scale solar energy generation facilities is emerging technology. BLM's RFDs for better known technologies, such as oil and gas drilling operations, have been way off the mark. BLM's oil and gas RFD scenarios, completed in the mid-1980s, consistently underestimated both the amount of federal public lands that would be leased for oil and gas development and the number of wells that would be drilled. BLM also underestimated the impacts of those operations on wildlife.

The "market" factors that may encourage or discourage the construction of utility-scale solar energy generation facilities are, perhaps, less well understood than those that have created the current "boom" of oil and natural gas drilling on federal public lands. The RFD scenario for solar energy development must speculate about the effects of such facets as world prices for other energy sources, the enactment of state and/or national renewable energy standards, the adoption of either "cap and trade" or carbon tax controls

---

[2] In its comments on the Solar DPEIS, The Wilderness Society (TWS) has provided a path for the identification of additional SEZs should new zones prove necessary. NWF believes that the inclusion of such a pathway in Appendix A and as an amendment to BLM's land use plans would be useful to allay any industry concerns that the proposed SEZs are inadequate.

[3] If anything, the RFD scenario overestimates the amount of public land that might be necessary to meet foreseeable demand for solar energy generation. The RFD scenario assumes that 50% of applicable Renewable Portfolio Standards (RPSs) will be met by solar energy from utility-scale generation facilities. The RFD scenario also assumes that 75% of all utility-scale facilities will be located on public lands. These assumptions result in an RFD that is very aggressive in terms of requisite acres of public land.

on GHG emissions, access to transmission, and tax subsidies for renewable energy projects. In addition, BLM has no experience with the environmental impacts of these facilities. For these reasons, NWF believes that BLM should focus its efforts to get utility-scale solar energy facilities on the ground in the SEZs.

SPECIFIC COMMENTS

The final Solar Energy PEIS should include a commitment to conduct site-specific environmental impact analyses when individual locations and proposed uses are identified. Because of its generic focus, the DPEIS is not sufficiently detailed to address the on-the-ground impacts of particular projects in specific locations. As noted in the DPEIS itself, "[b]ecause the proposed program involves environmental effects over a broad geographic and time horizon, the depth and detail of the impact analysis is fairly general . . ." (DPEIS at ES-5). The DPEIS cannot and does not address the environmental impact of the deployment of identified technologies in precise locations. It cannot accurately predict the advent of new technologies. Moreover, new information about the impacts and the efficacy of mitigation measures should be acquired as individual projects are constructed and operated.

BLM also acknowledges in the DPEIS that, when considering impacts to special status species, it only evaluated data in what are termed the "SEZ regions," defined as lands within 50 miles of SEZ centers (DPEIS at J-2). The agency then promises that while "an expanded species analysis by alternative was identified too late during the preparation of the Draft PEIS to be accommodated in this version of the document . . . that a discussion of all species with the potential for being impacted under each alternative will be developed between the time of the Draft and Final PEISs." *Id.* NWF believes that this analysis regarding potential impacts to sensitive fish and wildlife species is a vital component of the Agencies' implementation of the National Environmental Policy Act (NEPA) and should be subject to public review and comment. This expanded analysis should be included in any NEPA documents that purport to tier off the final PEIS and an adequate opportunity for public oversight should be provided before projects are authorized.

NWF understands that the prospect of additional environmental review may not provide the absolute certainty desired by some project proponents. However, the Agencies should not permit those proponents' angst about NEPA to derail this process. Any examination of potential environmental impacts from as yet unidentified projects in still to be specified locations on 600,000 of land cannot be expected to eliminate all possibility of site-specific conflicts. NWF believes that the final PEIS will be adequate to establish the solar program and adopt policies governing that program. It will provide sufficient information to draw the boundaries of SEZs with high solar energy resources and low potential for conflicts with other public lands values. It will significantly reduce both the range of issues that must be addressed in any future environmental reviews and the information that must be gathered on those issues.

As an overall matter, NWF is concerned with the outreach to tribes on the DPEIS. While the Agencies have made some attempt to notify the tribes of the preparation of the DPEIS and encourage them to participate, NWF believes that this outreach is not being conducted in an effective manner. Simply sending a letter to a tribal government is neither a sufficient nor proven method for achieving meaningful tribal consultation. Letters sent to tribal governments often do not filter down and reach the most appropriate tribal staff person with the expertise to respond to the issues at hand. Therefore, many tribes might never have an equitable opportunity to participate in the DPEIS process.

Bureau of Land Management

BLM should abandon its traditional "first come, first served" approach to reviewing applications for rights-of-way (ROWs) to construct renewable energy projects on public land. A more thoughtful assessment would provide an opportunity for BLM to compare the relative merits of various proposals, including their potential environmental impacts. This is particularly appropriate given that BLM currently has a backlog of more than 100 ROW applications for solar energy projects. Reviewing these applications one-by-one is not a process designed to identify projects that will "best meet the present and future needs of the American people." 43 U.S.C. § 1702(c). BLM recently issued several Instruction Memoranda (IMs) regarding renewable energy development on public lands. (BLM, Instruction Memorandum No. 2011-59; BLM, Instruction Memorandum 2011-60.) These IMs include criteria for prioritizing review of applications for ROWs. However, the IMs merely provide "guidance" to BLM personnel. They are neither mandatory nor enforceable. The content of these IMs should be included in Appendix A and in the land use plan amendments issued as a result of the DPEIS.

The site selection criteria and management practices delineated in Appendix A represent significant assurances that BLM will endeavor to *avoid* sensitive wildlife habitats and to use existing infrastructure, including transmission corridors, in siting solar energy facilities. However, vital wildlife habitats, including seasonal ranges for big game and habitat for Greater sage-grouse have not been *excluded* from development.[4] Several of the proposed SEZs include sage-grouse habitats and winter ranges for mule deer, elk, and pronghorn. For example, the De Tilla Gulch SEZ in Colorado contains both elk severe winter range and pronghorn winter concentration areas. The Los Mogotes East SEZ in Colorado also contains pronghorn winter concentration areas. The Gold Point SEZ in Nevada contains habitat for the Greater sage-grouse, as does the Millers SEZ in Nevada as well as the Escalante Valley, Milford Flats South, and Wah Wah Valley SEZs in Utah. Several of the proposed SEZs in Arizona, Nevada, and New Mexico include lands that

[4] Both the Executive Summary and the discussion of potential impacts in Chapter 6 indicate that lands with "seasonal restrictions" and big game winter ranges identified in land use plans will be excluded from development. (*See, e.g.*, DPEIS, Table ES.2-2 at ES-8.) However, neither the discussion of potential mitigation measures in Chapter 5 nor the policies and design features described in Appendix A include such an explicit exclusion of these wildlife habitats.

provide migration routes for Desert bighorn sheep.[5] BLM acknowledges this important wildlife use; yet, with the exception of suggested limits on fencing[6], nothing in the SEZ-Specific Design Features for these zones includes measures to ensure these routes retain their value as migratory corridors.[7] BLM must identify these corridors and commit to effective conservation measures.[8]

The Federal Land Policy and Management Act (FLPMA) provides that all grants of ROWs across lands "shall contain ... terms and conditions which will ... minimize damage to ... fish and wildlife habitat and otherwise protect the environment." 43 U.S.C. § 1765(a). Due to the nature of utility-scale solar energy generation facilities, the efficacy of mitigation measures is severely limited (*see* DPEIS Table 5-10-2 at 5-95). The only truly effective mitigation will be to close lands to this development.

Moreover, there is no assurance that mitigation measures proposed will be implemented and monitored for effectiveness.[9] The Council on Environmental Quality recommends that environmental analyses prepared by federal agencies should:

- describe the expertise applied in determining appropriate mitigation commitments;
- consider when and how mitigation commitments will be implemented;

---

[5] *See, e.g.,* Brenda SEZ in Arizona (DPEIS at 8.1-106); Bullard Wash SEZ in Arizona (DPEIS at 8.2-112); Gillespie SEZ in Arizona (DPEIS at 8.3-103); Armargosa Valley SEZ in Nevada (DPEIS at 11.1-175); Delamar Valley SEZ in Nevada(DPEIS at 11.2-165); Dry Lake SEZ in Nevada (DPEIS at 11.3-156); Dry Lake Valley North SEZ in Nevada (DPEIS at 11.4-171); East Mormon Mountain SEZ in Nevada (DPEIS at 11.5-150); Gold Point SEZ in Nevada (DPEIS at 11.6-135); Millers SEZ in Nevada (DPEIS at 11.7-118); Afton SEZ in New Mexico (DPEIS at 12.1-122 and 12.1-156); Mason Draw SEZ in New Mexico (DPEIS at 12.2-110 and 12.2-142); Red Sands SEZ in New Mexico (DPEIS at 12.3-108).

[6] Fences are not the only impediment to wildlife movement. Roads and other infrastructure, as well as human presence during crucial times of the year, can force animals from traditional routes and eventually extinguish migrations. *See, e.g.,* Berger K., Beckman J., Berger J., *Wildlife and Energy Development* (June 2007).

[7] For the SEZs in Arizona as well as the Red Sands SEZ in New Mexico, the DPEIS states that since the Desert bighorn is a sensitive species, impacts and mitigation will be discussed in special sections (*see, e.g.,* DPEIS at 8.1-106), but the applicable sections on "Sensitive Species" do not specifically address bighorn sheep.

[8] For some SEZs, such as the Dry Lake SEZ in Nevada, re-configuring the boundaries might be the best approach. For all SEZs, requiring that migratory bottlenecks are not created within these corridors both on and off the SEZs should be part of Appendix A and Specific Design Features.

[9] The DPEIS states that BLM will use "adaptive management" so that environmental impacts can be addressed on an ongoing basis (DPEIS at 2-5 to 2-6). In order for BLM to rely on future as yet unspecified actions to mitigate impacts from solar energy development, there must be a much more concrete adaptive management plan. That plan should include specific indicators of impacts on fish and wildlife populations and habitats and enforceable thresholds for acceptable or expected impacts on fish and wildlife. It must also include a commitment of adequate resources for monitoring and a commitment to impose additional mitigation measures in response to unacceptable or unexpected impacts. The absence of adequate monitoring data or the failure to complete required monitoring must not become an excuse to permit projects to go forward.

- specify measurable performance standards or expected results of mitigation commitments as well as the timeframe for the agency action and mitigation commitments;
- disclose if it is reasonably foreseeable that funding for mitigation measures may not be available and, if so, the resultant environmental effects;
- identify alternative mitigation measures if the initial commitments are not implemented or effective; and
- describe monitoring plans and programs, the agency and/or applicant responsible for developing and implementing the monitoring program and the monitoring area and appropriate monitoring system.

See Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, 76 *Fed. Reg.* 3843 (Jan. 21, 2011). At a minimum, these should be addressed fully in the final PEIS if BLM continues to consider mitigation measures other than exclusion of vital wildlife habitats.

Department of Energy

The policy directives in Appendix A should also drive the Department of Energy's (DOE) criteria for site selection, design, and operations of utility-scale solar energy generation facilities. Specifically, DOE should provide assistance to solar energy projects on federal public lands only within designated SEZs. Outside of public lands, DOE should give preference to projects in previously-disturbed areas. For all projects, DOE should ensure that a thorough cultural resource consultation has been completed.

SECTION-BY-SECTION COMMENTS

Wildlife

5.10.5 Potentially Applicable Mitigation Measures and *Appendix A, Section A.2.2.11 Design Features for Ecological Resources*

NWF is concerned that vital wildlife habitats have not been excluded from the either the SEZs or other federal public lands made available for construction and operation of utility-scale solar facilities. The DPEIS states that:

> "[p]rojects shall be sited and designed to *avoid* direct and indirect impacts on important, sensitive, or unique habitats in the project vicinity, including, but not limited to, waters of the United States, wetlands (both jurisdictional and nonjurisdictional), springs, seeps, streams (ephemeral, intermittent, and perennial), 100-year floodplains, ponds and other aquatic habitats, riparian habitat, remnant

vegetation associations, rare or unique biological communities, crucial[10] wildlife habitats, and habitats supporting special status species populations (including designated and proposed critical habitat). *For cases in which impacts cannot be avoided, they shall be minimized and mitigated appropriately*" (DPEIS at 5-128 and A-56 (emphasis added)).

The sections go on to state that "[p]rojects shall not be sited in designated critical habitat, ACECs, or other specially designated areas that are considered necessary for special status species and habitat conservation." *Id.* However, for many important species that will be impacted by solar energy development, no "specially designated areas" exist. With respect to Greater sage-grouse, for example, much of the vital habitat has not been identified and mapped by either BLM or state wildlife agencies.[11] With respect to many other wildlife species, there is simply no usable data regarding the location and condition of important habitats.[12]

Greater sage-grouse can only live in sagebrush steppe and their range has been significantly reduced, so much so that the United States Fish and Wildlife Service recently determined that the bird warrants protection under the Endangered Species Act. Greater sage-grouse distribution has decreased by 56 percent while range-wide abundance has declined by as much as 93 percent from historic levels. NWF is particularly concerned to see "translocation" offered as a possible mitigation strategy for sage-grouse (DPEIS at A-155). There is no scientific support for the efficacy of moving sage-grouse to other sites. ("Translocations of greater sage-grouse (*Centrocercus urophasianus*) have been attempted in 7 states and one Canadian province with very little success." (Baxter *et al.* 2010)).[13]

---

[10] Appendix A includes no definition of "crucial" wildlife habitats. While "crucial" is a term of art for many state wildlife agencies, other wildlife agencies use different descriptors for the same type of habitat. For example, the Wyoming Game and Fish Department (WGFD) designates some important big game habitats as "crucial winter ranges." WGFD defines "crucial range" as "any particular range or habitat component which determines whether a population maintains and reproduces itself at or above the WGFD population objective over the long term." The Colorado Division of Wildlife designates these same vital big game habitat components to include, among others, "severe winter range," severe winter relief areas," and "winter concentration areas" but rarely employs the term "crucial." The final PEIS must include a definition of "crucial" that captures the underlying importance of these habitats but recognizes that the specific designation may vary from state to state.

[11] The governor of Wyoming recently announced plans to "modify" the state's core area designations for conservation of Greater sage-grouse. *See* http://trib.com/news/state-and-regional/article_4d25586d-0f19-5af5-a14a-f237a475f9bf.html . It is unclear what the impact of this will be on BLM's conservation strategy for sage-grouse in Wyoming and across the West.

[12] With respect to the SEZs, NWF is confident that BLM, in consultation with the United States Fish and Wildlife Service, and state wildlife agencies will be able to identify and exclude vital wildlife habitats. However, NWF does not have the same faith in BLM's ability to complete this task for 22 million acres of public land. Opening these additional lands will undoubtedly lead to many applications in locations that are ultimately determined to be unsuitable.

[13] Translocation of any wildlife species should only be considered as a last resort and only when more proven conservation strategies, such as avoidance, are not feasible.

Winter range is considered to be a vital habitat for big game populations in the West.[14] Any habitat manipulation which occurs on sites utilized by elk, mule deer, or pronghorn as winter range can profoundly affect populations which utilize a much larger area during the remainder of the year. Habitat impacts are greatly magnified if they occur on winter range. Without an appropriate matrix of forage and cover on winter ranges, big game populations will suffer.

NWF strongly urges the Agencies to exclude vital winter ranges for elk, mule deer, and pronghorn from the SEZs and from any additional lands that might be made available for utility-scale solar facilities.[15] At the very least, additional information on the cumulative impacts of other human activities within these ranges should be included in the final PEIS and land managers should be instructed to develop thresholds for other activities given the loss of habitat the SEZs represent.

Moreover, while winter range traditionally has been considered the limiting factor, significant losses of summer and/or transitional ranges and migration routes as a result of human activities could also pose threats to the continued vitality of big game populations. Because the DPEIS contains little information regarding the migration and use patterns of

---

[14] [It is] a fundamental axiom of population ecology and wildlife management that has been known and reconfirmed since the time of Aldo Leopold – populations of organisms increase to fill vacant, suitable habitat and are then regulated by the essential component of their habitat that is in least supply (Leopold 1933; Edwards and Fowle 1955; Smith 1966:355; Odum 1971:183). For example, *availability and quality of crucial winter ranges at lower elevations generally limit productivity, recruitment and abundance of migratory big game populations in mountainous environments.* Complexes of suitable breeding and brood-rearing habitats are thought to limit populations of sage-grouse. In any given environment, existing populations of wildlife occupy the habitats that are suitable. Conversely, the areas that are not suitable for one reason or another are not used. When activities associated with energy development displace animals from otherwise suitable habitats, the animals are forced to utilize marginal habitats or they relocate to unaffected habitats where the population density and competition increase. *Consequences of such displacement and competition are lower survival, lower reproductive success, lower recruitment, and lower carrying capacity leading ultimately to population-level impacts.*

WGFD, *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (April 2010) at 11 (emphasis added).

[15] The language of Section *5.10.5* appears to be at odds with Table 6.1-2 (DPEIS 6-9) which indicates that under BLM's Preferred Alternative:

> Multiple exclusions would avoid such impacts, including *exclusion of* ACECs, *big game migratory corridors and winter ranges*, Research Natural Areas, and lands with seasonal restrictions (not quantified).

Id. (emphasis added).

big game herds, it is impossible to estimate those impacts. However, conservation of big game populations and distributions may require that additional lands be set off-limits.[16]

5.10.5.2 General Multiphase Measures for Ecological Resources

The DPEIS provides that "[a]ctivities should be timed to avoid, minimize, or mitigate impacts on wildlife. For example, crucial winter ranges for elk, deer, pronghorn, and other species should be avoided especially during their periods of use" (DPEIS at 5-130). While NWF agrees that human activities, particularly those associated with construction and hauling, should be prohibited on seasonal ranges during their use, this does not mitigate the permanent loss of habitat due to the physical location of industrial infrastructure within these ranges and the increased human presence that inevitably follows.

This section of the DPEIS also provides for "transloc[ation of] plant and wildlife species from project areas . . . to protected off-site locations . . ." (DPEIS at 5-136).

The DPEIS should acknowledge that off-site mitigation is inappropriate for some habitat losses. There is no "effective" mitigation for some losses resulting from the "unavoidable" impacts of development. BLM acknowledges in the Final Environmental Impact Statement for the Jack Morrow Hills Coordinated Activity Plan (JMHCAP FEIS), for example, that it may be impossible to reclaim some sagebrush habitats. JMHCAP FEIS at 4-74. The best available science does not support the efficacy of translocating Greater sage-grouse. Migration corridors for big game have been lost permanently to development. Animals are driven off of crucial ranges onto habitats that will not support them and no alternative habitat is available. No off-site mitigation proposal should be accepted without a thorough assessment of: the availability of other habitat, the feasibility of long-term restoration/enhancement/protection of alternative habitat, and the adequacy of funding to sustain the alternative habitat for the life of the project (including time required for final reclamation standards to be achieved). NWF has seen too many examples where industry has offered to "throw some money" at the problem without any analysis of the extent of the wildlife impacts or the availability of effective mitigation remedies.

Section 6.5.2.9.2 Cumulative Impacts on Wildlife and Aquatic Biota

According to the DPEIS:

> [c]umulative impacts on wildlife and aquatic biota from foreseeable development in the six-state region would be small provided mitigation measures to preserve important habitat and migration corridors are implemented (or sufficient

[16] Western state wildlife agencies have game management plans as well as population goals and Memoranda of Understanding (MOUs) with the Department of the Interior regarding the achievement of those goals. The final PEIS should address how the proposed Resource Management Plan amendments are consistent with those management plans and MOUs.

alternative lands are set aside as compensation). *This assessment assumed that solar development would affect the largest amount of acreage in the study area in comparison with other activities, on the basis of the assessment of other foreseeable actions and projects in the study area (see Section 6.5.1).* However, based on the RFDS land use projections, solar development would still affect a relatively small fraction of total BLM-administered lands in the study area, and solar facilities would affect mainly flat basin floors, habitat that is abundant in the region (DPEIS at 6-95 (emphasis added)).

NWF believes based upon experience with past energy development that, in many places in the West, this assumption is not accurate. The DPEIS fails to address the cumulative loss of vital fish and wildlife habitats in places like the San Luis Valley of Colorado. In addition to the SEZs proposed for federal public lands, the San Luis Valley currently is the site of several proposed solar energy facilities on private land. *See* *http://www.cleanenergyauthority.com/solar-energy-news/iberdrola-colorado-solar-plant-111210/.* A proposed new transmission line will cut across winter ranges for mule deer. *See* *http://www.denverpost.com/business/ci_13672659.* Until recently, the San Luis Valley has not been part of the natural gas boom in the Rocky Mountain West. Today, however, two energy corporations, Lexam Explorations, Inc. and Conoco-Philips, are planning to drill three 14,000-foot exploratory gas wells on Colorado's newly-formed Baca National Wildlife Refuge (BNWR). Lexam officials believe there is potential for discovering billions of dollars worth of natural gas in the San Luis Valley. Their seismic studies show San Luis Basin "remarkably similar" to those of the nearby San Juan and Raton Basins, about 100 miles to the southwest and 60 miles to the southeast, respectively (http://www.lexamexplorations.com). Both of which have been extensively drilled for natural gas. Natural gas extraction in winter ranges has been demonstrated to have devastating impacts on big game populations.[17] While the percentage of federal public land devoted to utility-scale solar energy facilities may be small, its cumulative effect may be considerable given the habitat losses suffered due to other human activities in the San Luis Valley.

Tribal Culture and Resources

4.15.3 Traditional Cultural Properties

The DPEIS states, "[l]ocations of specific traditional cultural properties within the BLM-administered lands considered suitable for solar energy development are not currently available but are part of the ongoing discussions during government-to-government consultations with Native American Tribes and through the public comment process for all cultural groups" (DPEIS at 4-163). NWF appreciates that the Agencies recognize their trust responsibility to conduct government-to-government consultation. However, NWF is concerned that the DPEIS does not address the location of traditional cultural

[17] Sawyer H., Nielson R., *Mule Deer Monitoring in the Pinedale Anticline Project Area: 2010 Annual Report* (September 2010). A copy of this report is attached.

properties in relation to the proposed SEZs, which in effect disregards the importance of traditional cultural properties and the potential impact to these properties. Moreover, it must be recognized that many tribes are not willing, and are not obligated, to publicly share the location of their cultural sites and resources. As such, the Agencies must fully address the location of traditional cultural properties in relation to sites suitable for solar energy development, fully analyze the potential impacts to traditional cultural properties, and respect tribal rights to privacy regarding these matters. If a Tribe requests that cultural information remain private, BLM must acknowledge this in the DPEIS but still fully address potential impacts.

Figure 4.15.1 (DPEIS at 4-163) identifies major cultural areas, congressionally designated national historic trails, and national historic landmarks within the six-state study area. While it is useful to see this information, the map would be much more useful if it was overlaid with a map of the solar suitable areas to effectively represent the location of solar areas in relation to cultural areas.

4.16 Native American Concerns

The DPEIS states that all federally recognized Tribes that have traditional territory within solar suitable areas "were contacted regarding the PEIS" and Appendix K contains "copies of the letters sent to the Tribes, a complete listing of each Tribe receiving the letter, and responses from Tribes" (DPEIS at 4-168). While NWF appreciates BLM's attempted outreach to tribes on the DPEIS, it is unclear from this description, as well as Appendix K, how effective BLM actually was at reaching out to and getting input from tribes. Sending a form letter has proven to be an ineffective method to conduct outreach to tribes. Sending a form letter to a tribal government does not guarantee that the letter will make its way to the most appropriate tribal staff that can respond to the letter. In fact, NWF has communicated with a number of Tribes listed in Appendix K and they stated they had never received any information on the DPEIS. Whether or not a letter was sent, it is clear that many tribes were not properly consulted. NWF recommends that BLM fully pursue its government-to-government consultation obligation by reaching out directly to tribes via phone calls, conference calls, and face-to-face meetings to ensure that the appropriate tribal staff is reached and tribes are fully consulted.

5.15.1 Common Impacts

The DPEIS states,

> [c]ultural resources are nonrenewable and, once damaged or destroyed, are not recoverable. Therefore, if a cultural resource is damaged or destroyed during solar energy development, this particular cultural location, resource, or object would be irretrievable. For cultural resources that are significant for their scientific value, data recovery is one way in which some information can be salvaged should a cultural resource site be adversely affected by development activity. Certain contextual data would be invariably lost, but new cultural resources information would be made

> available to the scientific community. Loss of value for education, heritage tourism, or traditional uses is less easily mitigated (DPEIS at 5-219).

This statement seems to indicate that the only measure to be considered for cultural resource protection would involve "data recovery" that would provide "cultural resources information...to the scientific community." As such, the option of "data recovery" totally ignores the full importance of cultural resources. Cultural resources are not only "significant for their scientific value." The value of cultural resources does not only reside in a western science framework; these resources have intrinsic value to tribes outside of western modes of thought. Thus, it is extremely disconcerting that the DPEIS favors this "mitigation" measure, while accepting that cultural resources would be "damaged," "destroyed," and "would be irretrievable." Moreover, it is unacceptable that the DPEIS states that the "loss of value" of cultural resources "for education, heritage tourism, or traditional uses is less easily mitigated," without proposing measures to prevent these losses of value. BLM must make serious efforts to prevent these losses by consulting and working with tribes, rather than accepting "data recovery" for "scientific value" as a mitigation option.

5.15.3 Potentially Applicable Mitigation Measures

To mitigate potential impacts on cultural resources, the DPEIS states that mitigation measures developed under Section 106 of the National Historic Preservation Act will be followed (DPEIS at 5-219). The DPEIS further states that "[s]ite-specific analyses and a Section 106 review would be conducted on individual projects" (DPEIS at 5-220). However, the DPEIS does not fully address cumulative impacts to cultural resources. It is wholly appropriate to conduct analyses for mitigation of individual projects, but analyses for cumulative impacts must also be conducted.

In site-specific analyses, the DPEIS states, "[i]f significant cultural resources are present at the project location or if there is a high potential for the project area to contain significant cultural resources that could be adversely affected, *a formalized agreement may be required to address management and mitigation options*" (DPEIS at 5-220, emphasis added). However, the DPEIS does not, but must, address when and how these formalized agreements will be developed and implemented. Without this information, there is no assurance that "formalized" agreements with tribes will be carried out.

5.15.3.1 Siting and Design

To mitigate and reduce the impacts on cultural resources, the DPEIS states, "[t]he use of previously disturbed lands, rather than pristine lands, should be encouraged" (DPEIS at 5-221). NWF believes this mitigation measure is critical and recognizes that many Tribes have commented that disturbed lands, rather than pristine lands, should be used whenever possible.

Another required mitigation measure the DPEIS mandates is that "[p]roject developers should conduct a records search of published and unpublished literature for past cultural

resource finds in the area...and, depending on the extent of existing information, develop a survey design in coordination with the managing agency and SHPO, and complete a Class III cultural resources inventory" (DPEIS at 5-221). As the Quechan Indian Tribe points out in its letter dated September 3, 2009 (DPEIS Appendix K at K-94), BLM's Final EIS for the Yuma Field Office Resource Management Plan noted over 4,300 archaeological sites but only 16% of the Yuma planning area has been surveyed for cultural resources. Given this example of the small percentage of land that has been surveyed to date for cultural resources, it is extremely important that BLM fully enforce the mandate for cultural resources inventories to mitigate potential impacts to cultural resources.

6.5.2.14 Cultural Resources

The DPEIS states, "[c]onsultation with affected local Native American Tribes regarding their knowledge of and/or concerns for cultural resources in a given project area must be implemented early and often throughout the project development process" (DPEIS at 6-100-6-101). NWF agrees with this in principle, but it is unclear from the DPEIS what specific plans there are for carrying out this consultation as projects move forward. The DPEIS should explicitly lay out a plan for ongoing tribal consultation on solar development projects. Moreover, given the location of the SEZs, BLM should diligently pursue cooperating agency agreements with impacted tribes.

6.5.2.15 Native American Concerns

The DPEIS states, "[c]umulative impacts on Native American concerns from foreseeable development in the six-state region are currently unknown, because consultation is still ongoing" (DPEIS at 6-100). This vague statement is wholly unsatisfactory. BLM must explicitly identify cumulative impacts, describe them in the DPEIS, and provide mitigation measures to reduce or avoid impacts. Given that BLM does not know the concerns of tribes on cumulative impacts, BLM must provide a plan for identifying the concerns and provide a timeline for achieving this.

14.2 Government-To-Government Consultation

The DPEIS states that in addition to letters to 253 Tribes sent in June 2008 and letters to 316 Tribes sent in July 2009, "[t]he BLM followed up with additional letters, phone calls, e-mails, and meetings for Tribes whose traditional use areas are closest to the proposed study areas" (DPEIS at 14-7). As previously expressed, form letters to tribes do not satisfy BLM's obligation for government-to-government consultation; it is not a proven method for fully engaging tribes on federal actions that may impact tribes. Moreover, it is unclear what "meetings" this statement includes. It is not clear anywhere in the DPEIS nor in Appendix K what "meetings" were held and what the results of those meetings were. If such meetings were held, the results of those meetings should be included in the DPEIS including full transcripts.

CONCLUSION

Energy development in the wrong place or done without reasonable and adequate measures to ensure the conservation of other resources is irresponsible, whether the energy source is fossil fuels or wind or solar. FLPMA mandates that the federal public lands be managed "without permanent impairment of the productivity of the land or quality of the environment." 43 U.S.C. 1702(c). It also mandates that the public lands be managed to provide "habitat for fish and wildlife". 43 U.S.C. § 1701(a)(8). While environmental protection and energy production are not mutually exclusive, the needs of wildlife and the exigencies of energy production, at least in some locations, are not always compatible. Multiple use is not achieved by maximizing the number of uses permitted to languish on each acre of the federal public lands. 43 U.S.C. § 1702(c) ("The term 'multiple use' means the . . . use of some land for less than all of the resources . . ..") NWF urges both BLM and the Department of Energy (DOE) to strike a balance that protects our nation's wildlife heritage and addresses the challenges wildlife face in a changing climate. With respect to the federal public lands, NWF believes the designation of SEZs represents the right balance by both facilitating utility-scale solar energy projects and ensuring conservation of other values of the public lands. While DOE has no expanse of lands upon which to designate SEZs, it should use the siting and design criteria as well as the operating practices developed in this PEIS to guide both selection and oversight of the projects it supports.

NWF also urges the Agencies to ensure that all stakeholders are provided full and fair opportunities to share both solutions and concerns regarding the challenges of a warming world. Tribes are sovereign governments with guaranteed rights to nation-to-nation consultation with the federal government, with distinct rights to protecting cultural resources, and with interests in and rights to preserving wildlife and plant resources. NWF urges the Agencies make a comprehensive, transparent, and fully-accountable effort to meet their obligations to tribes.

Sincerely,

Kathleen C. Zimmerman
Senior Policy Advisor, Public Lands Program

Garrit A. Voggesser
Senior Manager, Tribal Lands Conservation Program

ATTACHMENTS*

1) Sportsmen for Responsible Energy Development (SFRED) Guidelines for Renewable Energy Development on Public Lands

2) Letter of support for SFRED Guidelines

3) Sawyer H., Nielson R., *Mule Deer Monitoring in the Pinedale Anticline Project Area: 2010 Annual Report* (September 2010)

*Hard copies of attachments were submitted by regular mail.

Thank you for your comment

The comment tracking number that has been assigned to your comment is SolarD11843.

Comment Date: May 2, 2011 18:07:23PM
Solar Energy Development PEIS
Comment ID: SolarD11843

First Name: [Withheld by requestor]
Middle Initial:
Last Name: [Withheld by requestor]
Organization:
Address:
Address 2:
Address 3:
City:
State: [Withheld by requestor]
Zip:
Country: [Withheld by requestor]
Privacy Preference: Withhold name and address from public record
Attachment:

Comment Submitted:

On page 2-7 of the draft PEIS, screening criteria are discussed ([less than]5% slope, large parcels of land, solar insulation level). Lands where utility scale (20 megawatts) projects would be allowed were derived from the criteria. I think the PEIS is saying (not very clearly and not very well), is that utility scale projects would be limited to only those lands identified in the EIS. Lines 33-36 on page 2-7 states "It is anticipated that the BLM will continue to amend or revise land use plans over time to adapt to changing circumstances or new information, and that the shape, size, and/or location of exclusions or priority development areas may change accordingly." The executive summary states (page ES-6, lines 10-13) "under the solar energy development program alternative, certain categories of land that are known or believed to be unsuitable for utility-scale solar development would be excluded from development to guide solar energy developers to areas where there are fewer resource conflicts and potential controversy". The Executive Summary also states (page ES-7, lines 23,24) (regarding the Solar Energy Zones - SEZ- identified in the EIS), "changes to SEZs would have to go through a land use planning process, which would be subject to the appropriate environmental analysis". Comment: Why is BLM setting themselves up to do Land Use Plan amendments? The Solar EIS appears to be based on current existing solar technology and its many limitations. Solar power today is very inefficient. As interest, need and capital grow, technology will vastly improve. I have read several articles about research to significantly improve the efficiency of solar power. I fully anticipate that within ten years we will be able to generate much more power from a vastly smaller area than we are able to today. At some point the limitations we now identify ([less than]5% slope, large parcels of land, solar insulation level) will not be as severe. If a BLM office were to receive an application for a solar plant, I don't think BLM should deny the project just because the area wasn't considered in this Solar EIS. Projects in the future that may be more efficient or have differing requirements should not be denied up front (absent a Land Use Plan amendment). Perhaps the purpose of the Solar EIS should be to provide a platform for projects that fit the current criteria to tier to.

Thank you for your comment, Janine Blaeloch.

The comment tracking number that has been assigned to your comment is SolarD11844.

Comment Date: May 2, 2011 18:11:43PM
Solar Energy Development PEIS
Comment ID: SolarD11844

First Name: Janine
Middle Initial: C
Last Name: Blaeloch
Organization: Western Lands Project
Address: PO Box 95545
Address 2:
Address 3:
City: Seattle
State: WA
Zip: 98145
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

I hereby incorporate by reference and concur with all comments on the Solar PEIS submitted by Solar Done Right on April 1, 2011, which letter had return receipt number SEDD10149. I was contact person for the letter and signed on behalf of the other members of Solar Done Right, which includes my organization, the Western Lands Project.

Thank you for your comment, Loretta Mitson.

The comment tracking number that has been assigned to your comment is SolarD11845.

Comment Date: May 2, 2011 18:18:18PM
Solar Energy Development PEIS
Comment ID: SolarD11845

First Name: Loretta
Middle Initial:
Last Name: Mitson
Organization:
Address: Box 231
Address 2:
Address 3:
City: Manassa
State: CO
Zip: 81141
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

The Dept of Interior is unwittingly becoming a roadblock in the road to alternative energy independence. Placing large solar arrays on thousands of acres of previously undeveloped land will result in much lost time while the government and utilities battle private landowners over right of way and eminent domain issues for transmission. The Federal government needs to endorse a solar generation master plan that places solar collectors on buildings, rooftops, and despoiled lands that are already close to the locus of electrical need and use. We do not have decades to argue over the details of transmission. Global warming is NOW and distributed generation is the QUICKEST,CHEAPEST way to address this. Germany has already developed a model that works and we are stupid if we do not learn from their experiences. The politicians need to stop listening to the corporate utility profiteers and promote alternative energy models that truly benefit the people. All solar is not necessarily good. We need to do this RIGHT.
For years I have lived in an area of rural Colorado where it has been common knowledge that so much as running an unauthorized sheep over BLM land will get you severe fines--but now you want to allow corporate America to bulldoze thousands of acres in order to install already obsolete solar collectors and build transmission lines. The Dept of Interior and the Dept of Energy are being influenced by the wrong people. You need to listen to the PEOPLE and not the corporate FAT CATS.
I believe in distributed generation. I have it on the roof of my house. It works GREAT!
And it requires no additional public lands be carved up for generation or transmission. Ken Salazar, this is your sister-in-law, Loretta. You need to pay attention to the local experts, all over this country, who are not given a powerful voice in this decision!

Thank you for your comment, Carolyn Campbell.

The comment tracking number that has been assigned to your comment is SolarD11846.

Comment Date: May 2, 2011 18:23:13PM
Solar Energy Development PEIS
Comment ID: SolarD11846

First Name: Carolyn
Middle Initial:
Last Name: Campbell
Organization: Coalition for Sonoran Desert Protection
Address: 300 E University Blvd #120
Address 2:
Address 3:
City: Tucson
State: AZ
Zip: 85705
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: CSDP Solar PEIS Comments FINAL.pdf

Comment Submitted:

Coalition for Sonoran Desert Protection
300 E. University Blvd., Suite 120
Tucson, Arizona 85705
p (520) 388-9925 • f (520) 791-7709
www.sonorandesert.org

May 2, 2011

Linda Resseguie, BLM Solar PEIS Project Lead
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

RE: Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States

Dear Ms. Resseguie:

I am writing to you on behalf of the Coalition for Sonoran Desert Protection (Coalition), comprised of 39 environmental and community organizations in Pima County, Arizona. Since our founding in 1998, our mission has been to achieve the long-term conservation of biological diversity and ecological function of the Sonoran Desert through comprehensive land-use planning, with primary emphasis on Pima County's Sonoran Desert Conservation Plan. We have reviewed the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (hereafter "Solar Energy PEIS") and submit the following comments on this document.

Renewable energy and land conservation

First, the Coalition wants to clearly state our support for renewable energy development and the need for smart land-use planning as large-scale renewable energy projects move forward. We have long supported an approach of using land-use planning in order to identify both lands deserving long-term protection for their rich biological resources and lands suitable for development. This is exemplified by our work on the Sonoran Desert Conservation Plan, a nationally-recognized and award-winning regional conservation plan in Pima County, Arizona.

Preferred Alternative

In this spirit, we hope that the BLM will change its preferred alternative to the Modified Solar Energy Zone (SEZ) Program Alternative, as proposed in comments submitted by The Wilderness Society et al. on April 18, 2011 that focused on impacts to Arizona. This alternative is a more targeted approach that guides solar development to appropriate lands and minimizes impacts to wildlife habitat and wildlife species, while also eliminating elements of the currently proposed SEZs and developing a protocol for identifying new SEZs in the future. We strongly encourage the BLM to make this the preferred alternative as this plan moves forward. The Modified SEZ Program Alternative will serve as a strong, environmentally-sound starting point for locating utility-scale solar energy development in the future. We are in support of the detailed comments on this topic submitted by The Wilderness Society, et al.

Pima County

As an organization, our primary geographic focus area is Pima County, Arizona. Our review of the Solar Energy PEIS largely focused on its potential impacts to the significant conservation efforts that have occurred in Pima County in the recent past and are continuing today.

As background, Pima County is home of the nationally-recognized Sonoran Desert Conservation Plan (SDCP), a regional conservation plan created in 1998 whose primary goal is to "ensure the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County through maintaining or improving the habitat conditions and ecosystem functions necessary for their survival." The SDCP is a guiding force not just for Pima County, but also for local jurisdictions such as the City of Tucson, Town of Oro Valley, and Town of Marana.

As part of SDCP implementation, a map of biologically-rich lands was created – the Conservation Lands System (CLS) – through a rigorous, scientifically-driven process using the most current tenets of conservation biology and biological reserve design. It was adopted into Pima County's Comprehensive Land Use Plan in 2001 and has been in use ever since. The CLS consists of seven biologically-sensitive land use categories, and an associated map, with specific guidelines for each category. These land categories include Important Riparian Areas, Biological Core Areas, Multiple Use Management Areas, Special Species Management Areas, Critical Landscape Linkages, Scientific Resource Areas, and Agricultural In-Holdings. CLS guidelines are used by the Pima County Board of Supervisors when they are tasked with discretionary actions such as rezoning and have resulted in the set-aside of natural undisturbed open space within private developments. More importantly, the CLS is a guiding document and set of principles that tries to direct development away from biologically-rich areas and into areas more suitable for disturbance.

The BLM Preferred Alternative has identified extensive acreage for solar development that would, if developed, adversely impact and potentially jeopardize the integrity of the CLS and the goals set forth by the Sonoran Desert Conservation Plan to maintain native biological diversity and areas of cultural significance. Outlined below are more detailed descriptions of the CLS land use categories and an analysis of the significant impacts the BLM Preferred Alternative could have on these biologically-sensitive lands. (Note: Only four of the seven CLS categories have associated open space set-aside guidelines.)

Important Riparian Areas (IRA)
The CLS guidelines call for 95% open space set-aside in these areas. These areas are designated for their high water availability, vegetation density, and biological productivity. Not all washes are designated as IRAs. The BLM Preferred Alternative overlaps IRAs by 57,211 acres. In addition to the potential for habitat destruction and fragmentation, extensive water use for solar energy production in and adjacent to IRAs is inappropriate and could lead to degradation and impairment of these riparian systems. One example of an IRA is Cienega Creek Natural Preserve, one of Pima County's last remaining perennial streams. Cienega Creek is home to many rare and vulnerable species such as the Lowland leopard frog, Chiricauha leopard frog (including proposed critical habitat for this species), Lesser long-nosed bat, Desert box turtle, and Bell's vireo. The Preferred Alternative identifies a parcel of land south of Interstate 10 near Cienega Creek as appropriate for solar development. **We recommend all of these ecologically sensitive lands, again totaling 57,211 acres, be removed from further consideration for solar development.**

Biological Core Areas
The CLS guidelines call for 80% open space set-aside in the Biological Core areas. These lands are designated for their potential to support high value habitat for five or more priority vulnerable species identified under the SDCP. The BLM Preferred Alternative overlaps Biological Core lands by 85,167 acres. Direct and indirect impacts to these ecologically sensitive lands are inappropriate and could lead

to loss and degradation of key habitats for threatened, endangered or otherwise imperiled species. **We recommend these ecologically sensitive lands, again totaling 85,167 acres, be removed from further consideration for solar development.**

Special Species Management Areas
The CLS guidelines call for 80% open space set-aside in these areas. These areas are defined as crucial for the conservation of specific native floral & faunal species of special concern of Pima County. Management of these areas will focus on conservation, restoration, and enhancement of habitat for these species. Much of this designation overlaps with Multiple Use Management Areas, but will retain the 80% set aside percentage. The BLM Preferred Alternative overlaps Special Species Management Areas by 123,694 acres. Direct and indirect impacts to these ecologically sensitive lands, which are crucial for the conservation of specific species of special conservation concern, is inappropriate and could lead to loss and degradation of key habitats for threatened, endangered or otherwise imperiled species. **We recommend these ecologically sensitive lands, again totaling 123,694 acres, be removed from further consideration for solar development.**

Multiple Use Management Areas
The CLS guidelines call for 66 and 2/3% open space set-aside in these areas. These lands support high value habitat for 3-4 priority vulnerable species identified under the SDCP. Any overlap of the Special Species Management Areas over Multiple Use Management Areas will use the 80% set aside percentage. The BLM Preferred Alternative overlaps Multiple Use Management areas by 1,418,536 acres. Direct and indirect impacts to these ecologically sensitive lands are inappropriate and could lead to loss and degradation of key habitats for threatened, endangered or otherwise imperiled species. **We recommend these ecologically sensitive lands, again totaling 1,418,536 acres, be removed from further consideration for solar development.**

Open Space Preserve System
Another implementation tool of the SDCP is Pima County's extensive open space preserve system. With monies generated through two open space bonds – $25 million approved in 1997 and $174 million approved in 2004 – Pima County has purchased over 71,000 acres of private land and over 130,000 acres of leased State Trust Land and other leased lands. These lands will be used for mitigation in Pima County's Multiple-Species Conservation Plan, part of the County's recently submitted application for an Incidental Take Permit from the U.S. Fish and Wildlife Service. The BLM Preferred Alternative could impact ~2,264 acres of this open space preserve system, ~1,819 acres of Rancho Seco and ~445 acres of the Diamond Bell Ranch. Rancho Seco is comprised of semidesert grassland and open mesquite woodland and is home to threatened species such as the California leaf-nosed bat, Mexican long-tongued bat, Bell's vireo, and Abert's towhee. It is also a critical wildlife linkage between the Altar Valley, the Tumacacori Mountains and the Santa Cruz River. The Diamond Bell Ranch contains portions of the Special Species Management Area for the cactus ferruginous pygmy-owl and contains populations of the endangered Pima pineapple cactus. **We recommend these ecologically sensitive lands be removed from further consideration for solar development.**

In summary, Pima County, local jurisdictions, and a wide variety of community stakeholders have invested considerable time, energy, and money into the implementation of the SDCP over the last 13 years. We strongly recommend that ecologically sensitive lands identified in the BLM's Preferred Alternative that conflict with Pima County's Conservation Lands System and open space preserve system be removed from further consideration for solar development. Furthermore, we want to emphasize that the Modified SEZ Program Alternative (our "preferred" alternative) does not impact any lands in Pima County's Conservation Lands System and open space preserve system.

Ironwood Forest National Monument
The IFNM was established in 2000 and protects over 129,000 acres of Sonoran Desert habitat, including the densest stands of desert ironwood trees in the world. Some of the areas identified in the BLM's preferred alternative are in proximity to the IFNM and Pima County's Conservation Lands System (described above) overlaps portions of the IFNM. The Coalition for Sonoran Desert Protection helped found the Friends of Ironwood Forest and we support their more detailed comments on the Solar PEIS submitted on April 27, 2011.

Pinal County
Pima County shares its northern border with Pinal County. Although the Coalition's work largely focuses on Pima County, we have long recognized that the conservation of wildlife habitat, along with other conservation issues, cannot be limited to the boundaries of political subdivisions. With this in mind, we have recently expanded our geographic focus into Pinal County. In 2007, Pinal County adopted the Open Space and Trails Master Plan. The BLM's Preferred Alternative overlaps considerably with the lands identified in this plan (totaling 3,437,517 acres that Pinal County has designated as public or restricted use open space and regional parks, both existing and planned).

Nearly all of the lands in Pinal County designated as suitable for solar development in the BLM's Preferred Alternative are located in areas designated as having "high habitat value" in Pinal County's Open Space and Trails Master Plan. **We recommend that all of these lands be removed from further consideration for solar development.**

We also recommend a more deliberate planning approach that involves detailed, on-the-ground analysis, similar to the analysis employed in identifying the Solar Energy Zones. This type of approach would potentially identify both areas of conflict and land that are truly suitable for solar development on BLM lands.

San Pedro River
The San Pedro River, located in Cochise, Pima, and Pinal Counties, is a vitally important national and international resource. The BLM's Preferred Alternative would allow 21,900 acres of land in the San Pedro River watershed to be available for solar development. We strongly recommend that these acres be removed from further consideration for solar development. Anything that threatens the integrity of the ecosystem functions of the San Pedro River is of international concern, especially in light of the river's ability to provide for ecoregion resilience and flexibility in the face of climate change. For instance, any groundwater use for solar development in the San Pedro River Basin is unacceptable given the precarious state of groundwater in this region.

The San Pedro River is also the last major undammed river in the American Southwest, and exhibits a remarkably intact riparian system, including extensive stands of Fremont cottonwood, Goodding's willow gallery forest, and large mesquite bosques.

According to the American Bird Conservancy, southwestern riparian habitat is the fifth most threatened habitat type in the nation. The San Pedro River serves as a corridor between the Sky Islands of the Madrean Archipelago in northern Sonora and southern Arizona in its southernmost reaches and, in the north, Arizona's Central Highlands. The river is not only a major corridor between varied habitat types and ecoregions; it represents a ribbon of water and riparian vegetation in an otherwise arid environment. The river thus exhibits a remarkably high biodiversity, both in resident and migratory species.

More than 100 species of breeding birds, including 36 species of raptors, and approximately 250 species of migrant and wintering birds, occur in the area, representing roughly half the number of known breeding species in North America. The San Pedro River serves as a migratory corridor for an estimated 4 million migrating birds each year.

The abundance of mammals, reptiles, and amphibians is also high; more than 80 species of the former and more than 40 species of the latter. While fourteen species of native fish formerly occurred in the San Pedro River, only two persist today. The high importance of the Lower San Pedro River for the recovery of the endangered Southwestern Willow Flycatcher contributed to its designation as critical habitat for the species.

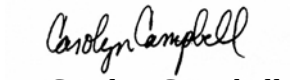
In light of all this supporting information, we recommend that **the 21,900 acres of land along the San Pedro River currently included in the BLM's Preferred Alternative be removed from further consideration for solar development.**

Summary and Conclusion

The Coalition for Sonoran Desert Protection fully supports the development of renewable energy sources, including solar development on targeted and suitable BLM lands. We recognize that the goals of renewable energy development and the preservation of important wildlife habitat can often be in conflict. However, with smart and targeted planning, we believe that both of these goals can be met. We strongly encourage the BLM to adopt the Modified SEZ Program Alternative as its Preferred Alternative as it moves forward with the PEIS for Solar Development in Six Southwestern States. We also encourage the BLM to include local conservation planning efforts in their analysis as the SEZs are further refined and developed. Often, local jurisdictions have conducted finer scale analysis of wildlife habitat and sensitive biological resources; acknowledging and including this data into the BLM's analysis will only strengthen future decision-making.

Thank you for considering our comments and recommendations. If you have any questions, please do not hesitate to contact me.

Sincerely,



Carolyn Campbell
Executive Director

Thank you for your comment, Rick Wixom.

The comment tracking number that has been assigned to your comment is SolarD11847.

Comment Date: May 2, 2011 18:25:37PM
Solar Energy Development PEIS
Comment ID: SolarD11847

First Name: Rick
Middle Initial:
Last Name: Wixom
Organization: Town of Springdale
Address: 118 Lion Boulevard
Address 2:
Address 3:
City: Springdale
State: UT
Zip: 847670187
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: draft peis comment letter 5-2-11.pdf

Comment Submitted:

TOWN OF SPRINGDALE

March 2, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

Re: Comments on the Solar Energy Programmatic Environmental Impact Statement

To Whom It May Concern:

Thank you for the opportunity to make some comments regarding the draft Solar Energy Programmatic Environmental Impact Statement (PEIS). The Town of Springdale is the gateway community to Zion National Park in Southern Utah. In this role, the Town has partnered with the National Park Service, the BLM, other Federal and State agencies and many non-profit and community groups to benefit the Zion Canyon Communities. Often these partnerships seek to promote sustainable lifestyles and environmental stewardship.

The Town of Springdale wholeheartedly supports the development of renewable and alternative energy sources. We have currently installed solar PV arrays to offset power used in municipal operations and support Rocky Mountain Power's Blue Sky Program. The Town is designated as an EPA Green Power Community, one of only four such communities in Utah.

This being said, the Town has some concerns about the development alternatives outlined in the draft PEIS. In particular, one area adjacent to Springdale, Rockville and Zion National Park is identified in the draft PEIS as potentially developable for utility-scale solar development under the Solar Energy Development Program Alternative. This area covers the majority of Gooseberry Mesa, a popular recreation area in the region.

The draft PEIS says the following regarding the lands identified under the Development Program Alternative:

> *"However, the 22 million acres (87,336 km2) that would be available for application are likely to include many areas not suitable for solar energy development because of as yet unidentified conflicts with other resources. As described in the authorization policies in Appendix A, BLM staff will be required*

118 Lion Boulevard Springdale, UT 84767-0187 (435) 772-3434
P.O. Box 187 www.springdaletown.com fax (435) 772-3952

to coordinate with federal, state, and local stakeholders and evaluate site-specific resource conflicts as part of the application analysis process."

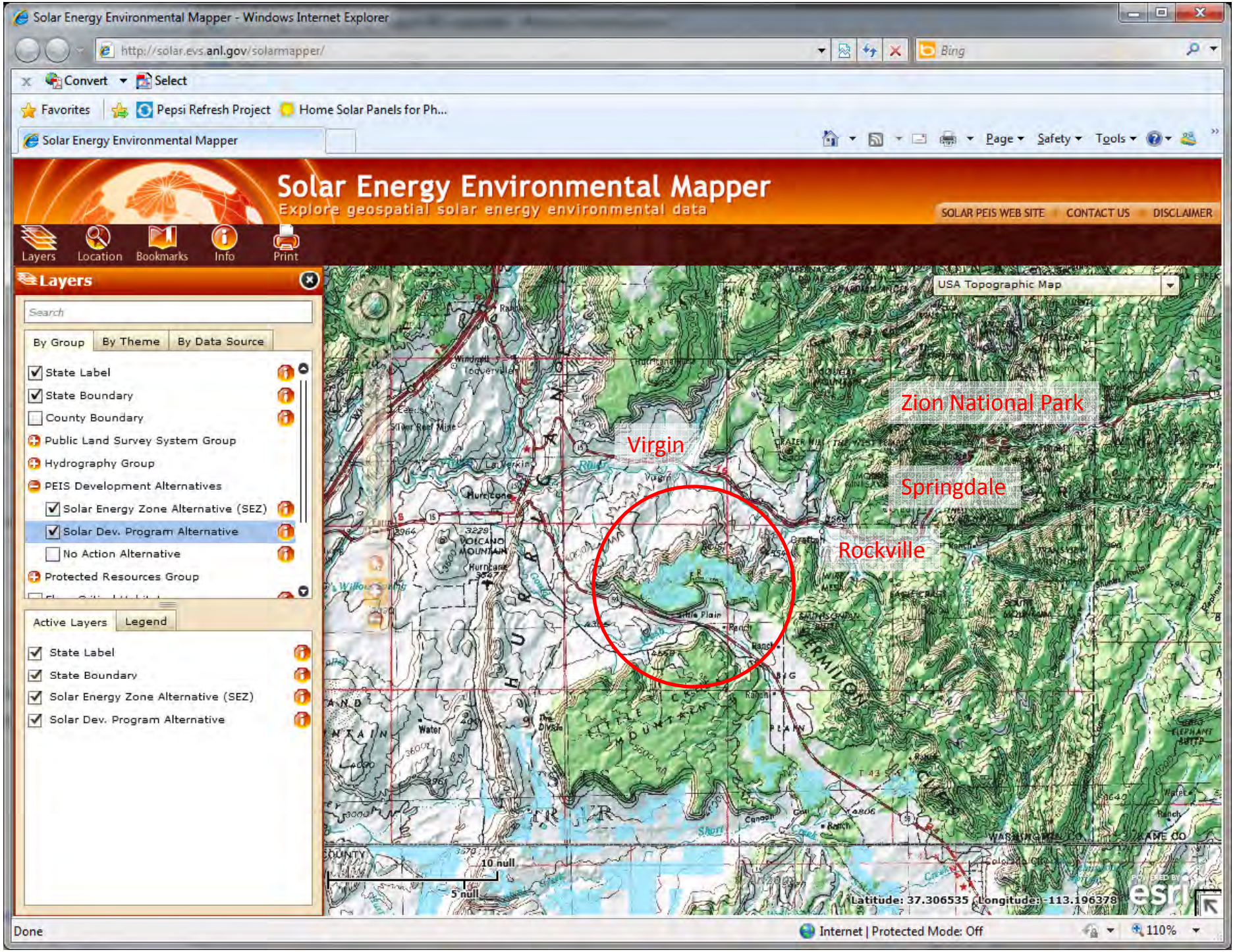
The area of Gooseberry Mesa is certainly one of these areas where solar energy development is not suitable. The impacts of establishing utility-scale solar energy would dramatically and forever change a resource that is well known for its recreation amenities, wildlife, native vegetation, cultural resources and magnificent views of Zion National Park and the surrounding communities. The area, only accessible by way of a Scenic Backcountry Byway, is far removed from roads, power transmission lines and other infrastructure necessary for solar development.

The Town supports the development of new solar infrastructure where is makes environmental and economic sense. In particular, we most support the development of solar infrastructure on lands that have been previously disturbed or developed. While we applaud the BLM for taking a leading role in providing for America's energy future, the development of solar energy on lands with wilderness characteristics or areas of pristine natural habitat should not be considered.

Thank you very much for the opportunity to comment.

TOWN OF SPRINGDALE

Rick Wixom
Town Manager


Solar Energy Environmental Mapper - Windows Internet Explorer
http://solar.evs.anl.gov/solarmapper/
Bing
Convert
Select
Favorites
Pepsi Refresh Project
Home Solar Panels for Ph...
Solar Energy Environmental Mapper
Page
Safety
Tools
Solar Energy Environmental Mapper
Explore geospatial solar energy environmental data
SOLAR PEIS WEB SITE
CONTACT US
DISCLAIMER
Layers
Location
Bookmarks
Info
Print
Layers
Search
By Group
By Theme
By Data Source
State Label
State Boundary
County Boundary
Public Land Survey System Group
Hydrography Group
PEIS Development Alternatives
Solar Energy Zone Alternative (SEZ)
Solar Dev. Program Alternative
No Action Alternative
Protected Resources Group
Active Layers
Legend
State Label
State Boundary
Solar Energy Zone Alternative (SEZ)
Solar Dev. Program Alternative
USA Topographic Map
Zion National Park
Virgin
Springdale
Rockville
10 null
5 null
Latitude: 37.306535 Longitude: -113.196378
Done
Internet | Protected Mode: Off
110%

Thank you for your comment, Harriet Brashear.

The comment tracking number that has been assigned to your comment is SolarD11848.

Comment Date: May 2, 2011 18:26:33PM
Solar Energy Development PEIS
Comment ID: SolarD11848

First Name: Harriet
Middle Initial: M
Last Name: Brashear
Organization: Society for the Protection and Care of Wildlife an
Address: 10500 Christenson Road
Address 2:
Address 3:
City: Lucerne Valley
State: CA
Zip:
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: SEZcomments V.wps

Comment Submitted:

Please disregard prior comment.

These comments are being submitted for myself and for the Society for the Protection and Care of Wildlife (SPCW), an organization which I represent. I am a desert resident and have been for almost 20 years. I have served 9 years in prior times as a member of the California Desert Conservation Area Advisory Committee. I have served as a member of all Desert Tortoise Technical Review Teams except for the last one. I have also been a member of the Joshua Tree National Park Advisory Committee.

The SPCW has been in existence since 1972 and incorporated in California in March of 1977. Our first effort was to restore the Tule Elk and this has been done. The SPCW has also been involved in the desert with Water For Wildlife projects, since its inception.

We are grateful for the opportunity to comment.

We are sorry to say that your document is badly flawed .

- The PEIS speaks to 2 levels of analysis. This is how the PEIS introduces combined EISs. In the past NEPA has indicated that there can be only one agency responsible for preparing an EIS. This document has two lead agencies. Department of the Interior/BLM should have completed its PEIS and the Department of Energy should have completed its own PEIS tiering off the BLM document. As a result this PEIS falls far short of discussing all of the relevant issues.

- This PEIS promises to evaluate and project the need and usage of solar for the next 20 years. No agency or individual can do more than guess what will happen over the next 20 years. Anyone can create a computer model based upon whatever assumptions one wishes to use and arrive at whatever end product will satisfy.

- We are concerned that we cannot find mention of the Amargosa Valley, Nevada - Millers, Nevada and Brenda, Arizona SEZs in the California section. It is true that they are located in Nevada and Arizona however we find that water, listed species and view shed at a minimum, appear to be issues concerning these SEZ which

need to be discussed in the Section on California. People reviewing this extremely large document are likely to review the executive summary, the appendices and the state in which they live or recreate. Without the mentions of all impacts including those in adjoining states the PEIS has not met its NEPA obligation. The proponents arbitrarily set limits on what would be evaluated as visual impacts and in the above
listed SEZ and these limits fall far short of the true impact.

- The data gaps and inconsistencies admitted to in the PEIS, are so great that there can be no such thing as an informed public making informed comments. The proponents say they will fix them in the “final”. A clear violation of NEPA.

- The producers of this document (BLM and DOE) have chosen to ignore several **requirements** of the Federal Land Policy and Management Act.

- The producers of the PEIS appear to be responding to Administrative/Executive Orders and the 2005 Congressional action and ignoring Congressional requirements passed in earlier times. The BLM/DOE say over and over that they have or are excluding “special lands and areas” from the SEZ and will exclude them from solar development in the “available lands”. They do qualify the statements with the words, “to the maximum extent possible”. Obviously, in California this does not include the Congressional designation of the California desert as a very “special area”. The PEIS as currently written is destroying the integrity of the Calif. Desert - partitioning it out without a comprehensive plan - losing the "whole" of it by giving away its "parts”.

- The PEIS does not adequately address other FLPMA issues and for all practical purposes; disregards the California Desert Conservation Area’s very special designation. BLM often calls the CDCA the California Desert National Conservation Area yet it is treated as just another BLM district. There are major legal issues being tried, remanded, stipulated to, executed and being tried now, which have not been included in the PEIS. This is a clear violation of NEPA requirements. “Fast tracking" is unraveling a

multitude of conservation efforts that citizens and BLM have spent decades and millions of dollars implementing.

- The Federal Land Policy and Management Act provides the guidance for Federal land management decisions. In the California Desert Conservation Area there are several chapters of the FLPMA which designate the California Desert as a “Special Area” (all of the California Desert) and requires a management plan which then becomes the guidance for these “special desert lands.” The California Desert Conservation Area management plan already zones this land. The PEIS mentions the four levels of use. It also mentions DWMAs, ACECs, ROWs and other generalized areas. It does not integrate these areas within the planning for the entire PEIS. In the California Desert Conservation Area, because it is a special area on its own, look at the desert as a "whole" and develope an "Energy Plan" with zoning and/or specific siting criteria - determine the "right" places. The existing CDCA Management Plan has a large section on energy which could be amended to accommodate whatever changes would be recommended in the “new section on alternative energy”.

- The BLM should increase its lease rates commensurate with the average cost of leased or purchased private parcels (ie: fallowed ag. land, etc. that can't be used for anything else in today's market), This will level the playing field for private property owners to benefit from these projects and stop the subsidizing through the use of public land instead of free market options.

- The CDCA management plan provides guidance for treatment of other issues. For example, in the CDCA Plan there are notification procedures spelled out for dealing with first Americans and decisions which may impact their lands and religion. BLM/DOE have not complied with these procedures. At least they have not done so with some tribes within the CDCA. The Chemehuevi are particularly upset that these procedures were ignored. (The PEIS says 130 plus tribes were contacted however at the Palm Springs hearing a significant number of tribes brought

complaints that they had not been contacted.)

- The FLPMA requires that each area which is to be designated for a purpose which excludes mining and segregates/withdraws 5000 acres or more from mineral entry must have first a mineral inventory and report and secondly review by Congress.

- In California there are four SEZ in the PEIS which exceed the 5,000 acre trigger. In Nevada there are 6 SEZ which exceed the 5,000 acres with more in other states. A mineral report and then Congressional review is required for each of these SEZ and each individual project outside of the SEZ which exceeds 5,000 acres. The inventory/report also must look at nearby withdrawals from mineral entry. This information is nowhere in the document and not providing it, is a violation of NEPA. Adding a sentence, paragraph or chapter which says slant drilling from outside the SEZ perhaps, might, could, maybe be done with no structures being within the SEZ is not the type of report or analysis required by FLPMA for Congress. Nor will the report meet Congressional requirements if it is a paragraph which includes the words, “there are no mining claims or no active mining claims which equals no minerals.” A real geologist/mineralogist should go and do the proper studies. Who ever does the write ups cannot spread the impact of the mining withdrawals over the 22 million acres. Minerals are where they are in the ground and not where you would wish them to be.

- The Secretary is premature in his withdrawal notice in the Federal Register of April 21st on page 22414. The SPCW believes that those areas in which active mining claims are found should be excluded from all SEZs. The proposed Pisgah SEZ is one that I personally am familiar with and mining is occurring there today.

- Additionally, in the PEIS there is mention of other types of alternative energy sources but no analysis as to which alternative energy facility takes precedent except indirectly. (In the Imperial South SEZ BLM/DOE have placed a SEZ over a significant portion of a KGRA.) The PEIS does not consider the cumulative impacts of all of the alternative energy sources on one another and the

PEIS lands. The PEIS does not project any cumulative impacts for “available lands” over the next 20 years. This is likely to be significant because states and Congress have set significant percentages of solar power which energy companies must deliver to its customers.

- It also seems that the solar PEIS will result in limited access by wildlife and those who maintain them, to tinajas, springs and seeps. It is likely that some wildlife waters (guzzlers and tanks) will have to be relocated. Some of these issues are not addressed and some of these issues are not adequately addressed.

The maps are of such scale it is impossible to discover if there are special areas which would require mitigation measures of such magnitude as to require special review and comment. The width of a line could be significant distance into or from a feature, with no way to tell the specifics.

It is impossible to determine the extent of fragmentation of existing roads. Nor is there discussion of fixes or opportunities to mitigate this fragmentation. Neither is there discussion of the impact of the fragmentation of roads on recreational opportunities other than to say they don‘t know how many individuals or families recreate on the PEIS lands.

Lands and Realty records in California have recently been found to be unreliable. (U.S. Forest Service personal conversation.) Therefore the acreage in the various categories in the PEIS can not be considered reliable. BLM has had the responsibility for keeping reliable land records for a very long time and this a great disappointment and should be rectified immediately.

The Socio-economic study is a farce. It implies, no states, that there is little to no socio-economic impact. The PEIS does not address the changes which will have to be made in local government’s general plans, nor the cost to the local taxpayers for these changes, nor does it address the lost property tax revenue from mitigation lands. Neither does it address those counties which are maxed out on PELT payments. Nor does it attempt to quantify the cost to local

government for all of the horrible outcomes predicted to arrive with the “boom”. Prior to the socio-economic study the minerals reports should have been completed first and the remaining economic information built upon this foundation. The PEIS states that ranchers may lose grazing lands and AUMs and nowhere is found what this will cost, both the ranchers and the federal taxpayer who will have to pay for this taking. (This loss is a taking and without being compensated is a violation of the Constitution.)

The assumptions utilized to attempt to assign a value to lost recreational opportunities would be laughable if they were not so bad. Ignored entirely were the value of dollars spent with vehicle dealers, dollars spent with after market dealers and manufacturers, dollars spent with specialized equipment and clothing manufacturers, dollars spent with service stations, dollars spent on tack, dollars spent on trailers, motor homes and so on. Millions of dollars have been ignored. Somehow the preparers of this PEIS also ignored the impact of lost dollars to small communities from lost recreational opportunities. The death or near death of small desert communities in or near the SEZs have not been given due consideration.

Nowhere is there adequately discussed, lost recreation opportunities. This is particularly important in California with the loss of access with the expansion of Fort Irwin and the proposed expansion of 29 Palms Marine Base and the California Wilderness Coalition‘s latest version of more proposed Wilderness which is also not reviewed with the SEZ in mind. Neither of the base expansions are a part of this PEIS and should have been discussed under cumulative impacts.

Nor is mitigation for lost recreational opportunities discussed; not even on a one acre for one acre basis.

More importantly, nowhere is addressed the inadequacy of mitigation lands. Especially in the CDCA where there are not enough mitigation lands to mitigate the impacts of existing applications. The numbers of these lands are available from the BLM State or District office. Because there is no discussion of how the insufficiency of mitigation lands will be addressed the document cannot meet NEPA requirements. The public needs to know what is proposed if a project cannot be mitigated.

22 million additional acres are shown in very poor detail as available for solar development. The scale is less than a ¼ inch per 36 square miles. We are not told what differentiates the 22 million “available” acres from the other lands identified as just BLM. Why the 22 million “available” acres are a part of this document is not clear. As best as can be told from the maps there are likely a significant number of very special areas and things within the 22 million “available” acres, but it is impossible to tell exactly what and where because of the poor quality of the maps.

The PEIS states in numerous places that big game animals should not be excluded from traditional transition zones and water sources. Fencing is allowed but the specifications are not given. In California and Nevada and probably in the remaining 4 states, there is an piece of paper in every BLM office which gives these specifications. The SPCW was instrumental in securing the adoption of these requirements. The fencing specifications are simple. There must be at least 18 inches clearance from ground level. (In a couple of states that figure is 14 inches.) This is an administrative agreement between state fish and game (game and fish), the Fish and Wildlife Service and an assortment of federal and state entities. If the fencing is barbed wire the bottom strand must have no barbs. It must be smooth. This is not a suggestion, it is a must. While not mandatory, the top strand, if the fence is barbed, should also be smooth.

Water sources utilized by wildlife should be left clear of night time human activities during construction and removal of solar facilities. If this cannot be accomplished then water must be provided several hundred feet away from the water source which is being disturbed.

There should also be a discussion of the appeals process. The difference between the ROD being signed by the Secretary or someone from BLM. This is a significant impact in time and dollars. DOI should eliminate its "fast tracking" practice of trumping BLM in final actions!

The public cannot be expected to comment in an informed manner on the PEIS when the information presented is inadequate or not

presented at all. BLM/DOE cannot just say they will give the needed information in the Final PEIS and then sign the ROD. For all of the above reasons this PEIS does not meet NEPA requirements.

We oppose all utility-scale “renewable” projects until the grid can fully accommodate its power without siphoning it off due to capacity constraints – decelerating/accelerating base load coal/natural gas/nuclear generation to accommodate it (which increases emissions/wastes power/disrupts systems, etc). Until this is done all that is being accomplished is less and less efficiency.

The Fix is easy. Halt solar/wind application processing until "Programmatic" is finalized/implemented. Take the time to do it right. The President, Secretary of the Interior and the Secretary of Energy can wait while you get it right or wait while you are forced to get it right through legal actions.

For myself and for the
Society for the Protection and Care of Wildlife

H. Marie Brashear, President.

Thank you for your comment, Margaret Fusari.

The comment tracking number that has been assigned to your comment is SolarD11849.

Comment Date: May 2, 2011 18:26:45PM
Solar Energy Development PEIS
Comment ID: SolarD11849

First Name: Margaret
Middle Initial: H
Last Name: Fusari
Organization:
Address: 2510 N Shannon Rd
Address 2:
Address 3:
City: Tucson
State: AZ
Zip: 85745
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: PEIS comment letter.docx

Comment Submitted:

2510 North Shannon Rd
Tucson AZ 85745
(520) 505-4366
maggiefusari@gmail.com
May 2, 2011

Solar Energy Draft Programmatic EIS
Argonne National Laboratory
9700 S. Cass Avenue - EVS/240
Argonne, Illinois 60439

Please accept this as a comment on the Solar Energy Development PIES.

As a conservation biologist who has been involved with desert conservation and with the Desert Tortoise Council and other conservation organizations for many years I am most particularly concerned with the stated objective: "Minimizing potential negative environmental, social, and economic impacts" and most especially the environmental impacts to the long term conservation of species. I am especially concerned that, although there are many specific mentions of things that could impact conservation of our native plant and animal species and specific ecosystems the overall process does not prioritize decision-making based on a mandate to protect our vulnerable species over time and space. I believe that a higher priority must be given to the overall conservation of populations of species at risk. The process of overall site designation must be based on an adequate and extensive database combined with models sufficiently well developed to support prediction of short and long term impacts on our native species and their populations.

From the information I have seen I do not think sufficient data have been brought to bear on locating solar projects in a manner that assures their success in delivering alternative energy source or in avoiding devastating losses to the natural resources of the Southwest Deserts and other lands. I am aware that several groups of researchers are working on usable habitat models that will allow intelligent decisions as to what level of overall harm would occur should projects be developed on specific sites. These models should be finalized and used to place any solar projects in a coordinated manner such that the overall impacts will not destroy irreplaceable natural resources including the special plant and animal species, their critical habitats and their connectivities. Furthermore there should be clear standards of habitat and species protection developed and used to evaluate short term, localized impacts and long term, cumulative impacts.

The overall impact of placing a large number of energy projects on "free land" using "fast-track" or site by site approval procedures will lead to unacceptable, large scale impacts on the entire ecosystem due to a lack of detailed standards for siting projects and for executing projects in a careful enough manner to avoid as much impact as possible. Unfortunately these impacts will be documented only after they have occurred; too late to prevent them unless the process for their approval has carefully evaluated the overall pattern of energy site placements.

The details of mitigation for all projects are not sufficiently developed. For example the translocation guidelines for desert tortoise as available to date do not address many serious question of protecting the desert tortoise from increasing levels of disease and from other threats that arise from the changes in behavior or location following translocation. Once the damage is done it is too late to retract; the approval process must address long term, large scale, ecosystem level impacts from the beginning.

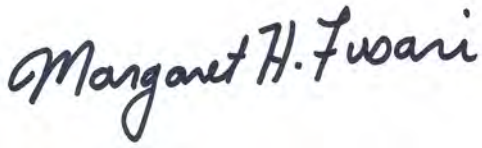
Another serious flaw in an adequate approval process is the lack of sufficient data addressing the location and numbers of sensitive species on proposed sites. Species such as the desert tortoise, the Mojave ground squirrel, and especially of rare, annual plants, which can only be surveyed during a strong blooming season, do not have a database sufficient to decide if a particular placement of energy sites will or will not do irreparable harm. We have already seen several preliminary surveys, presented as supporting development in an area, that were later shown to be seriously flawed because they were done out of season or by inexperienced personnel.

Although the PEIS can address only BLM lands the impacts of development, on or off BLM land, will influence adjacent lands. This must also be taken into account using wide scale projections of development.

Perhaps most important of all is using the habitat models to provide additional and permanent protection for all BLM lands important for the protection of desert species on lands already designated for them. Surrounding them with ill conceived and destructive developments will almost assure their eventual loss.

So in summary I ask that decisions not be made without sufficient and accurate data to support a conclusion that they will not have negative impacts in the short or long term on our precious natural resources. Each region open for potential projects requires a database that assures that decisions made will be correct as to their overall impacts.

Sincerely,



Margaret H. Fusari

Thank you for your comment, Laraine Turk.

The comment tracking number that has been assigned to your comment is SolarD11850.

Comment Date: May 2, 2011 18:27:10PM
Solar Energy Development PEIS
Comment ID: SolarD11850

First Name: Laraine
Middle Initial:
Last Name: Turk
Organization: Morongo Basin Conservation Association
Address: PO Box 24
Address 2:
Address 3:
City: Joshua Tree
State: CA
Zip: 92252
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: MBCA Final PEIS comment 05 02 11.pdf

Comment Submitted:

Morongo Basin Conservation Association, Inc.
mbconservation.org

May 2, 2011

Linda Resseguie, BLM Solar PEIS Project Lead
Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Ave. – EVS/900
Argonne, IL 60439
Sent via: http://solareis.anl.gov/involve/comments/index.cfm

Re: Comments on the Solar Energy Development Draft Programmatic Environmental Impact Statement

Dear Ms. Resseguie:

In July 2008, the Morongo Basin Conservation Association provided scoping comments for the Solar Energy Development Programmatic EIS. We are pleased for the opportunity to now comment on the Draft PEIS Solar Energy Development Programmatic Environmental Impact Statement (PEIS).

The Morongo Basin Conservation Association is a 501(c)(4), community-based, California Non-Profit Corporation. The MBCA is the oldest collective voice in our area for educating the Morongo Basin's citizens about the unique and valuable natural desert environment surrounding us, of which they are stewards. MBCA was founded in 1969, during a successful 11-year campaign to avert the imposition of power lines through the Basin by Southern California Edison. We have continued to be vigilant in seeking to protect the desert ecosystem surrounding us.

We are concerned that the plan proposed by the federal government to support renewable energy is subverting our efforts as desert citizens to preserve and protect desert resources and the interests of desert communities. We support energy usage reduction and renewable energy in a local distributed mode ("rooftop solar") as the primary goals in reducing carbon emissions and meeting energy needs. Indeed, the federal government's own 2006 Climate Technology Strategic Plan[1] listed distributed and community-scale technologies as important methods to meet goals for reducing emissions from end use and infrastructure (p. 79) and reducing emissions from the energy supply (p. 111).

[1] US Climate Change Technology Program, Strategic Plan. DOE/PI-0005, September 2006.

We believe implementation of the Draft PEIS as it stands can only fracture and eventually destroy the desert ecosystem by its piecemeal approach, which ignores the fragile and essential connections that keep desert ecology intact. We will also provide our recommendations for changes in the DPEIS that would point the nation toward "solar done right."

The 2010 release of the *Mojave Desert Ecoregional Assessment* [2]by The Nature Conservancy made us aware of how intact the Mojave Desert ecoregion is[3] (see Display 1 for map). This intactness supports a healthy functioning ecosystem with a high level of biodiversity which we have yet to fully document. It is elsewhere reported that,

> *Using the trends from the past 50 years and extrapolating forward in time, we can expect to discover another 200 native plant species in the California deserts over the next 50 years. Thus, approximately nine percent of today's California desert plants are not yet named by science.*[4]

In the belief that a functional network of connected wildlands is essential to the continued support of California's diverse natural communities in the face of human development and climate change the California Department of Transportation and California Department of Fish and Game commissioned the *California Essential Habitat Connectivity Project.*[5] Maps for the Mojave Desert Ecoregion[6] and the Sonoran Desert Ecoregion[7] show the natural landscape blocks and essential connectivity areas for the two ecoregions. The California Desert Connectivity Project is currently underway to complete the 23 linkage designs (see Display 1 for map). Ecological integrity or "naturalness" is used as primary basis for defining the natural landscape blocks.[8] The location and landscape wide acreage of 13 million acres made available for large scale solar development and transmission lines under the DPEIS "no action alternative" does not support the ecological integrity essential for successful linkage design. In fact, the Science Advisory Team for the DRECP points out that "Desert species and ecological communities are already severely stressed by human changes … Additional stress from large-scale energy developments, in concert with a

---

[2] Randall, J.M., S.S. Parker, J. Moore, B. Cohen, L. Crane, B. Christian, D. Cameron, J. MacKenzie, K. Klausmeyer and S. Morrison. 2010 Mojave Desert Ecoregional Assessment. Unpublished Report. The Nature Conservancy, San Francisco, California. 106 pages + appendices. Available at http://tinyurl.com/3t5rapn

[3] Ibid. p. xii, Figure 6-2.

[4] Andre, James; director, University of California Granite Mountains Desert Research Center. Email communication to Solar Done Right, February 17, 2011. Reported in US Public Lands Solar Policy: Wrong from The Start. P. 7. April 4, 2011. Available for download at www.solardoneright.org .

[5] Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highway Administration.

[6] Ibid. p. C-43

[7] Ibid. p. C-44

[8] Ibid. p.5

changing climate, portends further ecological degradation and the potential for species extinctions."[9]

MBCA strongly supports two specific recommendations drawn from the document "US Public Lands Solar Policy: Wrong from the Start."[10]

> * The DPEIS should include a Disturbed Lands alternative. Large-scale centralized solar plants should only be built on the millions of acres of abandoned mine lands, brownfields, and federal and non-federal Superfund sites identified by EPA and others as suitable for solar and other non-fossil-fuel energy projects.
>
> * The DEIS should include a Distributed PV alternative that directs solar development to the built environment. When all costs are factored in – including new transmission infrastructure and transmission line losses – local, distributed solar PV is comparable in efficiency, faster to bring online, and more cost-effective than remote utility-scale solar plants.

In sum, MBCA believes that the DPEIS document has not provided adequate evaluation of the negative effects of widespread solar development on desert ecological systems. Additional alternatives of Disturbed Lands siting and Distributed Solar development must be developed and given higher priority than industrial-scale solar development favored in the DPEIS.

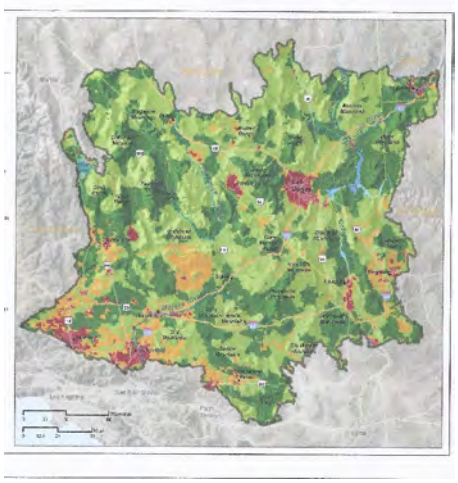
Sincerely,

Laraine Turk
President, Morongo Basin Conservation Association

[9] Recommendations of Independent Science Advisors for the California DRECP Report, Appendix A, Executive Summary. Conservation Biology Institute, October 2010.
[10] Ibid, p.

DISPLAY 1 – Competing Visions of the California Desert

The maps below demonstrate competing visions for the California Desert. The ecosystem values and biodiversity of the Mojave (Map 1) and Colorado Deserts (Map 2) are conserved by maintaining the ecological connectivity between wildlands. The DPEIS preferred alternative (Map 3) supports solar and transmission development which insures landscape fragmentation of 13 million acres and the loss of connectivity. The DPEIS proposes design features and mitigation requirements intended to offset the environmental impacts to the soil, the water, the air quality, and endangered species. The DPEIS does not evaluate the dynamic interacting whole: the loss of ecosystem function resulting from the deteriorating soil, air, and hydrologic systems on plant communities and wildlife. The inadequate mitigation measures are unable to address the unintended consequences of ecosystem wide assault. This magnitude of uncertainty and loss is unprecedented.



The Mojave Desert Ecoregional Assessment
The Nature Conservancy September 2010
http://tinyurl.com/3t5rapn

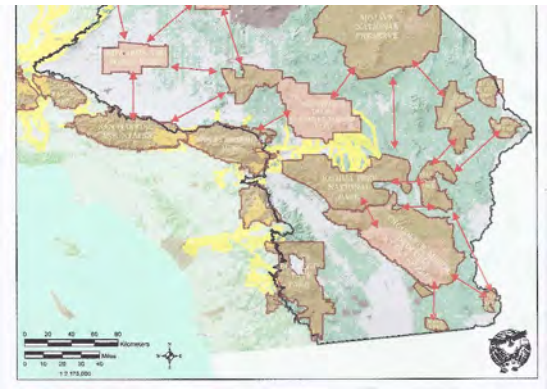
Map 1: Mojave Desert Conservation Value

Dark Green: Ecologically Core
Land with low levels of anthropogenic disturbance which support conservation targets and whose protection is critical for the long-term conservation of the ecoregion's biological diversity

Light Green: Ecologically Intact
Land with low levels of anthropogenic disturbance or which supports conservation targets and which requires a level of protection that will enable it to continue to support ecological processes and provide connectivity

Orange: Moderately Degraded
Land fragmented by roads, off-road-vehicle trails or in close proximity to urban, agricultural and other developments

Brick: Highly Converted
Land in urban and agricultural areas that is fragmented and most impacted by human uses



Map 2: California Desert Connectivity Linkage Planning Area (partial)

Arrows: Linkage Planning Areas (planning in process)
Yellow: Linkage Design (planning completed)
Pink: Wildland Blocks
Tan: Other Military Lands
Green: Other Public & Private Conservation Lands

When completed, this project will inform land management and conservation decisions by identifying areas where maintaining or restoring ecological connectivity is essential to conserving the California Desert's biological diversity. This comprehensive connectivity assessment will develop 23 Linkage Designs based the habitat and movement needs of over 40 selected focal species.

Science and Collaboration for Connected Wildlands
Formerly: South Coast Wildlands http://tinyurl.com/3lr3mpl

Map 3:
Figure 2.2-2 BLM Administered Lands in California Available for Application for Solar Energy ROW Authorization under the BLM Alternatives considered in this PEIS.

The lands available for Solar Energy Development includes both the pink and blue shaded areas.

The yellow shaded areas are BLM administered lands not available for Solar Development.

http://solareis.anl.gov/documents/dpeis/Solar_DPEIS_Chapter_2.pdf

Thank you for your comment, Mark Sechrist.

The comment tracking number that has been assigned to your comment is SolarD11851.

Comment Date: May 2, 2011 18:36:01PM
Solar Energy Development PEIS
Comment ID: SolarD11851

First Name: Mark
Middle Initial:
Last Name: Sechrist
Organization: Full Circle Heritage Services
Address: 54 Santana Road
Address 2:
Address 3: 54 Santana Road
City: Vado
State: NM
Zip: 88072
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

I have reviewed the proposal, particularly the parts concerning cultural resources in southern NM. The Afton, Mason Draw, and Red Sands areas should be subject to a very robust Section 106 (NHPA) process before any development begins. Also the evidence for consultation with tribes is weak. A much more assertive effort should be made to solicit their response than letters sent to to tribal officials. Thank you

Thank you for your comment, William Tyler.

The comment tracking number that has been assigned to your comment is SolarD11852.

Comment Date: May 2, 2011 18:36:41PM
Solar Energy Development PEIS
Comment ID: SolarD11852

First Name: William
Middle Initial:
Last Name: Tyler
Organization:
Address:
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip:
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

I strongly oppose the proposed development of large scale solar facilities on public desert lands. These plans are not economically or environmentally sound. These pristine lands support a high diversity of species and no serious effort has been made to document these species and the threats posed by development. These plant communities will do more to reduce atmospheric carbon than any of the proposed plans. Do not give away our public lands for this political grandstanding.

Thank you for your comment, Sophia Merk.

The comment tracking number that has been assigned to your comment is SolarD11853.

Comment Date: May 2, 2011 18:37:54PM
Solar Energy Development PEIS
Comment ID: SolarD11853

First Name: Sophia
Middle Initial: A
Last Name: Merk
Organization: National Public Lands News
Address: P. O. Box 403
Address 2:
Address 3:
City: Inyokern
State: CA
Zip: 93527
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: nplnews-letter-solar-peis-may022011.doc

Comment Submitted:

May 2, 2011

These comments are being submitted for myself and for the National Public Lands News (NPLNews.com), an organization that I represent. I am a desert resident and have been for forty years, have belonged to a Ridgecrest Steering Committee for numerous years and many other desert organizations.

The NPLNews has been in existence since 1999 and we are a conduit for NEPA informational purposes. We are grateful for the opportunity to comment on this Solar PEIS.

1. Who is the NEPA lead? It cannot be both DOI/BLM and DOE/NREL since they have different missions.

Public lands are subject to FLPMA and BLM must be the lead since they are the custodians of these public land resources to the American people. According to BLM it is both because it is about NREL projects on BLM public lands too. However, the agency with jurisdiction is the BLM even if NREL is the project proponent. It is more appropriate to have them as a co-op agency or have the NREL complete their own Draft Solar PEIS.

2. There is a fundamental flaw in the process.

This PEIS is really a resource management planning process not ONLY a NEPA process. It is a mega RMP. It will trigger land-use plan amendments across the Western States.

In other words, the federal action involves millions of acres of public lands in six western states that are currently governed by their respective land use plan/RMP that speak for the disposition of those lands under each states jurisdiction.

The PEIS cannot possibly address all of the complex issues that will result if the federal action is implemented, since tens of millions of acres are involved. The PEIS will not serve a practical purpose on the ground because it is structurally flawed from the outset.

DOI and DOE does not have a good track record in this area. In 2005-2006 the Wind PEIS was completed and after 4 years of field experience, it has been totally ineffective in managing wind energy Type II and Type III applications on

public lands.

So what is the purpose of doing this solar PEIS? An Executive Order? The US Constitution delegates the disposition of public lands to Congress not the President. The administration should not allocate public land resources without congressional approval.

In the Federal Land Policy Management Act (FLPMA), the California Desert was provided with its own legislative mandate: to manage the CDCA as a single unit in order to balance the conservation and use of the public lands. The California Desert Plan was completed in 1980 in conformance with the Congressional intent.

The Desert Plan outlined certain operating principles from which BLM and other agencies would use a "guidance" for their management of the CDCA.

For example, the 2nd management element was in regards to coordination with the Native Americans .

"Chapter 3 of the Desert Plan Native American Element"

Prominent features of the CDCA landscape, wildlife species, prehistoric and historic sites of occupation, worship, and 'domestic activities, and many plant and mineral resources are of traditional cultural value in the lives of the Desert's Native people. In some cases these resources have a religious value. Specific sites or regions may be important because of their role in ritual or the mythic origin of an ethnic group. These values will be considered in all CDCA land- use and management decisions. The outline for this element is as follows:

GOALS

The Native American Element addresses both the contemporary and traditional concerns of Native Americans and organized tribal governments. The Plan inventory has attempted to identify the full spectrum of Native American cultural values. The element deals with these values in two distinct contexts: those values associated with traditional heritage and religious concerns: and values and concerns which arise from the long-range goals and planning efforts of

reservation governments in, or adjacent to the California Desert Conservation Area (CDCA). The goals of this program are to:

(1) Achieve the full consideration of Native American values in all land-use and management decisions. The BLM will seek to manage and protect these values, wherever possible and feasible. Guidance is provided through this element to insure that this management is consistent not only with the applicable legislation but also with the concerns and cultural values of the appropriate Native American group(s).

(2) Provide guidance for contact and consultation with tribal organizations and reservation governments as specified in the Memorandum of Agreement between BLM and the California State Native American Heritage Commission (NAHC). Inconsistencies in the manner and degree of involvement of these organizations in projects adjacent to Federal lands has often reflected an absence of effective channels of communication between the Federal Government and representative Native American government organizations.

This element seeks to correct these inadequacies within the CDCA by:

(1) identifying regional tribal governments, associations, and inter-tribal government organizations;

(2) identifying the National Environmental Policy Act notice responsibilities of the BLM and Native American Heritage Commission, relative to the Native American community and setting these forth in a Memorandum of Agreement (appendix VIII to the Proposed Plan, October 1980) ;

(3) providing an outline for contact procedures and the identification of ' "appropriate and informed" tribal groups.

During the Barstow public meeting, the Chairman of the Chemeuvi Indian Tribe expressed his deep disappointment in the lack of consultation by the

lead federal agencies with the affected tribes by the Solar PEIS. In the previous meeting held In Indian Wells, on February 8, 2011 the Native American Tribes that spoke out against this plan was not properly recorded under the clear intent of NEPA. To date, these comments were not provided on your website or are they acknowledged.

It is clear that BLM and NREL did not conduct adequate consultation with the tribes in accordance with federal laws and regulations.

Specifically, in the California Desert Conservation Area (where the Solar PEIS is proposing to designate SEZ areas), the BLM and NREL failed to comply with the letter and spirit of the Native American Element (Chapter 3) goals and objectives:

(1) Achieve the full consideration of Native American values in all land-use and management decisions. The BLM will seek to manage and protect these values, wherever possible and feasible. Guidance is provided through this element to insure that this management is consistent not only with the applicable legislation but also with the concerns and cultural values of the appropriate Native American group(s).

(2) Provide guidance for contact and consultation with tribal organizations and reservation governments as specified in the Memorandum of Agreement between BLM and the California State Native American Heritage Commission (NAHC). Inconsistencies in the manner and degree of involvement of these organizations in projects adjacent to Federal lands has often reflected an absence of effective channels of communication between the Federal Government and representative Native American government organizations.

This is only one aspect of the California Desert Plan. FLPMA provides the guidance for federal land decisions. In FLPMA, there are several sections that required a management plan for those “special desert lands”. The California Desert Conservation Plan already zones those special lands. This PEIS does not integrate those already existing zones and is not adhering to notification procedures, which were spelled out.

This PEIS does not address other FLPMA issues such as the legal status of the California Desert Conservation Area (CDCA), which in this PEIS calls it the California Desert National Conservation area and as such is treating it

as such. There was special legislation for this area to be treated as a whole unit. It is true; that in the last ten years, it has not been treated as such, and we need to point out that the State and the Federal BLM needs to be aware of those “special desert lands”.

BLM’s mandate with public lands is to strike the right balance between use and conservation and that is an admirable mission. However, the balance has shifted dramatically in the past 15 years where conservation has the lion’s share of the balancing scale.

The PEIS has ignored the possible impacts of the acquisition and protection of compensatory habitat. “The PEIS only analyzes the effects on recreation directly where the projects are sited. Places that will be acquired and set aside as compensatory habitat will likely be restrictive or will likely be places that had considerable conservation opportunity. People who enjoy the desert for recreation regularly use those places. Those recreation activities may be motorized, motor dependent, or non-motor dependent. These are activities such as back-country touring, bicycling, camping, collecting and trapping, cultural site stewardship, educational enrichment, equestrian staging, gem and mineral collecting, hunting, model rocketry, even dog mushing and carting. Yes. There is general OHV driving, four-wheel drive touring, picnicking and photographs, rock climbing, solitude seeking, spiritual renewal. All of these activities have -can have a motor-dependent aspect to it.”

Many of these routes that make up the desert have RS2477 status, which means there is no right of way granted under law. Section of Highways 395 and 190 are examples that were never applied for RS2477.

We have great concern that as these routes are acquired on a piece by piece, the designated motorized route network will be destroyed.

Regarding mining under the Solar PEIS: The compensation for lost mineral deposits has not been clearly addressed. Mineral deposits typically cannot be moved to compensate lands even if there was enough land for all the other compensation that will have to be dealt with. A complete socio-economics has not been evaluated for all the multiple uses that will be compromised in this PEIS.

Regarding the SEZ areas, again, these are land-use designations under FLPMA and it is legal or appropriate to sue the NEPA process to conduct and resource management land-use designation with a PEIS.

It is not clear if the SEZ affects PELT (Payment in Lieu of Taxes) and have the counties affected by these designations been consulted regarding that matter?

Many areas in adjoining states are mentioned in one area, but are not mentioned in the adjoining state. Not only are recreational, but water, socio-economics and other existing rights are left out entirely leaving the public sorely lacking in being informed, a clear violation of NEPA. The Amargosa Valley is a good example of such.

By limiting access to many of these SEZ zones, many wildlife areas will be severely impacted. Guzzlers, seeps, springs, etc. will no longer get the attention that they need for maintenance and repairs.

The maps are not at a scale that the American Public can readily read and interpret whether mitigation is of significant distance to require additional review.

We could not find any mention of the appeals process. This should be better documented. The public cannot be expected to comment on an inadequate document. BLM/DOE cannot just say that they will give their information to the final PEIS and then sign the ROD. They have already proven that they have excluded tribal commentaries at the Indian Wells Meeting. Will the general public commentaries be excluded at the end?

An alternative that was never mentioned in this PEIS was using private land roof-tops closer to the energy usage and not desecrating scenic vistas and precious water basins.

In closing, it is disappointing to see how the Federal government wastes precious taxpayer dollars on a flawed process. Providing each BLM field office the funds to amend their respective RMP and deal with the local issues as they are presented could have better spent the dollars. A One-size fits all cookie cutter PEIS is misguided the wrong approach and above all does a disservice to the public lands. Americans deserve better from their government.

Sophia Anne Merk,
Public Coordinator, NPL News, P.O. Box 403, Inyokern, California 93527

Thank you for your comment, Gail Sevrens.

The comment tracking number that has been assigned to your comment is SolarD11854.

Comment Date: May 2, 2011 18:41:20PM
Solar Energy Development PEIS
Comment ID: SolarD11854

First Name: Gail
Middle Initial:
Last Name: Sevrens
Organization: California State Parks
Address: Colorado Desert District
Address 2: 200 Palm Canyon Drive
Address 3:
City: Borrego Springs
State: CA
Zip: 92004
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Calif State Parks Colo Des Dist Solar PEIS Letter 5-2-11.pdf

Comment Submitted:

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth Coleman, *Director*
Colorado Desert District
200 Palm Canyon Drive
Borrego Springs, CA 92004

May 2, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, Illinois 60439

Via upload to http://solareis.anl.gov/involve/comments/index.cfm and US Mail

Subject: Comments on the Draft PEIS for Solar Energy Development in Six Southwestern States.

To whom it may concern:

We appreciate the opportunity to comment on the above proposed project. The proposed project may entail the development of lands directly adjacent to Anza-Borrego Desert State Park (ABDSP), Salton Sea State Recreation Area, Indio Hills Palms property and Picacho State Recreation Area, which are all part of the Colorado Desert District (CDD) of California State Parks.

The CDD would like to bring your attention to the following points regarding the draft PEIS and proposed project.

1. The draft PEIS includes BLM lands directly adjacent to Anza-Borrego Desert State Park, Picacho State Recreation Area, Salton Sea State Recreation Area, and the Indio Hills Palms property as "lands available for solar development" under the preferred and no action alternatives. We request removal of BLM lands directly adjacent to state parks and state recreation areas from consideration for development of solar energy projects due to the significant aesthetic, biological, cultural, soils, air quality, water, economic (tourism) and recreational impacts of such projects to park resources. Many of these State Park lands were acquired specifically to provide an undeveloped wilderness experience to the visitor or to protect significant natural and cultural resources. We recommend that all BLM lands within one mile of—or significantly visible from—state park lands be put into the "lands not available for solar development" category.

2. We suggest that lands in the draft PEIS be closely re-reviewed by local BLM offices for the specific resources that may occur in the areas that are proposed for utility-scale solar energy development. For example, for the Imperial East solar energy zone the PEIS does not list the flat-tailed horned lizard as a species that could occur

on or in the area of the Imperial East solar energy zone, even though Imperial East is located directly across Interstate 8 from the East Mesa Management Area for the flat-tailed horned lizard (FTHLICC 2003). In addition, the PEIS did not include the following species as species that could occur on or in the area of the Imperial East solar energy zone: burrowing owl (*Athene cunicularia*), woodhouse's toad (*Bufo woodhousii*), desert iguana (*Dipsosaurus dorsalis*), long-tailed brush lizard (*Urosaurus graciosus*), desert spiny lizard (*Sceloporus magister*), great basin collared lizard (*Crotaphytus bicinctores*), ornate tree lizard (*Urosaurus ornatus*), western diamondback rattlesnake (*Crotalus atrox*), red diamond rattlesnake (*Crotalus ruber*), western patch-nosed snake (*Salvadora hexalepis*), western lyre snake (*Trimorphodon biscutatus*), western shovelnose snake (*Chionactis occipitalis*), spotted leaf-nosed snake (*Phyllorhynchus decurtatus*), western blind snake (*Leptotyphlops humilis*), Baja California rat snake (*Bogertophis rosaliae*), and checkered garter snake (*Thamnophis marcianus*). The Colorado Desert District of State Parks is available to provide data that we possess regarding potential occurrence of sensitive and other species.

3. We were unable to evaluate the potential for impacts to cultural resources for the entire preferred alternative as the DEIS evaluation concentrated on development within the SEZs only. We request that impacts to the cultural landscape related to the Colorado River and its travel and visual connections with the Colorado Desert Lands to the west be considered in the programmatic EIS. The total cultural landscape and impacts to that landscape, not just specific archaeological sites on the ground, need to be considered.

4. Due to the fact that the proposed Imperial East solar energy zone is adjacent to the existing East Mesa Management Area for the flat-tailed horned lizard, we propose that it be moved to a more appropriate area.

5. There is a section of BLM land (SBBM - T.10S., R.9E., Section 2) that is now within the California legislatively defined boundary of a newly acquired area of Anza-Borrego Desert Sate Park known as Desert Cahuilla. This area was acquired specifically for resource conservation and there are known significant cultural resources in the area. Sensitive species that may occur on this land include: LeConte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), burrowing owl (*Athene cunicularia*), flat-tailed horned lizard (*Phrynosoma mcallii*), Colorado fringe-toed lizard (*Uma notata*), Orcutt's woody aster (*Xylorhiza orcuttii*), Pierson's pincushion (*Chaenactis carphoclinia* var. *peirsonii*), Salton milkvetch (*Astragalus lentiginosus*), *Pilostyles thurberi*, and sand food (*Pholisma arenarium*). The above-mentioned section should be put into the "lands not available for solar development" category.

6. There are lands (SBBM - T.13S., R.22E., Sections 28 and 29) within the Picacho State Recreation Area that are proposed as "lands available for solar development" under the preferred and/or no action alternatives. These sections are within the boundary of the State Park and are currently being managed by the Colorado Desert District of the California State Park system. These sections should be put into the "lands not available for solar development" category.

7. There are lands (SBBM - T.8S., R.10E, Sections 2 and 12; T. 8S., R11E. Section 19) within the Salton Sea State Recreation Area that are proposed as "lands available for solar development" under the preferred and/or no action alternatives. These sections are within the boundary of the State Park and are currently being managed by the Colorado Desert District of the California State Park system. These sections should be put into the "lands not available for solar development" category.

8. There is land (T4S., R6E., north half of southeast quarter of Section 13) that is proposed as "lands available for solar development" under the no action alternative. This land is owned by California State Parks, is part of the Indio Hills Palms property and is not being leased or managed for BLM. This section should be put into the "lands not available for solar development" category. Lands adjacent need to also be removed from consideration for availability as they are part of the Coachella Valley Preserve/MSHCP.

Literature Cited

Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. Flat-tailed horned lizard rangewide management strategy, 2003 revision. 78 pp. plus appendices.

Sincerely,

Gail Sevrens
District Superintendent, Acting

Cc: Teri Raml, BLM, California Desert District Manager

Thank you for your comment, Lee Bice.

The comment tracking number that has been assigned to your comment is SolarD11855.

Comment Date: May 2, 2011 18:42:57PM
Solar Energy Development PEIS
Comment ID: SolarD11855

First Name: Lee
Middle Initial:
Last Name: Bice
Organization: Desert Conservation Program, Clark County
Address: 333 N. Rancho, #625
Address 2:
Address 3:
City: Las Vegas
State: NV
Zip: 89106
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: 20110502 Ltr to BLM re Solar DPEIS.pdf

Comment Submitted:

desert conservation
PROGRAM

May 2, 2011

Solar Energy Draft Programmatic EIS
Argonne National Laboratory
9700 S. Cass Avenue – EVS/240
Argonne, Illinois 60439
http://solareis.anl.gov/index.cfm

RE: Scoping Comments on the Solar Energy Draft Programmatic Environmental Impact Statement

To Whom It May Concern:

Thank you for the opportunity to provide comments on the Bureau of Land Management (BLM) Draft Solar Programmatic Environmental Impact Statement (DPEIS).

Clark County, Nevada, through the Desert Conservation Program (DCP), administers the Clark County Multiple Species Habitat Conservation Plan (MSHCP) and Section 10(a)(1)(B) incidental take permit (TE034927-0) for compliance with the Federal Endangered Species Act on behalf of the County and the cities of Boulder City, Henderson, Las Vegas, Mesquite and North Las Vegas; and the Nevada Department of Transportation (Permittees). The current permit covers 78 species, including the threatened desert tortoise.

General Comments:
Throughout the Solar DPEIS Nevada Solar Energy Zones (SEZ) document, the effects to species habitat are calculated based on the affected acres within the project area in relation to the species cumulative range, thereby minimizing the perception of localized effects. For example, the effects to desert tortoise habitat is calculated based on the proportion of potentially suitable habitat acres affected and the cumulative available suitable habitat in the region. This calculation leads to the perception of minimal impacts to desert tortoise habitat. However, each project will result in 80-100% loss of the potential habitat within each project area. Specifically, it is misleadingly stated that according to the Southwest Regional Gap Analysis Project (SW ReGAP) desert tortoise habitat suitability model, the approximately 15,000 acres affected by the Dry Lake project would result in only 0.5% of total desert tortoise habitat loss. The DPEIS fails to point out that this would be 96% desert tortoise habitat loss in the project area (see pages 11.3-176 and 11.3-86).

Within this document both the SWReGAP and the U.S. Geological Survey (USGS) desert tortoise habitat models were used. The DCP uses the USGS model extensively and feels it is more

current and accurate than the SWReGAP model. Any future modeling or analysis should use the USGS model.

In the web based data viewer, Solar Energy Environmental Mapper, under the Data Source for U.S. Forest Service (USFS), the data layer *Special Recreation Mgmt. Area* does not depict lands managed by the USFS. That data layer depicts the Special Recreation Management Areas managed by the BLM Southern Nevada's District Office. This data layer should be moved from USFS section to the BLM section.

Solar DPEIS Nevada SEZs Comments:

On page 11.3-1, lines 23 through 27, it states that three designated transmission corridors that pass through the proposed SEZ are heavily developed with numerous natural gas, petroleum product, and electric transmission lines. An aerial image identifying the heavily developed areas in the Dry Lake SEZ would be beneficial to the reader.

On page 11.3-8 under SEZ-Specific Design Features. It states that any yucca, cacti, or succulent plant species that cannot be avoided should be salvaged. Nevada Revised Statutes (N.R.S.) 527.060-.120 and Nevada Administrative Code chapter 527 states that any cacti and yucca that cannot be avoided in the project area *shall* be salvaged.

On page 11.3-9 under SEZ-Specific Design Features. It states that the requirements contained within the 2010 Memorandum of Understanding between the BLM and U. S. Fish and Wildlife Service (USFWS) to promote the conservation of migratory birds will be followed. Is this referring to the Migratory Bird Treaty Act? It also states fencing around the SEZ should not block the free movement of mammals, particularly big game species. Please identify big game species around the Dry Lake project and there is no mention of tortoise fencing around the project area (also see page 11.3-122).

On page 11.3-176, lines 20-23, it states that the development on the SEZ may directly affect up to 213 desert tortoises. What does this mean? Are these tortoises considered take? Will they be translocated or picked up by the USFWS?

On page 11.3-354, lines 8-10, it states that the Dry Lake playa contains 3,310.5 acres of wetlands, 1,022 acres within the SEZ. The Dry Lake playa is approximately 3,000 in total acres and it appears that only about 10% could be mapped as wetland. Please check your wetlands data and redo analysis. Also see page 11.3-355 lines 23-42.

We appreciate the opportunity to provide comments to the DPEIS. Should you have any questions, please don't hesitate to contact me at 702-455-3554.

Sincerely,

Lee Bice on behalf of Lee Bice

Lee Bice
Sr. GIS Analyst

LB/sbw

Thank you for your comment, patricia goley.

The comment tracking number that has been assigned to your comment is SolarD11856.

Comment Date: May 2, 2011 18:48:28PM
Solar Energy Development PEIS
Comment ID: SolarD11856

First Name: patricia
Middle Initial: d
Last Name: goley
Organization: humboldt state university
Address:
Address 2:
Address 3:
City: arcata california
State: CA
Zip: 95521
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

I do not approve of the solar energy complex that is being proposed in the California desert. The environment is too fragile and pristine for this type of development. Desert is not wasteland - it is a fragile habitat that houses specialized plants and animals. I whole-heartedly oppose this solar energy complex.

Thank you for your comment, Patrick Jordan.

The comment tracking number that has been assigned to your comment is SolarD11857.

Comment Date: May 2, 2011 19:04:14PM
Solar Energy Development PEIS
Comment ID: SolarD11857

First Name: Patrick
Middle Initial: V
Last Name: Jordan
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

With all that has been happening with the recent developments abroad concerning nucelar power and the continued rising prices of oil that seems to have no end in sight, I think it's time that we stop all the continued "talk" abour renewable energy and get off the stick and get it done.

It's time.

Patrick Jordan

Thank you for your comment, Jay Chamberlin.

The comment tracking number that has been assigned to your comment is SolarD11858.

Comment Date: May 2, 2011 19:05:15PM
Solar Energy Development PEIS
Comment ID: SolarD11858

First Name: Jay
Middle Initial:
Last Name: Chamberlin
Organization: California State Parks
Address: 1416 Ninth Street
Address 2: Suite 923
Address 3:
City: Sacramento
State: CA
Zip: 95814
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: JC-SolarPEIS_5.2.2011.pdf

Comment Submitted:

See attached letter.

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION • P.O. Box 942896 • Sacramento, CA 94296-0001
Ruth Coleman, *Director*
(916) 653-6725

May 2, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, Illinois 60439

Subject: Comments on the Draft PEIS for Solar Energy Development in Six Southwestern States

To whom it may concern:

California State Parks appreciates the opportunity to comment on the Solar Energy Development Draft Programmatic Environmental Impact Statement (Draft Solar PEIS). The Draft Solar PEIS may designate lands within, adjacent to or near several California State Park units as available for application for solar energy development projects.

The mission of California State Parks to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality recreation. Our park units are designated specifically for their exceptional resource values and/or recreational opportunities.

The first/No Action alternative and second/Solar Development Program alternative of the Draft Solar PEIS consider a large amount of land "available for application" for solar energy development projects. The Draft Solar PEIS, Chapter 2 (Introduction) states that: "The BLM may choose to adopt one of the alternatives or a combination of alternatives; selected alternatives may also vary by geographic region." (2.1, lines 15-16). Since it is possible that a mix of the alternatives could be approved, or different alternatives could be adopted for different areas, our comments will address land designation on a statewide/State Park System-wide basis.

Using the map and GIS layer (blm no action.shp) from the Solar PEIS website we compared State Park property boundaries to the lands designated/mapped as "Lands available for Application" under the "No Action" and "Solar Development Program" alternatives. From this preliminary GIS review, we have developed a list of State Park Districts, and units located in those Districts, for which lands designated "available for application" are (1) within and/or adjacent to State Park property boundaries and (2) within one mile of State Park property. We have also mapped the Section 368 transmission corridors within five miles of State Park property (see attached list).

We recommend that all such BLM lands be removed from consideration for development of solar energy projects or be removed from consideration for Right-of-Entry authorizations for utility scale development. A more appropriate category for these lands would in most cases be as "excluded BLM administered lands" due to the potential impacts of solar development on natural and cultural landscapes and recreation. State Parks is concerned about the potentially significant soils, biological, cultural, esthetic (visual impact to park viewshed and park visitors), and recreational impacts from energy development projects would have on park resources. State Parks is also concerned about the noise, dust, and traffic impacts from project construction and facility maintenance. Specifically, California State Parks requests that:

- Lands designated as "Lands available for Application" under the "No Action" and/or "Solar Development Program" alternatives that are either within State Park property, are within one mile of State Park property, or are otherwise within an important viewshed of State Park property be categorized as "Lands not available for Solar Development," unless it can be specifically shown that development of facilities will have no negative impact on park resources.

- The BLM lands north of Highway 167, northwest of Mono Lake Tufa State Natural Reserve be re-designated from "Lands Available for Application" to "excluded BLM-administered lands", and that the lands in that location not be considered available for development of solar energy projects due to the significant aesthetic and visual impacts such projects would have on park resources. This is request is consistent with the Mono Basin National Forest Scenic Area Comprehensive Management Plan, Chapter 14. Visual Resources.

- Lands within State Park property, adjacent to State Park property, or within an important viewshed of State Park property be designated "Lands not available" and considered off limits in current and future planning for energy transmission corridors, unless it can be specifically shown that development of facilities will have no negative impact on park resources.

- State Park lands should be considered in the analysis of specially designated areas on public lands as described on page 4-3, line 24, page 4-4, lines 1-6, and included in Table 4.12-1.

- BLM lands in the draft PEIS need to be closely re-reviewed by local BLM offices for the specific resources that may occur in the "lands available for solar development" in the Solar Energy Development and No Action alternatives should those lands be identified for future solar project development.

- BLM lands within Ocotillo Wells State Vehicular Recreation Area (SVRA) are subject to a Memorandum of Understanding, dated September 4, 2008, between the U.S. Department of the Interior, Bureau of Land Management and the

California Department of Parks and Recreation. In particular, Section III. Terms and Conditions, A through C should be noted for compliance. While this allows future consideration of solar and wind energy, full environmental review would be required for any proposed projects. It should also be noted that Imperial County is progressing with an energy overlay zone in the southern portion of the County, but not the area within or near Ocotillo Wells SVRA.

- State Parks participation in pre-application discussions and meetings be required for project proposals located within one mile of State Park property, or otherwise within an important viewshed of State Park property in order to enhance the consideration and protection of State Park resources, including shared landscape values.

Thank you for this opportunity to comment on the Draft Solar PEIS. If you have questions on our comments please contact me, jchamberlin@parks.ca.gov, or Dave Schaub of my staff at dscha@parks.ca.gov.

Sincerely,

Jay Chamberlin
Chief, Natural Resources Division
California Department of Parks and Recreation

Enclosure

cc: Tony Perez
Daphne Green Phil Jenkins
Ronilee Clark
Scott Wassmund
Craig Sapp
Gail Sevrens
Kathy Weatherman
Jess Cooper
Stephen Bachman
Scott Nakaji
Mat Fuzie
Michelle Gardner
Marilyn Linkem
Liz Burko
Chet Bardo
Matt Green
Kathy Dolinar

California State Park Units In or Near Draft Solar PEIS Alternatives

District / Park Unit Name	Lands designated "available for application" in OR within 1 mile of park unit boundary		Section 368 transmission corridors within 5 miles of park unit boundary corridor within 5 miles of park unit boundary
	No Action alternative	Solar Development Program alternative	
Angeles			
Castaic Lake SRA	X		X
Central Valley			
Columbia SHP	X		
Indian Grinding Rock SHP	X		
Millerton Lake SRA	X		
Colorado Desert			
Anza-Borrego Desert State Park	X	X	X
Desert Cahuilla/Freeman	X	X	
Indio Hills Palms	X		X
Picacho SRA	X	X	
Salton Sea SRA	X	X	
Diablo Vista			
Mount Diablo SP	X		
Robert Louis Stevenson SP	X		
Sugarloaf Ridge SP	X		
Gold Fields			
Auburn SRA	X		X
Folsom Lake SRA	X		
Marshall Gold Discovery SHP	X		
Mendocino			
Manchester SP	X		
Montgomery Woods SNR	X		
Monterey			
Henry W. Coe SP	X		
North Coast Redwoods			
Humboldt Redwoods SP	X		
Richardson Grove SP	X		
Sinkyone Wilderness SP	X		
Tolowa Dunes SP	X		
Northern Buttes			
Ahjumawi Lava Springs SP	X		
Castle Crags SP			X
Lake Oroville SRA	X		
Shasta SHP	X		
Weaverville Joss House SHP	X		
Ocotillo Wells			
Ocotillo Wells SVRA	X		
Russian River			
Austin Creek SRA	X		
San Luis Obispo Coast			
Montaña de Oro SP	X		
Morro Bay SP	X		
Santa Cruz			
Castle Rock SP	X		
Sierra			
Bodie SHP	X		
Donner Memorial SHP			X
Malakoff Diggins SHP	X		
Mono Lake Tufa SNR	X	X	
South Yuba River SP	X		
Tehachapi			
Antelope Valley Indian Museum SHP	X		
Red Rock Canyon SP	X		X
Saddleback Butte SP	X		
Silverwood Lake SRA			X

Thank you for your comment, Diane Ross-Leech.

The comment tracking number that has been assigned to your comment is SolarD11859.

Comment Date: May 2, 2011 19:09:08PM
Solar Energy Development PEIS
Comment ID: SolarD11859

First Name: Diane
Middle Initial: P
Last Name: Ross-Leech
Organization: Pacific Gas and Electric Company
Address: 77 Beale Street
Address 2: Mail Code B24A
Address 3:
City: San Francisco
State: CA
Zip: 94105
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: BLM PEIS Letter.pdf

Comment Submitted:

Pacific Gas and Electric Company appreciates the opportunity to comment on the Solar Energy Development Draft Programmatic Environmental Impact Statement (Solar PEIS) published in December, 2010. Our comments on the Draft Solar PEIS are enclosed in the attached file.

Pacific Gas and Electric Company®

Diane Ross-Leech
Director
Environmental Stewardship

77 Beale Street, Room 2473
San Francisco, CA 94105
Mailing Address
Mail Code B24A
P. O. Box 770000
San Francisco, CA 94177

415.973.5696
Internal: 223.5696
Fax: 415.973.0230

May 2, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

Subject: Pacific Gas and Electric Company's Comments on the Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States

Dear Sir or Madam:

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment on the Solar Energy Development Draft Programmatic Environmental Impact Statement (Solar PEIS) published in December 2010. We commend the collaborative efforts and work of the administration and federal agencies in addressing the complex issues associated with facilitating large-scale solar energy production on public lands by identifying and prioritizing specific locations best-suited for utility-scale solar energy development, as mandated by Executive Order (EO) 13212, the Energy Policy Act of 2005, and Secretarial Order 3285A1.

PG&E is working to procure power from new sources of wind, solar, and other renewable resources while protecting sensitive habitat and species in California. We support a balanced approach to developing responsible well-sited solar energy projects throughout California and the western United States.

As an active participant in the Solar PEIS review process, we have previously provided comments on the Bureau of Land Management's (BLM) proposed Solar Energy Zones (SEZs) in partnership with members of the California Desert Solar Energy Working Group (now renamed the California Desert & Renewable Energy Working Group [CDREWG]). We have again collaborated with the CDREWG to submit broad policy recommendations in a separate letter dated May 2, 2011, to improve and expedite the process of review and approval of solar energy development applications on public lands through the Solar PEIS and future planning efforts.

I. Summary

Within the framework of the Solar PEIS, PG&E supports a Solar Energy Program that offers the siting and design flexibility to allow timely and economical development of solar energy projects on public lands, while also providing greater protection for sensitive

environmental resources over the No Action Alternative. Specifically, PG&E favors the Solar Energy Development Program Alternative (the Preferred Alternative) proposed in the Draft Solar PEIS over the Solar Energy Zone Program Alternative (SEZ-only Alternative), in particular because it allows solar development to grow in a manner that takes into account the multiple criteria that are needed to ensure economically and environmentally-responsible siting, especially because some of the currently identified SEZs do not appear to be appropriate based on environmental and technical development factors.

We recognize that promoting development in appropriately-identified SEZs provides meaningful benefits to all stakeholders by reducing the uncertainties about the viability of projects to be successfully permitted, the impacts those projects could have, and by creating an atmosphere that reduces tension and facilitates success. As such, with crucial modifications and improvements proposed in this letter, as well as those contained in a joint comment letter dated May 2, 2011, submitted by CDREWG, and signed by PG&E, we are supportive of a more targeted and facilitated approach to siting projects in areas for directed development. We encourage the BLM and Department of Energy (DOE) to build upon the substantial effort the agencies have engaged in by incorporating these comments to improve the Final Solar PEIS to meet the Secretary's goal to "...accelerate responsible solar energy production that will help build a clean-energy economy for the 21st century."

We recommend approval without delay of the Solar PEIS proposed Solar Energy Program in order to free up resources needed to further refine the process of identifying, selecting, and approving additional SEZs.

Furthermore, we urge the BLM to consider adding new SEZs to the current proposal, and to establish a more clearly defined process for creating new SEZs in the future as improved knowledge and future needs warrant. In addition, clearer incentives to steer development towards additional ecologically-friendly, low conflict areas are crucial to making the SEZ concept functional.

The enclosed comments contain general sentiments that express our ongoing support for provisions of solar energy development siting flexibility as well as the need for implementing clear permitting incentives for developers to site projects within SEZs. A table containing comments referring to specific sections of the Solar PEIS is included in Attachment A of this letter.

II. General Comments

A. Flexibility

PG&E and other stakeholders must overcome difficult challenges to bring new renewable energy projects online. As such, a solar energy program that offers the flexibility to adapt to a complex array of factors would facilitate renewable resource development in the most appropriate areas.

We support a consistent, reasonable, and market-based approach to siting that allows developers access to economically viable sites based on a wide variety of factors. These factors include, but are not limited to, proximity to transmission, technology and solar insolation, land value, availability of workforce, and environmental permitting and impact minimization. We support an approach that ensures the most efficient utilization of public lands. Implementation of BLM's proposed Design Features (best management practices) that aim to mitigate negative impacts of projects would help ensure that development is guided to the most environmentally-suitable public lands available for solar energy development. The BLM should assure that projects sited in SEZs experience benefits offered by BLM's proposed policies, such as priority application processing and tiered compliance with the National Environmental Policy Act (NEPA), while at the same time allowing development to occur on non-SEZ parcels deemed economically viable and environmentally sound.

The BLM should have a clear process for considering applications for solar energy development outside SEZs submitted after the date of issuance of the Solar PEIS Record of Decision (ROD). To be accepted by the BLM, applications outside of SEZs must meet the criteria for such applications identified in the Solar PEIS and ultimately incorporated into the Solar PEIS ROD. Together with members of the CDREWG we have submitted recommendations in a letter dated May 2, 2011 for establishment of a clear process for considering these applications, referred to as "Variance Applications" and "Pending Applications".

In contrast, the SEZ-only Alternative as currently drafted proposes an approach that restricts development of utility-scale solar projects to preselected BLM zones. The draft SEZ-only approach is inflexible, as developers would not be allowed to utilize non-SEZ parcels – irrespective of the parcel's desirability in terms of high development potential and low conservation values– leaving suitable parcels not chosen by the BLM to be underutilized. This is problematic because the draft SEZ-only alternative could prevent efficient and cost-effective development of solar energy power plants located in proximity to existing infrastructure, such as transmission lines and roadways. Furthermore, utility-scale solar technology selection greatly affects solar plant site design and layout requirements. Because these requirements vary from project to project, the borders of the draft SEZ-only approach would likely result in underutilization of land within the SEZs, as well as suitable land outside of the proposed SEZs.

The BLM Solar PEIS should also retain the flexibility to provide coverage for new utility-scale solar technologies that may emerge over the next 30 years. As technology develops, it is unclear whether the PEIS would cover new variations of solar energy technology. We recommend that evaluations of new technologies be considered concurrent to the periodic re-assessment of need for updates to the Solar PEIS.

B. Process and Criteria for Evaluating Proposed SEZs

In addition to approval of SEZs in California, we recommend that the PEIS retain flexibility to incorporate changes required by regulatory and legislative directives and

broad-scale planning projects associated with permitting renewable energy projects in the California desert by providing a clear, efficient, and timely process for adding new SEZs.

The process for adding new SEZs should, at a minimum, identify the intervals and frequency that the BLM will use to evaluate new SEZs, opportunities for public proposal of new SEZs, opportunities for stakeholder involvement in the SEZ evaluation process, and the criteria that BLM will utilize to evaluate proposed SEZs. Together with our colleagues from environmental and industry organizations of the CDREWG, we have submitted a separate letter dated May 2, 2011, detailing suggestions for suitability criteria to consider new lands for SEZs and a recommended process of adding new zones to accommodate solar energy development.

Generally, the need for new SEZs should be assessed by the BLM at least every five years from the Solar PEIS ROD, or more frequently if the reasonably foreseeable development scenario analyzed in the Solar PEIS changes due to state or federal policy, laws or regulations requiring increased renewable energy development on public lands. This review should be completed at the regional field office or state office level in order to allow greater responsiveness to changes in state policy. In addition, we recommend that the BLM establish a formal petition process for the addition of new SEZs should the need arise.

The designation of new SEZs should incorporate the greatest amount of environmental permitting feasible and associated agency consultations in the land use plan amendment and NEPA processes to facilitate the most efficient development. BLM should conduct a thorough environmental review of new SEZs so projects within its borders can tier off the EIS for the SEZ and file an Environmental Assessment (EA), instead of preparing a new project-specific EIS as would be required in the Draft Solar PEIS. In the process of preparing the EIS on the proposed SEZ, the BLM should seek a Section 7(a)(2) consultation with US Fish and Wildlife Service to provide for faster project-level Endangered Species Act permitting once the area is designated. The BLM should also establish strict schedules for the completion of EAs on projects within designated SEZs and establish inter-agency teams to expedite service to projects in SEZs; provide a single point of contact for all Department of the Interior (DOI) agencies responsible for coordinating environmental reviews and consultations; ensure timely performance of agencies; and facilitate stakeholder reviews. In addition, in light of recent events and challenges to solar energy development projects in California, the BLM should ensure adequate outreach to tribal governments in the SEZ-designation process.

We recommend that BLM consider a least-conflict approach for evaluating the environmental suitability of new SEZs in the near-term. The recommended least-conflict approach should identify areas of minimal conflict with ecological resources and sensitive land uses in addition to the application of exclusion criteria currently included in the Solar PEIS (with modifications to the exclusion criteria proposed in Section III of this letter). Specific criteria that should be used to evaluate an area's potential suitability for SEZ designation should be comprehensive and include, without limitation, the

following factors: environmental resource value, technological and development feasibility, and proximity to existing infrastructure.

We also recommend the BLM adopt a Landscape-Scale Assessment Approach to identify other potential SEZs in the longer term that may be appropriate for development based on landscape-scale ecological assessments now underway and planned in the future such as the Desert Renewable Energy Conservation Plan (DRECP) in California, BLM Ecoregional Assessments, and landscape-level multi-species habitat conservation plans (MSHCPs).

In light of environmental conflicts with some of the SEZs currently under consideration in California, the least-conflict approach should be used for immediate consideration of new areas for SEZs to support foreseeable development on public lands. Likewise, if the SEZ-only Alternative is selected by BLM during this planning process, a process to identify and designate new SEZs would be highly critical to allow for economically feasible solar energy projects within California.

C. Benefits for Project Siting in SEZs

BLM should provide incentives to developing solar energy generation facilities within SEZs and clearly identify the incentives in the Solar PEIS. Developing new renewable energy facilities involves multiple interrelated factors, including permitting, siting, financing, technology and environmental concerns. Incentives that reduce these challenges for developers should be incorporated into the PEIS, and particularly in the SEZs to realize the streamlining intent of steering development to these areas.

Despite SEZ-specific design features intended to reduce environmental impacts, a wide range of environmental surveys, environmental permitting efforts, and agency consultations associated with project development would continue to be needed for projects sited within SEZs currently being evaluated in the Solar PEIS. For this reason, we recommend a greater degree of analysis of potential environmental impacts in SEZs and future SEZs to incentivize development in these areas. Up front, extensive environmental review of SEZs on the programmatic level by the BLM would incentivize developers to choose sites within SEZs and would allow the project-specific environmental reviews to be reasonably reduced in size and scope. As noted above, SEZs evaluated for conformance with the Endangered Species Act through agency consultations that could provide pre-approved habitat and species mitigation compensation requirements would be particularly attractive to developers.

We also recommend that the DOI establish inter-agency coordination measures to expedite service to developers of projects within SEZs including but not limited to timely production and review of environmental documentation and project schedules. BLM should also seek cooperative agreements to facilitate permitting of high-voltage interstate power lines that support solar energy development. Specifically, the BLM should seek a Memorandum of Agreement (MOA) with the relevant regulators and transmission planners within the Solar PEIS study area that will result in prioritized consideration of necessary transmission lines.

We recommend that BLM provide incentives to help steer development toward SEZs by incorporating financial studies into future NEPA analyses of additional SEZs to illustrate the true cost associated with bringing utility-scale solar energy to market. Currently, developers seeking to increase the availability of renewable energy to meet future electricity needs face tight credit markets and reduced capital availability. The PEIS does not adequately provide a comprehensive analysis of all costs associated with both the generation and transmission of solar energy and therefore accurate characterization of the value of SEZs is not clearly delineated in the Solar PEIS. An accurate economic analysis should clearly demonstrate that the price of projects and energy would be equal to or lower than current market levels with implementation of the proposed policies and design features.

BLM should consider offering priority processing for connected actions (such as transmission rights-of-way) to support projects proposed in low conflict areas and SEZs, including projects that are only partially located on BLM-administered land. This is alluded to in the description of the SEZs as a "prioritization" of associated project components such as transmission siting. However, the proposed actions the BLM will take to achieve this prioritization must be documented in guidance from the BLM to fully address the intent of promoting solar development in the SEZs. Furthermore, in addition to project-specific generation intertie power lines and interconnections, connected actions could also include upgrades to existing high voltage transmission lines to accommodate solar energy development. BLM should prioritize permitting and environmental review of infrastructure associated with the interstate electrical grid necessary to accommodate renewable resource development.

Finally, BLM should consider economic incentives for development within SEZs such as a reduced capacity charge on energy generated within SEZs (and conversely, a surcharge on rental fees on areas open to solar energy development outside of SEZs), and provision of longer phase-in periods for rental payments.

D. Refined SEZs

Based on PG&E's discussions with environmental and industry organizations, it is clear that at least some of the California SEZs are situated on lands that will not incentivize development. For example, non-governmental organizations have stated concerns regarding the important biological values within the Iron Mountain SEZ and the Pisgah SEZ, which could hinder development in those areas. Developers are unlikely to propose development within inappropriately chosen SEZs where extensive mitigation measures may be necessary. We recommend the refinement of SEZ boundaries to eliminate inappropriate areas from consideration.

As such, we support evaluation and analysis of additional California SEZs situated on degraded and disturbed lands in proximity to existing transmission infrastructure, such as parts of the western Mojave Desert. The proposed solar energy program as currently designed would preclude solar energy development from BLM lands adjacent to private

parcels in the western Mojave Desert. BLM should immediately begin to study new zones in a separate planning process.

E. Consistency with Recent BLM Policy Guidance

In February 2011, the BLM issued policy memoranda to provide guidance to field managers in evaluating, screening, and processing applications for utility-scale solar energy projects on BLM-managed lands. The 2011 policy guidance clarifies and improves NEPA documentation; streamlines the project application review and approval process; and strengthens Plans of Development (POD) and due diligence requirements. The BLM developed these policies from recommendations offered by federal and state agencies, industry and environmental groups based on 'lessons learned' from 2010's fast-track renewable energy initiatives. In particular, Instruction Memorandum (IM) No. 2011-061, issued on February 7, 2011, specifies pre-application requirements and screening criteria to assist the BLM in identifying and prioritizing applications that have the fewest resource conflicts and the greatest likelihood of success in the permitting process. This will provide an opportunity to "direct development away from lands with high conflict or sensitive resource values and towards low conflict areas such as previously disturbed sites, areas adjacent to previously disturbed or developed sites, and locations that minimize construction of new roads and / or transmission lines."

BLM IM 2011-061 requires that developers hold pre-application meetings with the BLM to discuss the project proposal and potential siting constraints. The IM also requires that developers hold pre-application meetings with other federal, state, tribal and local agencies to initiate early coordination. BLM should ensure that other agencies are able to devote time and resources for the pre-application interagency meetings required by this policy memo. BLM should consider requiring agencies to adhere to specific timetables for pre-application meetings to ensure right-of-way applications are not extensively held up in the pre-application stage due to this policy.

We support BLM's February 2011 Instruction Memorandum policies containing criteria to direct development to the least conflict/controversy areas. As such, we encourage the BLM to incorporate the February 2011 IM policies (IM 2011-061, IM 2011-060, and IM 2011-059) into the Solar PEIS proposed policies listed in Appendix A. These guidelines provide clarity and guidance to stakeholders, including developers, about environmentally-appropriate siting and effective mitigation for renewable energy projects and facilitate environmentally responsible development of solar power projects on our public lands. The guidelines are particularly helpful to utilities, which have a unique responsibility to purchase and interconnect power, because the prescreening restricts speculative projects and allows utilities and permitting agencies to focus resources on transmission needs of viable projects.

F. Consistency with the Desert Renewable Energy Conservation Plan

We support the BLM's close coordination and integration of the Solar PEIS with the DRECP, a Natural Community Conservation Plan (NCCP) that is currently under development to provide protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy projects. Recognizing that the

planning processes for the Solar PEIS and the DRECP are on overlapping schedules, the two processes should be highly coordinated such that they present a consistent approach to guiding development toward appropriate locations within the southern California deserts. The BLM should remain engaged in the DRECP planning process as an active participant. If the Solar PEIS is approved before the DRECP is completed, the Solar PEIS should allow expedited amendment for the addition of habitat conservation and development areas (such as new SEZs and other areas open to solar applications) on public lands that align with the DRECP findings.

G. Electricity Transmission

PG&E is working collaboratively with key stakeholders both in California and across the nation to lay the foundation for a reliable transmission system that will—over time—provide core infrastructure for the delivery of clean and sustainable energy supplies. New transmission lines, often in remote locations, are needed to accommodate new and anticipated renewable energy development. PG&E works with regulators, environmental organizations, government agencies and other stakeholders to support timely construction of transmission lines and permitting of proposed project sites. Generally, we support the flexibility to develop solar energy facilities in proximity to existing transmission infrastructure. As discussed below, additional analysis of transmission issues should be included in the Solar PEIS and future analyses of additional SEZs.

PG&E has several suggestions regarding improvement to the transmission analysis in the Solar PEIS. First, the BLM should include an evaluation of land and permitting impacts of new and potential upgraded transmission line projects to deliver power from each SEZ under consideration while meeting the most current North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) reliability criteria. Second, the Solar PEIS should recognize the downstream upgrades and impacts to high voltage electrical transmission systems. In particular, an analysis of existing transmission capacity is lacking in the Solar PEIS. Third, the Solar PEIS should not assume that sufficient additional transmission capacity is available by simply upgrading existing lines. The Solar PEIS does not address the siting of new transmission lines needed within or adjacent to existing rights-of-way and utility corridors nor does it analyze the amount of new rights-of-way or corridors that might be needed to transmit energy into the load centers while adhering to the NERC and WECC reliability criteria. Fourth, the transmission analysis within the Solar PEIS should include a discussion of the reliability of utilizing existing corridors for all necessary transmission lines, acknowledging transmission facilities standards. Finally, the PEIS should incorporate proposed policies that encourage developers to share gen ties to interconnection points.

Although a majority of the direct transmission impacts from the Solar PEIS proposed policies and foreseeable development are located outside of PG&E's immediate service territory, some of our facilities may need to be upgraded to accommodate increased loads of power from solar energy development on BLM lands. In particular, the capacity of our Kramer - Midway line may be affected by the amount of power expected by the development anticipated in the Solar PEIS alternatives.

The Solar Energy Program adopted by the BLM requires flexibility to address the potential for transmission issues that arise with respect to any of the proposed or future SEZs. The difficulties and uncertainty associated with siting transmission lines are important reasons we remain concerned about the viability of the limited areas under consideration for SEZs.

We encourage the BLM to engage in ongoing and comprehensive transmission planning efforts in California such as the California Independent System Operator Transmission Planning Process and Statewide Transmission Plan, the California Transmission Planning Group, and transmission planning efforts being conducted as part of the DRECP Planning effort. Close coordination with transmission planning efforts will ensure that solar energy loads generated on public lands can be efficiently utilized upon facility start-up.

H. Interim Processing of Applications for Development

PG&E is committed to providing clean, renewable power to Californians, some of which will be generated from current contracts for utility-scale solar projects on BLM lands. PG&E continues to negotiate new Power Purchase Agreements to procure power from solar energy facilities on both private and public lands, many of which are in the development stage and are undergoing environmental review. For this reason, it is essential that BLM provide a clear interim process for review and approval of applications for solar energy development on public lands, including continued evaluation and approval of applications received before June 30, 2009.

We understand that BLM continues to receive applications for solar energy rights-of way during preparation of the Solar PEIS and that applications received after June 30, 2009 are subject to the conditions contained in the BLM's ROD for the Solar PEIS. We recommend that BLM evaluate applications received prior to June 30, 2009 according BLM's existing Solar Energy Policies and the process outlined in the CDREWG May 2, 2011 letter regarding Pending Applications. Continued processing of right-of way applications received prior to June 30, 2009 is essential to ensure that projects currently undergoing site-specific environmental review are processed in a timely manner are not delayed until issuance of the BLM's ROD for the Solar PEIS.

I. Department of Energy Alternative – Mitigation Requirements

In contrast to BLM alternatives, proposed mitigation measures appear to serve as guidance, rather than required components of a proposed project under the DOE alternatives. Further clarity on this issue is needed. The DOE should clearly state in the Solar PEIS if proposed mitigations measures are in fact requirements rather than guidelines for projects requiring NEPA analysis from the DOE, regardless of location on BLM, private or other lands.

III. Specific Comments

Attachment A includes comments and suggestions offered on specific sections of the Solar PEIS, including but not limited to: Proposed ROW Exclusion Criteria, Proposed Design Features, and Transmission Availability.

We would like to reiterate our support of the BLM, the DOE, and all others continuing to work collectively to improve the timing and efficiency of the permitting process for renewable energy projects on public lands. PG&E greatly appreciate your consideration of our remarks. We look forward to working with all parties as the Solar PEIS planning process moves forward.

Respectfully submitted,

Diane Ross-Leech
Director, Environmental Stewardship
Pacific Gas & Electric Company

Enclosure: Attachment A – Specific Comments

Attachment A – Specific Comments

No.	Topic	Chapter	Page	Line	Comment
1	Size of BLM parcels considered for development in PEIS	2	2-1 2-7	Footnote 1 Footnote 6	Inconsistency between footnotes. One states that solar projects generating less than 20 MW (and or less than 247 acres) would not be applicable to the BLM's new Solar Energy Program; however, the document clarifies in the Reader's Guide and elsewhere that due to comments received during scoping, this sized project will be considered in the program alternatives. Projects should not be restricted to over 20 MW.
2	Proposed Exclusion Criteria	2	2-3	Table 2.2-1	The footnote states that "GIS data were not available for the entire set of exclusions listed in Table 2.2-2; thus the exact acreage could not be calculated. Exclusions that could not be mapped would be identified during the ROW application process." Please indicate the size and scope of exclusion area acreages that could not be mapped and if they would exclude a significant portion of land within SEZs or currently shown as open to applications for development under the Preferred Alternative.
3	Amending the PEIS	2	2-7 2-10	32-38 3-5	The PEIS states "the BLM will continue to amend or revise land use plans over time to adapt to changing circumstances or new information, and that the shape, size, and/or location of exclusions or priority development areas may change accordingly" but does not outline a clear process for updating decisions outlined in the PEIS or adding new SEZs. In addition, please indicate the BLM's plan for providing data not currently available to the public.
4	PEIS Coverage for Linear Features	2	2-7	7-10	According to the PEIS, linear infrastructure that supports the solar projects would be subject to existing land use plan decisions and would not need to comply with PEIS solar site exclusion criteria. For maximum efficiency, environmental review of

No.	Topic	Chapter	Page	Line	Comment
					supporting infrastructure should be included in reviews of solar energy sites.
5	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 1	Please indicate when exclusions would be applied in the development process - when the applications are submitted to the BLM or when the ROD is signed. Timing may be important for criteria that have the ability to change over time based on new designations.
6	Proposed Exclusion Criteria	2	2-7 2-8	17-18 Table 2.2-2, 1	Specifics regarding the slope of the land and minimum solar insolation level thresholds are listed as exclusion thresholds. The BLM should provide flexibility to update this information based on rapidly changing technology.
7	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 1	Please indicate the increments at which the slopes were mapped. There are possibly areas that are less than 5 percent slopes encompassed within areas that have been excluded from development based on this criteria.
8	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 4	Proposed critical habitat was used as a factor to exclude lands. Proposed critical habitat is not protected under federal law, and because the listing of proposed critical habitat is extremely contentious, it is subject to significant change. Please indicate the frequency that exclusion areas will be updated based on legislative changes.
9	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 10	ROW avoidance areas should not be listed under the exclusion category for solar development.
10	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 11	Please indicate the seasonal restrictions. The BLM should avoid the use of vague language and provide clear, concise guidance for development.
11	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 16	Please indicate the buffer around Visual Resource Management Classes I or II that would be applied. Also indicate if the criteria considered public lands that have not been inventoried for VRM.

No.	Topic	Chapter	Page	Line	Comment
12	Proposed Exclusion Criteria	2	2-8	Table 2.2-2, 17	Please indicate the buffer zones established for development in proximity to National Recreation Trails and Back Country Byways and National Historic Landmarks and Natural Landmarks. For all resources, buffer widths should be specified if required.
13	SEZs	2	2-10	28-30	The PEIS states that California SEZs were identified based on RETI. The RETI process provided groundwork for aggregation of transmission resources but at a very broad-scale planning level. The Solar PEIS should build off the RETI findings by including site-specific analysis of SEZs proposed in Competitive Renewable Energy Zones identified by RETI. The Solar PEIS should also closely coordinate with planning processes that have spurred from the RETI process, such as the DRECP and California Transmission Planning Process.
14	SEZs	2	2-11	28-30	Please describe the process for changing (adding new) SEZs and how long this process would take, the nomination process, and the criteria for evaluation.
15	SEZs	2	2-12	Table 2.2-3	Please indicate whether lands within SEZs would be identified for development of solar projects exclusively, such that (if it were feasible) wind projects or other types of development could not be considered. Conversely, please indicate if BLM would authorize other development with SEZs that could preclude and essentially decrease the SEZ land area available for solar development and how BLM would reconcile future competing land uses within SEZs.
16	Proposed Exclusion Criteria	2	2-12	28-30	"Exclusion areas that could not be mapped due to lack of data would be identified during pre-application consultations with local BLM staff or site-specific evaluation of individual ROW applications." BLM should seek to digitize as much exclusion zone data as possible and make data publicly accessible for

No.	Topic	Chapter	Page	Line	Comment
					review, even after approval of the PEIS. This would help avoid confusion and improve efficiency.
17	SEZs	2	2-29	10-14	"Suggestions to include additional SEZs were considered. However, because the site specific evaluation of SEZs requires a large amount of data and lengthy evaluation time, the BLM decided to not include additional proposed SEZs in order to reduce impacts on the PEIS schedule. As discussed in Section 2.2.2.2, the BLM may evaluate additional SEZs in the future, using a process similar to that employed in this PEIS." The decision not to evaluate additional SEZs will hinder the effectiveness of the document. BLM should begin to study new SEZs immediately, simultaneous with approval of the Solar PEIS.
18	Proposed Policy: Application Processing	Appendix A	A-25	33-37	BLM should seek to work with other federal agencies (such as FWS and NPS to provide priority processing to applications permits and other necessary clearances for projects sited within SEZs. BLM should coordinate with other agencies to ensure expedited permitting in SEZs and development proposed on disturbed lands.
19	Proposed Policy: Application Processing	Appendix A	A-26	39-46	Please indicate if projects sited on disturbed lands outside of SEZs would receive less priority than projects located within SEZs.
20	Proposed Policy: Consistency with IMs	Appendix A	A-26	39-46	The pre-application process outlined is not consistent with BLM's recent February 2011 IMs.
21	Proposed Policy: Consistency with IMs	Appendix A	A-26 to A-34	Section A.2.1.2	Many of the policies listed are not consistent with the BLM's recent February 2011 IMs. This entire section should be revised to be consistent with the February Policy IMs.
22	Proposed Policy: NEPA Tiering	Appendix A	A-31	15-20	"For projects that are proposed in SEZs, only limited additional NEPA analysis may be necessary because of the depth of the

No.	Topic	Chapter	Page	Line	Comment
					analysis contained in the PEIS." At this time, NEPA analysis and permitting efforts are not assured to be lessened.
23	Design Features for Lands and Realty	Appendix A	A-36	44-46	Please define "action." Some preconstruction activities could be permitted to occur prior to marking of property boundaries and PLSS.
24	Design Features	Appendix A	A-37	35-38	Please clarify how long is "recent" and whose responsibility would it be to conduct wilderness inventories. BLM should provide records of wilderness proposals that can be accessed by the public.
25	Design Features	Appendix A	A-39	13-14	Generally speaking, it is difficult to provide public access through a solar facility.
26	Design Features	Appendix A	A-39	16-17	Please clarify the definition of a unique or important recreation resource.
27	Design Features	Appendix A	A-39	19-23	Regarding replacement of acreage for off-highway vehicles, please clarify how secondary impacts associated with this mitigation would be evaluated.
28	Design Features	Appendix A	A-39	39-44	Regarding evaluating impacts from the solar energy facility in regards to the operation of existing military installations, please clarify how to quantify whether displacement of species onto their facilities was occurring.
29	Design Features	Appendix A	A-41	15 and general	There is a lot of discussion in the measures about "adequate" space and buffers from sensitive areas; however, please clarify how adequate is defined and the size of the buffer.
30	Design Features	Appendix A	A-41	39	Please indicate the recommendations for design of temporary roads.
31	Design Features	Appendix A	A-41	27	In some locations, it will be impossible to avoid existing desert washes when designing and building new roads.
32	Design Features	Appendix A	A-42	22-23	Minimization of ground-disturbing activities during the rainy season may not be feasible for large-scale solar facilities. The

No.	Topic	Chapter	Page	Line	Comment
					safety of the workers should also be taken into consideration, as work during the non-rainy season is extremely hot. Also, please clarify is this means winter/spring rainy season or monsoon season or both.
33	Design Features	Appendix A	A-42	39-40	We suggest providing examples of BMPs that would be acceptable in wildlife crossing areas.
34	Design Features	Appendix A	A-42	18	Water may not be the most appropriate dust stabilizer in desert environments.
35	Design Features	Appendix A	A-51	9-12	PEIS states that the EPA will ask for additional turbidity sampling. This does not apply in California.
36	Design Features	Appendix A	A-53	18 and general	"Special construction techniques" should be specified, here and in other design features.
37	Design Features	Appendix A	A-54	30 and general	The responsible party and frequency for "monitoring" proposed design features should be specified, here and throughout.
38	Design Features	Appendix A	A-55	Footnote 2	Note that U.S. Fish and Wildlife Service (USFWS) Species of Concern are included in the list of special-status species; USFWS Species of Concern are not protected under the law.
39	Design	Appendix A	A-56	17-20	The measure states not to site projects in designated critical habitat. Please clarify if this applies to habitat that does not support the species and if a situation arises where there are no primary constituent elements present.
40	Design	Appendix A	A-57	1-2	Please indicate the recommended distance of siting facilities in proximity to open water or areas supporting large numbers of birds and clarify what is considered a "large number of birds".
41	Design	Appendix A	A-57	7	"Tall structures shall be located to avoid known flight paths of birds and bats." Please indicate the maximum allowable height.
42	Design Features	Appendix A	A-57	17-18	Fencing as described would not allow installation of wildlife-friendly four-inch gap that we are using on other sites to facilitate (San Joaquin kit fox) species movement.

No.	Topic	Chapter	Page	Line	Comment
43	Design Features	Appendix A	A-58	1-5, general	When design features state that facilities should be designed to minimize impacts, they should also state specific recommendations for minimizing impacts.
44	Design Features	Appendix A	A-59	21-22	Nesting buffers should also be established in conjunction with the state agencies. There are also situations where the biological monitor can determine an appropriate nesting buffer without consultation with agencies.
45	Design Features	Appendix A	A-65	7-13	Please assure that agencies have time to attend the seasonally appropriate walkthroughs.
46	Design Features	Appendix A	A-66, 67	45-46,1-4	Please indicate why we need to consult with the agencies if active nests are not detected.
47	Design Features	Appendix A	A-68	6-8	Please indicate the timeframes for "immediate" revegetation.
48	Design Features	Appendix A	A-70	23-24	Pleas indicate the metric used to determine whether revegetation is "similar" to pre-construction conditions.
49	Design Features	Appendix A	A-71	37-38	Confirm that tree cutting is not in conflict with California Public Utilities Commission General Order 95.
50	Design Features	Appendix A	A-71	42-43	Use of helicopters can have significant impacts on air quality.
51	Design Features	Appendix A	A-72	29,39	Removal of raven's nests from transmission towers is likely not a California Department of Fish and Game-approved activity. Please indicate whose responsibility it would be to conduct nest removal activities.
52	Design Features	Appendix A	A-77 to 79		Design Features for Visual Resources indicate a need to conduct early visual studies to evaluate impacts to development during the siting process, a timely and economically intensive activity not typically conducted until further along in the development phase after a site has been selected.
53	Design Features	Appendix	A-81	18-21	Add "if feasible" in regards to transmission line/pipeline routing

No.	Topic	Chapter	Page	Line	Comment
		A			
	Design Features	Appendix A	A-82	24-26	
54	Design Features	Appendix A	A-89	22-42	Please indicate the methodology for off-site mitigation of visual impacts – and how equal magnitudes are determined for mitigation.
55	Design Features	Appendix A	A-90	6-11	Noise monitoring should not be necessary if there are no sensitive receptors nearby.
56	Design Features	Appendix A	A-90, A-91	14, 4, 26, 43	"Nearby" is used in mitigation measure but not defined
57	SEZ Design Features	Appendix A	A-116	General	With implementation of design features, it would be beneficial for BLM to quantify the amount of SEZs are available for development and how many acres are precluded from development based on the design features listed.
58	SEZ Design Features	Appendix A	A-116 to 119	Imperial East SEZ	The design features for this SEZ list the following areas as off-limits to development: desert washes, wetlands in the western and southern portions of the SEZ, sand dunes in the northern and eastern portion of the SEZ, areas near the All American Canal. Surveys and tribal consultation would be required for potential burial sites. USFWS consultation and surveys would also be needed for specified wildlife and plants. Design features would be improved if more specific information is provided about the specific areas that should be avoided, including quantified and mapped locations, and specific buffer distances should be recommended.
59	SEZ Design Features	Appendix A	A-116 to 119	Iron Mountain SEZ	Similar comment to above, Design features would be improved if more specific information is provided about the specific areas that should be avoided, including quantified and mapped locations, and specific buffer distances should be recommended.

No.	Topic	Chapter	Page	Line	Comment
					This SEZ seems to have a considerable amount of lands off limits to development: KSLA, sand and gravel areas, Danby Lake (25,000 acres), Colorado River Aqueduct, Homer Wash, dunes, unique habitats (e.g. dry wash), and historical sites. Surveys and tribal consultation would be required for potential burial sites. USFWS consultation and surveys would also be needed for specified wildlife and plants.
60	SEZ Design Features	Appendix A	A- 119 to 128	Pisgah SEZ And Riverside East SEZ	Similar comment to above, Design features would be improved if more specific information is provided about the specific areas that should be avoided, including quantified and mapped locations, and specific buffer distances should be recommended.
61	SEZ Design Features	Appendix A	general		The PEIS should present a comprehensive Map that shows all areas that should be avoided or are precluded from development within each SEZ.
62	California Transmission Planning Activities	Appendix D	Section D.3, Page D-21 to D-30		Section D.3.2 describes the California Renewable Energy Transmission Initiative (RETI) and Section D.3.3 describes the California Transmission Planning Group (CTPG). The RETI has concluded its work, and PG&E will continue to follow up and participate in the CTPG and other joint planning processes to shape and influence the new renewable transmission lines that would bring power out from the four California SEZs.
63	Transmission	Appendix G	G-I	26-28	"This transmission analysis only considered the locations of existing transmission lines and designated corridors and did not look at the available capacity on existing lines (i.e., the analysis assumed lines could be upgraded, if needed)." – This assumption is inadequate and should be reevaluated because upgrades to transmission lines are not easily accomplished and may not be feasible.
64	Transmission	Appendix G	G-3	41	The document states "approximately 35 lines planned for California..." The PEIS should provide a table of the planned

No.	Topic	Chapter	Page	Line	Comment
					lines.
65	Transmission	Appendix G	G-8	Figure G-3	The map resolution in the figure showing transmission lines and corridors is too vague and the proposed lines cannot be seen clearly. It would be great if the report provided a map per state and provide greater resolution.

Thank you for your comment

The comment tracking number that has been assigned to your comment is SolarD11860.

Comment Date: May 2, 2011 19:23:53PM
Solar Energy Development PEIS
Comment ID: SolarD11860

First Name: [Withheld by requestor]
Middle Initial: [Withheld by requestor]
Last Name: [Withheld by requestor]
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold name and address from public record
Attachment:

Comment Submitted:

I am a current resident of the San Luis Valley and a native of this beautiful location. I am in opposition to this energy movement unless our interests are protected. There are many locals who are dependent on this landscape and if our interests are removed for furthering corporate interests then we are in essence losing our rights. If this company is willing to work and protect the existing rights of the locals in harmony with their interests then possibly things could be worked out.
Thank you for your time and consideration.

Thank you for your comment, Stacey Crowley.

The comment tracking number that has been assigned to your comment is SolarD11861.

Comment Date: May 2, 2011 19:29:59PM
Solar Energy Development PEIS
Comment ID: SolarD11861

First Name: Stacey
Middle Initial:
Last Name: Crowley
Organization: Nevada State Office of Energy
Address: 755 N. Roop Street
Address 2: Suite 202
Address 3:
City: Carson City
State: NV
Zip: 89701
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: DPEIS LTR_NSOE 050211 (2).pdf

Comment Submitted:

BRIAN SANDOVAL
Governor

STATE OF NEVADA

STACEY CROWLEY
Director/Acting Commissioner
755 North Roop Street, Suite 202
Carson City, NV 89701
Office: (775) 687-1850
Fax: (775) 687-1869

OFFICE OF THE GOVERNOR
NEVADA STATE OFFICE OF ENERGY

May 2, 2011

Delivered via electronic submission to the BLM Solar PEIS website (http://solareis.anl.gov) and in hard copy format via U.S. mail.

Linda Resseguie, BLM Solar PEIS Project Lead
Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue - EVS/240
Argonne, IL 60439

Re: Comments on Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States—Nevada only

Dear Ms. Resseguie:

The Nevada State Office of Energy ("NSOE") appreciates the opportunity to provide comments on the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States ("PEIS").

The mission of NSOE is to ensure the wise development of the state's energy resources in harmony with local community economic needs and Nevada's natural resources by leading the nation in renewable energy production, energy efficiency, conservation, and exportation. NSOE strives for this by facilitating cooperation between key stakeholders, leading initiatives to stimulate economic development and attracting energy-related business venues to the State.

One of those initiatives is to address development of renewable energy on Nevada's vast public lands. Over 40% of the lands identified in the solar energy development alternative and 25% of the lands in the SEZ alternative under the PEIS are located in Nevada. Striking a balance between the need to offset the nation's fossil fuel use by renewable energy generation and maintaining critical biodiversity and habitat poses a unique challenge to a state that is fortunate to have such high quality solar attributes. NSOE understands the need to find a process by which to deal with this challenge in a methodical and reasonable way. Following are a few key comments from the perspective of our stated mission.

1. TRANSMISSION - A critical issue facing utility-scaled solar development in Nevada is the access to adequate transmission. Transmission corridors and construction are an important

part of solar development and while transmission limitations are mentioned in each of the SEZ's, the report does not sufficiently address the impact of additional transmission for those zones or the transmission impacts of the solar energy development alternative. For that reason, additional consideration will need to be given to transmission needs while allowing for solar energy development to fully realize its potential.

2. EXISTING STUDIES - Additionally with respect to transmission, several efforts have either been completed or are underway to identify solar energy zones similar to those proposed by the PEIS. Among these are the State of Nevada's Renewable Energy Transmission Access Advisory Committee ("RETAAC") report and the Western Governors Association's Western Renewable Energy Zone ("WREZ") process. The RETAAC report is considered to be widely accepted by stakeholders in Nevada and describes key renewable energy zones for solar, wind, geothermal and biomass development. NSOE respectfully requests that the findings in these reports be considered in the PEIS.

3. PROJECTS UNDER DEVELOPMENT - It is also important to note that there are currently several large scale solar developments in the planning phases in Nevada. Those projects may or may not be located within the SEZ's as described in the PEIS. From the transcripts provided from the Las Vegas scoping meeting, it appears that the existing applications will be reviewed under current policy. Because there has been a significant amount of time and financial resources expended on those projects, we believe that there should be an effort to establish a reasonable cutoff date for existing projects under review to continue through the permitting process. A selection of a date such as this should be discussed with all interested stakeholders during the next phases of this study.

The draft PEIS represents three primary alternatives to facilitate utility-scale solar energy development; the no action alternative and two action alternatives. As stated in the PEIS, the BLM may choose to adopt one of the alternatives or a combination of alternatives. In consideration of the variety of variables that make up the findings in the PEIS and variables with regard to feasibility of large scale solar development in the state of Nevada, perhaps the most appropriate direction for Nevada is to consider a hybrid of the SEZ alternative program alternative in combination with the solar energy development program alternative.

As stated in Chapter 2 of the PEIS, *"under the SEZ program alternative, the management of SEZs would be the same as described for the solar energy development program alternative, including the potential for the BLM to expand, add, remove, or reduce SEZs in the future on the basis of new information and lessons learned."* NSOE suggests that there should be a diligent and immediate effort to work to expand the SEZ's based on consensus with interested stakeholders and the information already provided in reports such as RETAAC and WREZ. The stakeholder list could include federal, state and local agencies, tribes, solar industry representatives, and environmental and conservation groups.

NSOE is supportive of this process brought forth by the DOE and BLM as it has the potential to produce clear direction for the solar industry on how and where development can occur.

3

Additionally, the PEIS has the ability to streamline the permitting processes which reduces workload on the BLM and reduces the risks for developers.

While our comments are general in nature and the PEIS is quite detailed, NSOE would like to be included as a cooperating partner in the subsequent phases of this process. Thank you for your consideration of our comments. Please contact me directly if you have any additional questions.

Sincerely,

Stacey Crowley, Director
Nevada State Office of Energy

Thank you for your comment, Ann McPherson.

The comment tracking number that has been assigned to your comment is SolarD11862.

Comment Date: May 2, 2011 19:43:06PM
Solar Energy Development PEIS
Comment ID: SolarD11862

First Name: Ann
Middle Initial: K
Last Name: McPherson
Organization: U.S. Environmental Protection Agency
Address: 75 Hawthorne Street
Address 2:
Address 3:
City: San Francisoc
State: CA
Zip: 94105
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: EPAComments.DraftSolarPEIS.05.02.11.pdf

Comment Submitted:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901
MAY 0 2 2011

Department of the Interior
Bureau of Land Management
Attn: Ms. Linda Resseguie
BLM Solar PEIS Project Manager
1849 C Street, N.W., Room 2134LM
Washington DC, 20240

Subject: Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States [CEQ# 20100466]

Dear Ms. Resseguie,

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Programmatic Environmental Impact Statement (PEIS; Solar PEIS; Draft PEIS) for Solar Energy Development in Six Southwestern States, including Arizona, California, Colorado, New Mexico, Nevada, and Utah. Our review was conducted pursuant to Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508). EPA Region 9 has coordinated with EPA Regions 6 and 8 and EPA Headquarters to provide these comments.

EPA strongly supports the Bureau of Land Management (BLM) and Department of Energy (DOE) efforts to develop a new Solar Energy Program. Accelerating the pace of development of renewable energy resources, such as solar power, will help the nation meet its energy demand, create new jobs, reduce our dependence on imported oil, and provide for increased energy security, while reducing greenhouse gas emissions. As with any program of this magnitude, thoughtful planning is critical to avoid and minimize unintended adverse consequences.

Based on our review of the Draft PEIS, we have rated the document as *Environmental Objections – Insufficient Information* (EO-2). An "EO" signifies that EPA's review of the Draft PEIS has identified potential significant environmental impacts that should be avoided in order to provide adequate protection for the environment, including but not limited to disruption of surface and groundwater hydrology, and fragmentation of desert ecosystems. A Category "2" rating signifies that EPA has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the Draft PEIS, which could reduce the environmental impacts of the action. In the enclosed detailed comments, we have identified issues of concern, along with specific recommendations for your consideration.

Our goal in provided detailed comments is to assist BLM and DOE in disclosing necessary information in the Final PEIS and to help develop consistent measures to avoid, minimize, or mitigate the adverse impacts of solar development. While we agree with the

objectives of BLM's proposed Solar Energy Program, we believe that proceeding with the proposed action would set a precedent for future project-level actions that, cumulatively, could result in significant environmental impacts. Other reasonable alternatives are available that could reduce the significance of the environmental impacts and appear to be more consistent with BLM's policy[1] to facilitate environmentally responsible development of solar (and wind) projects. To avoid unnecessary delays of future projects, it is critical that potential conflicts be identified and avoided to the extent possible from the outset. EPA agrees with BLM's initial approach to focus on the concept of establishing Solar Energy Zones (SEZs). That, in conjunction with the identification of disturbed lands, would be the most efficient way to streamline the application and permitting process. EPA recommends that BLM:

- Identify and apply a more comprehensive set of exclusion criteria – such as those being applied in BLM's Restoration Design Energy Project (RDEP) in Arizona, in combination with criteria proposed by the U.S. Fish and Wildlife Service in California and Nevada – to redefine the proposed SEZs, in consultation with federal resource management field offices and tribes.

- Apply the more comprehensive exclusion criteria to the 21.5 million acres to identify new SEZs.

- Focus substantial effort on building a comprehensive database of disturbed and degraded lands – on public, private, and tribal lands – to which developers can be directed in the future. BLM should consider soliciting the public for identification of disturbed land throughout the states covered by the PEIS, using an approach similar to that employed for the Arizona RDEP. Through the *RE-Powering America's Land* initiative, EPA has worked to develop maps showing contaminated lands with renewable energy potential.

- Discuss the proximity *and capacity* of existing transmission facilities to support new solar development and include an estimate of the costs and potential impacts associated with building new lines or upgrading existing infrastructure. As an integral component of solar energy development and a '*connected action*,' the development of transmission facilities must be analyzed in greater detail in the Final PEIS.

- Strengthen the language used to describe the proposed 'design features' to ensure consistency in their application and interpretation. The routine use of qualifying phrases such as '*shall be avoided to the extent practicable*' should be avoided.

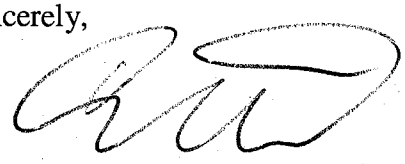
Results of the above process should be clearly summarized and illustrated in the Final PEIS to allow public review prior to issuance of the Record of Decision (ROD).

We appreciate the opportunity to provide comments on the Draft PEIS, and look forward to working closely with BLM and DOE to resolve the issues that we have identified and help

[1] Instructional Memorandum No. 2011-061: Solar and Wind Energy Applications – Pre-Application and Screening, February 7, 2011.

facilitate the nation's much needed shift to renewable energy sources. When the Final PEIS is published in the Federal Register, please send one hard copy and one CD to the address above (mail code: CED-2) at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at 415-972-3843, or contact Ann McPherson, the lead reviewer for this project. Ann can be reached at 415-972-3545 or mcpherson.ann@epa.gov.

Sincerely,



Enrique Manzanilla, Director
Communities and Ecosystem Division

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

Cc: John Blevins, U.S. Environmental Protection Agency, Region 6
Larry Svoboda, U.S. Environmental Protection Agency, Region 8
Susan Bromm, U.S. Environmental Protection Agency, Washington DC
Jane Summerson, Department of Energy, Washington DC
Bob Abbey, Bureau of Land Management, Washington DC
Jim Abbott, Bureau of Land Management, California State Office
Amy Lueders, Bureau of Land Management, Nevada State Office
Jim Kenna, Bureau of Land Management, Arizona State Office
Linda Rundell, Bureau of Land Management, New Mexico State Office
Juan Palma, Bureau of Land Management, Utah State Office
Helen Hankins, Bureau of Land Management, Colorado State Office
Jill Ralston, U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office
Amadee Brickey, U.S. Fish and Wildlife Service, California Fish and Wildlife

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

U.S. EPA DETAILED COMMENTS ON THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR SOLAR ENERGY DEVELOPMENT IN SIX SOUTHWESTERN STATES, MAY 2, 2011

Project Description

The Department of Energy (DOE) and the Bureau of Land Management (BLM) have worked jointly to prepare this Programmatic Environmental Impact Statement (PEIS; Solar PEIS, Draft PEIS). The BLM proposes to develop a new Solar Energy Program to further support utility-scale solar energy development on BLM-administered lands that would apply to all pending and future solar energy development applications upon execution of the Record of Decision (ROD) (pg. ES-2). For the BLM, the PEIS presents three alternatives: 1) Solar Energy Development Program alternative (preferred alternative); 2) Solar Energy Zone (SEZ) Program alternative; and 3) a No-Action alternative. Under the Solar Energy Development Program alternative, new program administration and authorization policies and design features for utility-scale solar energy development would be identified, and 21.5 million acres of BLM-administered land would be available for right-of-way (ROW) application, including land in the 24 SEZs. Under the SEZ Program alternative, the same new program administration and authorization policies and design features would be applied, but solar energy development would be restricted to the 24 SEZs (677,400 acres). Under the No-Action alternative, solar energy development would proceed pursuant to BLM's existing polices, on a project-by-project basis, within about 99 million acres of BLM-administered land currently open for ROW authorizations.

For the DOE, the PEIS examines two alternatives: 1) Programmatic Environmental Guidance alternative; and 2) a No-Action alternative. Under the first alternative, DOE would use the information in the PEIS to develop guidance with recommended environmental practices and mitigation measures for all solar energy projects supported by DOE. Under the no-action alternative, DOE would continue its existing case-by-case process for addressing environmental concerns for solar projects supported by DOE.

Alternatives Analysis – Analysis of a Full Range of Alternatives

Other reasonable alternatives are available that would help reduce the significance of the environmental impacts of future projects.

The U.S. Environmental Protection Agency (EPA) supports BLM and DOE in their efforts to develop a new Solar Energy Program. The Solar Energy Program that BLM and DOE are establishing is a monumental undertaking; consequently, particular care must be exercised while implementing this program due to the fragility of the ecosystems involved and the magnitude, extent, and duration of potential environmental impacts. We do not believe that the PEIS provides sufficient justification for leaving 21.5 million acres of land open to utility-scale solar energy development at this time – considering the myriad of resources that may be affected by such a decision, and the availability of potentially less damaging alternatives.

Since this is a new program that includes the deployment of new technologies on an unprecedented scale, we believe that designation of smaller, more targeted geographic areas, at

least initially, would be more prudent than designating such vast acreages as are proposed in the Preferred Alternative for utility-scale solar energy development. Other reasonable alternatives are available that could reduce the significance of project-level environmental impacts and appear to be more consistent with BLM's policy[2] to facilitate environmentally responsible development of solar (and wind) projects.

Several federal orders and statutes establish goals and requirements related to renewable energy, such as Secretarial Order 3285A1, which directs BLM and other Department of Interior (DOI) agencies to identify and prioritize the specific locations best-suited for such development, and the Energy Policy Act of 2005, which calls for 10,000 megawatts (MW) of non-hydropower renewable energy on public lands by 2015. According to the PEIS, the DOI is well on its way to accomplishing the Energy Policy Act goal, as more than 5,489 MW have already been approved (1,350 MW geothermal, 567 MW wind, and 3,572 MW solar; pg. 1-2). In March 2011, BLM announced a list of 20 "priority" projects[3] for developing renewable energy on public lands in 2011. The priority list now includes ten solar projects, five wind projects, and five geothermal projects – totaling some 4,536 MW – all expected to complete the environmental review process and have the potential for approval by the end of 2011. With the addition of the 2011 priority projects, it seems likely that DOI will reach 10,000 MWs in 2011 or 2012, well ahead of the Energy Policy Act goal. President Obama's comprehensive energy plan, *Blueprint for a Secure Energy Strategy*,[4] confirms this, as it specifically refers to DOI's commitment to issue permits for 10,000 MWs of renewable power generated from new projects on public lands by 2012.

While that objective represents only a fraction of our national renewable energy potential, it is an important benchmark cited as a driver for both the PEIS and other renewable energy projects currently under review. Under the Reasonably Foreseeable Development Scenario (RFDS), BLM and DOE estimate that 214,000 acres of BLM-administered land (24,000 MW) and 71,000 acres of private land (8,000 MW) will be necessary to support the estimated amount of solar energy generated over the next 20 years in the six-state region. Although EPA strongly supports the development of renewable sources to meet a far greater portion of the nation's energy needs, we believe that the selection of the preferred alternative, as described in the Draft PEIS, would be ill-advised at the present time.

Recommendations:

EPA recommends that the alternatives analysis be broadened to examine new reasonably available alternatives that will reduce the significance of environmental impacts associated with the proposed action and that are more consistent with BLM's policy to facilitate environmentally responsible development of solar (and wind) projects.

EPA recommends selection of an alternative that would consolidate utility-scale solar energy development in smaller, well-designated areas with fewer resource constraints, target disturbed or degraded lands, and include a commitment to conduct rigorous

[2] Instructional Memorandum No. 2011-061: Solar and Wind Energy Applications – Pre-Application and Screening, February 7, 2011.

[3] See internet address: http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/priority_projects.html

[4] See internet address: http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf

environmental reviews (EISs) when appropriate.

The FEIS should apply additional exclusion criteria to delineate SEZs with fewer resource conflicts, while giving preference to disturbed and degraded lands.

EPA supports the concept of establishing SEZs; however, we are not convinced that the SEZs proposed in the PEIS represent the most appropriate areas in which to concentrate utility-scale solar development. During the past year, EPA Region 9 reviewed 14 Draft EISs and 9 Final EISs for utility-scale solar energy projects located in California, Nevada, and Arizona. Several of these projects[5] are located in, or very close to, proposed SEZs. Resource conflicts involving, among other issues, groundwater consumption, surface-water hydrology, and habitat destruction, were identified at a number of the proposed project sites.

To avoid unnecessary delays of future projects, it is critical that potential environmental and cultural conflicts be identified and avoided to the maximum extent possible from the onset. The key lies in establishing a more robust set of land exclusion criteria and additional screening analyses that will enable BLM to identify and avoid those areas with the most significant resource constraints when drawing SEZ boundaries, and giving preference to disturbed and degraded lands. The exclusion criteria identified in table 2.2-2 that were used to identify the 21.5 million acre alternative provide a good start; however, it is difficult for the reader to discern what they actually represent, given their reliance on generic references to various land-use plans. In fact, it is not clear to us how the SEZs were selected or what additional criteria were used to delineate the SEZs within the 21.5 million acres, although we searched for clarification on that topic in the PEIS (pg. 2-10).

Table 6.1-3 in the PEIS summarizes the acreages of SEZs with possible development restrictions. It is unclear, however, whether BLM intends to modify those SEZs' boundaries based on these potential restrictions. Many cooperating agencies, as well as environmental groups, have already submitted detailed comments requesting that BLM eliminate some SEZs or modify the boundaries (for example, Pisgah, Iron Mountain, Riverside East, and Amargosa Valley), or that BLM identify new SEZs (Western Mojave).[6] Furthermore, we understand that the U.S. Fish and Wildlife Service (FWS) has identified additional exclusion criteria that, if applied, would result in a more protective approach based on the conservation of sensitive species, preservation of additional habitat and habitat connectivity corridors, and recovery of certain targeted species, including the desert tortoise.

Recommendations:

EPA recommends that BLM identify a more robust set of exclusion criteria – such as those being applied in BLM's own Restoration Design Energy Program (RDEP) in Arizona, and the criteria proposed by the FWS in California and Nevada – and utilize those criteria to reconfigure the proposed SEZs. These exclusion criteria can also be

[5] Projects that are located in the Riverside East SEZ in California include: Palen, Blythe, Genesis, and Desert Sunlight. The Amargosa Farm Road solar energy project is located near the Amargosa Valley SEZ in Nevada.
[6] The California Desert and Renewable Energy Working Group submitted a proposal for draft study areas in the western Mojave region of California in April 2009 and December 2010 encompassing up to 108,000 acres.

applied to the 21.5 million acres to delineate entirely new SEZs.

EPA recommends that BLM and DOE work closely with the FWS, state fish and game agencies, federal and state resource field offices, and other ecosystem experts to ensure that adequate habitat is maintained for species at risk and habitat corridors remain intact.

EPA further recommends that preference be given to disturbed or degraded areas and the avoidance of cultural and resource conflicts within the new delineated SEZs.

Any such revisions should be clearly summarized and illustrated in the Final PEIS, so that the public has the opportunity to review these changes prior to issuance of the ROD.

Preference for solar development should be given to disturbed and degraded lands.

Utilizing previously disturbed sites or areas adjacent to previously disturbed or developed sites is listed as a screening criterion in BLM's Instructional Memorandum (IM) No. 2011-061; yet, while the PEIS acknowledges that the use of disturbed land, rather than pristine lands, should be encouraged, it does not identify a way in which solar developers could be guided toward such properties. EPA has worked closely with the DOE's National Renewable Energy Laboratory (NREL) to develop maps[7] showing contaminated lands and mining sites with renewable energy generation potential. These maps were developed in conjunction with the *RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites* program,[8] which was launched by the EPA Office of Solid Waste and Emergency Response (OSWER) in September 2008. Under this initiative, EPA has taken a multi-pronged approach[9] to encouraging reuse of EPA tracked lands[10] for clean and renewable energy production facilities. EPA has developed a Renewable Energy Interactive Mapping Tool[11] that utilizes Google Earth to display these sites.

RE-Powering America's Land promotes renewable energy development on disturbed or degraded land, whether or not it is part of the current EPA database of contaminated sites. Through this initiative, EPA has identified more than 11,000 EPA tracked sites and nearly 15 million acres that have renewable energy potential (solar, wind, biomass, and geothermal). Within the six state area that the PEIS covers, the numbers break down as follows: Arizona – 122 sites – 84,000 acres; California – 1,262 sites – 1,972,000 acres; Colorado – 405 sites –

[7] To develop the maps, EPA and NREL collected renewable energy resource information and merged it with EPA and state data on contaminated lands and mining sites across the country. The mapping analysis applied basic screening criteria, such as distance to electric transmission lines, distance to roads, renewable energy potential, and site acreage in order to identify EPA tracked lands that might be good candidates for solar, wind, or biomass energy production facilities.

[8] For additional information on EPA's RE-Powering America's Land, please use the following weblink: http://www.epa.gov/renewableenergyland/index.htm

[9] See Internet site: http://www.epa.gov/renewableenergyland/docs/repower_contaminated_land_factsheet.pdf.

[10] EPA tracks Abandoned Mine Lands, Brownfields, Resource Conservation and Recovery Act (RCRA) sites, Federal Superfund Sites, and Non-Federal Superfund Sites.

[11] See Internet site: http://www.epa.gov/renewableenergyland/mapping_tool.htm. Open the Renewable Energy Interactive Map (KMZ) to launch the Renewable Energy Mapping Tool. More detailed information on the EPA tracked sites is available at: http://epa.gov/renewableenergyland/maps/ocpa_renewable_energy_data.xls.

503,000 acres; New Mexico – 69 sites – 3,314,000 acres; Nevada – 156 sites – 77,000 acres; Utah – 126 sites – 903,000 acres. Many such properties may have existing transmission capacity and infrastructure in place, as well as adequate zoning. EPA is, in fact, currently soliciting[12] applications from tribes, regional governments, and communities that want to evaluate the potential development of renewable energy on potentially or formerly contaminated properties; applications are due on May 20, 2011.

Although the PEIS mentions the *RE-Powering America's Land* initiative, it concludes that the types of contaminated properties it has identified so far are not likely to coincide substantially with BLM-administered public lands (pg. 2-27). Rhetorically, BLM promotes the concept of using disturbed sites by including it as a potential mitigation measure, stating that, to the extent practicable, projects should be sited on previously disturbed lands close to energy load centers to avoid and minimize impacts on remote undisturbed lands (pg. 5-126). Furthermore, the PEIS states that DOE may elect to establish programmatic guidance that promotes utility-scale solar development on previously disturbed lands (pg. 2-27); however, the concept is not developed further in the PEIS and no such lands are actually identified in the PEIS.

EPA is in the process of examining its own inventory of contaminated sites to determine which sites are on BLM land. We expect to finalize that list in the near future[13] and would like to work with BLM to ensure that the list is made public and integrated into the Final PEIS. Sites in the database range in size from small, one-acre sites up to thousands of acres. While development of utility-scale solar necessitates large tracts of land, contaminated sites with small-to-medium acreage should not be dismissed, because contaminated acreage might be combined with nearby undisturbed land to meet the acreage requirements needed for large-scale solar projects. Many of the disturbed sites may already be zoned for industrial/commercial application, and may have infrastructure in-place, including access to roads, water, and electrical transmission lines. Additionally, some of the disturbed mining sites may have been the subject of EIS studies that may be useful. The use of contaminated sites provides a win-win opportunity for BLM and other land management agencies to maximize the opportunities for cleanup and reuse.

EPA is aware of many large, recently active, but currently closed, mines on BLM land in Nevada. The Nevada Department of Environmental Protection (NDEP) currently tracks over 100 "modern" mines that have undergone permanent closure or are in post-closure monitoring, many of which are partly or completely on BLM land. Many of these have closed tailings, waste rock, or heap leach facilities that exceed 100 acres, and currently have (or had recently) nearby power infrastructure in place. These sites, as well as similar sites in other Western states, should be screened for solar energy development potential and the list be made public in the Final PEIS.

In addition to contaminated and former mining sites, lands that have been used previously for agriculture may be suitable for solar development, particularly when such land lies in close proximity to transmission lines. For example, the Westlands Solar Park is a 5,000 MW project proposed on 30,000 acres of disturbed private land in California's Central Valley that has been

[12] See Internet site: http://www.epa.gov/renewableenergyland/docs/repowering_epa_nrel_2011_rfa.pdf

[13] Lura Matthews, US EPA, OSWER, 202-566-2539, will serve as the primary point of contact and will submit the final list to BLM and DOE. EPA anticipates that the list will be ready in June/July 2011.

rendered unusable by salt buildup from long-term intensive irrigation and has been targeted for renewable energy development. Furthermore, several of the large solar projects in California that underwent joint National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) review last year examined and dismissed alternative sites that involved disturbed land, including degraded agricultural areas. Although the sites were not selected for those particular projects, they may be viable candidates for further consideration for other solar development.

To summarize, EPA believes that there are many disturbed, degraded, and contaminated sites located on federal, state, tribal, and private land that may be suitable for solar energy development. Identifying and utilizing these areas first, instead of using more pristine land, would seem to be in-line with Secretarial Order 3285A1, which calls for encouraging timely and responsible development of renewable energy and associated transmission while protecting and enhancing the Nation's water, wildlife, and other natural resources. EPA also believes that the permitting process is likely to be less daunting and, in fact, quicker and easier, if such lands are utilized. Maximizing the use of disturbed and degraded lands should be a more prominent component of BLM's new Solar Energy Program and any forth-coming guidance issued by DOE. In addition, directing development to disturbed and degraded areas on tribal lands would likely provide a much needed economic opportunity to those tribes, consistent with DOE's recently established Tribal Energy Program Office's stated mission.

Recommendations:

EPA strongly recommends that BLM focus substantial effort on identifying disturbed, degraded, and contaminated lands and building a comprehensive database cataloguing such lands – public, tribal, and private – to which solar energy developers can be directed.

BLM and DOE should consider developing specific incentives to direct developers to disturbed, degraded, or contaminated lands. For example, such incentives might include prioritized processing of ROW applications or loan guarantee applications for projects located on such lands.

EPA recommends that BLM consider soliciting the public for input on disturbed sites that may be suitable for solar energy development, as done with the Arizona RDEP.[14]

EPA plans to submit a list of contaminated sites tracked in our database that are located on or near BLM-administered lands in the six-state area. The Final PEIS should publish this list and screen these sites for solar energy development potential. Developers can and should work with EPA or State environmental offices to determine reasonable steps that can be taken to address any environmental liability issues at the project level stage.

BLM should work closely with the NDEP and other state environmental agencies to examine recently active, but currently closed, mine sites on BLM land suitable for solar energy development. We recommend that these sites, as well as similar sites in the other

[14] See Internet address: http://www.blm.gov/az/st/en/prog/energy/arra_solar.html

five southwestern states, be screened for solar energy development potential and identified in the Final PEIS.

Alternative sites utilizing disturbed land that were identified in the NEPA or CEQA process but were not developed should be catalogued and added to the database of disturbed sites. These sites should be presented in the Final PEIS.

The text[15] on page 2-27 referring to the *RE-Powering America's Land* initiative should be revised in the Final PEIS. The *RE-Powering America's Land* initiative promotes renewable energy development on disturbed or degraded land, whether or not sites are part of the current EPA database. This database can be utilized as a tool to identify disturbed sites with renewable energy potential; EPA and BLM could work together to include contaminated BLM land in the database. The database should be discussed in greater detail in the Final PEIS.

BLM's obligations regarding existing ROW applications outside of SEZs are unclear

According to the PEIS, BLM has received more than 300 applications for ROW authorizations for solar facilities to date. As of December 1, 2010, BLM had 104 active applications, including 30 in California, 35 in Nevada, 36 in Arizona and 3 in New Mexico (pg. 1-9). EPA is currently tracking 36 applications in California, 63 applications in NV, and 32 applications in AZ. The above numbers are continually fluctuating; however, of the 132 applications that we are tracking, approximately 18 are located in the proposed SEZs and 84 are located outside those zones, but within the 21.5 million acres, which leaves approximately 30 applications that are located outside the 21.5 million acre region. Thus, it appears that most of the solar projects that are already undergoing environmental review are not located in the proposed SEZs, but are located within the 21.5 million acres. Selection of the 21.5 million acres alternative (which, as noted above, EPA does not support) would, presumably, enable those developers to move forward with their applications, and perhaps streamline the process for them. The Solar PEIS, however, does not describe what would happen to the existing ROW applications should they be located outside the selected alternative.

Recommendations:
The Final PEIS should clarify what the status of the existing ROW applications would be in the event an SEZ-based alternative is selected, including whether or not BLM would have any obligation to continue processing those existing applications located outside the proposed SEZs.

The Final PEIS should use maps to illustrate the locations of the active ROW applications, as well as the GIS layers representing the alternatives.

[15] In addition, the U.S. Environmental Protection Agency has launched the RE-Powering America's Land initiative to promote the siting of renewable energy production facilities on contaminated land; however, the types of contaminated properties it has identified are not likely to coincide substantially with BLM-administered public lands."

Consider allowing a limited number of ROW applications to proceed if they meet additional screening criteria

Another alternative which deserves further consideration would be to limit future utility-scale solar development applications to the reconfigured SEZs or newly defined SEZs, and to continue processing a selected subset of existing ROW applications within the 21.5 million acres that have been screened in accordance with the newly defined exclusion criteria and BLM's recently published IMs. This would enable BLM to meet, and likely exceed, all of the objectives of its proposed Solar Energy Program without leaving 21.5 million acres of land open for further development. It could also serve as an interim measure, particularly in California and Arizona, where there are other comprehensive renewable energy planning efforts underway, including the California Desert Renewable Energy Conservation Plan (DRECP) and the Arizona RDEP.

Recommendation:
The Final PEIS could consider an alternative that would allow some existing ROW applications to proceed after applying more robust screening criteria and seeking input from BLM field office staff. Preference should be given to disturbed and degraded sites and those areas with the fewest resource constraints.

Establish a process for designating new SEZs and identifying disturbed lands

The PEIS states that BLM worked closely with state and field office staff to identify the 24 proposed SEZs; however, the process and criteria used to select them is not clearly defined in the PEIS (pg. 2-10) – nor is it clear whether BLM anticipates designating additional SEZs in the future.

Recommendations:
The Final PEIS should elaborate on how each of the proposed SEZs was selected.

The Final PEIS should establish a process for identifying and designating newly defined SEZs using public input. The process for designating (or reconfiguring SEZs) should allow for meaningful public participation.

The Final PEIS should also establish a process for identifying disturbed, degraded, and contaminated sites that might be suitable for solar energy development. We believe that it is crucial to build a larger, more comprehensive inventory of these sites on public, private, and tribal land so that developers can also be directed to these sites in the future.

Information on distributed generation should be updated in the Final PEIS

In our scoping comments, EPA recommended that the PEIS address the feasibility of using residential and wholesale distributed generation,[16] in conjunction with increased energy

[16] Distributed generation is the use of small-scale power sources on-site that can also supply energy to a utilities distribution center. Examples include solar photovoltaic (PV) systems mounted on rooftops, commercial warehouses, or parking lots.

efficiency and conservation, as an alternative (September 2009). Alternatives incorporating distributed generation were dismissed in the Draft PEIS on the basis that promoting distributed generation would not enable BLM to meet its 'purpose and need' for the proposed agency action, which is to respond to federal orders seeking to promote renewable energy projects on public land. The federal order to which BLM is chiefly responding is the Energy Policy Act of 2005, which calls for 10,000 MWs of renewable energy on public lands by 2015. As discussed previously, the DOI will likely meet that goal in 2012. The Draft PEIS also states that this level of renewable energy generation (10,000 MW) cannot be achieved through distributed generation systems (pg. 2-24).

The California Renewable Energy Transmission Initiative (RETI) has already determined[17] that there is tremendous potential (up to 27,500 MW) associated with the development of small-scale[18] photovoltaic (PV) facilities located near existing substations in California. Recently, California's Governor Jerry Brown set a goal of bringing 12,000 MW of distributed generation and 8,000 MW of large-scale renewable projects to the grid by the end of 2020. Strategies for developing 12,000 MWs of distributed generation by 2020 include installing smaller systems (< 2 MW) on the roofs of warehouses, parking lot structures, schools, and other commercial buildings, and installing larger systems (up to 20 MW) on public and private property throughout the state.

Expanding distributed generation will help California meet its Renewable Portfolio Standard (RPS) of 30% by 2020. Sixteen states, including Arizona, Colorado, Nevada, New Mexico, and Utah have specific goals dedicated to expanding distributed generation. Arizona, for example, has an RPS of 15% by 2025; 30% of which must be obtained through distributed generation.

EPA recognizes that BLM is appropriately focused on dealing with existing ROW applications, streamlining permitting, and promoting utility-scale solar energy development on public lands. However, as a factor that could impact the scale and choice of alternatives proposed in the PEIS, distributed generation warrants further discussion within the alternatives analysis. Although the increased use of distributed generation systems may not replace the need for utility-scale systems, the extent to which distributed generation can contribute to meeting future energy needs provides important context that should inform BLM's and DOE's decision-making.

Recommendations:

The Final PEIS should present the most recent information on distributed generation in each of the six states, including policies, initiatives, RPSs and specific carve-outs designed to promote distributed generation.

The Final PEIS should discuss how distributed generation efforts in the six states could impact the scale and choice of alternatives proposed in the Final PEIS.

---

[17] See RETI Phase 1B Report at Internet site: http://www.energy.ca.gov/2008publications/RETI-1000-2008-003/RETI-1000-2008-003-F.PDF

[18] Small scale systems include those that are 1-20 MW in size, and 160 acres or less in size; 1,350 potential sites.

Impact of BLM's Recent Instructional Memoranda is not clear

According to BLM's IM No. 2011-061, released after the PEIS was published, lands specifically identified for solar (and wind) energy development in BLM Land Use Plans are classified as having "*Low Potential for Conflict*" – where timely or expedited authorizations are possible. EPA is concerned that, if BLM selects the Preferred Alternative and designates 21.5 million acres for solar energy development, projects located within this area would automatically be prioritized, based on the screening criteria mentioned above and new land use designations – without further analysis. We do not believe that sufficient analysis has been completed on the 21.5 million acres to justify that classification (*Low Potential for Conflict*) for projects sited in this area.

Recommendation:
EPA recommends that the Final PEIS discuss BLM's three recently published IMs (Nos. 2011-059, 2011-060, and 2011-061) in conjunction with the Solar PEIS, including whether lands identified within the Solar PEIS would be further categorized as *Low Potential for Conflict* on the basis of new land use designations, without further analysis.

Transmission Analysis

Transmission is a 'connected action' and should be thoroughly analyzed in the PEIS.

Access to electrical transmission facilities is a major factor in siting utility-scale solar facilities, and the availability of transmission capacity is an integral component of that access. Without factoring in available capacity, there is no way of knowing whether the power generated from a given solar facility can be brought to market, even if the facility is located close to an existing line. Nor are there any assurances that simply upgrading transmission lines will be enough to get the electricity to load centers. According to CEQ regulations, connected actions are actions that are closely related and, therefore, should be discussed in the same impact statement. Connected actions include actions that cannot or will not proceed unless other actions are taken previously or simultaneously (CFR 1508.25). In this case, the development of transmission facilities or capacity is a '*connected action*'[19] and as such, should be addressed in greater detail in the Final PEIS.

According to the Draft PEIS, BLM conducted a transmission constraint analysis in order to determine whether it should designate additional transmission corridors to facilitate utility-scale solar energy development. The PEIS concluded that the majority of lands with developable solar resources were not constrained from development[20] on the basis of the location of existing transmission lines (pg. 1-13). EPA is concerned that the transmission analysis, as presented in the PEIS, is too narrowly focused on proximity to existing transmission lines and designated

[19] Connected actions are actions that are closely related and, therefore, should be discussed in the same impact statement. Connected actions include actions that cannot or will not proceed unless other actions are taken previously or simultaneously (CFR 1508.25).
[20] Constrained from development was defined as being located more than 25 miles from an existing transmission line or designated corridor.

corridors. BLM does not appear to have taken a '*hard look*' at other important issues such as the available capacity on existing lines (i.e., the analysis assumed lines could be upgraded if needed), the costs associated with upgrading or building new transmission lines, environmental impacts of such actions, and the timing of new transmission and energy development projects.

EPA believes that new transmission facilities will likely be required in many, if not all, cases. For example, consider transmission in the Amargosa Valley SEZ. According to the PEIS, full build-out (80%) of the SEZ could result in 2,811 - 5,060 MW of power, but the only existing line nearby is a 138-kilovolt (kV) line. According to the PEIS, a 500-kV line could accommodate one 700 MW facility (pg. 11.1-3). In this case, substantial new transmission capacity would be required to bring electricity from the proposed Amargosa Valley SEZ to load centers. The location, size, impact, and cost of such infrastructure, including transmission upgrades, is unknown at this time.

Transmission issues must be resolved prior to the construction of any utility-scale solar energy facility. As a '*connected action,*' we consider the omission of these topics to be a serious flaw in the Draft PEIS. In the absence of a clear demonstration of adequate available transmission capacity to support solar projects within the area covered by the PEIS, EPA believes that development of additional transmission access and/or capacity is likely to be needed to support such projects.

Recommendation:
The Final PEIS should provide additional information on transmission within each of the SEZs including: 1) available capacity on existing lines; 2) costs associated with building new transmission lines or upgrading existing infrastructure; 3) potential environmental impacts associated with new transmission lines or upgrades; and 4) the timing and approximate cost of new transmission and energy development projects.

Tiering

Clear standards for determining the appropriate level of NEPA review for individual projects are needed to avoid unnecessary delays.

As is typical for a programmatic EIS, the PEIS states that NEPA analyses for site-specific proposals would tier to the PEIS. While acknowledging that it evaluated environmental effects over very broad geographic and time horizons, the PEIS also states that projects proposed in SEZs are expected to require '*limited*' additional environmental review since BLM has completed in-depth environmental analyses for the proposed SEZs as part of the PEIS. While this might be appropriate if, in fact, in-depth environmental analyses had actually been conducted for each SEZ, EPA questions the characterization of BLM's SEZ analyses as *"in-depth"* considering that surveys have not yet been completed for threatened or endangered species, aquatic resources, or cultural resources. Nor does it appear that the Draft PEIS preparers reviewed the EISs that have already been prepared for proposed projects located within the SEZ areas. In addition, EPA does not find that the Solar PEIS provides an adequate description of the

Affected Environment for the Preferred Alternative (21.5 million acres) or the No-Action alternative (99 million acres) – even on a programmatic level.

According to the PEIS, the level of subsequent, environmental analysis required under NEPA would be determined on a case-by-case basis by the BLM field office at the time a solar energy project application is received (pg. A-31). How the individual BLM field offices would make that determination remains unclear, as the PEIS does not elaborate on the mechanism, screening criteria, or thresholds that will be used by BLM field offices to distinguish what level of environmental analysis is necessary.

In an effort to better understand how BLM distinguishes between the need for an Environmental Assessment (EA), EIS, or Determination of NEPA Adequacy (DNA), we consulted BLM's NEPA Handbook (Handbook). The Handbook[21] states that one should evaluate the broader NEPA document to determine if it sufficiently analyzed site-specific effects and considered the current proposed action before one tiers to a NEPA document or uses a DNA. (Note: The PEIS specifically states that it did not assess site-specific issues associated with any future individual solar energy project). The Handbook also states that an EA may be prepared for an action with significant effects, whether direct, indirect, or cumulative, if the EA is tiered to a broader EIS which *fully analyzes* those *significant effects* (pg. 27 - Handbook). EPA does not believe that the Draft PEIS fully analyzes the significant effects associated with utility-scale solar energy development; instead, the Draft PEIS *qualitatively* discusses the *range* of *possible impacts* on resources present in the six-state study. Consequently, we believe it will be necessary to prepare tiered EISs rather than tiered EAs, even in the SEZs, for any solar project with significant impacts. The need for an EIS, rather than an EA, might be reduced if the project is located on disturbed or degraded lands or in an area without significant resource constraints.

We recognize that BLM would like to use the tiering process to shorten the environmental review process and streamline permitting. Whether or not this will be successful will depend greatly on the extent to which BLM succeeds in identifying and characterizing appropriate SEZs with low risks of resource conflicts and disturbed, degraded, or contaminated sites. More in-depth analyses and field-level surveys may be needed to make that determination in advance.

Recommendations:

EPA strongly recommends that BLM elaborate on the process that individual BLM field offices will use to assess whether an EA or EIS will be required for subsequent projects, and address this topic in greater detail and with greater transparency in the Final PEIS.

Consistent standards for determining the appropriate level of NEPA review for individual projects should be identified and implemented to ensure that tiering is done properly.

---

[21] See internet address:
http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.24487.File.dat/h1790-1-2008-1.pdf

Reasonably Foreseeable Development Scenario (RFDS)

The RFDS may underestimate the amount of solar energy developed in the next 20 years.

The Solar PEIS utilizes the RFDS to identify the range of potential impacts as well as relevant design features. Under the RFDS, up to 24,000 MW on 214,000 acres of BLM-administered lands and 8,000 MW on 71,000 acres of non-BLM lands will be developed (pg. 2-20). The Draft PEIS states that the levels are likely over-estimates of solar development through 2030 (pg. 2-21). EPA is concerned, however, that the RFDS may actually under-estimate the amount of solar energy development on both BLM-administered land and private land during the next 20 years. According to the PEIS, currently active applications for ROW authorizations already total in excess of 74,000 MW (pg. 2-22). We recognize, of course, that not all ROW applications will result in authorizations, nor will all authorizations culminate in actual solar energy facilities, yet 3,572 MW of solar energy were approved on BLM-administered lands last year, and we anticipate that at least 1,500 MW of solar energy will be approved on BLM-administered lands in 2011.

Furthermore, there is rapid deployment of renewable energy on private land, particularly in California and Arizona. Kern County and Imperial County are *each* currently processing applications for close to 3,000 MW of renewable energy on private land in California. Moreover, there are several other utility-scale solar energy projects currently proposed on private land, including a 5,000 MW project[22] in California's Central Valley that targets 30,000 acres of disturbed agricultural lands; a 1,200 MW project[23] proposed in Mojave County, Arizona; and a 700 MW project[24] proposed in Maricopa County, Arizona. Given the apparent underestimation of solar development likely to occur within the next 20 years and its associated acreage, EPA is concerned that the potential environmental impacts – in particular, cumulative impacts – may also be underestimated in the Draft PEIS.

Recommendations:

Given the explosive growth of the market and general concern about the magnitude, extent, and long-term nature of potential environmental impacts, EPA recommends that the Final PEIS elaborate on what action, if any, BLM would take if the RFDS estimates are found to be too low. For example, if the RFDS is found to underestimate the amount of solar energy development on private land, would the amount of development on BLM-administered lands be curtailed to avoid surpassing the RFDS, based on the PEIS?

---

[22] The Westlands Solar Park study area is comprised of approximately 30,000 acres of disturbed agricultural land that has been rendered unusable by salt buildup from long-term intensive irrigation. This land is targeted for renewable energy development and is located within the Westlands Water District in western Fresno and Kings Counties.

[23] The Sterling Solar Generating Facility is a 1,200 MW project utilizing SunCatcher technology that is proposed in Mojave County, Arizona - supported by Needle Mountain Power, LLC. See internet address: http://needlemountainpower.com/project-description/

[24] The Mesquite Solar Project is a 700 MW project utilizing PV technology that is proposed in Maricopa County, Arizona. See internet address: http://www.greentechmedia.com/articles/read/Suntech-to-Supply-800000-PV-Panels-for-Sempras-Mesquite-1/

If subsequent NEPA documentation would be required, the Final PEIS should discuss what type of documentation would be necessary in the event the RFDS is surpassed.

Cumulative Impacts

Conclusions that cumulative impacts will be minor are not well supported.

Resources in the desert are particularly vulnerable to utility-scale solar energy development. Despite a widespread perception that our deserts are relatively pristine and secure, many desert species, natural communities, and ecological processes are already severely stressed by a myriad of human-induced changes to the landscape. The Independent Science Advisors for the California DRECP[25] (Science Advisors) report that additional stress from utility-scale solar energy development, in conjunction with a changing climate, likely portends further ecological degradation and the potential for species extinctions. Ecosystem processes at the landscape level have traditionally been overlooked, but are now considered among the resources most likely to be affected cumulatively by multiple activities. The Solar PEIS states that, for desert ecosystems, complete ecosystem recovery may require up to 3,000 years (pg 5-85).

To evaluate cumulative impacts, one must determine the condition of the resource and the time required for the resource to recover from the impact of the proposed action. Since cumulative impacts often occur at the landscape or regional level, thresholds should be developed at similar scales whenever possible. Indicators at a landscape level can be used to develop thresholds as well as assess the condition of the environment. The Solar PEIS, however, only presents a cursory analysis of cumulative impacts for various resources, usually concluding that impacts will be small to minor based on appropriate mitigation. In most cases, little or no evidence is presented in support of these conclusions, nor have thresholds been identified to determine significance. In many instances, relevant topics that should have been discussed in greater detail have been neglected altogether.

Recommendation:
Biological thresholds should be established to enable BLM and DOE to direct developers to areas with the fewest resource constraints.

Soil resources

The PEIS states that overall foreseeable cumulative impacts on soil would be small to moderate with appropriate mitigation in place (pg. 6-92). In contrast, the Science Advisors recommend that every effort be made to avoid and minimize any new disturbance of soil surfaces in the siting, design, construction, and maintenance of any and all project features because ecological impacts of projects that alter surficial geology should be presumed permanent. Furthermore, the Science Advisors recommend that projects be sited in areas where they will not disrupt eolian (wind-driven) processes, such as active sand dunes. Sand dunes are part of the larger eolian systems of the California deserts and sustain alarge number of rare,

[25] Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan, DRECP-1000-2010-008-F, October 2010.

endemic species, particularly on their margins. The PEIS provides very little information on eolian processes except to note that studies may be needed to determine whether the construction and operation of a solar facility would affect the eolian processes that maintain nearby sand dunes. The PEIS also provides scant information on endemic species associated with eolian systems that would likely be impacted by solar development. For example, the Riverside East SEZ contains an active sand transport corridor that supports the endemic Mojave fringe-toed lizard.[26] The Solar PEIS, however, states that the nearest known occurrence of the species is about 25 miles north of the SEZ (pg. 9.4-173).

Recommendations:
The Final PEIS should provide additional information on wind-driven systems, sand transport areas, and endemic species associated with them. Projects should be sited in areas where they will not disrupt eolian systems, including sand source transport corridors and zones.

Every effort should be made to avoid and minimize any new disturbance of soil surfaces in the siting, design, construction, and maintenance of any and all project features.

Water resources

For many resources, it seems doubtful that large-scale solar energy development can occur without significant impacts. According to the PEIS, the cumulative impacts on water supplies could range from small to moderately high, but impacts will be constrained by the limited availability of water rights and via oversight by state and local water authorities. Large drawdowns due to solar energy demands are not expected under the RFDS, given state and local oversight of groundwater supplies and fully allocated supplies in most regions (pg. 6-94). Groundwater, however, is over-appropriated in many SEZs, including Riverside East and Amargosa Valley. Groundwater withdrawals for construction and operation at full build-out capacity far exceed the available groundwater supply in both SEZs.

For the Riverside East SEZ, the PEIS notes that further characterization of the groundwater safe yield for the Chuckwalla Valley and Palo Verde Mesa basins is necessary prior to the evaluation of impacts associated with project-specific groundwater withdrawals (pg. 9.4-77). For the Amargosa SEZ, the basin is already over allocated and groundwater withdrawals are already limited due to restrictions protecting water rights at Devils Hole. General design features state that developers will be required to conduct a detailed hydrologic study that demonstrates their clear understanding of the local surface and groundwater hydrology. We note, however, that it is currently impossible to model the extent to which groundwater pumping will affect water levels at Devils Hole and Ash Meadows National Wildlife Refuge (NWR).[27] Consequently, we think that it is highly unlikely that full build out could occur in either SEZ without significant impacts to groundwater resources and groundwater-dependent species.

---

[26] See internet address: http://www.energy.ca.gov/2010publications/CEC-700-2010-007/CEC-700-2010-007.PDF

[27] Draft Environmental Impact Statement for the Amargosa Farm Road Solar Energy Project. See internet address: http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/las_vegas_field_office/energy/amargosa_farm_road3.Par.28872.File.dat/Chapter%204%20-%20Environmental%20Effects.pdf

Desert Tortoise and other Threatened and Endangered Species

EPA is particularly concerned about potential impacts to desert tortoise, which inhabit 10 SEZs, in a three-state region (California, Nevada, and Arizona). The Solar Energy Program has the potential to cause direct mortality to the species and significantly fragment its habitat. The survival and recovery of some species, such as the desert tortoise, is likely to depend on the protection of core habitat areas, as well as key linkages, necessary to maintain population connectivity. According to the PEIS, the overall impact to desert tortoise is considered moderate because of the amount of potentially suitable habitat for this species in the region.

Although the PEIS states that translocation is widely accepted as a useful strategy for the conservation of the desert tortoise, there are serious concerns associated with this practice (pg. 11.1-193). The mortality of desert tortoises translocated in the Fort Irwin Expansion project is estimated to be about 50 percent. The FWS considers translocation to be an *experimental measure* that requires additional research and monitoring based on both general and site-specific conditions. Avoidance of occupied habitats and areas important to population connectivity should be the primary approach, rather than translocation. The FWS has identified core habitat areas and corridors that are important for the survival of this species, including connectivity corridors necessary to maintain genetic flow between desert tortoise populations in the Mojave. To avoid further impacts – direct, indirect, and cumulative – to this species, solar energy development should not be permitted in these areas.

Although concepts such as habitat connectivity are discussed in the Solar PEIS, it remains unclear to what extent screening was done to ensure that habitat linkages and high-value habitat will be preserved. Areas that should be excluded from solar energy development extend beyond formally designated critical habitat to also include important habitat linking populations. In addition to desert tortoise, other species that may need special consideration include the Mojave ground squirrel, flat-tailed horned lizard, Mojave fringe-toed lizard, and bighorn desert sheep.

Recommendations:

The Final PEIS should clarify to what extent screening was done to ensure that high-value habitat, habitat linkages, and areas important to population connectivity have been preserved. Impacts to intact ecosystems should be avoided or minimized.

BLM should work closely with FWS, state fish and game agencies, and other ecosystem experts to incorporate additional exclusion criteria that will protect desert tortoise populations, habitat, and connectivity corridors necessary to maintain genetic flow between desert tortoise populations in the Mojave.

Translocation should not be presented as the standard measure to minimize impacts to desert tortoises – rather the Solar PEIS should characterize it as an *experimental* option to be employed only after all avoidance and minimization measures have been fully evaluated and implemented through reconfiguring or relocating projects.

If complete avoidance is not feasible, projects should be located at low-density sites that would necessitate the translocation of as few tortoises as possible, preferably within their home range.

BLM should ensure that adequate habitat is maintained and habitat corridors remain intact for other species at risk, including the Mojave ground squirrel, flat-tailed horned lizard, Mojave fringe-toed lizard, and bighorn desert sheep.

Design Features

Design features fall short of the identified mitigation needs and measures

On a qualitative level, the PEIS provides a good general description of direct and indirect impacts associated with solar energy development for several resources in Chapter 5 (*Impacts of Solar Energy Development and Potential Mitigation Measures).* Potential mitigation measures that could be used to avoid, eliminate, or minimize impacts from solar energy development are identified in this chapter; however, the gap between the potential mitigation measures that are identified and what BLM subsequently designated as design features is considerable, and we believe that, as written, the design features will not be sufficiently effective to minimize adverse impacts to sensitive resources in the surrounding landscape at the project level.

Language used to describe design features needs to be strengthened.

The language used to describe the design features is overly broad, and may be interpreted or applied inconsistently. The widespread use of phrases such as '*shall be avoided whenever possible*', '*avoided to the extent practicable*', and '*shall be avoided when possible*' is likely to limit the effectiveness of the proposed design features, and increases the risk that they will not be applied consistently. We encourage BLM and DOE to strengthen the language used to describe the design features by offering more stringent stipulations to developers.

In some instances, the description of design features is inconsistent among the resources addressed. For example, the design features for soil resources state that land disturbance (including crossings) in natural drainage systems and groundwater recharge zones, specifically ephemeral washes and dry lake beds, is to be avoided, and *solar facilities or components (e.g. heliostats, panels, dishes, and troughs) shall not be placed in natural drainage ways* (pg. A-41). The language used to describe the design features for water resources, however, is not as direct. It states that all structures related to the solar energy facility shall be sited in locations that *minimize impacts*.....project developers *shall plan to avoid impacts*....(*any unavoidable impacts would be minimized*) (pg. A-47). Such inconsistencies in the PEIS may result in the application of inconsistent standards when interpreting design features.

For example, a developer that utilizes parabolic trough technology could tell a BLM field office that it has sited a project in such a way as to minimize impacts, but cannot avoid certain ephemeral washes to a greater extent because parabolic trough technology requires complete

grading of the soil surface, and troughs must be situated in a set configuration that limits options to avoid washes. If the parabolic troughs were placed across ephemeral washes, would BLM agree that the developer has minimized impacts (based on that technology)? Or would BLM advise the developer that it cannot site the project in that area because it wants to place components in drainage ways? As written, the Draft PEIS could be interpreted either way. If the descriptions of design features are not clear and consistent within the PEIS, it is highly unlikely that there will be a uniform degree of compliance – between projects, between technologies, or between the BLM field offices.

Recommendations:
BLM and DOE should strengthen the language used to describe the design features by offering more stringent stipulations to developers and ensuring that the design features, as presented in the PEIS, are consistent among the resources addressed.

BLM and DOE should limit the use of qualifying phrases such as '*shall be avoided whenever possible*' and '*avoided to the extent practicable*' in the design features.

Aquatic Resources

Planning-level assessment of aquatic resources in the SEZs is needed

The Solar PEIS provides very limited information on the type and distribution of aquatic resources within the SEZs. As described in Section M.11.2.2, assessments were made using the U.S. Geological Survey (USGS) National Atlas (Atlas) and National Wetlands Inventory (NWI) maps, thereby identifying only gross aquatic features in the SEZ regions (pg. M-27). Approximately seventy percent of most watersheds are smaller systems not mapped by the Atlas or NWI due to scale. Of significant concern is the following statement in the EIS,

> "*Many of the wetland and surface water features in the Southwest are washes and dry lakes that have no connection to perennial surface waters and contain water for only short periods following rainfall. Therefore, although map data indicated the presence of an intermittent surface water or wetland feature within the SEZ region, it was not considered to be aquatic habitat if hydrologic data indicated water was rarely, if ever, present.*"

Based on this statement, it appears aquatic resources were arbitrarily removed from this analysis if water was rarely present. Ephemeral and intermittent streams make up over 81% of streams in the arid and semi-arid Southwest (Arizona, California, Colorado, Nevada, New Mexico, and Utah).[28] Ephemeral washes, playas, and other aquatic resources within the desert perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. Many plant populations are dependent on these aquatic

[28] See Internet address: http://azriparian.org/docs/arc/publications/EphemeralStreamsReport.pdf

ecosystems and adapted to their unique conditions. The evaluation of these aquatic resources should not be discounted.

Ideally, to facilitate tiering of project-level environmental reviews to the PEIS, a jurisdictional determination (JD) would be completed for each SEZ; however, we recognize that this would be a resource-intensive undertaking. At a minimum, EPA recommends that a *planning level delineation of aquatic resources* be performed within each of the SEZs. This may not disclose all aquatic resources, but it would provide additional information on the presence of aquatic resources within the study area subject to NEPA that may be subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA). A proposed project's impacts to waters subject to federal jurisdiction could result in significant degradation, as defined at 40 CRF Part 230 (Guidelines).

Recommendations:
EPA recommends that a *planning level delineation of aquatic resources* be performed within each of the SEZs. This would include the identification of aquatic resources using aerial photography, existing mapping data available, and field verification. The results of such delineations should be included in the Final PEIS.

The Final PEIS should clearly explain the circumstances under which a formal site-specific JD would be required and at what point in the project planning process it would be conducted.

The PEIS should describe information necessary to comply with CWA Section 404.

Pursuant to Section 404 of the CWA, discharge of dredged or fill material to waters of the United States (waters of the U.S., jurisdictional waters, waters) requires a Section 404 permit issued by the Corps. In order to comply with the 404(b)(1) Guidelines, the applicant must determine the *geographic extent of waters* and comprehensively evaluate a *range of alternatives* to ensure that the *"preferred"* alternative is the *Least Environmentally Damaging Practicable Alternative* (LEDPA). Identification of the LEDPA is achieved by performing an *alternatives analysis* that estimates the direct, indirect, and cumulative impacts to jurisdictional waters resulting from a set of on- and off-site project alternatives. In particular, EPA would like to clarify that the alternatives analysis that is required for a Section 404 permit differs from the alternatives analysis required under NEPA. The Section 404 alternatives analysis must include on-site and off-site alternatives, which may include private land, BLM-administered land, and/or disturbed sites. Project alternatives that are not practicable and do not meet the project purpose are eliminated. The LEDPA is the remaining alternative with the fewest impacts to aquatic resources, so long as it does not have other significant adverse environmental consequences. Pursuant to the Guidelines, *mitigation* of project impacts begins with the *avoidance* and *minimization* of *direct*, *indirect*, and *cumulative impacts* to the aquatic ecosystem, followed by *compensatory measures* if a *loss of aquatic functions and/or acreage* is unavoidable. Compensatory mitigation is, therefore, intended only for unavoidable impacts to waters after the LEDPA has been determined. If a Section 404 permit is required, EPA will review the project

for compliance with the Guidelines; the burden to demonstrate compliance with the Guidelines rests with the permit applicant.

Some types of technologies may be more appropriate for areas with jurisdictional waters. For example, dish technologies and PV systems allow for greater flexibility in siting layout, as compared to parabolic trough systems, which generally require complete grading and leveling of the site and re-routing of the washes.

Recommendations:
The Final PEIS should provide a more detailed discussion of issues uniquely related to aquatic resources that will need to be addressed if waters of the United States are present at a project site.

The Final PEIS should clarify that the CWA Section 404 issues mentioned above should be addressed by projects tiered to the PEIS as early in the ROW application process as possible to ensure that these projects, as proposed, are permittable under the CWA. Completing this type of analysis initially should result in a more efficient process in the long term.

If jurisdictional waters are located on site, the Final PEIS should discuss what this means in terms of subsequent environmental documentation. For example, the Final PEIS should state that, if the developer needs a CWA Section 404 permit, a project-level EIS, rather than an EA may be required. By incorporating this information into the Final PEIS, BLM will better inform potential applicants.

Design features should apply to all aquatic resources, regardless of jurisdiction

It is unclear whether BLM will consistently apply the proposed design features to protect all aquatic resources or only those subject to CWA Section 404. EPA recommends that impacts to aquatic resources, particularly in the desert, be minimized regardless of jurisdiction. We are also concerned that the language used to describe the design features is subject to interpretation, and may be interpreted or applied differently, depending on the technology, the applicant, and the BLM field office.

For example, the general siting and design criteria in Section A.2.2.10.1 state that, "A*ll structures related to the solar energy facility shall be sited in locations that* ***minimize impacts*** *on surface water bodies, ephemeral washes, playas, and natural drainage areas (including groundwater recharge areas*" (A-46). Furthermore, "*Project developers shall* ***plan to avoid impacts*** *on existing surface water features, including streams, lakes, wetlands, floodplains, intermittent streams, playas, and ephemeral washes/drainages (****any unavoidable impacts would be minimized****) of the development and in nearby regions according to*:

- All sections of the Clean Water Act (CWA), including Sections 401, 402, and 404 addressing licensing and permitting issues;" (pg. A-47).

Based on the description in the PEIS, there are no assurances that implementation of design features will be consistently applied to renewable energy projects – unless they are subject to the provisions of CWA Section 404. Using this regulatory program, avoidance and minimization of impacts to aquatic resources to the maximum extent practicable is achieved through a rigorous alternatives analysis that evaluates onsite and offsite alternatives, renewable energy technologies, and alternative site design. It is not clear what level of protection, if any, would be afforded to waters not subject to CWA Section 404 that are, nonetheless, integral to desert ecosystems and hydrology.

For example, consider two projects that EPA reviewed last year, the Calico Solar Project (CSP) and the Imperial Valley Solar Project (IVSP) – two nearly identical projects proposed by the same applicant, utilizing the same type of technology (SunCatcher). The CSP site included 456 acres of desert streams that were not subject to jurisdiction under Section 404 of the CWA; therefore, the proposed fill of 258 acres went unchallenged. In contrast, the IVSP's 881 acres of desert streams were subject to Section 404 of the CWA, and the proposal to fill 177 acres was reduced to 38 acres through the Section 404 review process and revisions to the project scope and design.

To effectively protect and manage the desert's fragile and invaluable ecosystems, the distribution of aquatic resources on a project site – regardless of CWA jurisdictional status – should be fully disclosed by an applicant in its ROW application for renewable energy development on public lands. If BLM's approval criteria were modified to incentivize avoidance of aquatic resources, e.g. by prioritizing review of, and giving preference to, projects on sites selected for minimal presence of aquatic resources, BLM could programmatically shift important renewable energy development toward more disturbed lands with fewer natural resources conflicts.

Recommendations:

EPA recommends that the language used to describe the design features, particularly as it relates to aquatic resources, be strengthened and made compulsory for all projects, to ensure consistency and accountability in protecting aquatic resources whenever and wherever it is practicable to do so.

EPA recommends that BLM's approval criteria be modified to incentivize avoidance of aquatic resources, e.g. by prioritizing review of, and giving preference to, projects on sites selected for minimal presence of aquatic resources.

Discuss geologic flood hazard class areas

The Solar PEIS does not provide information on geologic flood hazard class areas within the proposed SEZs. Flood hazards associated with alluvial fans are particularly hard to characterize using conventional methods. Flooding on active alluvial fans may consist of high velocity, sediment laden floodwater that may follow multiple paths simultaneously; flow paths may shift position during even low or moderate flows. Flooding can also occur as broad, largely unconfined shallow flow swaths that inundate large areas. These areas should be avoided if at all

possible. Additional information on these maps can be found in the following scientific article[29] describing the flood hazard areas.

Recommendation:
EPA recommends that new geologic flood hazard class maps be prepared for those SEZs containing alluvial fans so that the areas of highest risk can be avoided if possible.

Wetland Protection – Colorado and Utah

Several SEZs in Colorado and Utah have wetlands present within the SEZ boundaries, closely surrounding the boundary, or within proposed transmission corridors (e.g., Fourmile East and Los Mogotes East SEZs). EPA is concerned that land disturbance activities may impact wetlands within the SEZs. EPA is particularly concerned regarding wetland protection in the Antonito Southeast SEZ, which contains three wetlands, including Alta Lake. This SEZ also has extensive wet meadow areas within the proposed transmission line corridor. Site specific design criteria are critical for this SEZ to protect these valuable resources from direct and indirect impacts. If unavoidable impacts are anticipated, a conceptual mitigation plan is also needed that identifies the following: (1) an assessment of the functions and values of the wetlands that would be impacted, (2) the conceptual approach on how mitigation site selection will be carried out, (3) the number of acres of proposed mitigation, and (4) a basic discussion of the type of mitigation that will take place. Note: This is a subset of the "12 elements" of the mitigation plan in the Mitigation Rule that EPA believes can be appropriately defined during the programmatic NEPA stage (40 CFR 230).

Recommendations:
The Final PEIS should describe how impacts to wetlands will be avoided during land disturbance activities. The Final PEIS should include specific design criteria for wetland protection that would be applied to all solar energy projects.

EPA recommends complete avoidance of wet meadows in the Antonio Southeast SEZ – this should be incorporated as a SEZ site-specific design feature.

Water Consumption – Clarity needed on feasibility of wet cooling - Colorado and Utah

The Draft PEIS identifies wet-cooling technologies as being infeasible in all of the Utah SEZs as well as three of four Colorado SEZs (the exception being De Tilla Gulch). It is unclear from the Draft PEIS why wet-cooling technologies incorporating water conservation measures were determined to be feasible for the De Tilla Gulch SEZ. Water resources are over-appropriated in the De Tilla Gulch area. Further, the SEZ is located within a significant groundwater recharge area for Salinas Valley aquifers. The large water requirements associated with wet-cooled technology may also have the potential to impact groundwater recharge if obtained from surface water sources.

---

[29] For example, see *Using Geology to Improve Flood Hazard Management on Alluvial Fans - An Example from Laughlin, Nevada,* Journal of the America Water Resources Association, Vol. 41, Issue 6, pgs. 1,431-1,447, December 2005.

EPA concurs with the assessment in the Draft PEIS that wet-cooling options would not be feasible in most Colorado and Utah SEZs. This is particularly true for those SEZs where excessive withdrawals have already resulted in lowered groundwater tables, or where subsidence associated with lowered groundwater has been observed (i.e., Escalante Valley and Milford Flats South). It is unclear whether the statement of infeasibility implies that BLM will not approve projects utilizing wet-cooling technologies, or whether it is anticipated that project proponents will not select those technologies. Given the substantial potential for environmental impacts from large water withdrawals in these SEZs, as well as the documented difficulty in obtaining water rights, the Final PEIS should clearly identify SEZs where wet-cooling technologies will not be allowed. This stipulation should be documented in the ROD.

Recommendations:

The Final PEIS should clarify whether BLM will approve projects utilizing wet-cooling technology if the SEZ-specific design features states that wet-cooling technologies are infeasible.

The Final PEIS should clearly identify SEZs where wet-cooling will not be allowed.

If wet-cooling is considered an option for the De Tilla Gulch SEZ, the Final PEIS should clearly identify the level of groundwater withdrawal that can be maintained without adversely affecting groundwater levels in the area.

Groundwater Withdrawal – Quantify groundwater withdrawal allowed in each SEZ

EPA is concerned about the long-term availability of groundwater in many SEZs, considering the quantities needed for maximum build out and the potential impacts associated pumping groundwater in these basins. Where surface water bodies are connected, including springs, lowering the water table may result in reduced flow, or could even eliminate surface flows in springs or rivers. Surface water impacts may include reduction of flow volume and duration in some seasonal water courses, as well as permanent water sources. Lowering of the water table may also cause other wells, such as those for domestic supply, to dry up and need to be drilled deeper, and may result in long term potential for subsidence. Lowering of the water table below the ability of plants to reach it can also result in significant impacts.

Recommendation:

The Final PEIS should clearly identify the quantity of groundwater withdrawal allowable in each SEZ, and describe impacts associated with lowering of the water table.

Groundwater Withdrawal in the Amargosa Valley SEZ

EPA is particularly concerned about the long-term availability of groundwater in the Amargosa Valley SEZ, given that future appropriations have already been curtailed. The SEZ is located in the Amargosa Desert Hydrographic Basin, a region that has already experienced rapid water level declines. Several springs of regional importance are located nearby in the Ash

Meadows NWR, including Devils Hole, a 40-acre detached unit of Death Valley National Park. Devils Hole provides habitat for the only naturally occurring population of the endangered Devils Hole Pupfish. Ash Meadows NWR is home to 24 species of plants and animals found nowhere else in the world (pg. 11.1-21) including 11 groundwater-dependent species that are listed under the Endangered Species Act (ESA) (pg. 11.1-179).

As noted in the PEIS, the status of water supplies has been a major concern and a focus of litigation. Consequently, the Nevada State Engineer has declared the basin as over-appropriated and has stated that new water right applications in the Amargosa Desert Basin would be denied, as would any application seeking to change an existing point of diversion closer to Devils Hole (pg. 11.1-23). Although the design features listed in the Solar PEIS call for developers to conduct hydrologic studies, it is currently not possible to model the extent to which continued groundwater pumping will impact water levels at Devils Hole and Ash Meadows NWR. Regional groundwater models indicate that groundwater levels at Devils Hole are steadily declining and may reach critical levels in the near future. Small declines in spring discharge or changes in water temperature or water chemistry resulting from groundwater withdrawals in the basin may affect threatened and endangered species at Ash Meadows NWR.

Recommendation:
Given the over-appropriation of groundwater resources and the presence of special-status species, particularly in Ash Meadows NWR, EPA recommends that BLM consider eliminating this SEZ, or restricting the amount of development in this SEZ and setting restrictions on the type of solar technology permitted, such as allowing only those technologies that consume the least amount of water, such as PV systems.

Air Quality

National Ambient Air Quality Standards (NAAQS), attainment designations, emissions data, mitigation measures, and general conformity – Arizona, California, and Nevada

The Draft PEIS includes basic information on the NAAQS, attainment designations, and emissions data. This information changes periodically, though, and data are now out-of-date for some items[30] in California, Arizona, and Nevada. Also, some of the potential air mitigation measures described in both Section 5.11 and Appendix A are not specific, given that the project locations and conditions have not been refined. Although the concept of general conformity was documented in the Draft PEIS, the document did not describe how a general conformity applicability analysis will be conducted.

[30] For example, the PEIS shows that Las Vegas, NV is situated in a "nonattainment area" for CO (pg. 4-127); however, this area is now classified as in attainment with a maintenance status. Furthermore, the PEIS shows that West Central Pinal County in Arizona is listed as "attainment" for PM2.5; however, as of 2006, this area is listed as "nonattainment" status.

Recommendations:
The Final PEIS should include current information on NAAQS,[31, 32] attainment designations,[33] nonattainment designations,[31] and emissions data[34] and indicate how BLM will ensure compliance with all applicable state and local air quality regulations.

The Final PEIS should demonstrate how BLM will ensure that applicable emissions from both the construction and operational phases of solar development projects will conform to the approved State Implementation Plans (SIPs) and not cause or contribute to violations of the NAAQS, in accordance with the final general conformity rule (see 75 FR 17254, April 5, 2010).

The Final PEIS should include a detailed description of how a general conformity applicability analysis will be conducted.

EPA recommends that all air mitigation measures be as detailed as possible in the project specific plans.

Adverse impacts to air quality – Colorado, Utah, Arizona, California, and Nevada SEZs

EPA is concerned regarding the adverse impacts to air quality modeled for the construction phase in all Utah and Colorado SEZs and one Arizona SEZ. We are particularly concerned in those cases where exceedances of the PM_{10} NAAQS are modeled at residences near to the SEZ:

- Antonito Southeast (Colorado) – 230 $\mu g/m^3$ at nearest residence;
- De Tilla Gulch (Colorado) – 200 $\mu g/m^3$ at nearest residence;
- Los Mogotes East (Colorado) – 200 $\mu g/m^3$ at nearest residence;
- Wah Wah Valley (Utah) – 353 $\mu g/m^3$ at nearest residence; and
- Brenda (Arizona) – 175 $\mu g/m^3$ at nearest residence.

We are also concerned regarding adverse impacts to Class I areas from construction in four Colorado SEZs, two California (SEZs), and four Nevada (SEZs):

- Antonito Southeast (Colorado) – 114% of the Prevention of Significant Deterioration (PSD) increment for PM_{10} at Wheeler Peak Wilderness Area (WA);
- De Tilla Gulch (Colorado) – 137% of the PSD increment for PM_{10} at Great Sand Dunes WA;
- Fourmile East (Colorado) – 427% of the PSD increment for PM_{10} at Great Sand Dunes WA;

[31] For info on NAAQSs, see internet address: http://epa.gov/air/criteria.html#1
[32] For info on NAAQAs and nonattainment designations, see internet address: http://www.epa.gov/oaqps001/greenbk/index.html
[33] For info on attainment designations, see internet address: http://www.epa.gov/region9/air/maps/index.html
[34] For info on emissions data, see internet address: http://www.epa.gov/ttnchie1/eiinformation.html and http://www.arb.ca.gov/ei/emissiondata.htm

- Los Mogotes East (Colorado) – 131% of the PSD increment for PM_{10} at Great Sand Dunes WA;
- Iron Mountain (California) – 354% of the PSD increment for PM_{10} at Joshua Tree National Park (NP);
- Riverside East (California) – 5,200% of the PSD increment for PM_{10} at Joshua Tree NP;
- Amargosa Valley (Nevada) – 314% of the PSD increment for PM_{10} at John Muir WA;
- Dry Lake (Nevada) – 180% of the PSD increment for PM_{10} at Grand Canyon NP;
- East Mormon Mountain (Nevada) – 135% of the PSD increment for PM_{10} at Zion NP; and
- Millers (Nevada) – 109% of the PSD increment for PM_{10} at John Muir WA.

We appreciate the comprehensive list of potentially applicable mitigation measures provided in Chapter 5 of the Draft PEIS, and agree that those measures, if appropriately designed and implemented, could be effective in reducing fugitive dust emissions; however, the discussion in the Utah and Colorado SEZ chapters of the Draft PEIS is insufficient to assess whether mitigation will reduce adverse impacts to acceptable levels. In Chapter 5, it is indicated that project- and location-specific Dust Abatement Plans would be prepared for all solar facilities (pg. 5-153). Given the predicted adverse impacts to residents and Class I areas, the PEIS should include Dust Mitigation Plans for individual SEZs in the PEIS.

Recommendation:
Where adverse air quality impacts have been predicted, additional information regarding Dust Mitigation Plans for individual SEZs should be included in the Final PEIS. The anticipated effectiveness for reduction of predicted impacts to health of local residents or air quality in Class I areas should also be discussed.

Fugitive dust, dust control measures, and cumulative impacts – Colorado and Utah

Fugitive dust is not listed among the significant emission sources for operations impacts in Utah or Colorado SEZs, yet the Draft PEIS indicates that re-establishment of vegetation in temporarily disturbed areas would be difficult, particularly in the arid environments of Utah SEZs. In Chapter 5, the Draft PEIS notes that areas maintained to be free of vegetation during operations will use the same dust control measures listed for the construction phase. Because re-establishment of vegetation will be difficult, EPA is concerned that the dust control measures required to protect air quality during operations in Colorado and Utah SEZs may be more extensive than currently indicated in the Draft PEIS. Water consumed for dust control throughout the life of the solar energy projects is also a concern in arid western states, where water resources are already over-appropriated.

Recommendations:
The Final PEIS should include additional discussion of soil stabilization techniques that will be used during the operations phase, including information on specific Dust Abatement Plans for operations in Colorado and Utah SEZs.

The Final PEIS should provide estimates of water consumption information for dust control during operations.

EPA is concerned regarding cumulative impacts of fugitive dust on Class I areas or more broadly across the Rocky Mountain West. As noted above, three Colorado SEZs may cause substantial PM_{10} impacts to the Great Sand Dunes WA. It is not clear from the Draft PEIS whether the possible cumulative impact of simultaneous construction in more than one of these SEZs was considered. Similarly, there may be Class I areas for which construction in one SEZ did not result in modeled adverse impacts, but, due to their proximity to multiple SEZs, may be impacted by concurrent construction in two or more. Additionally, long distance transport of fugitive dust from the Colorado Plateau or Utah Great Basin is a regional concern. Long distance transport of fugitive dust from SEZs may contribute to dust on snow events in the mountains. A recent study found that dust on snow in the Upper Colorado River Basin robs the Colorado River of about five percent of its water each year, enough to supply Los Angeles for 18 months.[35]

Recommendations:
The Final PEIS should clearly indicate the potential for cumulative impacts of solar energy development on Class I areas.

The Final PEIS should include the long distance transport of fugitive dust from SEZs and the corresponding impact of that dust on snow events in the mountains within the cumulative impact analysis.

Integration of the California DRECP and the Arizona RDEP with the Solar PEIS

The California DRECP, scheduled for completion in December 2012, is intended to advance State and federal conservation goals in the desert regions while also facilitating the timely permitting of renewable energy projects in California. The DRECP will include a strategy that identifies and maps areas for renewable energy development and areas for long-term natural resource conservation.

The Arizona RDEP is scheduled for completion in 2012 and is focused on identifying lands across Arizona that may be suitable for the development of renewable energy, with an emphasis on previously disturbed or developed lands where the impacts to sensitive resources would be minimized. The objectives of the RDEP include: 1) obtaining broad consensus on the future renewable energy footprint on federal, tribal, state, and private lands in Arizona that may inform renewable energy developers in their siting of projects throughout the state; 2) designating BLM-administered public lands for renewable energy development, with an emphasis on previously disturbed sites and areas with low resource conflicts; and 3) providing opportunities to sustainably reuse disturbed lands with renewable energy potential, recognizing the demand for renewable energy generation and potential remediation and restoration requirements.

[35] Painter et. al, "Response of Colorado River runoff to dust radiative forcing in snow," *PNAS* 2010 107 (40) 17125-17130.

For the Arizona RDEP, five conceptual alternatives have been developed, in addition to the No-Action alternative. The first alternative serves as the first screen for removing areas with sensitive resources and creates a "base map" of proposed Renewable Energy Development Areas (REDAs). The second alternative focuses on identifying lands within reasonable proximity (five miles) to designated utility corridors and existing or proposed transmission lines. The third alternative focuses on avoiding impacts to sensitive surface watersheds, protecting ground-water supply, reducing consumptive use of water, and maintaining groundwater quality. The fourth alternative focuses on keeping energy generation near the point of demand. The fifth alternative emphasizes land exchanges for the purposes of enhancing revenue and protecting resources for federal lands. The BLM intends to use the Arizona RDEP EIS to amend its land use plans across Arizona.

EPA supports both the California DRECP and the Arizona RDEP. We are concerned, however, that there may be potential conflicts between the Solar PEIS and the DRECP or the Arizona RDEP, and that these conflicts may not be recognized until after all the documents have been published.

Recommendation:
We recommend that BLM elaborate on the DRECP and the Arizona RDEP in the Final PEIS, and include up-to-date maps illustrating the current boundaries and conceptual alternatives. The Final PEIS should acknowledge that additional requirements and/or conditions may apply under the DRECP and the Arizona RDEP and could supersede those presented in the Solar PEIS.

Research and Development to develop Best Management Practices in SEZs

EPA recommends that BLM and DOE set aside some portion of each SEZ for active Research and Development (R&D) aimed at defining Best Management Practices (BMPs) appropriate to each of the four primary technologies (trough, power tower, PV, and dish). Construction of a utility-scale solar energy facility requires an extensive array of ground-disturbing activities including: vegetation clearing and grubbing, excavating of soil surfaces for foundations, footings, and trenches, as well as pile driving, drilling, and grading of soil surfaces. These activities result in significant adverse impacts on soil resources and vegetation over the project area, with complete ecosystem recovery potentially requiring more than 3,000 years (pg. 5-85).

The Science Advisors provided recommendations on avoiding, minimizing, and mitigating adverse ecological impacts while accommodating renewable energy development in appropriate areas in October 2010. This report[36] states that the ecological impacts of projects that alter surficial geology should be presumed permanent, despite any good intentions or promises to restore what came before. Arid ecosystems are strongly shaped by processes that develop over millennia that cannot be replicated by human actions. Therefore, every effort should be made to

[36] See Internet address: http://www.energy.ca.gov/2010publications/DRECP-1000-2010-008/DRECP-1000-2010-008-F.PDF

avoid and minimize any new disturbance of soil surfaces in the siting, design, construction, and maintenance of any and all project features.

Since most large-scale solar energy projects require complete grading of the project site, we continue to recommend that BLM and DOE focus on developing techniques and practices to minimize the adverse impacts of constructing large solar installations on desert ecosystems. Researchers may be able to identify opportunities for the coexistence of certain species or types of vegetation, in conjunction with solar energy development. In addition, researchers may be able to identify better ways to reestablish vegetation in each of the SEZs during the lifetime of the project, as opposed to disregarding this task until decommissioning.

Recommendations:
EPA recommends BLM and DOE set aside some portion of each SEZ for active R&D aimed at defining BMPs appropriate to each of the four primary technologies (trough, power tower, PV, and dish).

BLM and DOE should encourage developers to actively engage in research projects or to support research efforts to develop techniques and practices unique to the specific technology they utilize to minimize the adverse impacts of constructing large solar installations on desert ecosystems.

Such research should be conducted within each SEZ, and should focus on investigating whether there are alternative ways of designing and/or constructing projects such that long-term impacts to soil surfaces, vegetation, and species can be reduced. BMPs should be developed for each technology and for each specific Ecoregion.

Tribal and Cultural Resources

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes. Section 106 of the NHPA requires Federal agencies to consider the effects of their actions on cultural resources, following regulations at 36 CFR 800. Under NEPA, any impacts to tribal, cultural, or other treaty resources, and possible measures to mitigate such impacts, must be discussed in the EIS. Executive Order 13007 *Indian Sacred Sites* (May 24, 1996) requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites.

According to the PEIS, government-to-government consultation was initiated with the submission of letters to 253 Tribes, Chapters, and Bands in 2008. With the expansion of the PEIS to include the SEZs, a second letter was sent out to 316 Tribes, Chapters, and Bands in July 2009 seeking comments on the proposed action and indicating that the Section 106 consultation process would be done concurrently with the NEPA process and government-to-government

consultation requirements. As of 2010, 36 tribes had responded by letter, email, or telephone, or met with local BLM personnel (pg. K-1).

Recommendations:
BLM and DOE should discuss more explicitly how impacts to tribal or cultural resources will be avoided or mitigated, consistent with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments,* Section 106 of the National Historic Preservation Act, and Executive Order 13007, *Indian Sacred Sites.*

BLM and DOE should work diligently to identify the most effective ways of establishing meaningful consultation and collaboration with tribal officials to address concerns related to cultural resources.

We encourage federal officials to meet directly with tribal officials and 'walk the land' whenever possible.

DOE's Tribal Energy Program promotes tribal energy sufficiency and fosters economic development and employment on tribal lands through the use of renewable energy and energy efficiency technologies. Financial and technical assistance is offered to tribes through government-to-government partnerships sponsored by DOE. Within the six-state area, there are more than 32 million acres of tribal land, some of which are suitable for large-scale solar energy development. In addition, there are disturbed, degraded, and contaminated sites located on tribal lands. Directing development to disturbed, degraded, and contaminated areas on tribal lands would likely provide a much needed economic opportunity to those tribes, consistent with DOE's recently established Tribal Energy Office's stated mission.

Recommendation:
EPA encourages BLM and DOE to identify disturbed, degraded, and contaminated sites on tribal lands and add them to the comprehensive database of such sites.

DOE is hosting a 2-day Tribal Summit on May 4-5, 2011 in Washington DC. This Summit should provide an opportunity for meaningful dialogue between DOE and tribal nations on a broad range of energy and environmental issues. Any findings, agreements, or policies arising from this event that may be relevant to federal interactions with tribes regarding utility-scale solar energy development should be summarized in the Final PEIS.

Environmental Justice

EPA is concerned about the non-traditional approach used in Section 4.18 of the PEIS to evaluate minority and low-income populations. In Section 4.18, the minority and low-income populations are assessed on a state-wide basis for each of the six states proposed for solar energy development. The analysis of minority and low-income populations on such a large scale is not relevant to the decisions being made by BLM and DOE, as it is not refined enough to identify the potential Environmental Justice (EJ) communities living in close proximity to the proposed SEZs. Additionally, this state-wide analysis is confusing when compared to the SEZ-specific

discussions in Chapters 8-13, which identify minority and low-income populations at the block-group level. For example, the conclusions in Chapter 4 lead the reader to believe that there are no low-income populations in these states (pg. 4-185). This is misleading when compared with the SEZ-specific discussions.

The PEIS concludes numerous times that no low-income populations are present. This conclusion is drawn from the criterion that the percent poverty in an area must exceed the state average by 20%. This logic is flawed. The fact that an area does not exceed the state average by 20% does not mean that no low-income populations exist. Twenty percent above state average is too a high threshold to set for poverty, particularly in California where the cost of living is much higher than in other states. Many households in California are above the poverty line, but still considered low-income. Only approximately 3.5% of the block groups in California meet the 20 percentage-points criterion.

Recommendations:
EPA recommends that the state-wide analysis of minority and low-income populations be removed from the PEIS, as it is confusing when compared to the more specific SEZ analysis.

EPA recommends that BLM use a lower threshold to define low-income and minority populations that are meaningfully greater than the state average. In addition to minority and low-income populations, EPA recommends consideration of other community characteristics including: whether the community is linguistically isolated, the education level of residents, local political capacity, potential land use differences, and health concerns.

Impacts from solar development on the surrounding community are not well understood. The loss of agricultural jobs and land conversion may not disproportionately impact low-income or minority communities directly, but could greatly impact the character of the region. Ultimately, many low-income communities depend on low-wage agricultural jobs that could be impacted by land conversion. Measuring and analyzing the communities within a 50-mile radius around the proposed SEZ is insufficient to address the socioeconomic impacts of development. In addition, the severity of impacts may be associated with different phases of development.

Recommendation:
Because potential EJ communities have been identified in the Region of Influence for many SEZs, EPA recommends that SEZ-specific design features be added for EJ, where appropriate. For example, this includes all four SEZs in Colorado and all three SEZs in Utah.

The general design features included in Appendix A provide a useful reference in determining SEZ-specific design features for EJ. However, we note that the Socioeconomic and EJ design feature sections in Appendix A are very similar and do not appear to be sensitive to the differences between these two issues.

Recommendations:
EPA recommends that additional design features be incorporated into the Final PEIS that are sensitive to the differences between Socio-economic issues and EJ issues.

EPA also recommends that the PEIS include SEZ-specific design features for SEZs with potential EJ communities. These commitments should be identified as site-specific design features, to be implemented during project-specific NEPA.

EPA recommends that BLM commit to completing the following assessments and analyses for each proposed SEZ prior to further action on the alternatives: Social Impact Assessment, Fiscal Impact Analyses, Economic Impact Analyses, and Local Workforce Assessment (educational attainment, labor force skills, etc...). These assessments and analyses would elucidate burdens on the overall economy (regionally), local jurisdictions, and communities.

The Solar PEIS states that the economic effects of solar energy projects can be positive, but this assumption fails to consider the burdens of wide-scale energy project development. An understanding of specific communities that could be impacted and how mitigation or design features will specifically relate to these communities is important when considering proposed solar energy projects within the SEZs. Potential economic burdens also should be considered in greater detail in project-specific NEPA analysis. The PEIS suggests that disruption of housing, local government expenditures, and employment would require mitigation; however, the suggested design features (mitigation measures) fail to address housing, expenditures, or employment impacts by development. The PEIS estimates that potential impacts are likely to be small with the incorporation of design features for EJ; however, this may be a gross underestimation

Recommendation:
The Final PEIS should include additional design features addressing impacts associated with the disruption of housing, local government expenditures, and employment.

Section 10.1.19.1.10 suggests that population growth in small rural communities could lead to alcoholism, depression, suicide, social conflict, divorce, and delinquency. Appendix A, however, does not include proposed design features that address these serious impacts to the societies affected by this proposed development. While monitoring crime and mental health and effectiveness of community welfare programs is a useful post-implementation tool, it is not a mitigation strategy.

Recommendation:
The Final PEIS should describe mitigation efforts directed at issues stemming from population growth in small rural communities, including alcoholism, depression, suicide, social conflict, divorce and delinquency.

EPA recommends that consideration of potential impacts to EJ communities, and proposed design features, be more closely tied to potential impacts identified in other resource

sections of the PEIS. For example, the Final PEIS should consider how impacts on water supply could affect the cost of water services to low-income communities for drinking and irrigation water. Consideration of the asthma rate for communities in areas surrounding the proposed SEZs should also be included, as well as a discussion of how impacts to air quality could affect people with asthma and other respiratory diseases.

Recommendation:
EPA recommends that the Final PEIS examine whether there are correlations between potential impacts to EJ communities, proposed design features, and potential impacts identified in other resource sections of the PEIS, including air quality and water supply.

Recent Trends and Innovations on Technology

One recent trend evident in California is the increased use of PV systems, both small-scale and large-scale. The cost of solar panels has declined by 50 percent in the last two years and is expected to decline another 10-15% in 2011.[37] In the future, we anticipate seeing more PV projects than any other type of solar technology (parabolic trough, dish, power tower). Most recently, two SunCatcher (dish technology) projects in California that had already completed the NEPA/CEQA review process were sold to two companies that specialize in PV technology.[38] Both of the companies that bought these projects intend to utilize PV, largely abandoning dish technology.

Recent innovations in concentrated solar PV should also be evaluated within the technology section. For example, consider the Amonix 7700 Concentrated PV (CPV) Solar Power Generator,[39] developed by Amonix and NREL. According to their website and recent literature, this technology uses super-efficient cells to convert sunlight to electricity, producing 40% more electricity than traditional PV systems while using about half the acreage (1 MW per 5 acres). The modules (77 feet by 49 feet) are mounted on single pedestals and can be hauled on flatbed trucks and assembled in the field. Supposedly, these modules require no special grading or other site treatment, use no water, and may allow for the movement of wildlife below them. If this is true, the environmental impacts associated with implementing this type of technology may be less severe than other types of utility-scale technology, particularly power trough technology. In addition, the power output per unit area is comparable to that of solar troughs (1 MW/5 acres).

Recommendations:
The Final PEIS should discuss recent innovations in technology including: CPV and other new technologies, potential environmental impacts associated with these technologies, and other recent trends – including cost – associated with new and existing technologies.

---

[37] See internet address: http://greenworldinvestor.com/2011/02/17/another-win-for-solar-pv-over-solar-thermal-as-tessera-sells-imperial-valley-project-to-aes/

[38] The 709 MW Imperial Valley Solar project (SunCatchers) was sold to AES Solar (PV). In addition, the 850 MW Calico project (SunCatchers) was sold to K Road Power (PV).

[39] See internet addresses: http://amonix.com/content/amonix-7700 and http://www.nrel.gov/features/20110216_low-cost_solar.html

Applicants proposing to use PV technology should also be encouraged to consider the use of two-sided PV panels, demonstrated to be cost effective at Nellis Air Force Base. Use of such panels, which utilize light reflected from the ground surface as well as direct sunlight, could reduce the acreage required to generate a given number of megawatts, compared to the use of one-sided panels.

Catellus Lands

In 2010, Senator Diane Feinstein introduced new legislation in California to establish a National Monument to preserve the Catellus lands.[40] The Catellus lands include more than 600,000 acres located between the Mojave National Preserve and Joshua Tree National Monument Park. The Catellus lands were previously donated to or purchased by the DOI for conservation, and serve as an important linkage protecting wildlife corridors and ecological processes. Senator Feinstein expressed concern that these lands might be used for solar energy development, rather than conservation and sought to preserve them through a National Monument designation. In December 2009, Senator Feinstein introduced legislation, the California Desert Protection Act of 2010, to protect these lands, but the bill was not passed in 2010. Subsequently, the bill was revised and reintroduced in January 2011 as the California Desert Protection Act of 2011.

Recommendations:
Because of significant public interest in these lands, we urge BLM to elaborate on this topic in the Final PEIS and to include a map that clearly illustrates the Catellus lands, a brief history of the situation, as well as an update on the status of the lands, with respect to pending legislation.

EPA recommends that the maps presented in the Solar PEIS clearly and accurately illustrate the current boundaries of State Parks, National Preserves, National Wildlife Refuges, National Parks, and National Monuments, including the Catellus lands.

The maps should also show existing habitat corridors and areas where threatened and endangered species may be present, especially if they are located in close proximity to the SEZs.

[40] Senator Diane Feinstein has expressed an interest in incorporating the Catellus lands into a national monument. The national monument designation would ensure that hundreds of thousands of acres between the Joshua Tree National Park and the Mojave National Preserve are protected in perpetuity. The Catellus lands were previously donated to or purchased by the Department of the Interior for conservation.

Thank you for your comment, Bobby McEnaney.

The comment tracking number that has been assigned to your comment is SolarD11863.

Comment Date: May 2, 2011 20:03:57PM
Solar Energy Development PEIS
Comment ID: SolarD11863

First Name: Bobby
Middle Initial:
Last Name: McEnaney
Organization: Natural Resources Defense Council
Address: 1200 New York Avenue NW, Suite 400
Address 2:
Address 3:
City: Washington
State: DC
Zip: 20005
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: PEIS NRDC Solar Report Comments.pdf

Comment Submitted:

May 2, 2011

Mr. Robert Abbey
Director, Bureau of Land Management
United States Department of the Interior
1849 C Street, NW
Washington, DC 20241

Delivered via email and US Postal

Dear Director Abbey:

The Natural Resources Defense Council (NRDC) appreciates the opportunity to submit these comments in response to the Draft Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States, released in December 2010. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.3 million members and online activists nationwide, served from offices in New York, Washington, D.C., Chicago, Los Angeles, San Francisco and Beijing. These comments are intended to supplement the broader sets of comments already submitted by NRDC and our partners.

Attached to these comments is a report prepared by NRDC entitled *Bureau of Land Management Utility-Scale Solar Applications: A Geospatial Survey of Active ROW Applications*. This report is a Geographic Information Systems (GIS) assessment in which NRDC analyzed and mapped 166 right-of-way (ROW) boundaries for proposed and authorized utility-scale solar projects on Bureau of Land Management (BLM) lands in California, Nevada, New Mexico and Arizona. The GIS data for ROW boundaries, as well as depicted land designations were downloaded from BLM's ArcIMS service, www.geocommunicator.gov, prior to the data being removed from the public website in late February 2011. NRDC selected these particular 166 ROW applications based upon a concerted attempt to encapsulate the range of solar applications likely to be considered active by both solar developers and the BLM.

In addition to the comments we have already submitted, NRDC would like to stress three additional points that are reinforced by the findings embodied in our report. These recommendations can be summarized as:

- A full commitment to transparency calls for BLM to maintain an authoritative, publically-available list of active solar project ROW applications and incorporate such data and representative maps of these ROWs into the final PEIS;
- Failure to address the issue of existing applications has the potential to undermine the success of solar energy development on public lands. BLM must ensure that applications filed after March 1, 2011 are prioritized, and only those that are found in the least conflict areas are processed; and
- In establishing the foundations for a new solar program, NRDC strongly recommends that BLM incorporate into the Final PEIS and the Record of Decision a commitment to ensure that comprehensive landscape analyses are incorporated into planning decisions, in concert with the development of effective solar energy zones to guide solar applications to appropriate areas.

This report is being submitted to help facilitate informed agency decision-making and because the data contained within is viewed as essential information for the general public, agencies, stakeholders, and developers to consider when discussing a comprehensive solar energy development program. Unfortunately, nowhere in the Draft PEIS does this type of analysis—effectively portraying the possible range of current solar project ROW applications throughout the affected environment—exist. We consider this a serious deficiency and suggest BLM include such data and maps in the final PEIS.

NRDC encountered numerous barriers in gathering comprehensive data for this report, including significant inconsistencies in the agency's data—such as differing lists of active ROW applications, inconsistency in acreage assessments, and incomplete GIS data for conservation and exclusion areas. At a minimum, we recommend that BLM develop and maintain one authoritative, publically available list of active solar project ROW applications—including notice of any change in pending, closed, and approved ROW application status. Not only is the lack of such an authoritative list a severe impediment to public engagement in the management of our public lands, but also such inaction falls far short of that which a true commitment to government transparency requires. The February 2011 termination of public access to BLM's LR2000 GIS server will almost certainly aggravate this problem.

The attached report of active solar project ROW applications demonstrates that, at present, there are numerous, widely-dispersed and often overlapping ROW applications throughout BLM's land management system in Arizona, California, Nevada and New Mexico. Considering the size and complexity of most of these projects, in conjunction with the expectation of declining agency resources, the challenge to process these existing applications will be considerable. Failing to address this issue could jeopardize BLM's goals to establish a meaningful solar

program, as existing applications continue to move forward without clear guidance. NRDC recommends that BLM promptly set forth a definitive, time-certain definition of what it considers to be pending applications and a clear description of how such applications will be treated as the agency moves forward in establishing a permanent solar program.

In conclusion, the apparent conflict between ROW applications and environmentally sensitive areas undermines the agency's efforts to establish a meaningful solar program. The majority of existing solar project ROW applications are located outside of BLM's proposed Solar Energy Zones. In addition, our analysis reveals that 24 ROW applications appear to substantially overlap the conservation and exclusion areas. These conflicts strongly underscore our conclusion that in the absence of meaningful instructions embodied in the PEIS that efficiently and effectively guide projects towards appropriate areas for development, the timely and successful development of solar renewable energy on federal lands will not be fully realized.

Thank you for your consideration of our comments.

Sincerely,

Bobby McEnaney
Senior Public Lands Policy Analyst
Natural Resources Defense Council
1200 New York Avenue, NW Suite 400
Washington, DC 20005

Bureau of Land Management
Utility-Scale Solar Applications

A Geospatial Survey of Active ROW Applications

Natural Resources Defense Council

May 2, 2011

Overview

The Natural Resources Defense Council (NRDC) analyzed and mapped 166 right-of-way (ROW) boundaries for proposed and authorized utility-scale solar projects on Bureau of Land Management (BLM) lands in California, Nevada, New Mexico and Arizona.[1] NRDC selected these particular 166 ROW applications based upon a concerted attempt to encapsulate the range of solar applications likely to be considered active by solar developers and the BLM.

Method

In surveying individual projects, NRDC first mapped ROWs that have been issued a Record of Decision (ROD). This was followed by the four 2011 solar "Priority Projects," as branded by the BLM.[2] Succeeding these projects were "first tier" applications—an informal designation exclusive to the state of California[3]—and the remainder of active ROW applications, which includes applications listed on BLM state websites or represented in additional unpublished ROW lists that NRDC was able to assess. *Table 1* and *Table 2* describe additional project categorization information.

---

[1] Colorado and Utah were excluded from this survey because current information indicated that there were no active ROW applications for solar projects on BLM lands in either of those states at the time of our sampling.

[2] See http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/priority_projects.html.

[3] These *first tier* projects are ROW applications that precede, by application date, any subsequent and overlapping ROW application.

Our intent for this survey was to provide a single, contemporary snapshot of ROW applications likely to be considered by the BLM, fully recognizing and expecting the list to change. Even within the parameters utilized to formulate this survey, constructing a singular representation with BLM's data was a challenge given that there were numerous inconsistencies between information presented by BLM's Legacy Rehost 2000 System (LR 2000), BLM state and national websites, and other BLM sources. Considering this, NRDC opted towards including project ROWs in the survey even when there were discrepancies regarding project status with the differing lists.[4]

Appendix 1 contains a list of all ROWs included in this survey.

Table 1: Solar Project Categorization[5]

Solar Project Status or Priority	Total Number of Solar Projects	Total ROW Acres
Record of Decision Issued for Project	13	44,631
BLM 2011 Priority Projects	4	31,571
California First Tier Projects, Application Before June 30, 2009	19	154,584
California First Tier Projects, Application After June 30, 2009	5	7,649
Other Projects, Application Before June 30, 2009	105	1,201,004
Other Projects, Application After June 30, 2009	20	63,359
OVERALL TOTAL	**166**	**1,502,799**

Table 2: 2011 BLM Priority Projects Represented

Solar Project (type)	Developer	Location/ SEZ	Application filing date	NEPA Status	ROW Acres	Potential Output
Sonoran Solar Project (parabolic trough)	NextEra Energy Resources, LLC	Maricopa County (AZ)	6/28/2007 (Fast-track)	Draft EIS April 19, 2010	14,759	500 MW
Desert Sunlight (thin film PV)	First Solar Development, Inc	Riverside East SEZ (CA)	11/7/2006 (Fast-track)	Draft EIS August 27, 2010	20,553	550 MW
Palen Solar Project (parabolic trough)	Solar Millennium, LLC	Riverside East SEZ (CA)	3/14/2007 (Fast-track)	Draft EIS April 7, 2010	5,160	484 MW
Ocotillo Sol (thin film PV)	San Diego Gas & Electric	Imperial County (CA)	12/17/2009	Pending	115	14 MW

[4] It should be noted that the BLM does not publish one definitive list of ROW applications, nor is there any standardized method for public notice regarding modifications to such a list.

[5] NRDC chose the date of June 30, 2009 as a demarcation for comparison given that on this date, BLM registered its intention to adopt a zone-based approach to the management of solar resources on the public lands under its jurisdiction. See 74 FR 31307.

Data Source

Specific Geographic Information Systems (GIS) data for ROW boundaries were downloaded from the BLM's ArcIMS service www.geocommunicator.gov, prior to the data being removed from the public website in late February 2011.[6]

Total acreage for the 166 solar projects included is 1,454,800 acres; however, this cumulative total does not account for overlap between ROW boundaries, which is especially prevalent where there is clustering of solar projects. Furthermore, there is some discrepancy in acreage assessments provided by BLM's ArcIMS service and the information provided on other renewable energy project status lists—this may be attributable to factors such as modification in project acreage estimates or differences between actual project footprint and acres applied for in a ROW. All acreage data included in this report is based on information taken from BLM's ArcIMS service.

Additional data layers for BLM lands were taken from the data presented by the December 2010 Solar Energy Development Draft Programmatic Environmental Impact Statement (PEIS), specifically including data layers for PEIS proposed Solar Energy Zones (SEZs), PEIS Developable Areas, PEIS Conservation Areas and ROW Exclusion/Avoidance Areas.[7] Data layers incorporated for urban areas, major military installations, state boundaries, and roads and highways were taken from other publicly available sources.

Map Layout

This survey begins with an overview map where each of the 166 solar projects is depicted as a point located at the center of the ROW boundary. A second overview map then shows the distribution of the series of detail maps that follow, which are displayed at 1:500,000 scale. Detail maps are presented in order of decreasing project density per map. Project names are listed next to the outlined ROW boundary in each detail map.

SEZs are depicted in bright yellow, while "Lands Available for Application - Solar Development Program" (Developable Areas) in blue—both of which are described further in the Solar Energy Development PEIS.[8] A total of 24 SEZs were identified in the PEIS Preferred Alternative, covering 677,000 acres, and an additional 21.4 million acres were identified as Developable Areas in six states (Arizona, California, Colorado, Nevada, New Mexico, and Utah).

[6] See http://www.geocommunicator.gov/GeoComm/site_alter_notice_static.htm.
[7] See http://solareis.anl.gov/maps/gis/index.cfm. Relevant problems with these data that NRDC is aware of are identified in this report.
[8] See http://solareis.anl.gov/documents/dpeis/index.cfm.

PEIS Conservation Areas related to sensitive lands, wilderness, and wildlife are shown as a continuous layer in the maps in pale green—these areas are excluded from both "action" alternatives considered in the PEIS—and include, but are not limited to:

- Areas of Critical Environmental Concern,
- Critical Habitat for Threatened and Endangered Species,
- Designated Wilderness,
- Units of the National Landscape Conservation System,
- National Parks,
- National Recreation Areas,
- National Wildlife Refuges, and
- Wilderness Study Areas.

It is important to note that the data layers for these Conservation Areas are inconsistent across states, as the Solar Energy Development PEIS makes specific mention of the fact that not all data could be acquired, nor made accessible, by the BLM.[9] Similarly, ROW Exclusion and Avoidance Areas are presented here in a darker green where such data was presented by BLM.[10]

Urban areas and major military installations are depicted on the maps in grey, and highways and local roads are also shown. All other lands, which may include private lands and/or any other non-designated federal, state or county lands, are depicted in pale yellow.

Analysis of ROW Distribution

There are various degrees of overlap between SEZ and Developable Area designations and current ROW project applications. *Table 3* provides acreage information for specific SEZs as well as overlap between SEZs and ROW applications. *Table 4* presents a rough analysis of this intersection, by listing the number of projects and acreage amounts for those ROWs that intersect SEZs, Developable Areas and Conservation Areas—using greater than 50% overlap as an indicator of significance.

Overall, most pending ROW applications fall within the Developable Area if not already included within a SEZ, while projects that do not intersect a SEZ significantly typically do not intersect a SEZ at all—there are only three projects that fall between these categories. Of the projects that do not intersect the Developable Area at all, at least seven are contained wholly within BLM's PEIS Conservation Areas, including one 2011 BLM Priority Project—Ocotillo Sol. There are 24 solar project ROWs that have significant conflict with PEIS Conservation Areas, the majority of which occur in Nevada and account for 106,137 acres.

[9] See http://solareis.anl.gov/documents/dpeis/Solar_DPEIS_Chapter_2.pdf. In addition, questions about the accuracy of at least some of these data layers have been brought to NRDC's attention.
[10] *Id.*

Table 3: PEIS Solar Energy Zones by State

State	SEZ	Total SEZ Acres	SEZ Acres in Project ROWs*	Percent SEZ in Project ROWs*	Developable Area Acres
Arizona	Brenda	3,878	0	0%	
Arizona	Bullard Wash	7,239	0	0%	
Arizona	Gillespie	2,618	0	0%	
Total Arizona		**13,735**	**0**	**0%**	**408,081**
California	Imperial East	5,722	3,880	68%	
California	Iron Mountain	106,522	79,057	74%	
California	Pisgah	23,950	13,219	55%	
California	Riverside East	202,896	93,123	46%	
Total California		**339,090**	**189,279**	**56%**	**283,753**
Nevada	Amargosa Valley	31,625	20,534	65%	
Nevada	Delamar Valley	16,552	0	0%	
Nevada	Dry Lake	15,649	11,552	74%	
Nevada	Dry Lake Valley North	76,874	0	0%	
Nevada	East Mormon Mtn	8,968	0	0%	
Nevada	Gold Point	4,810	0	0%	
Nevada	Millers	16,787	0	0%	
Total Nevada		**171,265**	**32,086**	**19%**	**210,803**
New Mexico	Afton	77,623	4,460	6%	
New Mexico	Mason Draw	12,909	0	0%	
New Mexico	Red Sands	22,520	0	0%	
Total New Mexico		**113,052**	**4,460**	**4%**	**33,514**
OVERALL TOTAL		**637,142**	**225,825**	**35%**	**936,151**

*Calculations meant to capture overall ROW intersection with or coverage of SEZ acres. Such calculations should be distinguished from total active ROW application acreage falling within SEZs—which would represent a much larger number or percentage due to significant ROW application overlap.

Notably, there are no current ROW applications in Arizona that fall within a SEZ boundary; however, 31 of 36 Arizona projects intersect the Developable Area by more than 50%, including one BLM 2011 Priority Project—Sonoran Solar Project. There are also three projects in Arizona that significantly overlap Conservation Areas, but none that overlap Conservation Areas by less than 50%. In California, there are three Projects with RODs issued, two BLM 2011 Priority Projects—Desert Sunlight Solar Farm and Palen Solar Project—and 13 first tier California projects that intersect SEZs by greater than 50%. Similarly, 62 of 77 total California projects

intersect the Developable Area and 9 projects, or 26,368 acres, overlap Conservation Areas significantly. In Nevada, 6 of 50 total projects intersect a SEZ by greater than 50%, while 34 projects intersect the Developable Area and 12 overlap Conservation Areas significantly. In New Mexico, one project resides predominantly within a SEZ and three intersect the Developable Area by more than 50%.

Table 4: ROW Distribution by State

	AZ	CA	NV	NM	Total
ROWs Intersecting SEZ					
by GREATER than 50% (Acreage)	0 (0)	43 (385,500)	6 (38,222)	1 (4,502)	50 (428,224)
by LESS than 50% (Acreage)	1 (5,445)	0 (0)	2 (19,559)	0 (0)	3 (25,004)
by 0% (Acreage)	35 (488,420)	34 (143,820)	42 (387,355)	2 (29,970)	113 (1,049,564)
ROWs Intersecting Developable Area					
by GREATER than 50% (Acreage)	31 (457,658)	62 (501,696)	32 (308,371)	3 (34,471)	128 (1,302,197)
by LESS than 50% (Acreage)	3 (36,006)	2 (7,900)	10 (68,457)	0 (0)	15 (112,362)
by 0% (Acreage)	2 (200)	13 (19,724)	8 (68,309)	0 (0)	23 (88,233)
ROWs Intersecting Conservation Areas					
by GREATER than 50% (Acreage)	3 (36,006)	9 (26,368)	12 (106,137)	0 (0)	24 (168,511)
by LESS than 50% (Acreage)	0 (0)	2 (31,764)	4 (82,331)	0 (0)	6 (114,095)
by 0% (Acreage)	33 (457,859)	66 (471,188)	34 (256,669)	3 (34,471)	136 (1,220,187)
OVERALL TOTAL (Acreage)	**36 (493,865)**	**77 (529,320)**	**50 (445,137)**	**3 (34,471)**	**166 (1,502,793)**

Disclaimer

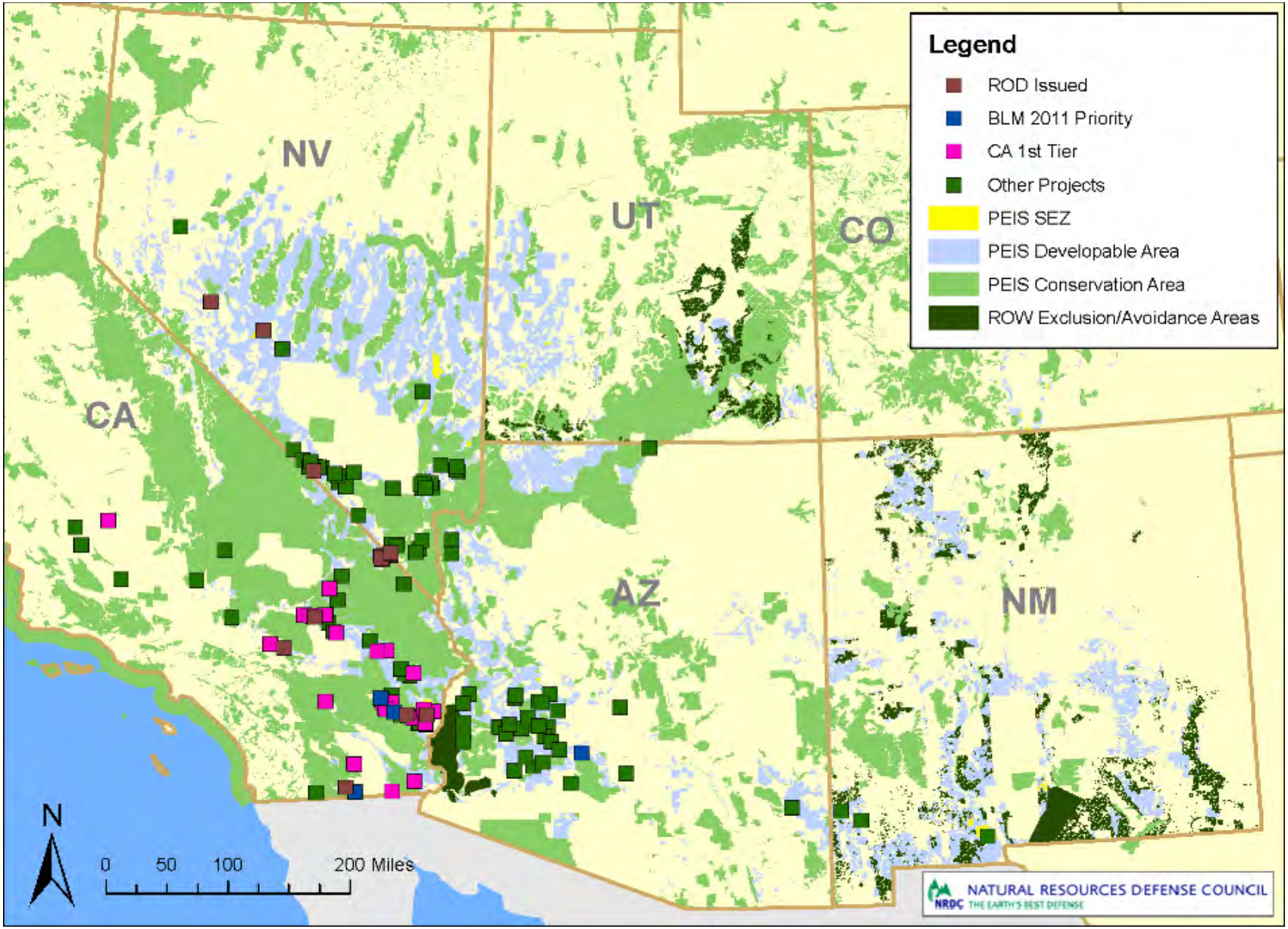
Please note, these maps are intended to display a single, contemporary snapshot of active BLM solar project ROW applications based upon the best available information at the time. We expect that this snapshot will continue to change as new information becomes available. As noted, we have found numerous discrepancies in acreage assessments between BLM sources. All acreage data included in this report is based on information taken from BLM's ArcIMS service.

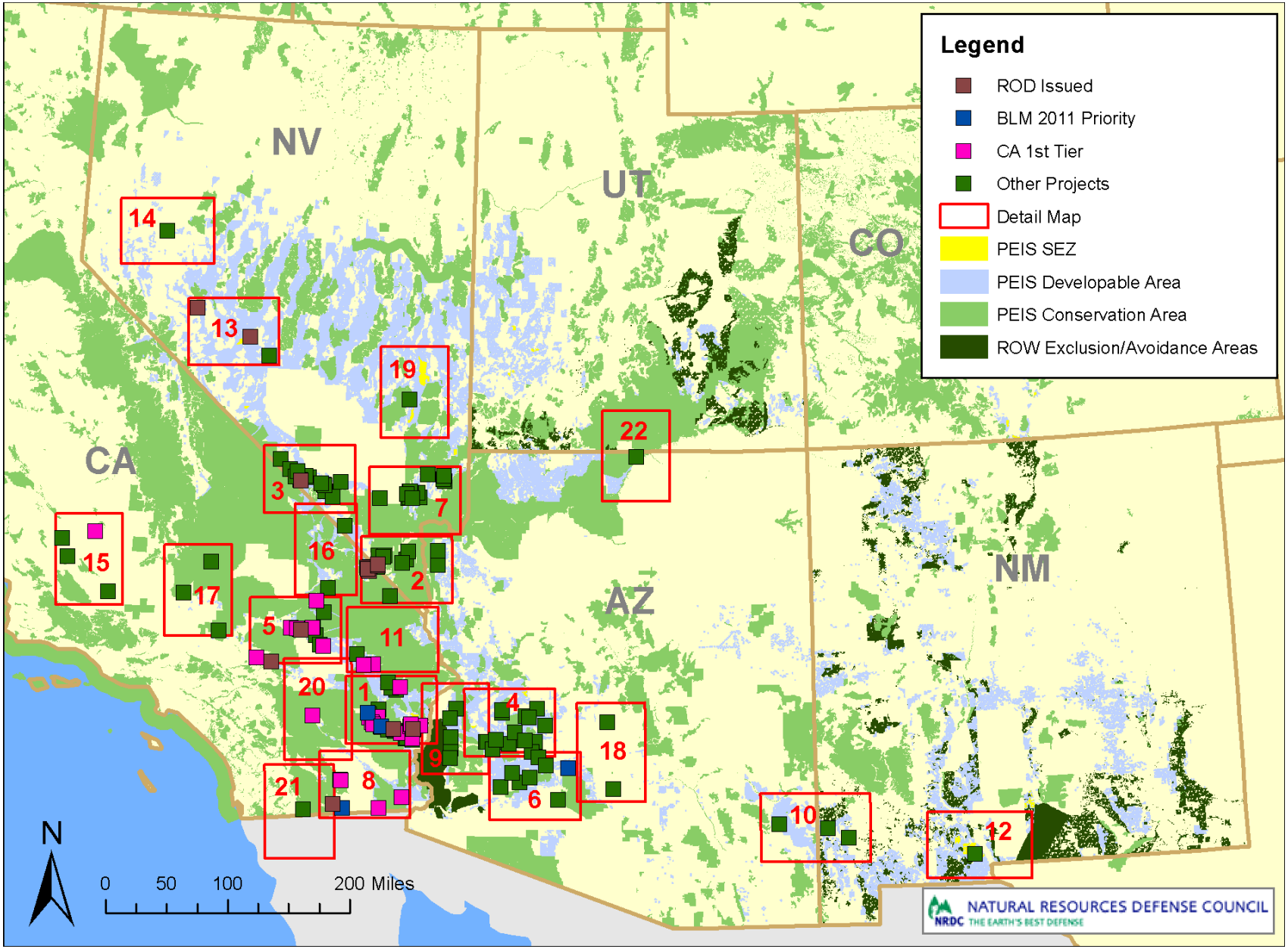
These maps display ROW boundaries for potential solar application projects, and by no means represent an endorsement of any specific application or project. Certain sensitive lands—such as parks, monuments and important wildlife habitat areas—are not appropriate for energy development. In some of these places, energy development is prohibited or limited by law or policy, while in others it would be highly controversial. NRDC does not endorse locating energy facilities or transmission lines in such areas. Siting decisions must always be made extremely carefully, with unavoidable impacts mitigated and operations conducted in an environmentally responsible manner.

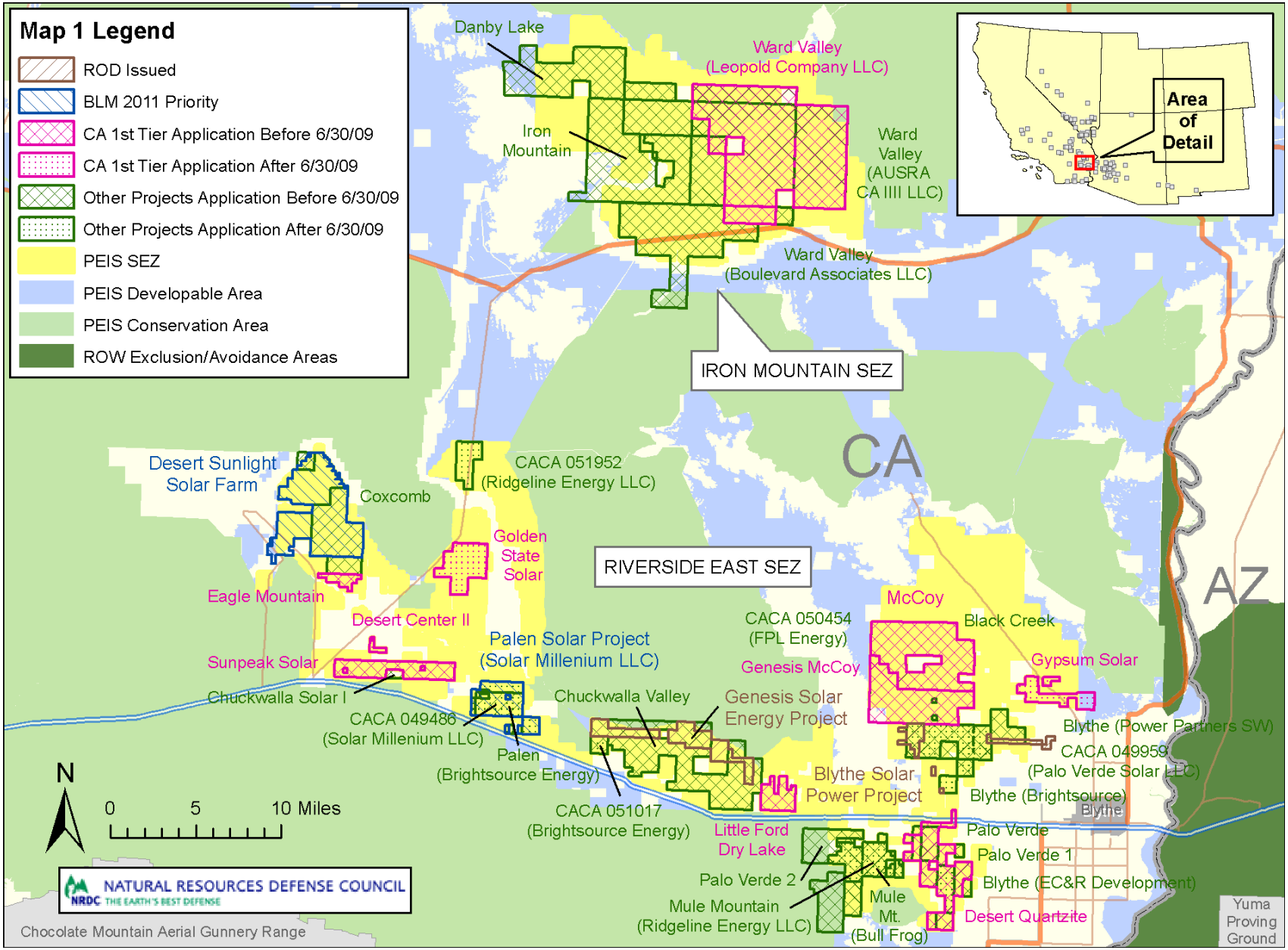
This work was performed by Rachel Fried, Bobby McEnaney, Matthew McKinzie, and Katie Umekubo of NRDC's Lands and Wildlife Program.

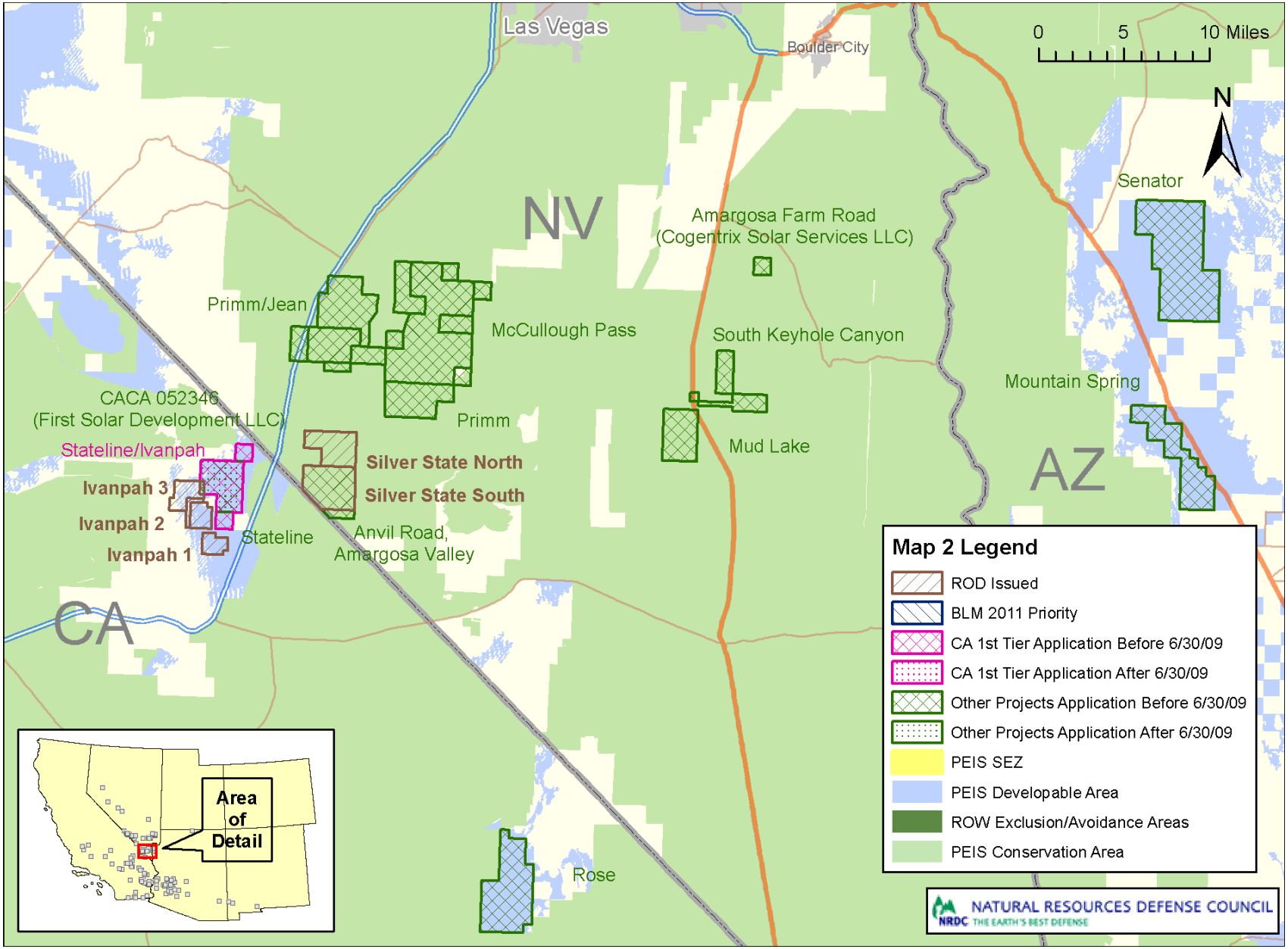
For additional information, please contact:

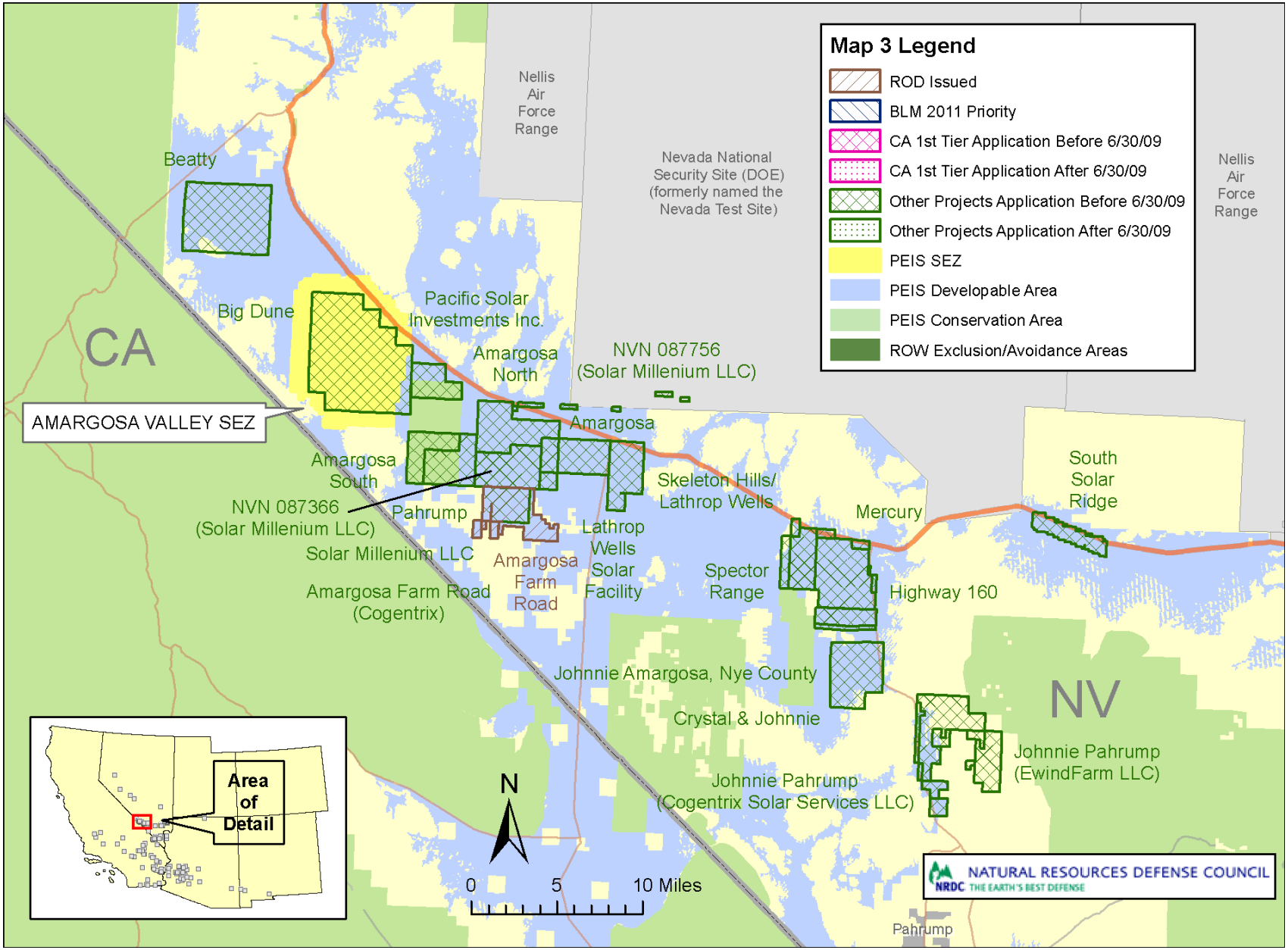
Katie Umekubo
Natural Resources Defense Council
1200 New York Avenue NW, Suite 400
Washington, DC 20005
Telephone: 202-289-6868
Email: kumekubo@nrdc.org

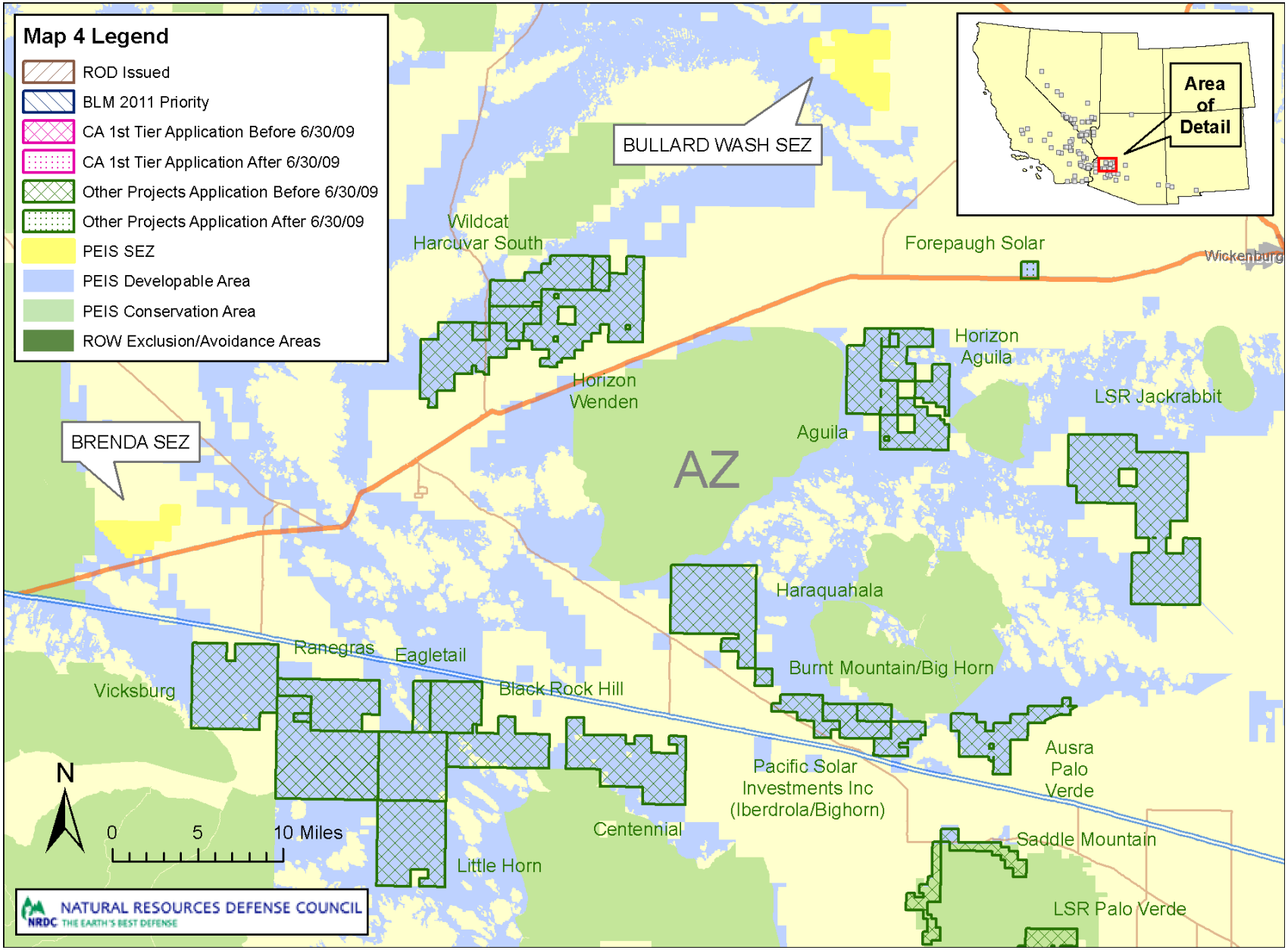

Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier
Other Projects
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NV
UT
CO
CA
AZ
NM
N
0
50
100
200 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

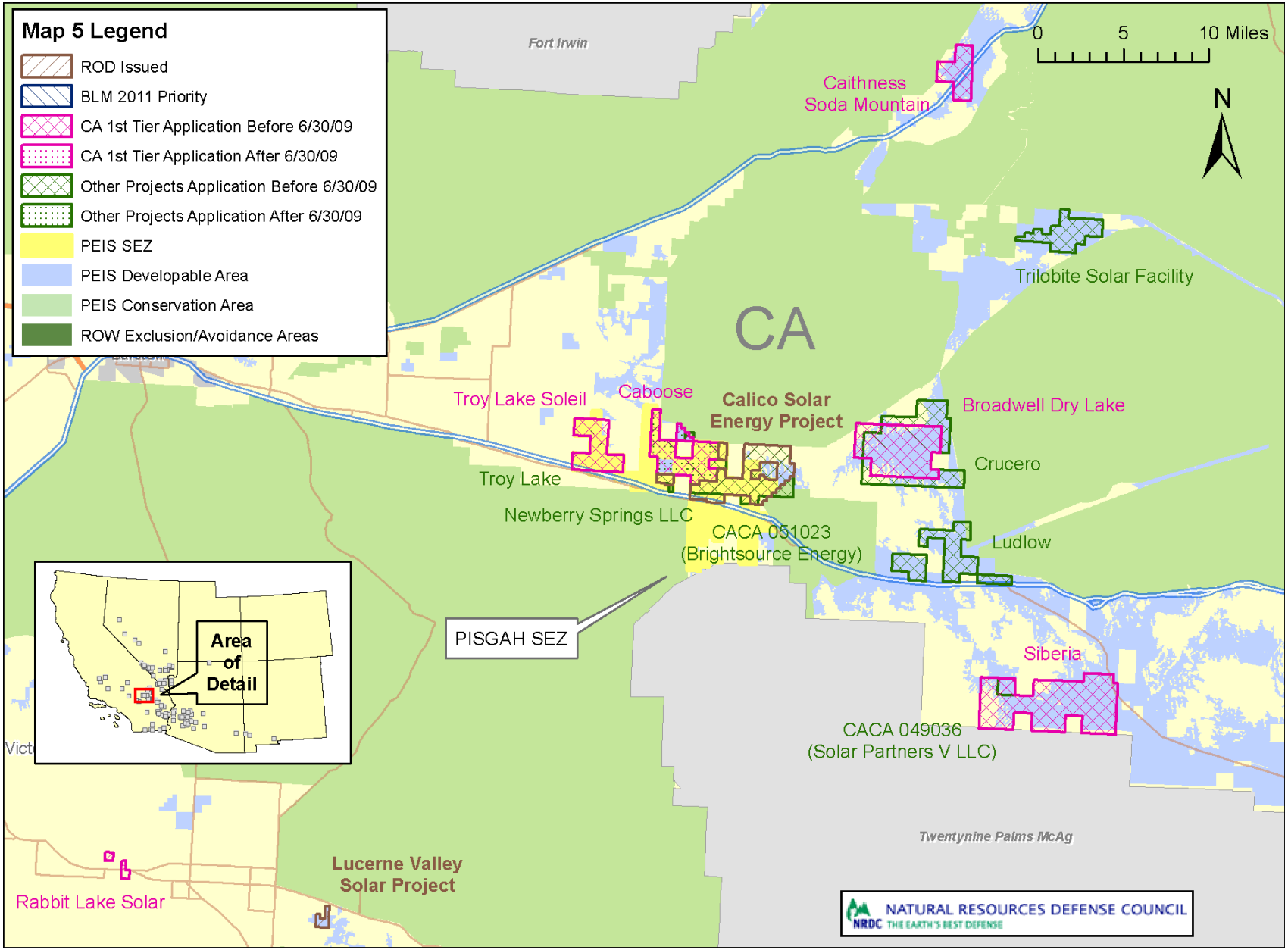

Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier
Other Projects
Detail Map
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NV
UT
CO
CA
AZ
NM
14
13
19
22
3
7
15
16
2
17
5
11
20
1
4
18
9
21
8
6
10
12
N
0
50
100
200 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

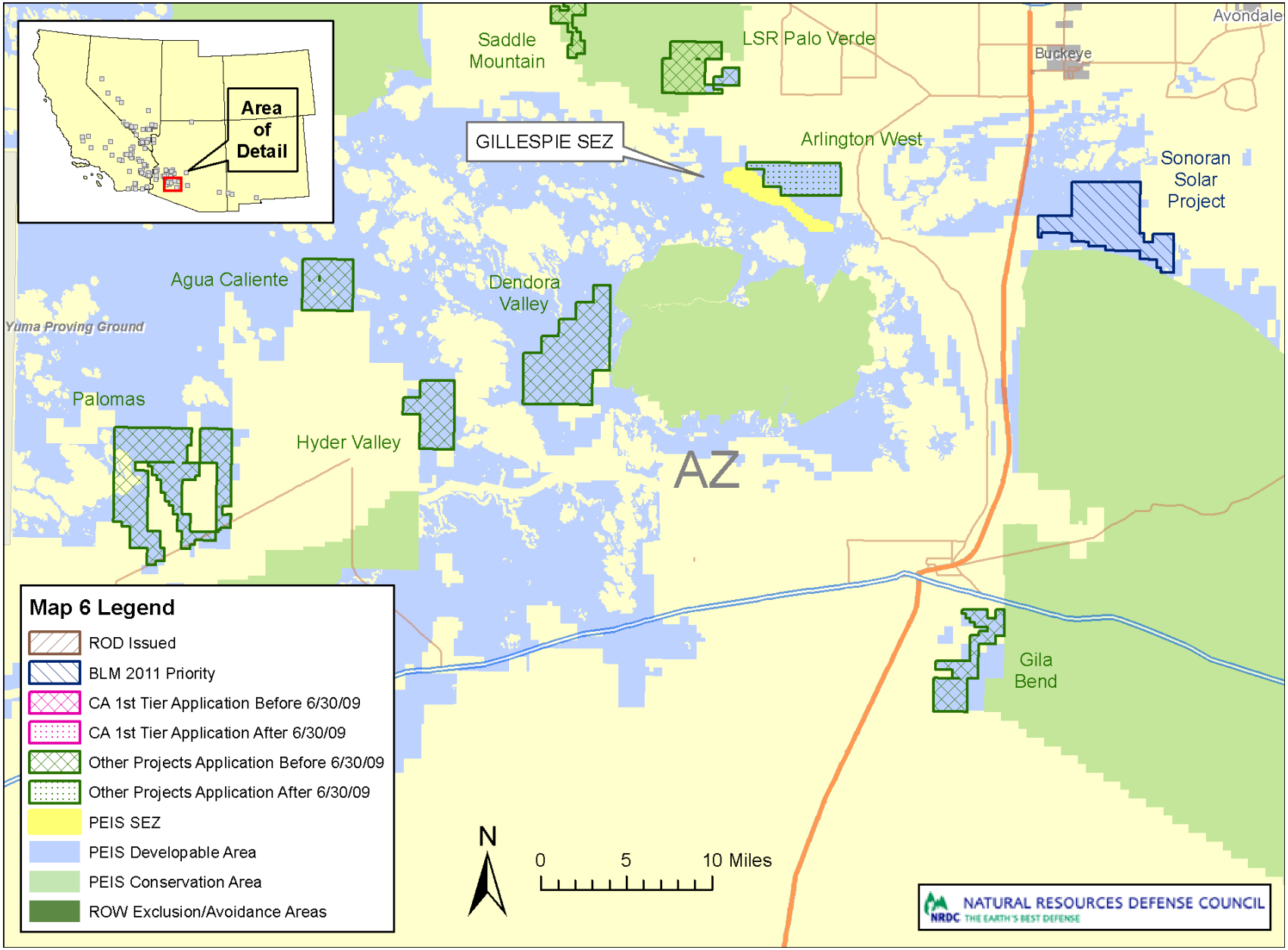

Map 1 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
Area of Detail
Danby Lake
Ward Valley (Leopold Company LLC)
Iron Mountain
Ward Valley (AUSRA CA IIII LLC)
Ward Valley (Boulevard Associates LLC)
IRON MOUNTAIN SEZ
CA
AZ
Desert Sunlight Solar Farm
Coxcomb
CACA 051952 (Ridgeline Energy LLC)
Golden State Solar
RIVERSIDE EAST SEZ
Eagle Mountain
Desert Center II
Palen Solar Project (Solar Millenium LLC)
Sunpeak Solar
Chuckwalla Solar I
CACA 049486 (Solar Millenium LLC)
Palen (Brightsource Energy)
Chuckwalla Valley
Genesis Solar Energy Project
CACA 051017 (Brightsource Energy)
CACA 050454 (FPL Energy)
McCoy
Black Creek
Genesis McCoy
Gypsum Solar
Blythe (Power Partners SW)
CACA 049959 (Palo Verde Solar LLC)
Blythe Solar Power Project
Blythe (Brightsource)
Blythe
Little Ford Dry Lake
Palo Verde
Palo Verde 1
Palo Verde 2
Blythe (EC&R Development)
Mule Mountain (Ridgeline Energy LLC)
Mule Mt. (Bull Frog)
Desert Quartzite
Yuma Proving Ground
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
Chocolate Mountain Aerial Gunnery Range

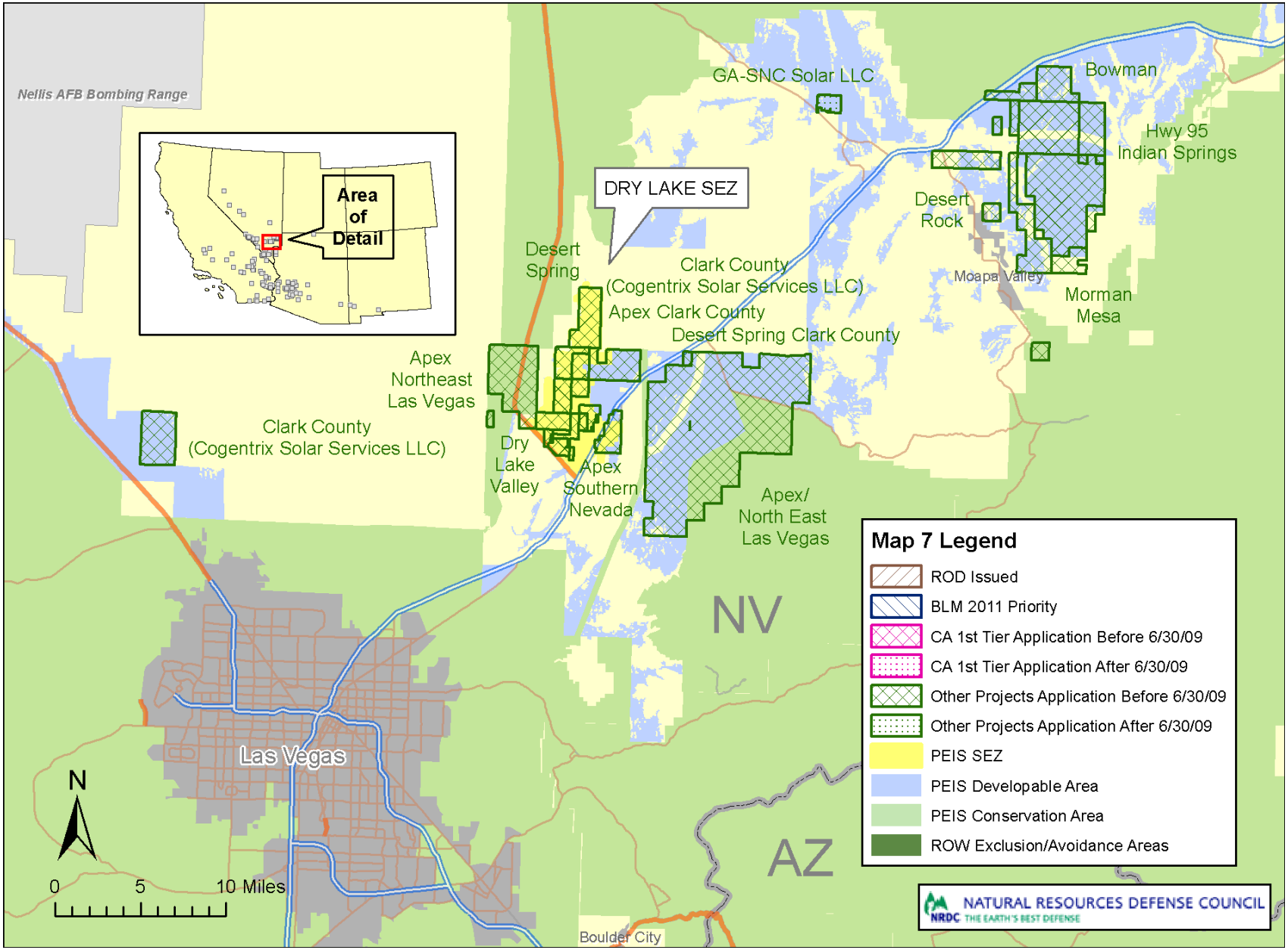

Las Vegas
Boulder City
0 5 10 Miles
N
NV
CA
AZ
Amargosa Farm Road
(Cogentrix Solar Services LLC)
Senator
Primm/Jean
McCullough Pass
South Keyhole Canyon
Mountain Spring
CACA 052346
(First Solar Development LLC)
Primm
Mud Lake
Stateline/Ivanpah
Silver State North
Silver State South
Ivanpah 3
Ivanpah 2
Ivanpah 1
Stateline
Anvil Road,
Amargosa Valley
Rose
Area of Detail
Map 2 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
ROW Exclusion/Avoidance Areas
PEIS Conservation Area
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE


Map 3 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
Nellis Air Force Range
Nevada National Security Site (DOE) (formerly named the Nevada Test Site)
Nellis Air Force Range
Beatty
CA
Big Dune
Pacific Solar Investments Inc.
Amargosa North
NVN 087756 (Solar Millenium LLC)
AMARGOSA VALLEY SEZ
Amargosa
Amargosa South
NVN 087366 (Solar Millenium LLC)
Pahrump
Solar Millenium LLC
Amargosa Farm Road (Cogentrix)
Amargosa Farm Road
Lathrop Wells Solar Facility
Skeleton Hills/ Lathrop Wells
Mercury
South Solar Ridge
Spector Range
Highway 160
Johnnie Amargosa, Nye County
Crystal & Johnnie
NV
Johnnie Pahrump (EwindFarm LLC)
Johnnie Pahrump (Cogentrix Solar Services LLC)
Area of Detail
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
Pahrump

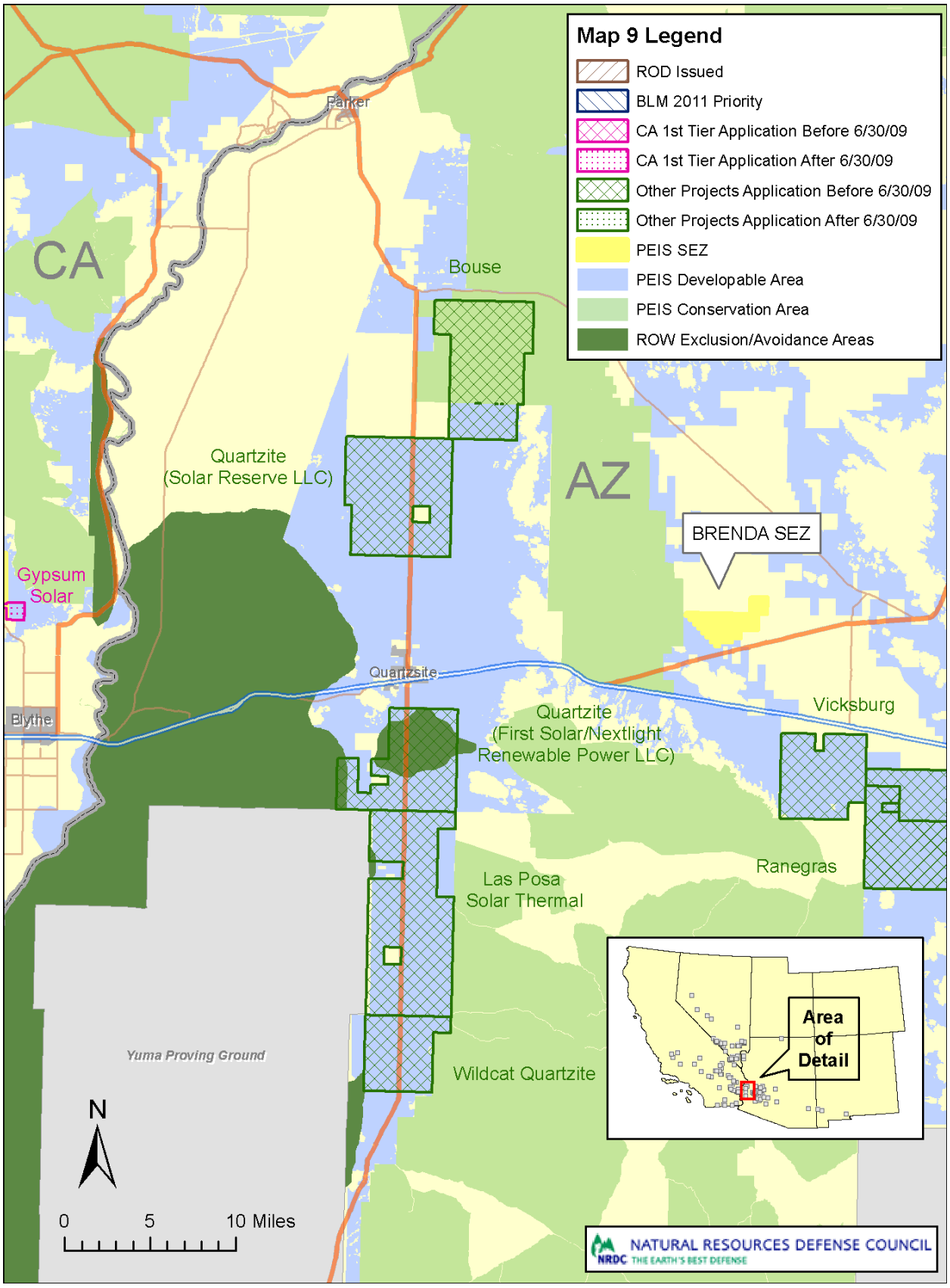

Map 4 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
Area of Detail
BULLARD WASH SEZ
BRENDA SEZ
AZ
Wildcat
Harcuvar South
Horizon
Wenden
Forepaugh Solar
Wickenburg
Horizon
Aguila
Aguila
LSR Jackrabbit
Haraquahala
Burnt Mountain/Big Horn
Ausra
Palo
Verde
Pacific Solar
Investments Inc
(Iberdrola/Bighorn)
Saddle Mountain
LSR Palo Verde
Ranegras
Eagletail
Vicksburg
Black Rock Hill
Centennial
Little Horn
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

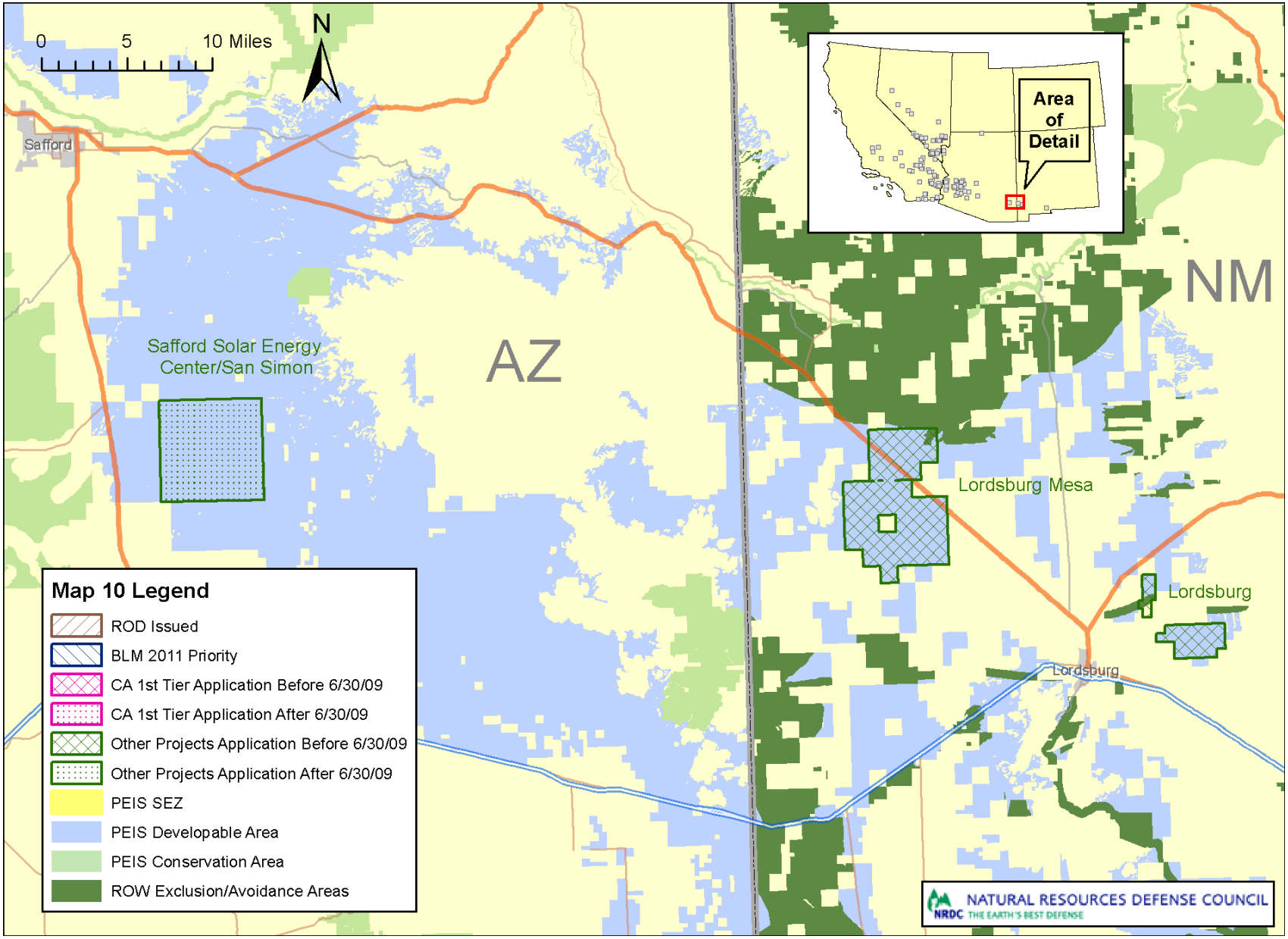

Map 5 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
0 5 10 Miles
N
Fort Irwin
Caithness Soda Mountain
Trilobite Solar Facility
CA
Troy Lake Soleil
Caboose
Calico Solar Energy Project
Broadwell Dry Lake
Crucero
Troy Lake
Newberry Springs LLC
CACA 051023 (Brightsource Energy)
Ludlow
PISGAH SEZ
Siberia
CACA 049036 (Solar Partners V LLC)
Area of Detail
Twentynine Palms McAg
Lucerne Valley Solar Project
Rabbit Lake Solar
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

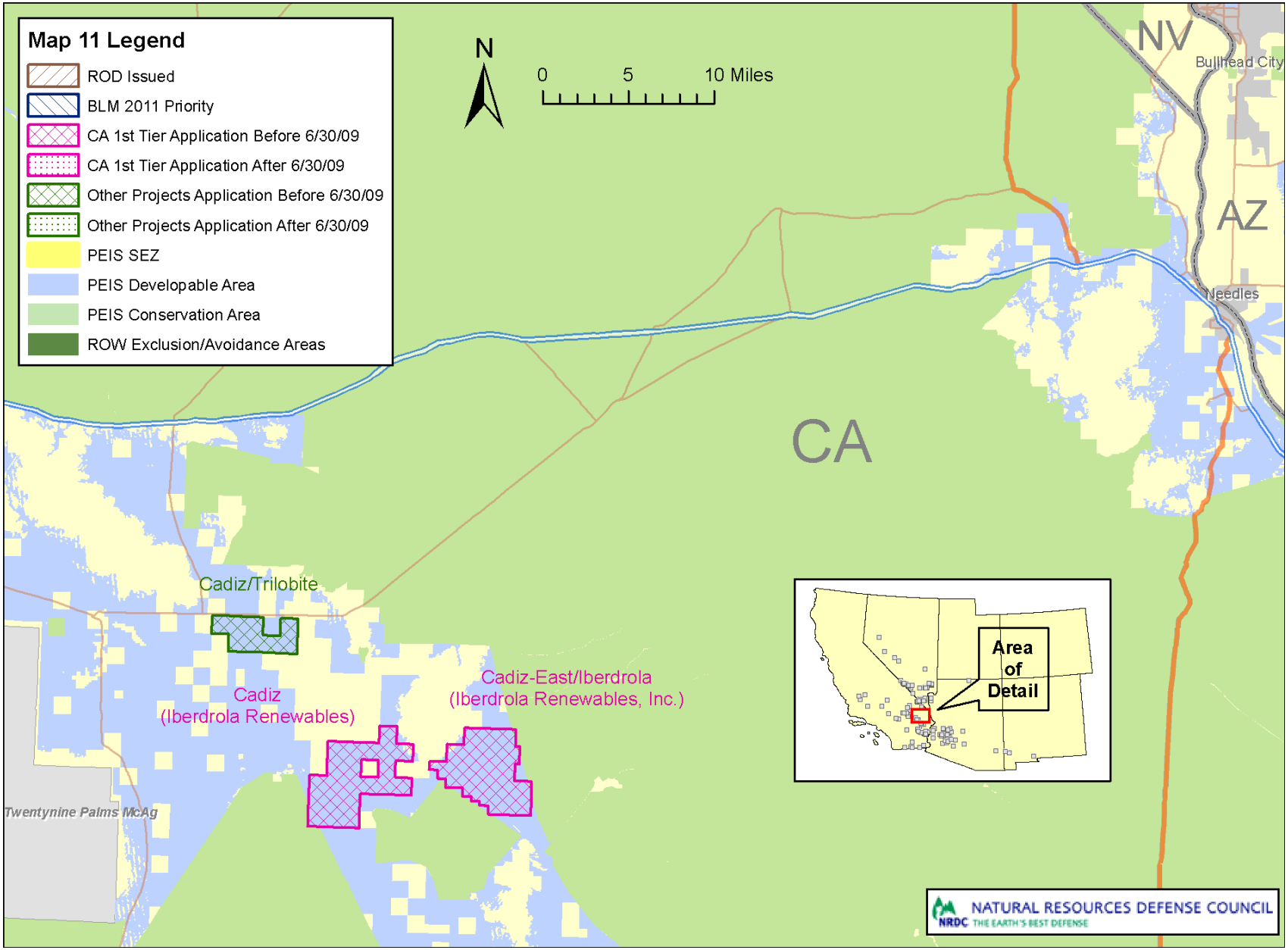

Area of Detail
Saddle Mountain
LSR Palo Verde
Avondale
Buckeye
GILLESPIE SEZ
Arlington West
Sonoran Solar Project
Agua Caliente
Dendora Valley
Yuma Proving Ground
Palomas
Hyder Valley
AZ
Gila Bend
Map 6 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

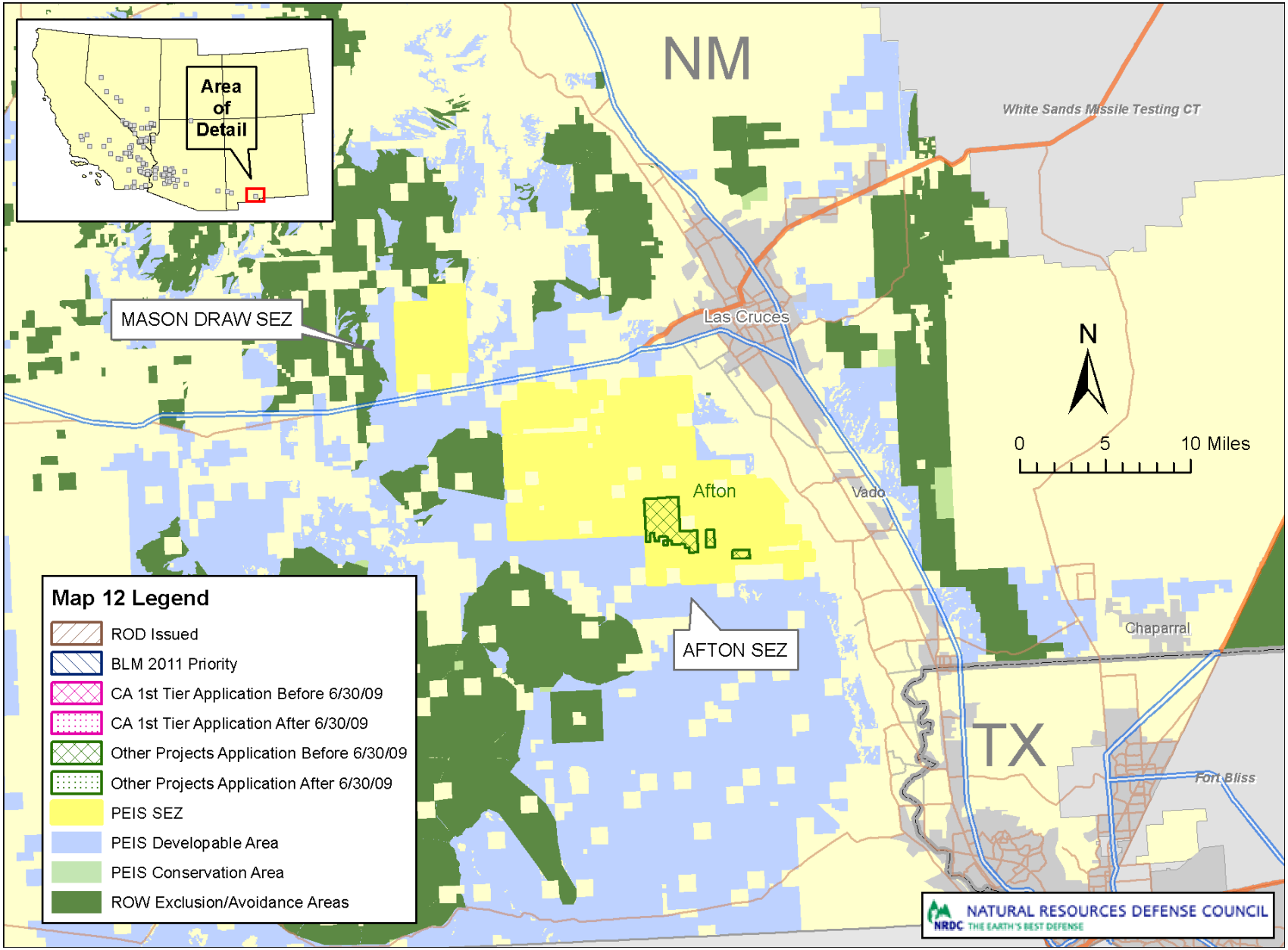

Nellis AFB Bombing Range
Area of Detail
GA-SNC Solar LLC
Bowman
Hwy 95
Indian Springs
DRY LAKE SEZ
Desert Rock
Desert Spring
Clark County (Cogentrix Solar Services LLC)
Apex Clark County
Desert Spring Clark County
Moapa Valley
Morman Mesa
Apex Northeast Las Vegas
Clark County (Cogentrix Solar Services LLC)
Dry Lake Valley
Apex Southern Nevada
Apex/ North East Las Vegas
NV
Las Vegas
AZ
Boulder City
N
0
5
10 Miles
Map 7 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

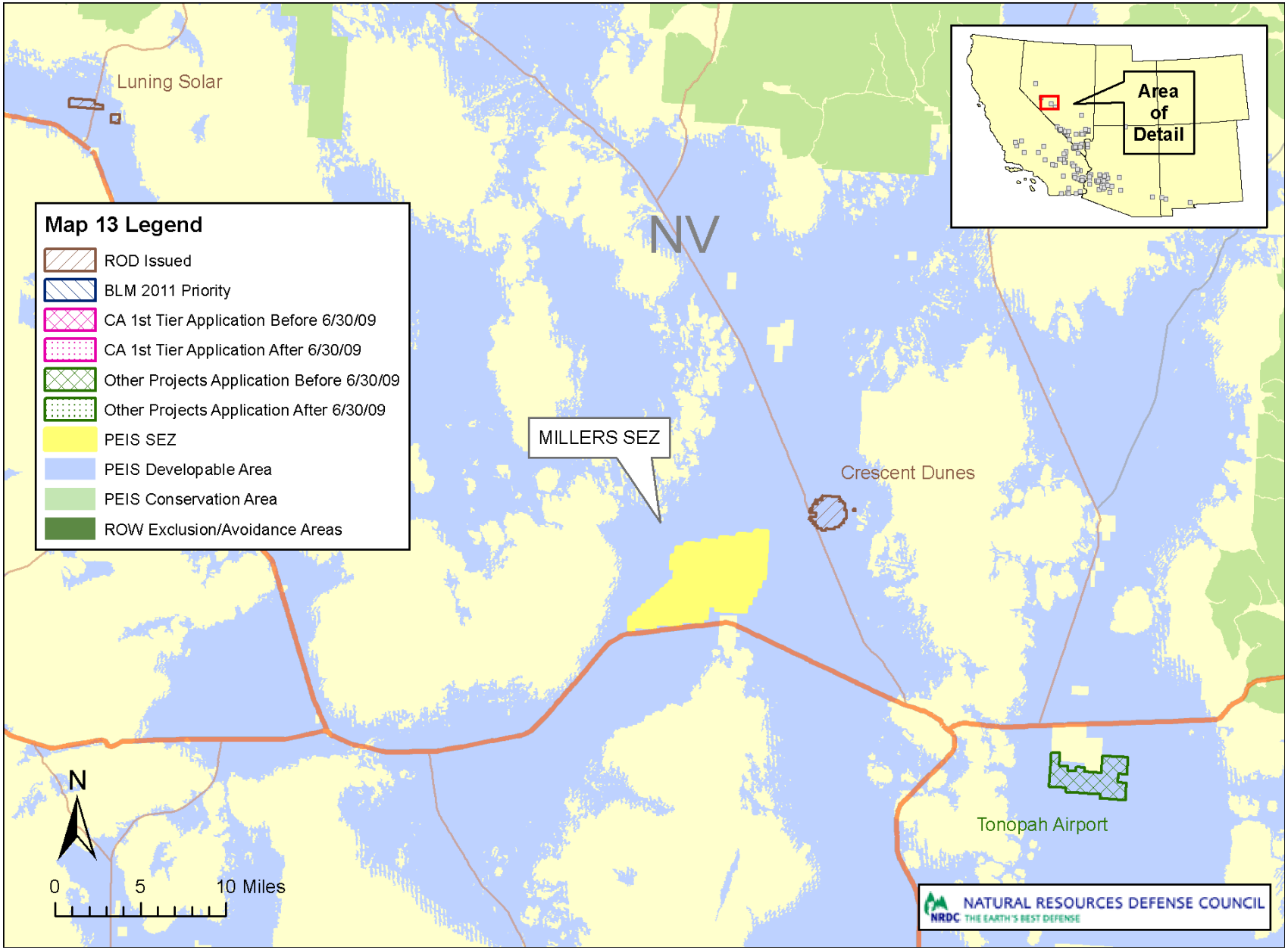

Map 8 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
CA
Chocolate Mountain Naval Aerial Gunnery Range
Area of Detail
Calipatria
Bannister
Superstition Solar 1
Brawley
IMPERIAL EAST SEZ
Ogilby Solar
Imperial Valley
Holtville
El Centro
Solar Reserve
Ocotillo Sol
N
0 5 10 Miles
Calexico
MEXICO
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

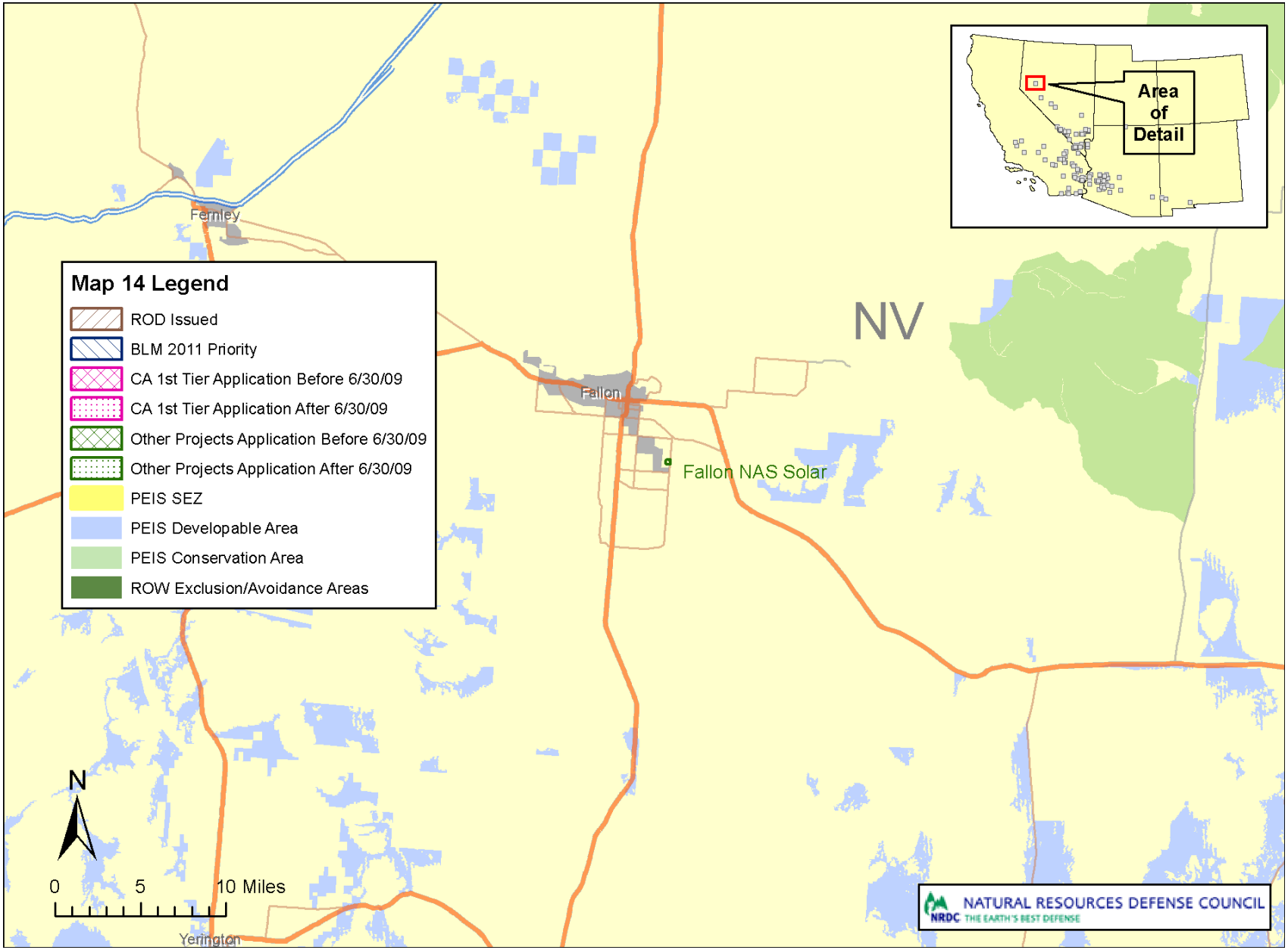

Map 9 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
CA
AZ
Parker
Bouse
Quartzite
(Solar Reserve LLC)
BRENDA SEZ
Gypsum
Solar
Quartzsite
Blythe
Quartzite
(First Solar/Nextlight
Renewable Power LLC)
Vicksburg
Ranegras
Las Posa
Solar Thermal
Yuma Proving Ground
Wildcat Quartzite
Area
of
Detail
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

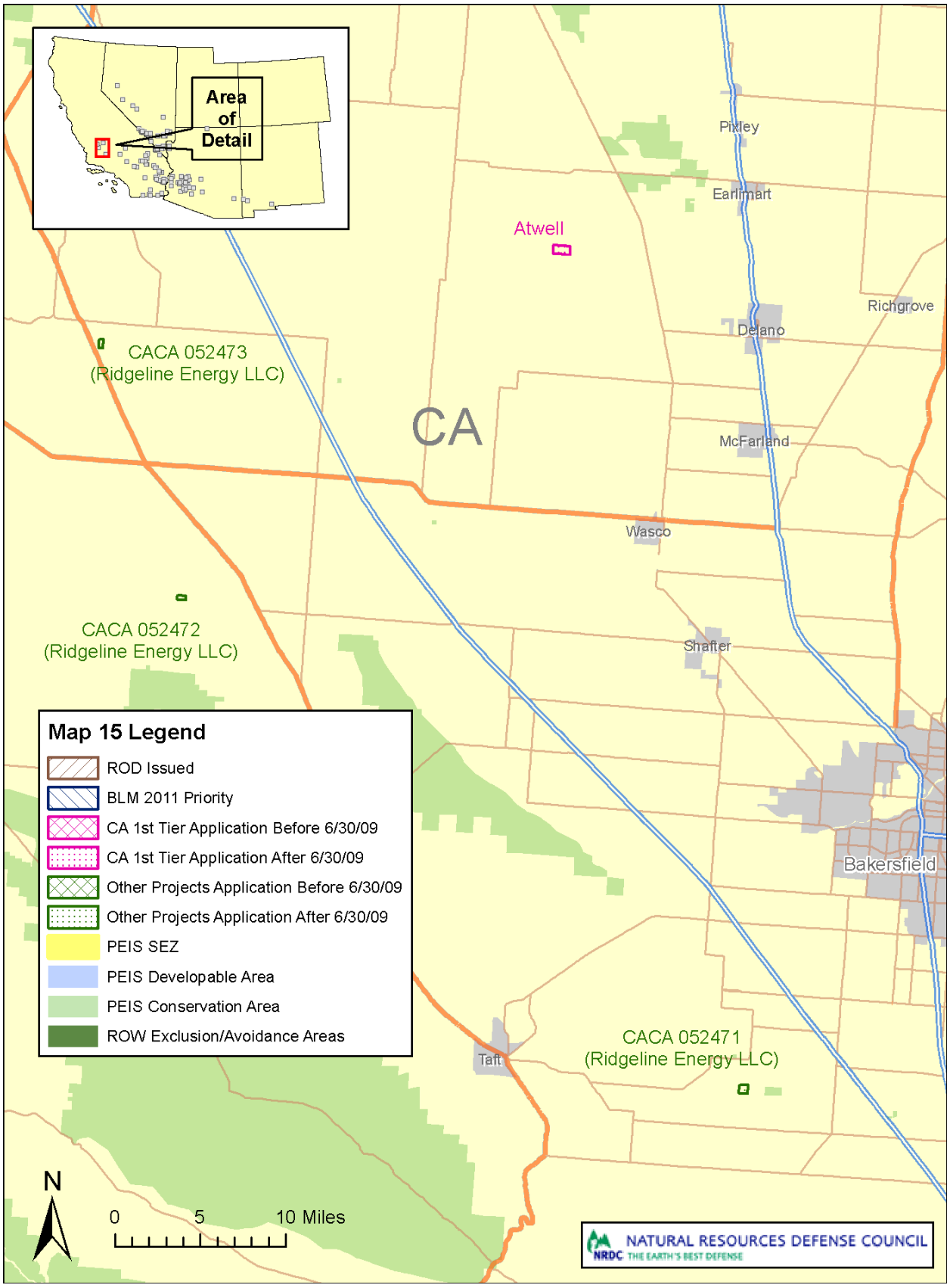

0
5
10 Miles
N
Safford
Area of Detail
NM
AZ
Safford Solar Energy Center/San Simon
Lordsburg Mesa
Lordsburg
Lordsburg
Map 10 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

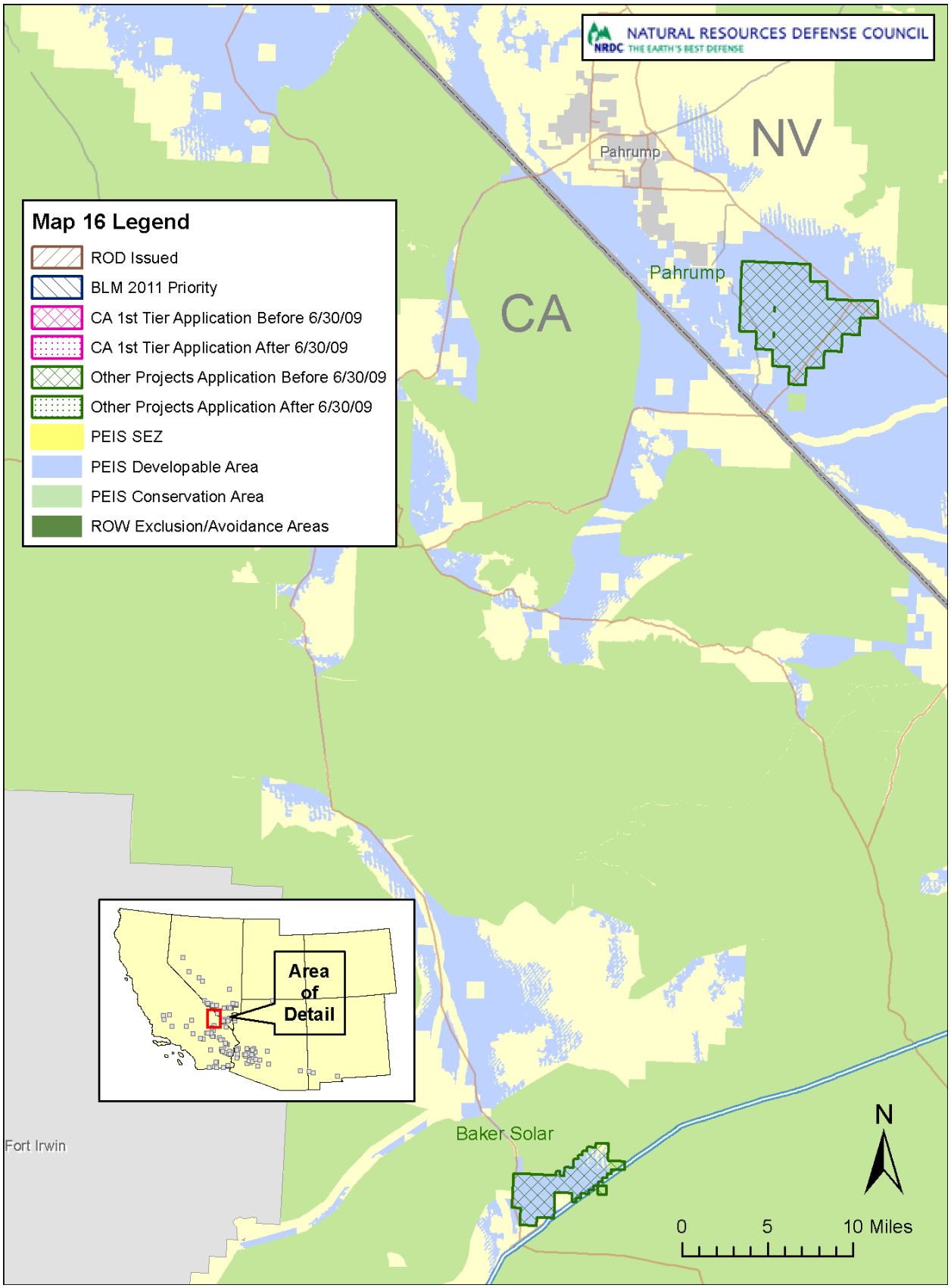

Map 11 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
N
0
5
10 Miles
NV
Bullhead City
AZ
Needles
CA
Cadiz/Trilobite
Cadiz
(Iberdrola Renewables)
Cadiz-East/Iberdrola
(Iberdrola Renewables, Inc.)
Twentynine Palms MCAg
Area
of
Detail
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

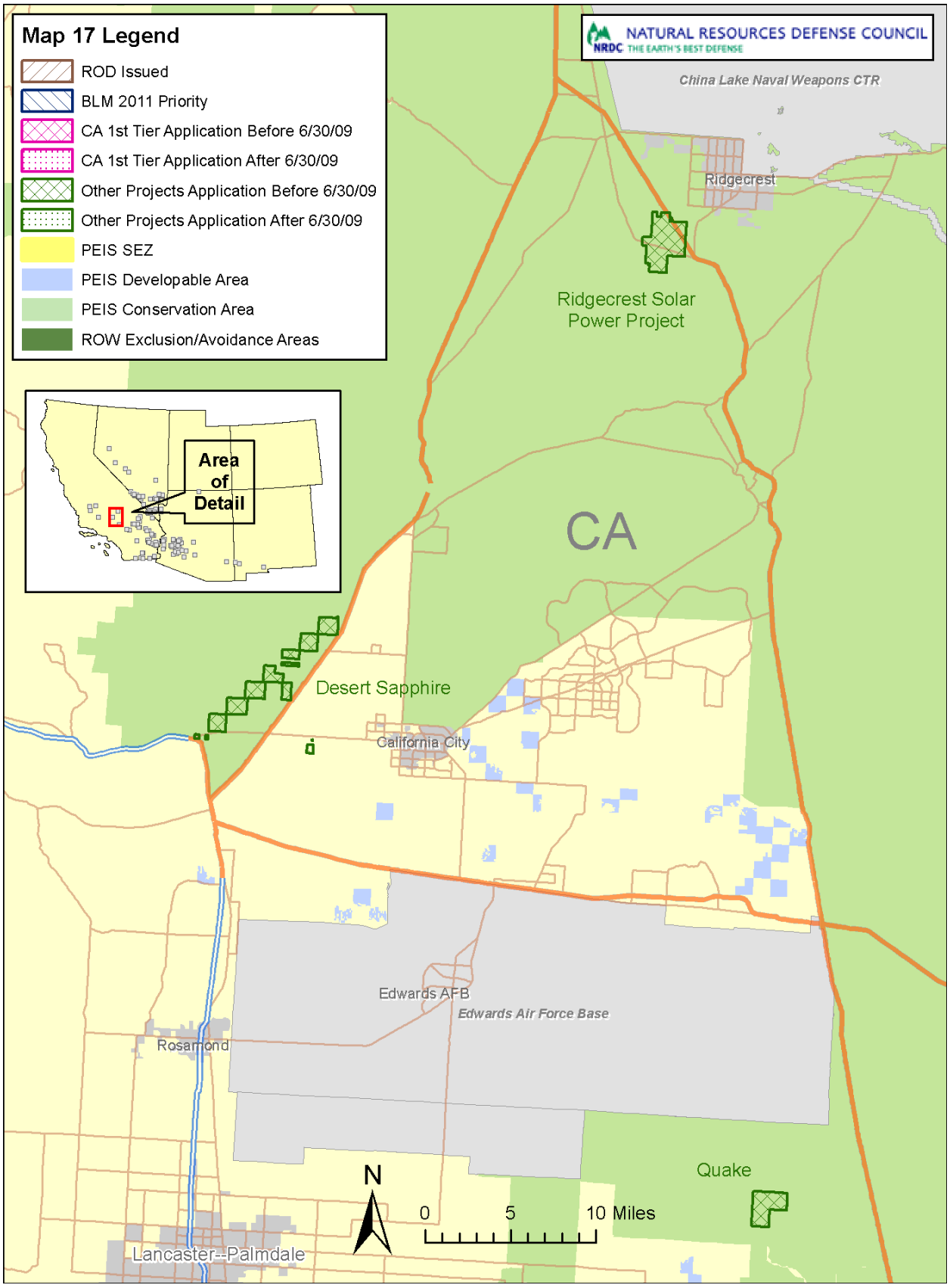

Area of Detail
NM
White Sands Missile Testing CT
MASON DRAW SEZ
Las Cruces
N
0
5
10 Miles
Afton
Vado
AFTON SEZ
Chaparral
TX
Fort Bliss
Map 12 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

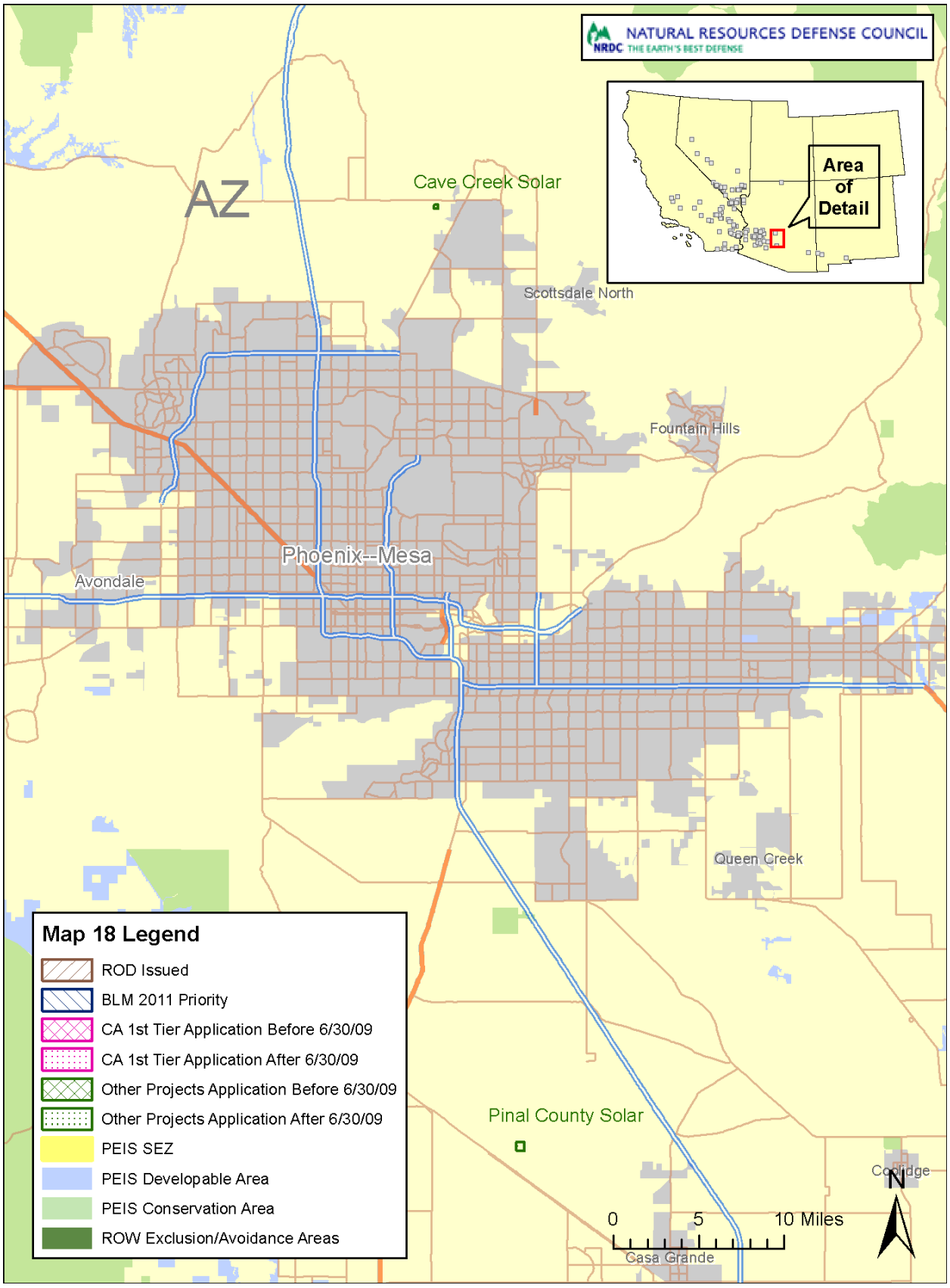

Luning Solar
NV
Area of Detail
Map 13 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
MILLERS SEZ
Crescent Dunes
Tonopah Airport
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

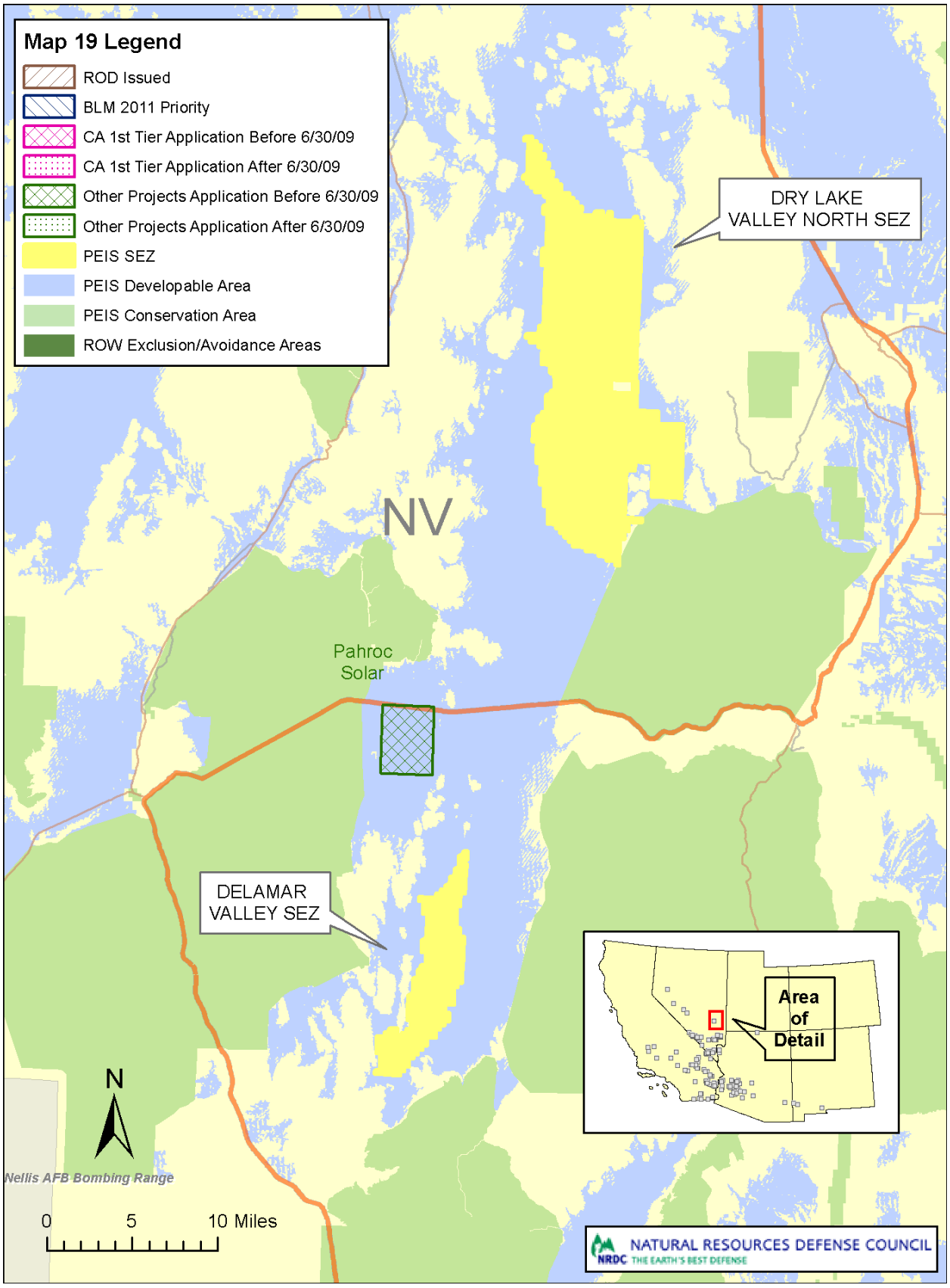

Area of Detail
Fernley
Fallon
Fallon NAS Solar
NV
Map 14 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
N
0
5
10 Miles
Yerington
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE

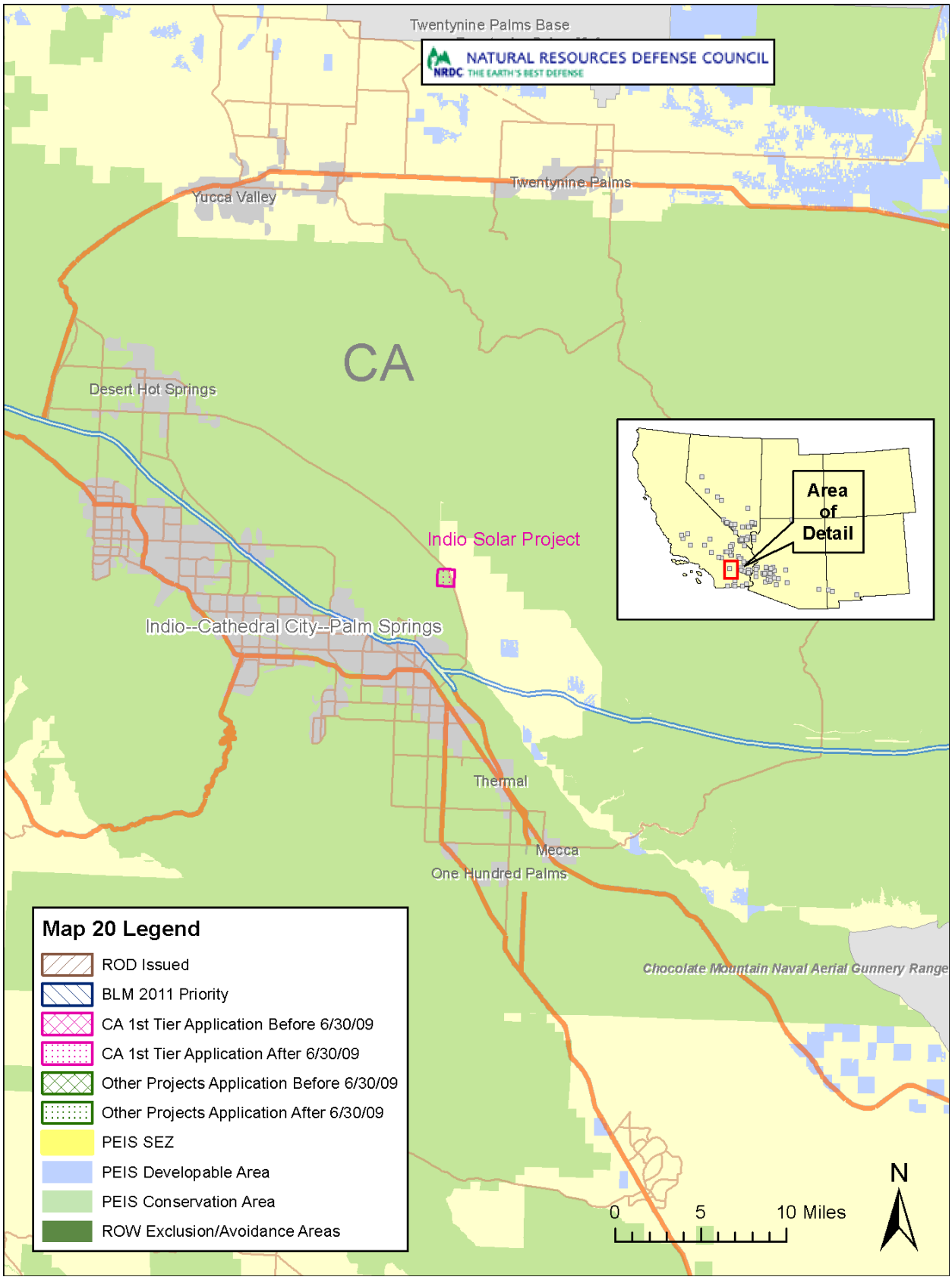

Area of Detail
Pixley
Earlimart
Atwell
Richgrove
Delano
CACA 052473
(Ridgeline Energy LLC)
CA
McFarland
Wasco
CACA 052472
(Ridgeline Energy LLC)
Shafter
Bakersfield
Taft
CACA 052471
(Ridgeline Energy LLC)
Map 15 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
N
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE


NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
NV
CA
Pahrump
Pahrump
Map 16 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
Area of Detail
Fort Irwin
Baker Solar
N
0
5
10 Miles

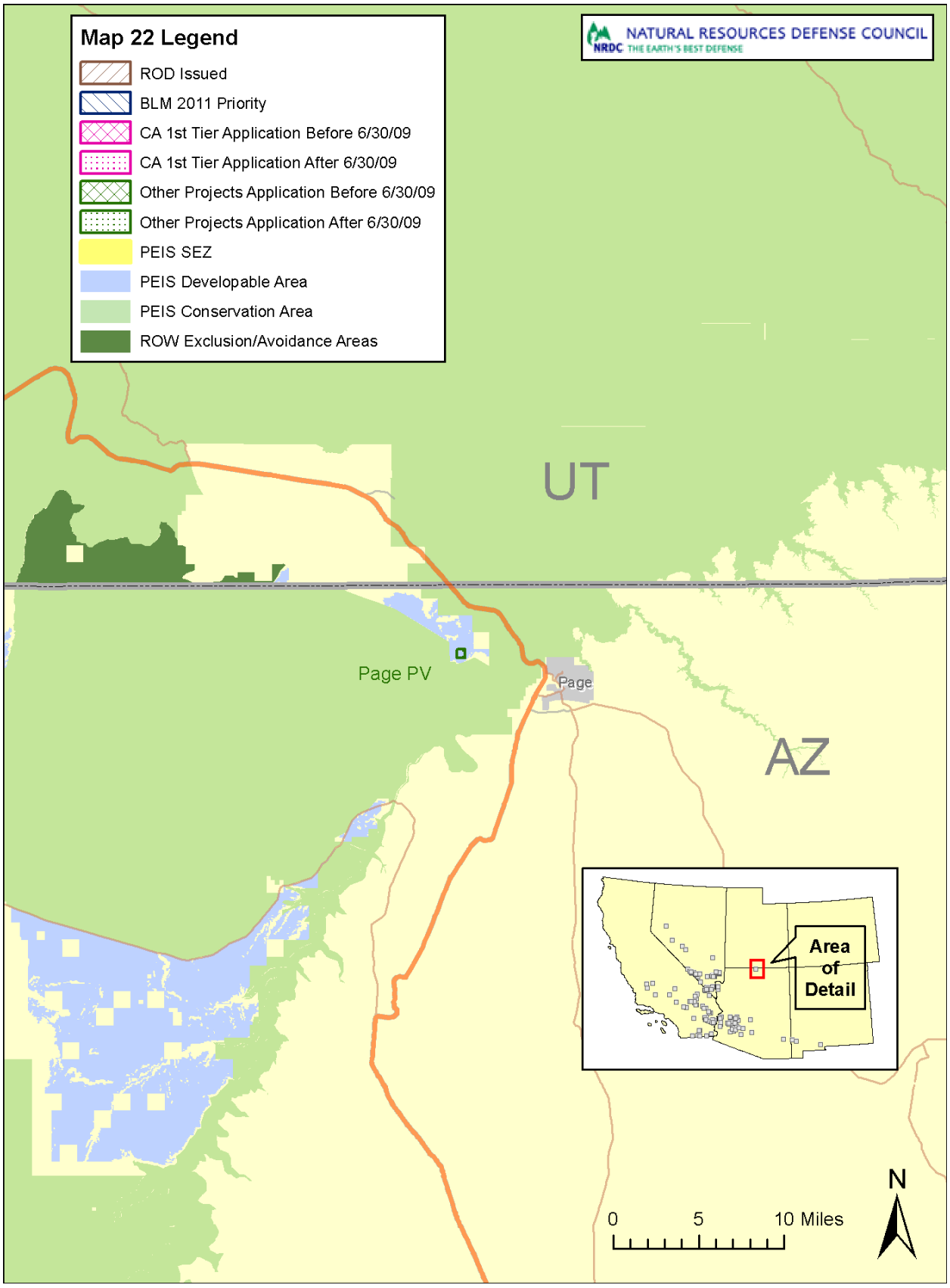

Map 17 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
Area of Detail
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
China Lake Naval Weapons CTR
Ridgecrest
Ridgecrest Solar Power Project
CA
Desert Sapphire
California City
Edwards AFB
Edwards Air Force Base
Rosamond
Quake
Lancaster--Palmdale
N
0
5
10 Miles


NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
Area of Detail
AZ
Cave Creek Solar
Scottsdale North
Fountain Hills
Phoenix--Mesa
Avondale
Queen Creek
Pinal County Solar
Coolidge
Casa Grande
0
5
10 Miles
N
Map 18 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas


Map 19 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
DRY LAKE VALLEY NORTH SEZ
NV
Pahroc Solar
DELAMAR VALLEY SEZ
Area of Detail
N
Nellis AFB Bombing Range
0
5
10 Miles
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE


Twentynine Palms Base
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
Twentynine Palms
Yucca Valley
CA
Desert Hot Springs
Area of Detail
Indio Solar Project
Indio--Cathedral City--Palm Springs
Thermal
Mecca
One Hundred Palms
Chocolate Mountain Naval Aerial Gunnery Range
Map 20 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
0
5
10 Miles
N


NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
Ramona
CA
San Diego
Imperial Valley
Tule Lake
MEXICO
Area of Detail
Map 21 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
0
5
10 Miles
N


Map 22 Legend
ROD Issued
BLM 2011 Priority
CA 1st Tier Application Before 6/30/09
CA 1st Tier Application After 6/30/09
Other Projects Application Before 6/30/09
Other Projects Application After 6/30/09
PEIS SEZ
PEIS Developable Area
PEIS Conservation Area
ROW Exclusion/Avoidance Areas
NATURAL RESOURCES DEFENSE COUNCIL
NRDC THE EARTH'S BEST DEFENSE
UT
Page PV
Page
AZ
Area of Detail
0
5
10 Miles
N

Appendix 1: Active ROW Applications

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
AZ									
	AZA 034184	Aguila	Boulevard Assoc LLC	6/26/2007		7335	500		
	AZA 034186	Burnt Mountain/Big Horn	Boulevard Assoc LLC	6/26/2007		5912	500		
	AZA 034187	Sonoran Solar Project	NextEra/Boulevard Assoc LLC	6/28/2007		14759	375	7/8/2009	
	AZA 034200	Mountain Spring	NextEra/Boulevard Assoc LLC	6/22/2007		6705	250		
	AZA 034201	Senator	Boulevard Assoc LLC	6/22/2007		15634	250		
	AZA 034321	Ausra Palo Verde	Areva Solar AZ II LLC	10/1/2007		5748	400		
	AZA 034335	Bouse	Boulevard Assoc LLC	6/8/2007		24221	1,000		
	AZA 034357	Gila Bend	First Solar	11/6/2007		6003	500		
	AZA 034358	Saddle Mountain	First Solar	11/5/2007		5997	300		
	AZA 034416	Eagletail	Pacific Solar Investments Inc	12/2/2007		26082	1,500		
	AZA 034424	Bighorn (Iberdrola)	Pacific Solar Investments Inc	12/4/2007		7240	900		
	AZA 034425	Hyder Valley Solar Energy	Pacific Solar Investments Inc	12/7/2007		5794	300		
	AZA 034426	Ranegras	Pacific Solar Investments Inc	12/2/2007		25860	2,000		
	AZA 034427	La Posa Solar Thermal	Pacific Solar Investments Inc	9/6/2007		38212	2,000		
	AZA 034540	Horizon Aguila	Horizon Wind Energy LLC	3/4/2008		11535	250		
	AZA 034554	Quartzite	First Solar/NextLight	3/26/2008		20699	600		
	AZA 034560	Vicksburg	First Solar/NextLight	3/26/2008		15040	500		
	AZA 034566	Centennial	First Solar/NextLight	3/26/2008		13428	500		
	AZA 034568	Palomas	First Solar/NextLight	3/26/2008		20165	500		
	AZA 034665	Black Rock Hill	SolarReserve LLC	5/27/2008		5600	600		
	AZA 034666	Quartzite	SolarReserve LLC	5/27/2008		26273	100		
	AZA 034668	Agua Caliente	SolarReserve LLC	5/27/2008		5678	600		
	AZA 034737	Haraquahala	IDIT Inc	7/10/2008		14047	500		

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	AZA 034739	Little Horn	IDIT Inc	7/9/2008		12292	1,000		
	AZA 034754	Horizon	Horizon Wind Energy LLC	3/4/2008		28760	250		
	AZA 034774	Dendora Valley	IDIT Inc	8/12/2008		14765	500		
	AZA 034797	LSR Jackrabbit	LSR Jackrabbit LLC	8/27/2008		27036	500		
	AZA 034799	LSR Palo Verde	LSR Jackrabbit LLC	8/27/2008		5855	600		
	AZA 034936	Wildcat Quartzite	BrightSource Energy	1/29/2009		11960	800		
	AZA 034946	Wildcat Harcuvar South	BrightSource Energy	1/28/2009		10947	800		
	AZA 035166	Arlington West	IDIT Inc	7/27/2009		5800	573		
	AZA 035236	Safford Solar Energy Center	SolarReserve LLC	1/4/2010		22892	250		
	AZA 035387	Forepaugh Solar	Ridgeline Energy LLC	5/4/2010		640	10		
	AZA 035388	Cave Creek Solar	Ridgeline Energy LLC	5/4/2010		40	5		
	AZA 035399	Pinal County Solar	Ridgeline Energy LLC	5/4/2010		160	10		
	AZA 035413	Page PV	Ridgeline Energy LLC	5/21/2010		160	10		
CA									
	CACA 047740	Imperial Valley	Tessera Solar North America	1/6/2005		6144	709	10/17/2008	10/5/2010
	CACA 048649	Desert Sunlight Solar Farm	First Solar	11/7/2006	Riverside East	20553	550	1/13/2010	
	CACA 048668	Ivanpah Solar Electric Generating Sys	BrightSource Energy	11/17/2006		1077	370	11/6/2007	10/7/2010
	CACA 048669	Stateline/Ivanpah	First Solar	12/14/2006		5454	380	12/14/2006	
	CACA 048728	Genesis McCoy	NextEra Energy	1/31/2007	Riverside East	7754	250		
	CACA 048741	Baker Solar	Solar Investments VI LLC (G-S)	1/18/2007		8384	350		
	CACA 048808	Sunpeak Solar	Chuckwalla Solar LLC	9/15/2006	Riverside East	4083	200	9/15/2006	
	CACA 048810	Palen Solar Project	Solar Millennium LLC	3/14/2007	Riverside East	5160	484	11/23/2009	
	CACA 048811	Blythe Solar Power Project	Solar Millennium/Chevron	2/15/2007	Riverside East	9569	1,000	11/23/2009	10/22/2010
	CACA 048820	Desert Sapphire	First Solar	2/13/2007		5299	745		
	CACA 048875	Broadwell Dry Lake	BrightSource Energy	1/24/2007		8625	500		

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	CACA 048880	Genesis Solar Energy Project	Genesis Solar LLC	1/31/2007	Riverside East	4640	250	11/23/2009	11/4/2010
	CACA 049002	Ward Valley	Leopold Company LLC	4/2/2007	Iron Mountain	35200	4,100		
	CACA 049005	Rose	Boulevard Assoc LLC	5/14/2007		8480			
	CACA 049007	Ward Valley	Boulevard Assoc LLC	5/14/2007	Iron Mountain	52480			
	CACA 049016	Ridgecrest Solar Power Project	Solar Millennium LLC	3/23/2007		3995	250	11/23/2009	
	CACA 049036	CACA 049036	Solar Partners V LLC	4/27/2007		640			
	CACA 049097	Mule Mountain	Bull Frog Green Energy LLC	10/1/2008		6586	2,500		
	CACA 049150	Supersition Solar 1	SunPeak Solar	7/17/2007		5588	500		
	CACA 049328	Crucero	FPL Energy	9/19/2007		13440			
	CACA 049397	Desert Quartzite	First Solar	9/28/2007	Riverside East	7245	600		
	CACA 049421	Siberia	Solar Partners V LLC	4/30/2007		13920			
	CACA 049430	Cadiz	Iberdrola Renewables	9/20/2007		13440	300		
	CACA 049432	Cadiz/Trilobite	PG&E	9/24/2007		5120	800	9/24/2007	
	CACA 049434	Trilobite Solar Facility	PG&E	8/31/2007		5900	800		
	CACA 049486	CACA 049486	Solar Millennium LLC	10/22/2007	Riverside East	3152			
	CACA 049488	Little Ford Dry Lake	EnXco Development Inc	11/13/2007	Riverside East	2049	200		
	CACA 049490	McCoy	EnXco Development Inc	11/13/2007	Riverside East	20480	300	11/13/2007	
	CACA 049491	Eagle Mountain	EnXco Development Inc	11/13/2007	Riverside East	930	300		
	CACA 049503	CACA 049503	Solar Partners VIII LLC	12/10/2007		1235			
	CACA 049504	CACA 049504	Solar Partners II LLC	8/20/2007		914			
	CACA 049537	Calico Solar Energy Project	Tessera Solar North America	3/14/2007	Pisgah	8264	663	6/8/2009	10/20/2010
	CACA 049561	Lucerne Valley Solar Project	Chevron Energy Solutions	12/7/2007		421	45	7/23/2009	10/5/2010
	CACA 049584	Caithness Soda Mtn	Caithness Soda Mountain LLC	12/18/2007		7995	350	12/18/2007	
	CACA 049585	Troy Lake Soleil	Power Partners Southwest LLC	12/12/2007	Pisgah	3834	1,000		
	CACA 049615	Ogilby Solar	Pacific Solar Investments Inc	9/5/2007		7405	1,500	9/5/2007	

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	CACA 049811	Ludlow	NextLight Renewable Power LLC	3/24/2008		5920	500	3/24/2008	
	CACA 049813	Cadiz East	Iberdrola Renewables	4/1/2008		12720	1,000		
	CACA 049884	Solar Reserve	SolarReserve LLC	4/24/2008	Imperial East	4000	100		
	CACA 049950	Palo Verde	Palo Verde Solar I LLC	5/8/2008	Riverside East	6158			
	CACA 050105	Caboose	Power Partners Southwest LLC	7/21/2008	Pisgah	6228			
	CACA 050131	Quake	EnXco Development Inc	7/21/2008		1921			
	CACA 050454	CACA 050454	FPL Energy	11/1/2008		1			
	CACA 050476	Troy Lake	Ausra CA III LLC	11/18/2008	Pisgah	3834			
	CACA 050504	Ward Valley	Ausra CA II LLC	11/18/2008	Iron Mountain	27000			
	CACA 050505	Iron Mountain	Ausra CA II LLC	11/18/2008	Iron Mountain	14000			
	CACA 050506	Danby Lake	Ausra CA III LLC	11/18/2008	Iron Mountain	16000			
	CACA 050528	Rabbit Lake Solar	IDIT Inc	12/8/2008		404	40		
	CACA 050891	Stateline	BrightSource Energy	5/21/2009		4160			
	CACA 051017	CACA 051017	BrightSource Energy	7/1/2009		19581			
	CACA 051023	CACA 051023	BrightSource Energy	5/12/2009		7989			
	CACA 051580	Bannister	Franconia Investments LLC	11/16/2009		3340			
	CACA 051611	Newberry Springs LLC	Newberry Springs LLC	12/29/2009	Pisgah	6228			
	CACA 051625	Ocotillo Sol	SDG&E	12/17/2009		115	14		
	CACA 051812	Atwell	Element Power	4/9/2010		1509	150		
	CACA 051950	Gypsum Solar	Ridgeline Energy LLC	3/3/2010	Riverside East	2840			
	CACA 051951	Mule Mountain	Ridgeline Energy LLC	3/3/2010	Riverside East	4270			
	CACA 051952	CACA 051952	Ridgeline Energy LLC	3/11/2010		1920			
	CACA 051954	Golden State Solar	NextLight Renewable Power LLC	3/25/2010	Riverside East	4120	250		
	CACA 051957	Blythe	Power Partners Southwest LLC	7/21/2008	Riverside East	8800			
	CACA 051960	Chuckwalla Solar I	Power Partners Southwest LLC	7/21/2008	Riverside East	4483			

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	CACA 051963	Coxcomb	Power Partners Southwest LLC	7/21/2008	Riverside East	7680			
	CACA 051964	Palo Verde	Power Partners Southwest LLC	7/21/2008	Riverside East	3195			
	CACA 051965	Blythe	EC&R Development LLC	7/6/2009	Riverside East	1440			
	CACA 051966	Palo Verde 1	BrightSource Energy	5/12/2009	Riverside East	6887			
	CACA 051967	Palo Verde 2	BrightSource Energy	5/12/2009	Riverside East	12269			
	CACA 051969	Chuckwalla Valley	BrightSource Energy	5/12/2009	Riverside East	19581			
	CACA 051970	Black Creek	BrightSource Energy	5/12/2009	Riverside East	20604			
	CACA 051972	Blythe	BrightSource Energy	11/9/2009	Riverside East	9307			
	CACA 051974	Palen	BrightSource Energy	11/9/2009	Riverside East	4520			
	CACA 052130	Indio Solar Project	Ridgeline Energy LLC	5/19/2010		640			
	CACA 052344	Desert Center II	Ridgeline Energy LLC	9/27/2010	Riverside East	260			
	CACA 052346	Stateline	First Solar	10/18/2010		4160			
	CACA 052471	CACA 052471	Ridgeline Energy LLC	12/23/2010		160			
	CACA 052472	CACA 052472	Ridgeline Energy LLC	12/23/2010		80			
	CACA 052473	CACA 052473	Ridgeline Energy LLC	12/23/2010		80			
	CACA 052494	Tule Lake	Ridgeline Energy LLC	12/23/2010		155			
NM									
	NMNM 119969	Afton	EnXco Development Inc	2/6/2008	Afton	3000	600		
	NMNM 120910	Lordsburg Mesa	Iberdrola Renewables	3/25/2008		24320	1,500		
	NMNM 121092	Lordsburg	SolarReserve LLC	8/11/2008		5296	100		
NV									
	NVN 083083	Primm/Jean Nevada	Cogentrix Solar Services LLC	1/18/2007		9760	1,000		
	NVN 083129	McCullough Pass	Cogentrix Solar Services LLC	1/18/2007		19840	1,000		
	NVN 083150	Amargosa	Cogentrix Solar Services LLC	2/14/2007		13440	1,400		
	NVN 083151	Pahrump	Cogentrix Solar Services LLC	2/14/2007		21141	1,000		
	NVN 083220	Beatty	Cogentrix Solar Services LLC	3/5/2007		12800	1,400		

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	NVN 083221	Big Dune	Cogentrix Solar Services LLC	3/5/2007	Amargosa Valley	22400	1,400		
	NVN 083914	Morman Mesa	BrightSource Energy	7/25/2007		14960	500		
	NVN 084052	Dry Lake Valley	NV Power Co	8/14/2007	Dry Lake	1959	120		
	NVN 084232	Desert Spring/Apex/NE Las Vegas	First Solar	10/22/2007		3215	400		
	NVN 084262	Tonopah Airport	Solar Millennium LLC	11/1/2007			300		
	NVN 084359	Amargosa Farm Road	Solar Millennium LLC	11/20/2007		6200	500	7/13/2009	11/15/2010
	NVN 084465	Amargosa North	Pacific Solar Investments Inc	12/7/2007		10006	300		
	NVN 084466	Amargosa South, Big Dune	Pacific Solar Investments Inc	12/7/2007		4480	500		
	NVN 084467	Bowman	Pacific Solar Investments Inc	12/7/2007		11000	1,000		
	NVN 084631	Apex/North East Las Vegas	BrightSource Energy	1/28/2008		2000	1,200		
	NVN 084654	Navy Solar	Navy FacEng Cmnd SW	1/25/2008		37	4		
	NVN 084704	Crystal & Johnnie	Amargosa Flats Energy LLC	3/12/2008		7040	140		
	NVN 085077	Silver State Solar Energy Project (S)	NextLight Renewable Power LLC	3/21/2008		7677	267	6/30/2009	10/12/2010
	NVN 085117	South Keyhole Canyon	Bull Frog Green Energy LLC	3/18/2008		3639	500		
	NVN 085201	Johnnie Pahrump	EwindFarm Inc	5/14/2008		11238	500		
	NVN 085215	Luning Solar	Luning Solar Energy LLC	5/20/2008		575	30		8/30/2009
	NVN 085601	Desert Spring	Cogentrix Solar Services LLC	7/11/2008	Dry Lake				
	NVN 085602	Johnnie Amargosa	Cogentrix Solar Services LLC	7/11/2008			720		
	NVN 085603	Anvil Road, Amargosa Valley	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085611	Amargosa Farm Road	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085612	Apex Clark County	Cogentrix Solar Services LLC	7/11/2008	Dry Lake	2012	240		
	NVN 085616	Johnnie Pahrump	Cogentrix Solar Services LLC				1,000		
	NVN 085619	Primm	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085620	Desert Rock NTS	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085621	NVN 085621	Cogentrix Solar Services LLC	7/11/2008					

State	Serial Number	Project	Developer	Application Date	Solar Energy Zone	Acres	MW	NOI Date	ROD Date
	NVN 085651	NVN 085651	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085652	NVN 085652	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085654	Amargosa Farm Road	Cogentrix Solar Services LLC						
	NVN 085657	Amargosa South	Cogentrix Solar Services LLC	7/11/2008		7700	720		
	NVN 085680	Hwy 95-Indian Springs	Cogentrix Solar Services LLC	7/11/2008					
	NVN 085773	Apex Northeast of Las Vegas	Cogentrix Solar Services LLC	7/11/2008		11584	1,000		
	NVN 085801	Silver State Solar Energy Project (N)	First Solar	3/21/2008		2560	60	6/30/2009	10/12/2010
	NVN 086158	Mud Lake	Power Partners Southwest LLC	9/18/2008		3885	250		
	NVN 086159	Apex Southern Nevada	Power Partners Southwest LLC	9/19/2008	Dry Lake	1751	250		
	NVN 086217	Mercury	Nye County Solar I LLC	9/29/2008		14160	300		
	NVN 086246	Lathrop Wells	Ausra NV I LLC	10/6/2008		4480	140		
	NVN 086248	Highway 160	Ausra NV I LLC	10/6/2008		10080	420		
	NVN 086249	Spector Range	Ausra NV I LLC	10/9/2008		4480			
	NVN 086292	Crescent Dunes	Tonopah Solar Energy Inc	11/5/2008		2094	110	11/24/2009	12/20/2010
	NVN 086350	Pahroc Solar	SolarReserve LLC	10/2/2008		7680	180		
	NVN 086571	Lathrop Wells	Abengoa Solar INC	12/12/2008		5280	550	7/15/2010	
	NVN 086782	South Solar Ridge	Southwest Solar Land Co LLC	2/23/2009		2640	138		
	NVN 087366	NVN 087366	Solar Millennium LLC	9/22/2008		6400	500		
	NVN 087756	NVN 087756	Solar Millennium LLC	6/4/2009		13571			
	NVN 088552	GA-SNC Solar LLC	GA-SNC Solar LLC	5/13/2010		825			

Thank you for your comment, Christine Canaly.

The comment tracking number that has been assigned to your comment is SolarD11864.

Comment Date: May 2, 2011 20:23:00PM
Solar Energy Development PEIS
Comment ID: SolarD11864

First Name: Christine
Middle Initial:
Last Name: Canaly
Organization: San Luis Valley Ecosystem Council
Address: P.O. Box 223
Address 2:
Address 3:
City: Alamosa
State: CO
Zip: 81131
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: 05.02.11.SolarDPEIScommentresponse.final.pdf

Comment Submitted:

PLease accept these comments and let me know you have received them. Thank you very much, we really needed the extension of deadline.
Sincerely,
Christine Canaly
Director
San Luis Valley Ecosystem Council
P.O. Box 223
Alamosa, CO 81101
(719) 589-1518

Monday, May 2, 2011

Delivered via electronic comment mail and hard copy U.S. post

Linda Resseguie, Project Manager
Solar Energy Draft Programmatic EIS
Argonne National Laboratory
9700 S. Cass Avenue - EVS/240
Argonne, Illinois 60439
http://solareis.anl.gov

Re: Comments on the BLM Solar Energy Draft Programmatic Environmental Impact Statement, (DPEIS) specifically, 4 study areas selected for Colorado in the San Luis Valley

Dear Ms. Resseguie;

Please accept and genuinely consider these comments regarding our draft response on behalf of the San Luis Valley Ecosystem Council. We also signed onto The Wilderness Society comments in regards to the PEIS for six western states. We serve the six county area of the San Luis Valley basin in South Central Colorado. We provide public policy recommendations for the entire Rio Grande Headwaters in CO, an area encompassing over 8,100 square miles.

San Luis Valley Ecosystem Council (SLVEC) The mission of SLVEC is to protect and restore—through research, education, and advocacy—the biological diversity, ecosystems, and natural resources of the Upper Rio Grande bioregion, balancing ecological values and human needs. SLVEC works as the only local public lands advocacy organization that is concerned about protecting and restoring intact ecosystems and wildlife corridors, from the mountain peaks to the rivers along the valley floor, and into New Mexico.

Since 1995 SLVEC has been serving the San Luis Valley, which is surrounded by 3.1 million acres of public lands that includes the Great Sand Dunes National Park, the Rio Grande National Forest, three National Wildlife Refuges, numerous State Wildlife Areas, 230,000 acres of wetlands- the most extensive system in the Southern Rocky Mountains, and some of Colorado's most remote wilderness. SLVEC originally formed to offer input for the Revised Management Plan of the Rio Grande National Forest (RGNF). Today it stands as a voice for citizens concerned about threats from increased motorized recreation, destructive timber sales, unbridled development, oil and gas development, and most recently, utility scale solar power facilities and transmission lines. We formed a Volunteer working group that has been working on solar/transmission issues for about 2 years. SLVEC has established a reputation for bringing a strong environmental voice that finds workable solutions to the rural, conservative, public arena. SLVEC has approx. 500 members and a mailing list of 4,000 supporters.

Thank you for giving us the opportunity to respond to, and offer input into the BLM and Department of Energy (DOE) Draft Programmatic Environmental Impact Statement (DPEIS) process for agency wide solar energy programs and policy.

We encourage both a national and a regional conversation on energy use and, especially, on fossil fuels and their impacts to climate change. It is imperative that our country makes the transition to the use of renewable energy sources. The warming effects are being felt in the San Luis Valley, as in other parts of the world, and are impacting wildlife, water supplies, and forest health.

We believe that renewable energy can offer a clean, affordable, sustainable, and environmentally friendly alternative. We support a measured approach, however, to the switch to alternatives. We recognize the unique and valuable aspects of the San Luis Valley.

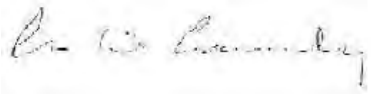
We understand that the Valley has enormous potential in the area of solar production, and has had a long history of supporting solar energy on a smaller scale. We encourage the development of renewable energy strategies that will promote the long-term health and well being of the community, and protect the environment, critical habitat, wildlife, sensitive corridors, and water, as well as the history and culture of this agro-pastoral community.

We urge the DOE and BLM to take a long term view when considering the scale, siting, water demands and the building of new transmission lines that will be required to accommodate Utility Scale Solar development in a culturally and ecologically sensitive area like the San Luis Valley (SLV). It is imperative that solar development remain **responsible and that renewable energy development does not compromise this area's unique values.**

We recommend a national model of appropriate energy development based on what is currently being implemented in European countries. They appear to exercise a three-fold strategy; emphasis on flexibility in size and scale fitted to location and need, constructing open ended systems that can rapidly integrate new technologies, and suitably subsidizing research and development that encompasses a range of alternative energy sources.

Thank you for considering these scoping comments and for your commitment to prioritize and bring the possibility of responsible renewable energy development to our nation's infrastructure. We look forward to a continual interchange of ideas and information throughout this process.

Sincerely,



Christine Canaly, Director, San Luis Valley Ecosystem Council www.slvec.org

There are 4 study areas within the San Luis Valley, representing all of Colorado totaling 22,000 acres.

1. DeTilla Gulch- North of Town of Saguache, between Hwy 285 and Hwy 17 in Saguache County

2. Four mile East-NW corner of Hwy 150 and 160 intersection, in Alamosa County

3. Los Mogotes East- directly west of Town of Romeo & Hwy 285 in Conejos County

4. Antonito Southeast- East of San Antonio Mountain in Conejos County

We understand that this programmatic effort will also require future site-specific NEPA analysis; however, we see many questions that are now ~~"r~~ipe" for evaluation and decisions at this time.

- We want to support a Solar Program but have serious concerns for the proposed scale and implementation here in the San Luis Valley.
- We are concerned about the presumption of large-utility scale solar energy development which would be a poor fit
- We feel the Solar NEPA process should evaluate a more reasonable array of alternatives including a more modest program with small-utility scale solar projects, for instance 10 mW on 100 acres, next to the 31 sub-stations located within the SLVcoordinated with smaller scale projects on private and municipal lands.
- Such a program would be properly phased to promote local jobs and revenue and to allow adaptive management over the 10-20 year planning window.
- Include a solar-energy-driven ecosystem conservation plan to offer a holistic guide to solar development including mitigation strategies and priorities.

Table of Contents

1) Cumulative Effects

The San Luis Valley Ecosystem Council (SLVEC) recognizes the BLM+DOE NEPA Interdisciplinary Team (IDT) has performed a Herculean task identifying and addressing cumulative environmental concerns over the six-state project area including 24 individual Solar Energy Zones (SEZs) and additional Solar Development Program "Zones Plus" areas. The Draft Programmatic Environmental Impact Statement (SOLAR DPEIS) does list many past, present, and reasonably foreseeable actions throughout the six-state project area; however, we do not see a thorough cumulative analysis of impacts for Colorado and the San Luis Valley.

Colorado is unique in the proposed Solar Program as addressed in the Solar DPEIS in that we are the only state where all Solar Energy Zones (SEZs would be located within the same watershed – the Upper Rio Grande (DPEIS Figure 2.2-3):

Most, if not all of BLM's utility scale solar development in Colorado would thus be focused upon our predominantly rural valley with its rich agricultural heritage, important national wildlife refuges on a critical North American flyway, and growing recreational industry based upon natural resources and panoramic viewshed. Incomes here are lower than other parts of the state, and national average, especially Conejos County (DPEIS Page 10.0-304) where most of the proposed SEZ development would occur. New jobs and revenue are certainly welcome, but the scale and cumulative effects of increased solar energy development are of great concern.

The San Luis Valley has an active, solar-friendly community now pursuing a number of community scale Distributed Generation (DG) solar opportunities and are very proud of our recently completed Sun Edison project in Alamosa County near Mosca, now generating 8.2 mW on 82 acres. But the San Luis Valley is also considered "transmission limited" (Renewable Energy Development Infrastructure (REDI) by the Colorado Governor's Energy Office 2009), so any significant solar development presses the need for transmission upgrades at a time when many residents are very concerned that new transmission corridors will unnecessarily fragment large areas of great conservation value and invite massive power projects that will impact our way of life and push our own DG solar projects to the side.

Additional Cumulative Impacts Assessment Needed – SLVEC believes that a thorough cumulative analysis of SEZ development in the San Luis Valley would reveal that large-utility scale solar power development, with "bigfootprints" modeled after traditional centralized utility models based upon fossil fuels, would have enormous cumulative impacts upon the San Luis Valley. We further believe that these cumulative concerns are now ripe for analysis in the SOLAR DPEIS and will not necessarily be properly addressed in future site-specific NEPA analysis (*kicking the can down the road*). A thorough cumulative impact assessment should lead

to reasonable mitigations to protect our communities and the environment while paving the way for future streamlined solar efforts. Indeed, the San Luis Valley is ready for more solar development, but we are cautious and want solar done for community enhancement.

> **Recommendation 1-1:** The DPEIS should recognize the unique Colorado situation of having all four proposed SEZs, in addition to significant ~~"~~Zones Plus" lands, located in the Upper Rio Grande watershed. This situation focuses and amplifies likely cumulative impacts of the Solar Development Program upon all other actions and resources in the valley, and calls for a more thorough, watershed based analysis than those states where SEZs would be more dispersed across the landscape.
>
> **Recommendation 1-2:** The DPEIS should recognize the likelihood of our community generating significant solar power on private and municipal lands, with SLVEC stated goals of maximum of 800mW to export over 10-20 years as well finding alternative solutions to the challenges facing the proposed new transmission corridor over La Veta Pass.
>
> **Recommendation 1-3:** The DPEIS cumulative impact assessment should guide a <u>solar-energy-driven ecosystem conservation plan for the San Luis Valley</u>. Such a conservation plan that would including ecological and agricultural planning and set the stage for future site-specific NEPA analysis, and outline general mitigation strategies based upon recent guidance (CEQ Guidance on Mitigation and Monitoring dated 16Jan11). BLM+DOE would find many willing partners on this effort and the SLVEC would be pleased to facilitate.

2) Solar Program DPEIS Purpose and Need

SLVEC fully embraces our need for a secure, sustainable energy future, and recognizes the DPEIS makes significant progress toward an efficient and enduring solar energy program in the six southwestern states. However, we challenge the logic that our national and state solar goals can be met only by centralized, large-utility scale solar energy facilities (DPEIS page 2-24). The DPEIS recognizes Distributed Generation (DG) solar projects as typically less than 10mW ~~"~~at or near the point of consumption," and that, while DG and utility-scale solar power will be needed to meet future needs in the United States, DG alone cannot meet the DPEIS Purpose and Need. The DPEIS then dismissed DG altogether and focuses on what appears to be an assumption of traditional, large footprint, large-scale solar energy development (DPEIS Page 2-24 lines 16-45).

Perhaps this is an issue of semantics, for the DPEIS identifies utility-scale solar project areas as ranging from 90 acres to 6,750 acres (DPEIS Page 2-7) and generating greater than 20mW (DPEIS Page 2-1). SLVEC recognizes that the low end of this range (90 acres) overlaps both DG and utility scales of solar power development. For instance, the successful Sun Edison project north of Mosca (8.2 mW of solar generation on 82 acres) would be large DG or small

utility according to the DPEIS. We believe more of this small-utility scale of solar development would be embraced in the San Luis Valley on both on Federal and non-Federal lands, but only with smaller footprint projects, installed step-by-step under a coordinated adaptive management scenario with community DG and other solar efforts. Multiplied many times over, such a cautious, phased small-utility scale effort could achieve great power goals while reducing cumulative environmental impacts.

Unfortunately, the DPEIS oversimplifies ~~"u~~tility-scale solar development" with overly broad language and opens the door to many of the cumulative concerns voiced in the 7Mar11 Public Comments meeting in Alamosa:

- Large-utility scale concentrated (big footprint) energy development will fundamentally change the energy future of the San Luis Valley, not necessarily for the good.
- Government-sponsored big-footprint energy development gives an unfair competitive advantage to large utilities with imperialistic business models and guaranteed profit margins, and no reason to respect local ownership, community needs, or the San Luis Valley ecosystem.
- Large capital projects will dominate energy development in the San Luis Valley, hindering local free-market innovation and smaller scale DG projects on private and municipal lands while driving the need for additional large-scale transmission development over La Veta Pass.
- Large-footprint projects are poorly suited to the adaptive management approach promoted by the environmental community, leading to maximum environmental impacts with expensive and often ineffective, after-the-fact mitigations.
- Large capital projects will proceed on a fast track, leading to boom-bust business cycles, short-term migrant jobs, and minimal long-term benefits to our local community.

These cumulative concerns and likely impacts are surely ripe for analysis, without which the DPEIS would fail to streamline future site-specific NEPA and proper tiering.

> **Recommendation 2-1:** The Solar DPEIS must make a reasonable estimate for amount of solar power that could be generated in the San Luis Valley, including BLM lands and non-BLM lands, and how much of this power could reasonably be exported to other markets.
>
> **Recommendation 2-2:** The Solar DPEIS must recognize and evaluate the cumulative impacts of a reasonable range of solar-energy development strategies including a more diverse, phased, small-footprint small-utility scale (100 acre = 10mW each) program that would better mesh with our local community DG efforts while helping meet Colorado renewable energy goals.

Recommendation 2-3: The Solar DPEIS baseline must recognize the likely scenario of significant power generation on non-BLM lands in the San Luis Valley, including private, state, and municipal lands. One local goal, for instance, is to develop 800 mW of solar power (120 mW for each of six counties) over the next 10-20 years.

Recommendation 2-4: The DPEIS should identify and evaluate barriers to free-market energy development in order to better meet its purpose and need. This should include evaluation of traditional heavy-footed centralized business models that hinder innovation.

3) Alternatives

The Solar DPEIS presents a limited set of alternatives:

- No Action = baseline conditions with 99 million acres of BLM lands available for utility-scale solar power development on a case-by-case basis.
- A Solar Energy Zone (SEZ) alternative which would focus utility-scale solar energy development on less than 1% of BLM lands, or 677,400 acres, under new program administration and authorization policies and mitigating design criteria. This is generally considered the ~~"g~~reen alternative."
- A Solar Energy Development Program alternative (Zones Plus) which would focus utility-scale solar energy development on 22 million acres of BLM lands available under the new program administration and authorization policies and mitigating design criteria. This is a compromise between the ~~"g~~reen alternative" and a push for more energy development opportunities on public lands.

The SEZ alternative lands near large load centers in California, Nevada, and Arizona may have more relevance, but they do not offer a reasonable array of alternatives for Colorado for at least three reasons:

- Our unique situation among the six southwestern states where we have all four SEZs and so much of the Zones-Only land in one watershed. This calls for a discussion of alternatives to reduce impacts including development of a <u>solar-energy-driven ecosystem conservation plan for the San Luis Valley</u>.
- The unacceptably broad definition of ~~"u~~tility-scale" solar projects which could include community friendly, light footprint, small-utility scale projects as well as heavy-footprint, large-utility projects with enormous direct, indirect, and cumulative impacts.
- The San Luis Valley's so-called transmission-limited status (REDI 2009) which argues for additional alternatives to evaluate Solar Program development with and without a new transmission corridor over La Veta Pass.

Connected Actions – The DPEIS does present existing transmission corridors (DPEIS un-numbered Figure of the four SEZs in San Luis Valley), lists present and reasonably foreseeable transmission projects (DPEIS Table 10.1.22.2-1), and discusses likely transmission corridors near the SEZs. However, we do not see the larger transmission issues properly considered as connected actions into the action alternatives (CEQ 1508.25(a)(1). SLVEC believes the interrelationship of power generation and transmission is critical to the understanding programmatic impacts here in the San Luis Valley and, indeed, should drive alternation alternatives. For instance, the assumption of large-utility scale solar development in the San Luis Valley drives the apparent need for additional transmission over La Veta Pass, a project that may not be available within the 10-20 year DPEIS planning window. This in turn suggests a more prudent action alternative for the SLV that builds upon existing transmission corridors. We feel that optimization of existing transmission and upgrade on existing lines is a more cost effective way to export electrical power from the San Luis Valley to market.

As discussed above, the action alternatives appear to promote large-utility scale solar development under business models developed by the fossil fuel industries. Without more detailed and diverse alternatives it will be impossible to truly understand or mitigate impacts in the San Luis Valley.

> **Recommendation 3-1:** The Solar DPEIS analysis should be expanded to include a reasonable array of renewable-energy development scenarios, from small-utility (100-acre = 10mW) up to large-utility (6,750 = 675 mW) scales. This should include a meaningful mix of connected actions tied to transmission capacities:
>
> - 150 mW – estimated to be needed locally, with available transmission within the valley.
> - 300 mW – energy needed locally + estimated to be exportable with available transmission over Poncha Pass.
> - 650 mW – energy needed locally + estimated to be exportable with upgraded transmission over Poncha Pass
> - More than 650mW which would presumably require additional transmission over La Veta Pass.
>
> **Recommendation 3-2:** The DPEIS should include an action alternative with light-footprint solar energy development that would meet realistic energy goals in the San Luis Valley:
>
> - A diverse mix of small-utility scale solar projects on public lands coordinated with similar scale projects on private and municipal lands.

- Project phasing over 10-20 years that would promote sustainable growth while allowing more effective adaptive management. For discussion, we propose a cumulative development of 10-30 mW per year over 10-20 years to meet our solar potential.
- Lower density layouts that would reduce impacts while promoting watershed conservation and better wildlife use of post-development landscapes.
- A community-friendly business model that would promote sustainable jobs, equitable revenue sharing, and solar-related multipliers including local suppliers.

Recommendation 3-3: The DPEIS alternatives must offer more detail on the DOE Solar Energy program including:

- Description of the existing solar energy program, priorities for funding, and concerns to be addressed in this DPEIS including barriers to innovation and free-market solar development.
- Description of what the DOE solar program might look like per the action alternatives.
- More detail on how the DPEIS will streamline future NEPA analysis and DOE approval processes.

4) Solar Project Authorization

The Solar DPEIS states that the BLM program would be implemented under a BLM-issued Right of Way (ROW) process (DPEIS Page 2-2). We understand the ROW process is typically used for cell phone towers, pipelines, irrigation ditches, and temporary roads. We believe this is not appropriate for solar-energy development in the San Luis Valley in part because it undercuts revenue generation and limits competition. For instance, the first-come-first-served approach used in ROW authorizations hinders innovation and makes it difficult for BLM to choose the best, most practicable projects with greatest public benefit. We understand that authorizations under leases promote better competition amongst project proponents and leads to greater Federal revenues.

Recommendation 4-1: The Solar DPEIS must identify and evaluate the logistical and financial differences between operating the Six-State Solar Program under ROW versus Lease authorizations, and present their environmental impacts as well as socioeconomic benefits.

Recommendation 4-2: The Solar DPEIS should identify and evaluate the regulatory hurdles necessary to change from the existing solar ROW authorization process to a competitive leasing approach, and begin to make that change as soon as possible to facilitate the next round of site-specific Solar NEPA in the San Luis Valley.

Recommendation 4-3: SEZ authorizations should be tied to a solar-energy conservation plan for the San Luis Valley.

SLVEC included a number of scoping comments in 2008 for inclusion in developing the DPEIS terms and conditions for authorization (reference). These terms and conditions are incorporated by reference here to continue our NEPA status:

- Reasonable Term and Diligent Development
- Changes in Applicable Laws and Regulations are Incorporated
- Monitoring, Phased Development, and Adaptive Management
- Restoration and Bonding
- Management Practices to Limit Impacts on the Environment

SLVEC thanks the DPEIS IDT for including most of these suggestions in the Solar DPEIS but remains concerned that these terms and conditions be carried forward with the DPEIS planning process.

5) NEPA Documentation

SLVEC respects the BLM/DOE effort to evaluate the Solar Energy Program for Six Southwestern States including 99 million acres of public land. Page by page, the Solar DPEIS is well written and organized. Overall, however, the 10,000-page –document" is clearly too large to meet the NEPA goal of –availability" (NEPA Sec. 102 (C). The document thus fails to fully inform the public and decision makers about the programmatic details and ramifications of the proposed program. We are particularly concerned that the emphasis on being thorough and consistent between SEZs has made the documentation encyclopedic, rather than dealing with many programmatic aspects ripe for analysis and communication with the public. Many taxpayers in Conejos County, for instance, do not have computers or cannot afford to print out thousands of pages of NEPA documentation.

For instance, the NEPA documentation for our Colorado SEZs look for all intent and purpose like four EISs stacked together. We do see summaries, but not enough comparisons to understand the proposed action alternatives. A quick editorial estimate shows 25% of the discussion is redundant, generally valley-wide discussion, while important differences between the SEZs are ignored such as:

- The proposed DeTilla Gulch and Fourmile East SEZs are located within transmission corridors with transmission lines in place. They would be located in the closed basin part of the San Luis Valley and on alluvial fan materials that would be relatively easy to engineer for access and facility development.

- The Los Mogotes East and Antonito SE sites are located away from transmission corridors. They would in lower part of the San Luis Valley in the Rio Grande Drainage on lava flows with sparse, shallow soils that would be more difficult to engineer for access and facility development.

Such programmatic comparisons would help the DPEIS meet the goal of streamlining future site-specific NEPA analysis while helping proactive project proponents better understand opportunities to become part of this important Solar Energy Program.

Recommendation 5-1: A NEPA summary document pertinent to Colorado should be prepared including:

- Project summary from Chapter 2 Description of Alternatives and Reasonably Foreseeable Development Standard.
- Summary of Colorado SEZs and Zones-Only Lands.
- Summary for each SEZ (DPEIS Parts 10.1.1, 10.2.1, 10.3.1, and 10.4.1, including tables).
- Mitigations outlined in DPEIS Appendix A.

This state-summary document should be available both electronically as well as hard copy available at local libraries and other clearinghouses at cost.

Recommendation 5-2: For Colorado at least, the DPEIS should dig deeper into the programmatic analysis to help readers and decision makers understand the program. This may be different for other states where SEZs are more dispersed.

6) Socioeconomics – Jobs and Environmental Justice

Solar enterprises and jobs are welcome in the San Luis Valley, but the presumed industrial model of heavy-footed large-utility scale solar development discussed above lends itself to a boom-bust cycle of short-term construction, temporary jobs, enormous pressures on local services, and limited economic benefits. Indeed, due to our unique situation with four SEZs and so much ~~"~~Zones Only" lands within our watershed, the stresses and strains of solar-energy construction would be amplified here in the San Luis Valley far beyond what would be experienced in the other five Southwestern States.

The DPEIS does discuss issues of Environmental Justice (for instance DPEIS Part 10.1.20) and estimates 2,000 to 4,000 jobs statewide from reductions in the recreation sector (Table 5.17-1) with additional concerns for ~~"~~a breakdown in social structures…alcoholism, depression, suicide, social conflict, divorce, and delinquency could increase, and levels of community dissatisfaction would deteriorate" from changes in demographics (DPEIS Page 5-230). These are hardly encouraging words for a disadvantaged community looking for honest work and fair treatment.

Local solar construction projects to date have resulted in a small number of temporary jobs and an even smaller number of jobs for long-term site maintenance and management. These experiences do not prove the jobs numbers typically presented by industry proponents. Even in jobs-hungry Conejos County where 74 % of the Colorado SEZ development would be located, locals are skeptical of industry jobs projections (for instance DPEIS Table 5.17-6) and concerned for the loss of traditional agriculture-related businesses. Again, we believe this is due at least in part to the presumed heavy-footprint large-utility scale of discussions and clear history of fossil-fuel business models throughout the six Southwestern States. SLVEC believes these concerns can be mitigated via the Solar PDEIS program with the analysis of a more reasonable array of solar development scenarios that better match local conditions for solar energy generation and transmission such as proposed in Part 3 above under ―Alternatives." In addition, we believe that phased, less centralized solar development would promote more multiplier effects including other solar-related industries such as a PV panel manufacturer or assembly facility here in the San Luis Valley.

> **Recommendation 6-1:** The Solar DPEIS should evaluate jobs-creation comparing the more reasonable array of build out models discussed above, including a phased, less centralized small-utility scale solar development program coordinated with DG and other small scale development.
>
> **Recommendation 6-2:** BLM should place conditions on solar project authorizations that promote cautious project phasing that would promote long-term, locally based jobs in the San Luis Valley. Phasing of 10-30MW per year over 10-20 years would promote more local jobs, and increased likelihood of local manufacture, while meeting renewable energy goals.
>
> **Recommendation 6-3:** The Solar DPEIS should recognize the implications of forcing large-utility scale projects upon disadvantaged communities in the San Luis Valley, including NEPA Environmental Justice Considerations.

7) Socioeconomics – Revenue and Environmental Justice

The small-utility scale Sun Edison project on private land in the San Luis Valley has proven to generate significant tax revenue for Alamosa County, and similar projects are now in planning and soon to be in construction phases with similar revenue expectations. However, solar projects on BLM lands, especially under ROW authorizations, are not expected to generate as much local revenue. In fact, the large-utility model is often seen as imperialistic, with outside utilities generating power to be exported out of the area with little benefit to the local community. Worse, we have real concern that large capital projects on public lands will have an unfair competitive advantage over local DG and small-utility projects, sapping local resources and further reducing local revenues.

SLVEC believes that properly phased, decentralized, small-utility solar generation and transmission would better serve our local economy while still helping meet renewable energy needs. While projects on private land have shown to be more beneficial, we encourage projects on BLM lands be analyzed that might have benefits if planned and implemented in a sustainable way.

Recommendation 7-1: The Solar DPEIS should evaluate projected costs and benefits of solar development in the San Luis Valley, comparing revenue generation and distribution in large-utility and small-utility scale projects.

Recommendation 7-2: The Solar DPEIS should identify and evaluate barriers to more equitable distribution of solar revenues including:

- The ROW vs. Lease authorization processes discussed above.
- Competitive project proposals

Recommendation 7-3: BLM should put conditions on solar project authorizations that would guide cautious project phasing which would in turn promote long-term revenues, including multiplier jobs and industries in the San Luis Valley. Also, there doesn't seem to be a direct tax or PILT process in place for counties to benefit from solar development on public land.

Recommendation 7-4: The Solar DPEIS should recognize the implications of forcing large-utility scale projects upon disadvantaged communities in the San Luis Valley, including NEPA Environmental Justice Considerations for Conejos County.

8) Solar Program Facilities Siting

The Solar DPEIS describes a thorough screening process used by BLM to eliminate almost 80% of BLM lands (99M – 21.5M) from the Zones Plus alternative and more than 99% of BLM lands for the SEZ alternative DPEIS Page 2-1 to 2-2). We understand this process was carried out in collaboration with local BLM field offices and eliminates land with open water, wetlands and riparian areas, critical habitats including habitat for Threatened and Endangered Species, areas with cultural resources including sites eligible for listing on the National Register of Historic Places, and other areas of important conservation values (DPEIS Table 2.2-2 on Page 2-8). In addition, the screening process did evaluate the possibility of development solar facilities on brownfields including previously disturbed grounds such as mining sites, closed industrial facilities, and landfills. This corresponds with our scoping comments dated 15July08.

We are concerned, however, that this screening only applies to solar-energy generation facilities and not to supporting linear infrastructure such as roads, transmission lines, and natural gas or water pipelines (DPEIS Page 2-7).

Recommendation 8-1: The Solar DPEIS should disclose any lands of important conservation value that is likely to be utilized in transmission, road, and pipeline corridors as part of SEZ development in the San Luis Valley.

Recommendation 8-2: The Solar DPEIS should disclose the presence of brownfields in and adjacent to the SEZs.

9) Natural Resources – Soil/Vegetation/Reclamation

We have reviewed the four Colorado SEZs by aerial photo and field reconnaissance site checks and see that the Solar DPEIS screening process described in Part 2.2.2.2 has eliminated most of the BLM lands with high ecological value including lands listed in our SLVEC scoping letter dated 10Sept09. Conversely, the low ecological function of these SEZ lands would present greater challenges to site development and reclamation. Disturbed areas would be prone to erosion from wind, vehicle use, precipitation, and increased water along facility drip lines. Thin soils will be difficult to manage, vegetation sensitive to disturbance, and the dry settings will make reclamation difficult.

The scale and layout of solar projects would have large consequences upon natural resource management. Heavy-footprint, large-utility scale projects would be difficult to fit into the landscape while creating more intensive disturbances over shorter periods of time and larger volumes of storm water over longer periods. On the other hand, light-footprint, small-utility scale projects would be easier to fit into the landscape and be more suitable to adaptive management including phased reclamation where ~~l~~live" materials from one project phase can be used to help reclaim another.

The DPEIS is ripe for evaluation of a solar-energy-driven ecosystem conservation plan for the San Luis Valley, identifying larger scale habitat values to guide site-specific NEPA analysis of the four SEZs, and high-value mitigations not readily apparent to site specific projects.

Recommendation 9-1: The DPEIS should include a conceptual solar-energy-driven ecosystem conservation plan for the San Luis Valley responding to likely solar-development impacts and offering guidance for future site-specific NEPA analysis. Conceptual conservation planning would include:

- Watershed based planning building on numerous sources including our SLVEC Ecosystem Map dated March11. **We submit link as a BLM/DOE resource.**
- **http://slvec.org/index.php?option=com_content&view=article&id=10&Itemid=10**
- Broad-based mitigation strategies that would guide future efforts and be fully funded by solar-energy development.

- No net loss of habitat values over the conservation area through restored habitat linkages, securing and restoration of important habitats, and protection under conservation easement.
- A net improvement of agricultural values over the conservation area through restored wildlife-friendly agricultural infrastructure, coordinated rest-rotation practices, and land protection through conservation easement.
- The SLVEC ecosystem base map as a planning base to be combined with other resources.

Recommendation 9-2: Site development plans should prohibit typical over-lot grading and be closely tied to habitat conservation plans to assure minimal disturbance, staging and immediate re-use of live topsoil and plant materials, and timely reclamation.

Recommendation 9-4: Site reclamation plans should include consideration of revegetation needs under solar panels. Consideration should include elevated panels to allow wildlife usage, and grass/shrub species suited to shade and reduced precipitation.

Recommendation 9-3: Site designs should take advantage of habitat modifications from solar panel shading and concentration of water along drip lines. For instance, all drip lines should fall into vegetated swales that connect to existing drainages.

10) Natural Resources – Groundwater/Surface Water

The Solar DPEIS sorting process has generally eliminated areas with open water, wetlands, and riparian areas with shallow groundwater. In addition, we understand all site development plans will include site-specific detailed surveys to further clarify site resources and develop mitigation strategies. As discussed above, we see the dilemma of working in these dry areas where solar facilities would shade out and block rain and snow but also concentrate water along facility drip edges. In addition, all four Colorado SEZs have value as water-recharge areas which would be modified by site development.

Here again, the scale and layout of solar projects would have large consequences on natural resource management. Heavy-footprint, large-utility scale projects would be difficult to fit into the landscape while creating more intensive disturbances over shorter periods of time and larger volumes of stormwater over longer periods. Such changes in hydrology could lead to increased overland flow and erosion of now-dry drainages. On the other hand, light-footprint, small-utility scale projects would be easier to fit into the landscape and be more suitable to adaptive management including phased reclamation and better connectivity between solar site drainage and adjacent natural drainages.

We commend the DPEIS for proposing to place a condition on authorizations to prohibit high-water-use solar facilities, consistent with our comments dated 10Sept09. This will go a long way toward re-assuring local residents.

> **Recommendation 10-1:** DOE should further evaluate water-conservation practices in solar-energy technology and develop performance-based standards for authorizations in the Proposed Solar Program.
>
> **Recommendation 10-2:** Site development plans should be closely tied to the solar-energy-driven conservation plan for the San Luis Valley recommended above.
>
> **Recommendation 10-3:** Site developments plans should include grading to collect drip-line water and other stormwater into vegetated swales connecting with existing drainages. Minor modifications of existing drainages may be required to handle additional flows possible from sites.

11) Natural Resources – Wildlife Habitat

The Solar DPEIS screening process described in Part 2.2.2.2 has eliminated most of the BLM lands with high wildlife value including lands listed in our SLVEC scoping letter dated 10Sept09. In addition, we understand all site development plans will include detailed surveys to further clarify site resources and develop mitigation strategies.

Not readily apparent from outside, these areas do have value to migrating birds, small resident mammals and the birds of prey who rely upon them as food base, and pronghorn antelope. We also understand there is some concern for migrating waterfowl mistaking solar arrays for open water. Upon recognizing their mistake, such waterfowl might not have the energy to regain flight elevations and be stranded in the dry areas chosen for the SEZs.

Here again, the scale and layout of solar projects would have large consequences upon natural resource management. Heavy-footprint, large-utility scale projects would be difficult to fit into the landscape while creating more intensive disturbances of wildlife populations. On the other hand, light-footprint, small-utility scale projects would be easier on resident and migrating wildlife, allowing them to disperse into closer adjacent areas. Light-footprint projects could be woven around existing habitat corridors, maintaining connectivity, as well as being more suitable to adaptive management.

The DPEIS is ripe for evaluation of wildlife characteristics in a solar-energy-driven ecosystem conservation plan for the San Luis Valley, identifying larger scale habitat values to guide site-specific NEPA analysis of the four SEZs, and high-value mitigations not readily apparent to site-specific projects.

Recommendation 11-1: The DPEIS should include the conceptual solar-energy-driven ecosystem conservation plan above in Recommendations 9-1 and 10-1. This plan should be watershed based and address a variety of wildlife habitat needs.

Recommendation 11-2: Site development plans should be closely tied to conservation planning including timing of disturbances and reclamation activities.

Recommendation 11-3: Site reclamation plans should include consideration of wildlife opportunities under solar panels. Consideration should include elevated panels to allow wildlife usage, and forage species suited to shade and modified precipitation.

Recommendation 11-4: Site development plans should take into account the possibility that high-flying waterfowl might mistake the solar facilities for open water areas.

12) Natural Heritage and Cultural Resources

The Solar DPEIS screening process described in Part 2.2.2.2 has eliminated most of the BLM lands with Natural Heritage and Cultural Resource values including lands listed in our SLVEC scoping letter dated 10Sept09. In addition, we understand all site development plans will include detailed surveys to further clarify site resources and develop mitigation strategies. Here again, the scale and layout of solar projects would have large consequences on natural resource management. We believe light-footprint, small-utility scale projects would be easier to blend into the landscape, including avoidance of Natural Heritage and Cultural Resources. As mentioned in previous comments, three of the four recommended sites are located within the Sangre de Cristo National Heritage Area.

13) Air Quality

Air quality is a big concern in the San Luis Valley and every disturbance has the possibility of generating dust. This will be a particular concern in the SEZs due to the factors listed above such as sparse soils and difficulty of re-vegetation. There is also some concern for air pollution should a solar facility catch fire.

Here again, the scale and layout of solar projects would have large consequences on dust and air quality. Heavy-footprint, large-utility scale projects would be offer large continuous areas susceptible to wind erosion and fewer natural breaks and traps. On the other hand, light-footprint, small-utility scale projects would be easier to fit into the landscape, retaining and enhancing natural dust prevention and capture features, and be more suitable to adaptive management.

Recommendation 13-1: Solar site development plans should include conservation methods to prevent dust erosion and capture dust as part of site layout. Additional measures including dust-inhibitors should be balanced against re-vegetation needs. (Dust inhibitors also can inhibit vegetation growth)

Recommendation 13-2: The Solar DPEIS should evaluate the impacts of low-probability events at developed solar sites including fire and explosions related to natural disasters and terrorism.

14) Visual Resource Management

The Solar DPEIS eliminates all BLM lands with high to moderate visual resource values (BLM VRM Classes I and II) as part of site selection (DPEIS Page 2-8) which agrees with our scoping letters dated 15July08 and 10Sept09. Thank you. We also understand the authorization process would prohibit high-profile solar facilities such as "power towers" and that all site plans would include visual resource evaluation. SLVEC supports these conditions.

Here again, the scale and layout of solar projects would have large consequences on visual impacts air quality. Heavy-footprint, large-utility scale projects would presumably include large continuous areas of solar panels with few visual breaks. On the other hand, light-footprint, small-utility scale projects would be easier to break into smaller areas spread across the landscape, reducing visual impacts.

15) Public Health

We did not find in the DPEIS discussion of potential impacts upon public health from Electromagnetic Frequencies (EMF) including EMF emitted from transmission lines near homes, schools, businesses or places such as the Blanca/Ft. Garland Community Center This is another reason to include transmission lines and necessarily connected actions to solar energy development.

Recommendation 15-1: The Solar DPEIS should develop and present general characteristics of EMF effects along all existing and proposed transmission corridors.

Recommendation 15-2: The DPEIS should evaluate the health effects of EMF from different scales of solar development.

Recommendation 15-3: Project authorizations should include evaluation of EMF effects upon local populations of humans as well as wildlife.

cc:
Erin Minks, Senator Mark Udall
Charlotte Bobicki, Senator Mike Bennet
Brenda Felmlee, Rep. Scott Tipton
Jane Summerson, DOE
Andrea M. Jones, BLM La Jara
Jeanna M. Paluzzi, CSU Extension, GEO Office

Thank you for your comment, Julie McKown.

The comment tracking number that has been assigned to your comment is SolarD11865.

Comment Date: May 2, 2011 20:23:28PM
Solar Energy Development PEIS
Comment ID: SolarD11865

First Name: Julie
Middle Initial: C
Last Name: McKown
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

I'm writing concerning a proposed solar development site located approx. 3 miles SW of Rockville, Utah and Virgin, Utah. This area has just recently become a very desirable outdoor recreational tourist location. Although I completely endorse solar energy projects I believe there are better locations than this. Thank you, Julie McKown

Thank you for your comment, John Beach.

The comment tracking number that has been assigned to your comment is SolarD11866.

Comment Date: May 2, 2011 20:33:45PM
Solar Energy Development PEIS
Comment ID: SolarD11866

First Name: John
Middle Initial:
Last Name: Beach
Organization:
Address: Box 91
Address 2:
Address 3:
City: Desert Center
State: CA
Zip: 922390091
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

The Solar Programmatic Environmental Impact Statement (PEIS) preferred alternative would reduce the amount of BLM land available for solar project applications (in six southwestern states) from the current figure of 99 million acres to 22 million acres. Within the 22 million acres are 24 Solar Energy Zones (SEZs) with a total of 677,000 acres. The Riverside East SEZ (Desert Center to Blythe) is the largest, at 202,000 acres.

The 24 SEZs would be priority development areas, however the balance of the 22 million acres, subject to subsequent evaluation and reduction, would remain available for application. But each project, whether located within a SEZ or not, would still have to be approved as at present.

There are five utility-scale solar projects from Desert Center to Blythe Airport that are either approved (two) or expected to be approved (three) shortly. All five would begin construction in 2011.

Approved:
NextEra – Ford Dry Lake, 1950 ac, 250MW, parabolic trough
Solar Millenium – Blythe Airport, 5950 ac, 1000MW, parabolic trough

Pending:
First Solar – Desert Center, 4410 ac, 550MW, photovoltaic
Solar Millennium – 10 mi E of DC, 2970 ac, 500MW, parabolic trough
SolarReserve – Rice, 1387 ac, 150MW, power tower (private land, not part of the SEZ)

Besides these five projects, there are nine others in the Riverside East SEZ that are early in the process.

I support the preferred alternative, to allow solar applications on 22 million acres of BLM land, with the following observations:

1. The Riverside East SEZ is too large because it would allow development of vast portions of open desert within a compact area. At 202,000 acres, it contains 30% of the land in all 24 SEZs. Five projects are to begin construction this year in the Riverside East SEZ and nine others are in the pipeline - the size of the SEZ should be limited to that land presently under consideration.

2. The underlying aquifer cannot support major development of the Riverside East SEZ.

3. The Riverside County General Plan has marked the triangle between Desert Center (SR-177 at I-10) and Lake Tamarisk for community development, however that area is presently also included in the SEZ and so it could potentially be used for solar instead. Similarly, the SEZ includes frontage along Kaiser Road and SR-177 (Rice Road) that would be prime commercial property.

Thank you for your comment, Paul Malone.

The comment tracking number that has been assigned to your comment is SolarD11867.

Comment Date: May 2, 2011 20:37:10PM
Solar Energy Development PEIS
Comment ID: SolarD11867

First Name: Paul
Middle Initial: A
Last Name: Malone
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

I have been a resident of the High Desert near Barstow for 33 years. I have grown to love and respect it. I have worked for NASA at the Deep Space Tracking Station at Goldstone near Barstow, and now I teach Renewable Energy at the Victor Valley College in Victorville. Because of the copious amount of sunlight here, I have taken my home and family OFF-GRID and make all our own electricity from the sun. I personally know the desert can produce a lot of energy from both solar and wind.
I support solar energy in the desert, but I am very concerned about carving up the desert with technologies that are very inefficient and waste the potential of this great resource.
At Victor Valley College we have installed a one Megawatt GaAs dual-axis solar array on seven acres that will save the college over twenty million dollars over the next twenty years. This technology (Solar Concentrator by Sol Focus) is over thirty percent efficient and can produce about ten megawatt-hours every day. This is exceptional! A comparable technology is the Stirling Engine from Tessera that can achieve thirty-five percent efficiency.
On the same seven acres, a fixed array from First Solar utilizing CdTe technology would have produced between two and three megawatt-hours per day due to its poor efficiency and fixed axis. Because of its low installation costs, this is becoming the preferred technology for installations in the desert.
Our desert is more important to us than to allow a sub-standard technology to proliferate throughout the Mojave Desert.

Thank you,
Tony Malone

Thank you for your comment, Harriet Jernquist.

The comment tracking number that has been assigned to your comment is SolarD11868.

Comment Date: May 2, 2011 21:04:05PM
Solar Energy Development PEIS
Comment ID: SolarD11868

First Name: Harriet
Middle Initial:
Last Name: Jernquist
Organization:
Address:
Address 2:
Address 3:
City:
State:
Zip:
Country:
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

I favor solar energy

Thank you for your comment, David Beaumont.

The comment tracking number that has been assigned to your comment is SolarD11869.

Comment Date: May 2, 2011 21:21:12PM
Solar Energy Development PEIS
Comment ID: SolarD11869

First Name: David
Middle Initial:
Last Name: Beaumont
Organization: Mojave Trails Group
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip:
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

Solar PEIS Comment
From: David Beaumont
Founder of Mojave Trails Group.
Alternate Stakeholder to the Desert Renewable Energy Conservation Plan (DRECP) for the California Off Road Vehicle Association. (CORVA)
Founding member of the Recreational Access Committee of California. (RACC)
Life Member of the Blue Ribbon Coalition.
May 2nd 2011

This document is in violation of NEPA.

This document fails to analyze the negative effects it causes to personal, interpersonal, and social relationships for individuals and groups of people who utilize motorized vehicles as a means of transportation and recreation on public lands.
As this program is designed, there is a negative cumulative effect to these individual's sense of self and their perceived worthiness as part of the whole of our social culture.
These people see that the solar projects are being taken care of, they see that endangered species and their habitats are being taken care of, all at the expense of their personal access to public lands. This process has a detrimental effect on their sense of self worth.
By failing to sufficiently consider, and appropriately mitigate the damage done to these peoples, this document has failed to include the broad range of "human" aspects of the effects and impacts of this program.
Such people include, but are not limited to:
Handicapped, physically challenged, or aged individuals; rock hounds; astronomers using telescopes; campers, where access was achieved by motorized vehicles; hunters; in short, any person or group of persons, which requires the use of motorized vehicles to safely transport themselves and their equipment for their chosen recreational activity; or operation of motorized vehicles for sport.

To correct this omission this document shall include:

A thorough Social Impact Analysis (SIA) to establish the short and long term impacts and effects of the programs established inside this Solar PEIS on motorized users of public lands when faced with incremental restrictions and loss of access to those public lands.

Establishment of a mitigation plan based on the findings of this study.

In part, this SIA should reference the scientific document(s) which are discussed in brief at this location:

http://library.constantcontact.com/download/get/file/1104629435579-4/Study+Confirms+OHV.pdf

Sincerely,
David Beaumont

Thank you for your comment, Carlos Garcia.

The comment tracking number that has been assigned to your comment is SolarD11870.

Comment Date: May 2, 2011 21:28:29PM
Solar Energy Development PEIS
Comment ID: SolarD11870

First Name: Carlos
Middle Initial:
Last Name: Garcia
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip:
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment: Carlos Garcia Public Conments on BLM Antonito Southeast.doc

Comment Submitted:

I am strongly opposed to the proposed Antonito Southeast solar zone, state of Colorado. I have lived in the Antonito community all of my life, self-employed as a farmer and cattle rancher. My family is the current permittee of the BLM Alta Lake Grazing Permit. I was unaware that our permit was being considered for solar development until Saturday, April 30, 2011. To my knowledge, as a permittee, I have never received written correspondence from BLM regarding this proposition. I recently grazed the permit in the fall of 2010 and I am currently planning of grazing the permit during the months of May and June, 2011, anxiously waiting BLM approval for a start date of at least May 5, 2011.

Sheep and cattle ranching has been a part of my family for a confirmed four generations. Factually, my grandfather and my father were proud owners of the Alta Lake Grazing Permit and I inherited it, along with my two brothers, upon the passing of our mother and father. My father and grandfather originally used the permit to pasture a flock of approximately 1,000 sheep. My father, in the early 1970's converted the permit to a 200 herd of cattle permit. Since then, the permit was annually grazed in the fall by his cattle and my cattle. Since I became a permittee, I have needed this permit in order to successfully remain in the cattle business. Records will show that I have used this permit every time the grazing periods become available. If this zone is approved, the impact to my family and I is significant. I will be forced to sell my cattle herd and look for employment elsewhere.

If approved, the impact to the antelope herd will also be significant. My observations lead me to conclude antelope depend on the grazing in the Alta Lake Permit during certain times of the year. Historically, this permit and the land proposed has the capacity to adequately feed the antelope during their migration cycles and provide ample pasture grasses and sage for sheep and cattle grazing. There is no water for the antelope in the permit, requiring the antelope to migrate daily to the San Antonio River, which is approximately 1.5 miles from the north boundary fence of the permit. My point is this permit is the closest BLM land to the San Antonio River, which makes the permit ideal for the preservation of antelope and

other wildlife in the area. The impact would be significant to the herd if they were no longer able to graze the land.

Further, my understanding is the water that once was channeled through the permit has been abandoned and/or sold, and there are no plans or rights of ownership to plan on having access to water for development of any kind. Currently, I haul water for my cattle to drink to parts of the permit and centered in the middle of the permit is a 300 foot well that is designated for livestock drinking water only. My understanding at the time the well was drilled in the 1980's is water could not be found any higher than 300 feet down and the pump flow is poor, as we have to run a generator for a minimum of 3-5 hours a day to adequately water the cattle. Therefore, I believe water is one major reason to deny approval of this zone for solar development.

Transmission of solar energy produced is a major disadvantage, due to the lack of proximity to the nearest substation, which is south of the Town of Antonito. The cost would be significant to develop transmission lines to move the electricity produced. Transmission lines would have to be developed under/and or above the San Antonio River to hook onto the Town of Antonito substation, which is an environmental impact. Who would bear the cost? How fair would it be to ranchers, such as myself, for the government to subsidize large companies for this type of development and all these years, to not subsidize my operation in relation to surface water rights for my cattle to drink, providing me with electrical power to pump water for my cattle, and/or other forms of subsidy that would assist me in reducing my operating costs? When one considers the east most part of the proposed Antonito Southeast Zone, it is highly impractical, not feasible, not cost efficient to consider the majority of the land proposed and my fear is who would bear the developmental costs for what could become a private ownership profit. I do not see it being fair to make government subsidy funds available for infrastructure costs that are essentially funded by the taxpayer?

Another area of concern is the environmental and ecosystem impact on the proposed area. The composition of the surface land is predominately

volcanic rock and soils. This land by all accounts is not flat land; there are not large sections that meet the description of uniformity. The land would have to be bulldozed; volcanic rocks would have to be stockpiled and/or hauled away, which means the land would have to be significantly impacted during the construction process. Rabbits, rattlesnakes, other snakes, gophers, rats, and other rodents would be greatly impacted. Coyotes are abundant in the proposed zone and I am certain they depend on rabbits and other animals for their livelihood. The impact to the types of sage and other plants that wildlife, sheep, and cattle depend on will be significant, if this land is disturbed. We know the nearby San Antonio Mountain was a volcano at one time and these proposed zones are the geological remains of what happened back then. Once again, the environmental and ecosystem impact will be tremendous, if approved.

I can empathize with the lack of employment in Conejos County and all areas of the United States that are hurting. However, one knows these projects provide temporary employment and a small number of full-time jobs, once the project is completed. I also acknowledge the need for renewable energy. However, I believe there are alternatives that need to be considered, other than proposing government owned land that is currently designated for a purpose such as the proposed one I have talked about. I know there are private property owners that would be willing to sell their land for this type of development, with water rights attached to it. Let the large companies and the developers/investors seek private land owners that are willing to part with their land and at the same time leave government/public owned lands out of the development process that has the potential to become a private ownership profit. In addition, there are other proposed BLM solar zones that might have no designated purposes, such as livestock grazing permits, etc., and I would support these lands be the ones to approve, because of the lack of impact to current forms of operations that depend on the use of the land.

In conclusion, I will repeat that I am strongly opposed to any approval of the Alta Lake Permit land and the adjacent grazing permit owned by the Moeller family for solar development for the above stated reasons and the reasons I further wish to emphasize below. As mentioned above, I have

never been contacted by anyone from BLM regarding my thoughts on the proposal. I don't believe it is professional of BLM staff to not notify me earlier that my permit was being considered for such development. If the current law does not provide a protocol for involving and notifying grazing permitees, I am recommending protocol be implemented during the initial phase of such a proposal in order to adequately treat all involved equitably. I must emphasize there will be environmental and ecosystem impacts which will be significant, if approved.

Also, I am more than willing to testify in person. I am more than willing to become actively involved in this process, as I do not believe it is fair that people that are not aware of the lay of this land and the historical purposes of the land are the only ones involved. I kindly ask that my public comments be shared as the process continues, especially the fact to consider that I would be significantly impacted, if approved. Also, I ask my concerns be further studied and evaluated in order to secure data as to what the impact really is.

Carlos Garcia

Thank you for your comment, Charles Alton.

The comment tracking number that has been assigned to your comment is SolarD11871.

Comment Date: May 2, 2011 21:51:21PM
Solar Energy Development PEIS
Comment ID: SolarD11871

First Name: Charles
Middle Initial: C
Last Name: Alton
Organization: Alton Strategic Environmental Group
Address: 9745 Conservation Drive
Address 2:
Address 3:
City: New Port Richey
State: FL
Zip: 34655
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Draft Solar PEIS 5-2-2011 Final comments.doc

Comment Submitted:

Alton Strategic Environmental Group

New Port Richey, FL
charles.alton@earthlink.net

April 28, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue – EVS/240
Argonne, IL 60439

Dear Solar Energy PEIS Manager,

The three minute overview video of the documents is a nice feature for the Solar Energy Development Draft Programmatic Environmental Impact Statement (Draft Solar PEIS). The work on this Draft Solar PEIS is impressive. After some time reviewing the PEIS I have the following comments and recommendations.

General Comments

Although this 11,000 page PEIS[1] is impressive in volume and data, it is also excessive and misses the intent of NEPA and the "Council on Environmental Quality Regulations For Implementing The Procedural Provisions Of The National Environmental Policy Act" (CEQ Regulations or 40 CFR 1500-1508).[2] While the Readers Guide makes a point that, "*a comprehensive review of the document will be aided by a clear understanding of how information presented in the Draft PEIS is organized,"* it doesn't resolve the need to read all 11,000 pages and try to use this overwhelming amount of information to determine what a reasoned decision(s) might be. The alternatives provided in the PEIS have already limited the options for making a broad based decision because the information is not laid out in such a way that the reader could develop their own possible or plausible alternatives. And, this document

[1] Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States "*The public will have 90 days to review this Draft PEIS. Given that the document consists of about 11,000 pages, 16 chapters and 14 appendices, a comprehensive review of the document will be aided by a clear understanding of how information presented in the Draft PEIS is organized and how that information supports the agencies' evaluation of alternatives*." Emphasis added, p. RG-1, December 2010

[2] 40 CFR 1500.4, Reducing paperwork**, "***Agencies shall reduce excessive paperwork by: (a) Reducing the length of environmental impact statements (§1502.2(c)), by means such as setting appropriate page limits (§§1501.7(b)(1) and 1502.7); (b) Preparing analytic rather than encyclopedic environmental impact statements (§1502.2(a)); … (d) Writing environmental impact statements in plain language (§1502.8); … (f) Emphasizing the portions of the environmental impact statement that are useful to decisionmakers and the public (§§1502.14 and 1502.15) and reducing emphasis on background material (§1502.16); … (i) Using program, policy, or plan environmental impact statements and tiering from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues (§§1502.4 and 1502.20)*." Emphasis added.

makes it very difficult, not clearer, for an understanding how decision or decisions will be made from this PEIS.

I am sure someone working on this PEIS will be able to respond to my comments by quoting and referencing something similar to, "review pages 4,231 through 4,250". In truth, this may be an accurate response but in fact, it does not help me determine an appropriate alternative or make me better informed to do so. I hope the answer to my comments will result in reconsidering redrafting this EIS as a policy-level EIS and adding tiered NEPA documents that can handle the potential for significant impacts. This will break the traditional NEPA cycle of tiering agency actions down to a level where Categorical Exclusions (CEs) or Environmental Assessments (EAs)/mitigated Findings of No Significant Impact (FONSIs) can be used which do little to help understand what action or actions incrementally caused the original determination of *potential for significant impact* in this Solar Energy PEIS. A prime example of this practice is the recent 2010 BP oil spill situation. The broader Gulf of Mexico oil permitting and drilling actions were broken down until each miniscule action was NEPA reviewed for new "significant information".[3] The only consistent outcome of this practice was that such small actions were by themselves not significant (e.g., the "approving" of drilling was not significant), although cumulatively they were as stated in the Outer Continental Shelf Lands Act (OCSLA)[4] and the Five Year Programmatic EIS for 2007-2012 covering all such actions.[5]

The creation of a policy-level EIS from the information gathered for this draft Solar PEIS and including a tiered Records of Decision (RODs) process can eliminate the need to make determinations about the potential for significant impacts on each minute action covered under this PEIS. Rather than using potential for significance of impacts as the measure for taking agency action, the objective would be to balance beneficial and adverse impacts so as to achieve

---

[3] "Proposed Gulf of Mexico OCS Oil and Gas Lease Sale 206 Central Planning Area Environmental Assessment", U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, OCS EIS/EA, MMS 2007-059, October 2007. In the Finding Of No New Significant Impact (FONNSI) contained in the EA for the Lease Sale 206 (related to the Deepwater Horizon project) states NEPA compliance. "*The purpose of the EA is to analyze whether the new information indicates that there are likely to be significant new impacts that were not addressed in the Multisale EIS*." [Emphasis added]

[4] OCSLA, 43 U.S.C. section 1332, Congressional declaration of policy, "*It is hereby declared to be the policy of the United States that … (4) since exploration, development, and production of the minerals of the outer Continental Shelf will have significant impacts on coastal and non-coastal areas of the coastal States, and on other affected States, …*" [Emphasis added]

[5] Federal Register, Vol. 75 No. 103, May 28, 2010, p. 29997. The reduction of potential significant impacts as stated in the Council On Environmental Quality Review Of MMS NEPA Policies, Practices, And Procedures For OCS Oil And Gas Exploration And Development. "… *First, in April 2007, MMS prepared a broad ''programmatic'' EIS on the Outer Continental Shelf Oil and Gas Leasing Program for 2007–2012. Also, in April 2007, MMS prepared an EIS for the Gulf of Mexico OCS Oil and Gas Lease Sales in the Western and Central Planning Areas, the ''multi-sale'' EIS.*

In October 2007, MMS completed another NEPA analysis, an Environmental Assessment (EA), under the multi-sale EIS, for Central Gulf of Mexico Lease Sale 206. This is the sale in which the lease was issued for the location that includes the Deepwater Horizon well. …

Finally, for the Deepwater Horizon well, MMS applied its existing Categorical Exclusion Review (CER) process prior to the decision to approve the Exploration Plan that included the drilling of the Deepwater Horizon well. The Categorical Exclusion used by MMS for Deepwater Horizon was established more than 20 years ago. Under section 11 of the Outer Continental Shelf Lands Act, 43 U.S.C. section 1340, MMS had 30 days to complete its environmental review and act on the application to permit drilling. …" [Emphasis added]

the given objectives of the BLM/DOE Need and Purposes, as well as designated mission and national or regional considerations.

Alternatives

The alternatives provided in the PEIS have already limited the options for making a broad based decision because the information is not laid out in such a way as on a continuum of alternatives for the reader to develop their own possible alternatives. The BLM/DOE need to focus on solar energy policy for their respective missions.[6] The basic policy direction alternatives on the continuum should focus on key societal issues such as; 1) Least-Cost Economically Energy direction, 2) Environmentally Sensitive Energy direction, and 3) Technologically Superior Energy direction. These three issues are always at the root of national debate over energy resources of all types. The BLM/DOE could also select a couple of other policy directions relevant to some of their particular issues related to mission. For example, the DOE may add a policy alternative such as National Security Energy direction. The BLM could add a policy alternative for Public Usability Energy direction.

All of the generic environmental data in this draft Solar PEIS could be structured to understand the impacts associated with the different resource types and tie them to each of the basic policy direction alternatives. Because of the continuum nature of the alternative configuration outside interests and the public then could be given the opportunity to use this information format to construct their own alternative(s). This facilitates the desired outcome of a comprehensive "hard look" throughout the six states. The final PEIS could then develop a Preferred Policy Direction alternative found somewhere on the continuum of alternatives by mixing and matching elements of the public's and interest groups' "build your own alternatives" and the draft PEIS alternatives.[7]

---

[6] BLM Mission: It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

The mission of the Department of Energy is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.
Goal 1: Catalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in clean energy technologies.
Goal 2: Maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity, with clear leadership in strategic areas.
Goal 3: Enhance nuclear security through defense, nonproliferation, and environmental efforts.

We will achieve our mission by establishing an operational and adaptable framework that combines the best wisdom of all Department stakeholders.

[7] "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," CEQ Question 1b, "***How many alternatives*** *have to be discussed when there is an infinite number of possible alternatives?*
A. For some proposals there may exist a very large or even an infinite number of possible reasonable alternatives. For example, a proposal to designate wilderness areas within a National Forest could be said to involve an infinite number of alternatives from 0 to 100 percent of the forest. When there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS. An appropriate series of alternatives might include dedicating 0, 10, 30, 50, 70, 90, or 100 percent of the Forest to wilderness. What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case." 46 Fed. Reg. March 23, 1981, p. 18026.

Once the policy direction alternative is selected by BLM/DOE in a policy ROD, the current draft Solar PEIS alternatives could be easily handled with Tiered RODs. The Solar PEIS has already assembled the necessary information for doing either the Solar Energy Development Program Alternative or the Solar Energy Zone Program Alternative. It would become an internal decision how to proceed based on the consistency with the policy direction selected in the ROD from the policy-level EIS. DOE would not need to make so many determinations of potential for significant impacts for their programs and projects. Both BLM/DOE would be freed from trying to make programmatic guidance such that "one shoe fits all". Each decision could be balanced against mission and national or regional considerations through the Tiered RODs.

Energy Programs and Projects

In reviewing this draft PEIS it appears that general standards or guidelines would be used in the future for making NEPA determinations. The biggest concern with this process is that decisions would be made without public or interested parties input. Past federal agencies NEPA practices have shown that public process is removed from many programs and projects through the use of tiered CEs which have completed a checklist focused on potential significance of "new information" issues. Since the Solar PEIS is 11,000 pages and very encyclopedic there is little chance some form of connection couldn't be made to this information making the tiered actions "information" non-significant.

The other common NEPA practice is to use an EA/mitigated FONSI. The checklist is completed to help ensure the EA reaches a FONSI through mitigation actions. Whether these mitigation actions make sense for the particular program or project are less important than simply doing them to reach a FONSI. For example, a programmatic EIS done this way may conclude that all hydro facilities have fish passage. A tiered project is then required to have fish passage even if the fish cannot pass the three other dams below it. The preferred outcome would be to balance all relevant concerns whether significant or not and build the so passage could be added in the future when needed.

In both cases of the CE and EA/mitigated FONSI, the true nature of the potential impacts connected with other programs and projects would be lost. The original reason for doing the Solar PEIS based on the potential for significant impacts is negated at the program and project level. The opportunity to balance the program or project decision against mission, national, regional, or local considerations is also lost.

Conclusions and Recommendations

While this Solar PEIS is a laudable effort for the BLM and DOE to do this EIS together it is also evident that the sequence is out of synchronization. BLM and DOE continue to prepare PEISs on changes to national solar and other energy issues because they have not reviewed the overall policy concept for the bigger issue of national energy policy against their agency mission. Because there is no overall policy for energy development by DOE or on BLM public lands both will be caught in reoccurring cycle of EISs or PEISs each time a newer renewable or clean energy issue arises.

BLM and DOE should make a paradigm shift to modernize the application of NEPA. Ample data already exists from this Solar PEIS and other energy PEISs to prepare a policy-level energy EIS. Examples of Policy Direction alternatives have been provided to begin structuring the recommended policy-level EIS process from this PEIS. Rather than a focus on incremental energy changes these alternatives broaden the perspective and scope so that all energy resources and related actions can be considered and expedited.

The development of a DOE/BLM *National Energy Plan Programmatic EIS* would have the following advantages:

1. Introduce use of a policy-level EIS and Tiered RODs to expedite national energy planning, implementation, and monitoring on both public and private lands
2. Lessen the need to make determinations of "potential for significant impacts" for proposed tiered energy program and project actions
3. Reduce challenges and litigation risks over "potential for significant impacts" related to cumulative, connected, or similar actions such as changes and modifications of DOE/BLM resources or implementation of energy related programs and projects
4. Allow each proposed program and project under the National Energy Plan to be decided on a balance of national, regional, and agency mission factors
5. The current NEPA processes underway for programs and projects do not need to be stopped because they meet the requirements of 40 CFR 1506.1(c) (i.e., proposed actions are; independently justified, accompanied by an EIS, and do not prejudice the ultimate decision on programs and projects or limit alternatives of the policy EIS)
6. Once the policy EIS and Tiered RODs methodology are properly put in place through a legally sufficient NEPA process DOE/BLM could incorporate any relevant EISs, EAs, or CEs underway or completed in future proposed policy implementation actions

DOE's and BLM's application of a new NEPA paradigm and implementation for compliance would have the effect of leading all federal agency management and the NEPA community in eliminating unwanted, lengthy EAs used to substantiate mitigated FONSIs. It would also break the unhealthy promotion of force fitting proposed agency actions into non-significant potential impacts categories or breaking down actions until they no longer have the potential for significant effects due to their minute size. The ability to monitor energy policy implementation through programs and projects would be enhanced and offer opportunity to realize when existing policies need change without having to go through another unnecessary programmatic EIS or supplemental EIS process.

I appreciate the opportunity to review and comment on this very important Solar PEIS. If you want to see examples of policy-level EISs and tiered RODs as described see the Bonneville Power Administration, US Department of Energy, Business Plan EIS and Fish and Wildlife Implementation Plan EIS as models for how such a strategic NEPA plan can be accomplished. I look forward to your response to draft PEIS comments and recommendations.

Sincerely,

Charles C. Alton
Director of Strategic Environmental Assessment

Thank you for your comment

The comment tracking number that has been assigned to your comment is SolarD11872.

Comment Date: May 2, 2011 22:29:27PM
Solar Energy Development PEIS
Comment ID: SolarD11872

First Name: [Withheld by requestor]
Middle Initial: [Withheld by requestor]
Last Name: [Withheld by requestor]
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold name and address from public record
Attachment:

Comment Submitted:

Please do not cover the Mojave or other deserts in solar panels. There is so much diversity to be both studied and enjoyed. People seem to think deserts are void of life, interestingly enough, it is quite the opposite. I make it a point to travel to the desert annually to view not only the spring bloom, but also to see the amazing animals adapted specifically to this harsh and beautiful environment. While I believe in the power of solar energy, I think this can be done in a more effective way - how about roof tops in urban areas. It is senseless to decimate a sensitive habitat like the desert. Please do not ruin the beautiful landscape that provides shelter to the sidewinder, the desert tortoise, the cholla cacti, and the phenopepla. I don't want a mcdonald's billboard on the roof of my house, I'm sure they don't want a solar panel on the roof of theirs.

Thank you for your comment, Luke Papez.

The comment tracking number that has been assigned to your comment is SolarD11873.

Comment Date: May 2, 2011 22:32:58PM
Solar Energy Development PEIS
Comment ID: SolarD11873

First Name: Luke
Middle Initial: C
Last Name: Papez
Organization: LS Power Development, LLC
Address: 400 Chesterfield Center
Address 2: Suite 110
Address 3:
City: St Louis
State: MO
Zip: 63017
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Solar Zone DPEIS - LS Power comment letter - 05-02-2011.pdf

Comment Submitted:

Please see attached comment letter.

LS Power Development, LLC
400 Chesterfield Center, Suite 110
St. Louis, MO 63017
(636) 532-2200

May 2, 2011

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue EVS/240
Argonne, IL 60439

RE: Comments on Solar Energy Development Draft PEIS

Dear Sir or Madam:

Upon review of the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (DOE/EIS-0403), LS Power is pleased to submit the following comments:

Background: LS Power is a privately held company focused on the development, investment and management of reliable and environmentally responsible power generation and transmission assets in the United States. LS Power currently has assets and development projects within the western states analyzed in the Draft Programmatic EIS. The Draft Programmatic EIS (PDEIS) proposes to designate Solar Energy Zones (SEZ) in areas where members of the LS Power Group currently hold either authorized rights-of-way for high voltage electrical transmission and substation facilities, or pending applications for rights-of-way to construct and operate high voltage electrical transmission facilities.

Comments: The PDEIS notes in several locations (i.e. Sections 9.1.2.2.1 and 11.3.2.2.1) that "[s]hould the proposed SEZ be identified as an SEZ in the ROD for this PEIS, the BLM would still have discretion to authorize additional ROWs in the area until solar energy development was authorized, and then future ROWs would be subject to the rights granted for solar energy development." It is the understanding of LS Power that the designation of an SEZ will have no effect on authorized rights-of-way, whether or not construction has been initiated on those rights-of-way. For those instances where an application has been made for a right-of-way but action is still pending, LS Power requests confirmation that the designation of an SEZ will not prohibit BLM from granting additional rights-of-way for transmission facilities within an SEZ. LS Power currently has applications for transmission facilities pending action by the BLM and has expended significant time and resources performing engineering, design, field resource surveys, and other work based on a set of proposed and alternative alignments. These proposals for transmission facilities will create additional capacity for renewable transmission, including solar resources, and therefore BLM should not let a SEZ

designation interfere with proposed projects, including any alternatives being considered for such proposed projects.

LS Power would like to commend the efforts of those who were involved with the designation of these Solar Energy Zones within this Programmatic EIS. Thank you for your consideration of these comments. Should you have any questions or wish to obtain further clarification of these comments, please feel free to contact me.

Sincerely,

Luke C Papez
LS Power Development, LLC

Thank you for your comment, Robert Tafanelli.

The comment tracking number that has been assigned to your comment is SolarD11874.

Comment Date: May 2, 2011 22:39:01PM
Solar Energy Development PEIS
Comment ID: SolarD11874

First Name: Robert
Middle Initial:
Last Name: Tafanelli
Organization: Mesilla Valley Audubon Society
Address: 3881 Westview Ave.
Address 2:
Address 3:
City: Las Cruces
State: NM
Zip: 88007
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

2 May 2011

Linda Resseguie, BLM Solar PEIS Project Lead
Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

Re: Comments on Draft Programmatic Environmental Impact Statement for Solar Energy Development in New Mexico.

These comments are presented on behalf of the Mesilla Valley Audubon Society (MVAS). Thank you for this opportunity.

Mesilla Valley Audubon Society is a strong supporter of development of alternative energy however we believe it must be done carefully and correctly. We firmly believe that we must be “smart from the start”.

We are very concerned about the loss of desert grasslands over the past several decades and the subsequent decline of grassland bird species. Therefore we are focusing on preserving and restoring grasslands—a major part of the Bureau of Land Management’s Restore New Mexico Program. These grassland in general are important habitat to the endangered Aplomado Falcon that is currently being introduced in southern New Mexico by the Peregrine Fund.

The Solar Energy Development Alternative is the completely wrong approach. It is the “shotgun” approach used when oil and gas development was first started. We are smarter now and should use that experience to do better from the start. The 4 million acres proposed for New Mexico far exceeds the needs for all the affected states combined. It is overkill and unnecessary.

We believe that a modified Solar Energy Zone Alternative is the correct approach. We commend BLM for their identification of the three Solar Energy Zones in southern New Mexico. We agree with the location of these areas with some modification. Those modifications are as follows.

Afton SEZ: This zone is the most suitable one except for the view shed of the proposed Potrillos and Aden Wilderness units within the Organ Mountains/Desert Peaks Wilderness Bill. Wherever possible we would encourage BLM to proposed locating solar facilities within this SEZ that provide the most screening from the proposed Wilderness units.

Mason Draw SEZ: The major flaw in this area is in the northeast corner where it includes about 1800 acres that is part of the Sleeping Lady Hills unit that was identified by the New Mexico Wilderness Alliance as having Wilderness qualities as defined by the U.S. Wilderness Act of 1964. If this area and some associated grasslands were removed MVAS would have no objections.

Red Sands SEZ: We are happy to see that the numerous playas in this area are not included in the SEZ. However, the northern part of this SEZ starting a mile or two north of Lone Butte and continuing northeast to include a couple of sections of the large unit to

the south and about the northern half of the middle unit should be excluded from the SEZ. This area has important grasslands that are associated with the playas and other grasslands to the west and northwest. These grasslands are important to grassland birds and associated raptors. During one 5 hour visit we saw numerous small birds as well as 2 or 3 golden eagles, one Ferruginous Hawk, one American Kestrel as well as other raptors near the site.

Thank you for this opportunity to comment on this important issue to us in southern New Mexcio. We hope our suggestions can be implemented in the final draft of this document.

Sincerely,

Robert Tafanelli
Conservation Chair
Mesilla Valley Audubon Society
575-526-9380

Thank you for your comment, David Beaumont.

The comment tracking number that has been assigned to your comment is SolarD11875.

Comment Date: May 2, 2011 22:48:44PM
Solar Energy Development PEIS
Comment ID: SolarD11875

First Name: David
Middle Initial:
Last Name: Beaumont
Organization: Mojave Trails Group
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

Solar PEIS Comment
From: David Beaumont
Founder of Mojave Trails Group. (MTG)
Alternate Stakeholder to the Desert Renewable Energy Conservation Plan (DRECP) for the California Off Road Vehicle Association. (CORVA)
Founding member of the Recreational Access Committee of California. (RACC)
Life Member of the Blue Ribbon Coalition. (BRC)
May 2nd 2011

This document is in violation of NEPA.

The document fails to consider a wide range of human activities in the affected and impacted areas, specifically in regards to recreation in the SEZ's.

Typical Sections in all documents for all states affected by this program with numerical and written reference X.X.5.3 SEZ-Specific Design Features and Deign Feature Effectiveness, includes a statement which excludes mitigation for the loss of any recreational use in the SEZ's. Yet this Section makes reference to Appendix A, Section A.2.2, which leads one to Section A.2.2.6 Design Features for Recreation Impacts, which clearly states that the only mitigation considered for the recreational community will be for acreage lost for off-highway vehicle use.
This is appreciated as it allows visitors to reach a given destination in mind, however, it is prejudiced in that there has been no accommodation for the wide variety of human uses of our public lands. Not all users of public lands are using those public lands for the sake of operating a motor vehicle. The motor vehicle is merely a means to an end allowing them to reach a location where they may do a wide variety of recreational activities. Without mitigation for such activities eliminated inside the SEZ's it is a foreseeable consequence of this action that less and less opportunity for public enjoyment of our public lands will exist.
The document has also failed to properly analyze the cumulative effect of such actions.

The document shall do the following:

Strike any and all instances of the last sentence of X.X.5.3 from the record. This sentence reads, "The exceptions would be in the loss of any recreational use in the SEZ which would not be mitigated." Replace this sentence with one which reflects the following:
"The loss of any recreational use, of any type, in the SEZ, shall be fully mitigated."

Sincerely,
David Beaumont

Thank you for your comment, Randy Banis.

The comment tracking number that has been assigned to your comment is SolarD11876.

Comment Date: May 2, 2011 22:52:26PM
Solar Energy Development PEIS
Comment ID: SolarD11876

First Name: Randy
Middle Initial:
Last Name: Banis
Organization: California Desert Advisory Council
Address: 44404 16th St W, Ste 204
Address 2:
Address 3:
City: Lancaster
State: CA
Zip: 93534
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: desert_advisory_council.solar_dpeis.pdf

Comment Submitted:

May 2, 2011

RE: Solar Draft Programmatic Environmental Impact Statement

The Mojave and Colorado Deserts of the California Desert Conservation Area (CDCA) contain unique and diverse natural, cultural, scenic, mineral, and recreational resources, which benefit millions of Californian's, the people of our nation, and visitors from around the world. The value and importance of all these resources must be taken fully into account when considering other potential uses that could result in their substantial degradation or permanent loss.

Over the past several years the BLM California Desert District staff has informed the California Desert District Advisory Committee (DAC) of a large number of proposed thermal and photovoltaic solar energy plants and wind turbine farms in the Mojave and Colorado Deserts. These proposed wind and solar energy projects, if developed, will impact many square miles of open desert lands. Just the solar projects approved to date comprise over 37 square miles (23,832 acres). This is of particular concern because they destroy all onsite resources across several square miles per installation and are not consistent with the multiple-use mandate of the BLM.

While DAC members recognize that the BLM has been directed to consider fast track renewable energy projects on public lands in California, we have frequently expressed our reservations, individually and collectively about the environmental and economic impacts of these projects. As a diverse body of individuals representing an equally diverse group of constituents, business affiliations, and geographic areas, we of the DAC are very concerned that the rush to accommodate the permitting and development of these projects could cause unacceptable and unanticipated impacts to the environment and to society. We are troubled that reviewing such projects using the fast track methodology could in hindsight, and decades later, result in a greater societal cost than benefits.

As such, it is imperative that processes be developed to ensure that renewable energy projects are appropriately limited in size, number, sequence of development and location so they do not cause unacceptable and unanticipated harm.

While it is hoped that the Programmatic Environmental Impact Statement (Draft currently in public comment stage) will address the DAC's concerns as expressed in our letter of November 26, 2008, we wish to reiterate those concerns as stated below:

Acceptable Project Areas

We appreciate the effort the CDCA BLM staff has made to date to encourage renewable energy project applicants to site their projects in locations which avoid areas containing important natural, cultural and recreational resources. However, it is our concern that these areas may not remain off-limits to future projects. For example, a current wind energy proposal is sited within

the Johnson Valley Off-highway Vehicle Area. The development of realistic siting criteria would be useful.

The DAC agrees that siting renewable energy projects in areas with important resource values or long established recreational uses is unacceptable. In addition to those areas where renewable energy projects are not permitted by statute, e.g., Wilderness Areas, Wilderness Study Areas and National Monuments, we strongly urge the BLM to prohibit renewable energy projects in environmentally or economically significant areas such as Desert Wildlife Management Areas and Areas of Critical Environmental Concern, areas with recognized mineral resources, and in areas set aside for recreation, including designated Off-highway Vehicle areas.

We urge the Bureau of Land Management (BLM) to identify and prioritize disturbed or otherwise impacted areas near existing or officially designated electrical transmission corridors in the California desert for the siting of remote solar generating plants. These should be utilized over other sites.

Purpose and Need

Again, while the DAC members recognize the directives driving BLM actions, the DAC requests that the BLM carefully identify and evaluate any viable alternatives to the project; for example, are there opportunities for locally generated power (see comments below), is the technology viable, or are there more renewable energy projects currently proposed in the CDCA than are needed to meet California's current or anticipated renewable energy portfolio needs or transmission capabilities.

Alternatives

In its regulations implementing NEPA, the Council on Environmental Quality (CEQ) calls the alternatives analysis section the "heart of the EIS," and require that agencies shall, in part:

> (a) Rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
> (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
> (d) Include the alternative of no action.

We request when considering each project, that the BLM conduct a thorough analysis of potential alternatives, including the siting of solar and other renewable energy projects at sites closer to demand such as on industrial sites; on private lands or military lands that are not used but currently available or potentially reclaimable, if contaminated. In light of the military's request for additional public lands, providing currently unused land for renewable energy

development seems like a potentially viable option that would help mitigate for the loss of any additional public lands that are withdrawn by the military.

Cumulative Effects Analysis

It is critical that any analysis of the potential adverse effects of renewable energy projects consider past, present, and reasonably foreseeable future actions. In the our letter of November 26, 2008 the DAC requested that the Programmatic EIS and subsequent project level NEPA reviews include a thorough analysis of cumulative effects per U.S. Environmental Protection Agency "Consideration of Cumulative Impacts in EPA Review of NEPA Documents", EPA 315-R-99-002, May 1999. This analysis should include not only other renewable energy projects but also any power transmission lines that would need to be developed to serve the renewable energy plants. The analysis should also consider a phased approach to the installation of these projects, with regular evaluation of impacts by BLM staff.

Potential Impacts to Recreational Resources

Just as the DAC requested in 2008, we again urge that the BLM consider and address the effects of proposed renewable energy projects on the full range of recreational opportunities in the desert, including designated off-road vehicle areas, motorized and non-motorized trails, rock hounding areas, and other recreational resources.

Potential Impacts to Wildlife Movement

A number of the proposed solar energy projects are clustered together in bands along highways and energy transmission corridors. If fully developed, they could create a massive impediment or barrier to wildlife movement. The DAC requests that the BLM fully consider this potential effect, and that solar energy facilities be sited in a manner which maintains adequate corridors for wildlife movement and the maintenance of ecological processes.

Public Participation in the NEPA Review of Proposed Projects

The public input provision of NEPA helps to ensure that the managing agency receives input from knowledgeable individuals and experts. This is to aid them in the decision making process. Simply said, it is good public policy to allow for public input during the NEPA process. Given the number and importance of the resources in the CDCA and the potential impacts to them from renewable energy projects, we reiterate our previous request that all NEPA reviews for proposed renewable energy projects continue to include meaningful public input, including sufficient public meetings and adequate public comment periods.

Economic Viability and Compensation for the use of Public Lands

For those sites that meet NEPA and other requirements, the DAC is concerned that the public will not receive the true market value for its use by for-profit companies for power generation.

The DAC is also concerned about the completion of due diligence to determine the economic viability of the proposed operator's projects. We request that the BLM consult with knowledgeable third party experts to assist in the appraisal of the value of the leases and to assess the economic viability of each proposal.

Project Remediation

The DAC members are concerned that unacceptable and unanticipated impacts can result from the abandonment of large renewable projects. We ask that the BLM require sufficient bonding, comparable to that requested by other resource development projects, such as mining, to ensure that renewable energy project sites are fully remediated in the event they are abandoned or otherwise terminated.

DAC members continue to strongly recommend that the BLM proceed thoughtfully and carefully in the development of polices for dealing with solar and other renewable energy projects and that it give full consideration to alternatives and all affected resources during the environmental review process.

The DAC members also request that we continue to be invited to be a part of the policy formation discussions and that we have the opportunity to provide input on any proposed policies prior to their adoption.

Thank you in advance for your attention to these comments.

Sincerely,

Randy Banis
Chairman
BLM California Desert District Advisory Committee

Thank you for your comment, Jenny Nehring.

The comment tracking number that has been assigned to your comment is SolarD11877.

Comment Date: May 2, 2011 22:57:21PM
Solar Energy Development PEIS
Comment ID: SolarD11877

First Name: Jenny
Middle Initial:
Last Name: Nehring
Organization: Poncha Pass Gunnison Sage-grouse Local Working Gro
Address: 416 Adams Street
Address 2:
Address 3:
City: Monte Vista
State: CO
Zip: 81144
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: SolarPEIS.docx

Comment Submitted:

Solar Energy Draft Programmatic
EIS, Argonne National Laboratory
9700 S. Cass Avenue - EVS/240
Argonne, Illinois 60439

May 2, 2011

Re: Solar PEIS Comments, San Luis Valley of Coloardo

Dear Sir/Madams:

The Poncha Pass Gunnison Sage-grouse Working Group was formed in 1998 and is a local, multi-interest group of landowners, citizens, NGOs and agencies working toward conservation of Gunnison Sage-grouse at Poncha Pass in Saguache County, Colorado. In response to your request for comments on the Solar PEIS you are preparing for the possible establishment of industrial scale solar power generation in the San Luis Valley of Colorado, we would like to comment on the impacts of such operations on Gunnison Sage-grouse in our area.

The Gunnison Sage-grouse (*Centrocercus minimus*) is a State of Colorado "Species of Special Concern"; a Bureau of Land Management designated "sensitive species" and is a candidate for listing under the Endangered Species Act with the U.S. Fish and Wildlife Service. The Poncha Pass population of Gunnison Sage-grouse is a small (< 30 individuals), isolated population and is one of only seven populations of Gunnison Sage-grouse (GuSG) remaining in Colorado and Utah.

Gunnison Sage-grouse are dependent upon sagebrush habitat for every stage of their life cycle. Sagebrush in the San Luis Valley of Colorado is limited and the Poncha Pass GuSG population depends on the sagebrush habitat that is present from the summit of Poncha Pass south about 10 miles on both the east and west sides of Highway 285. The majority of GuSG habitat at Poncha Pass is publically owned and managed by the BLM. The birds display and mate on areas known as "leks". At Poncha Pass there is only one known active lek located on BLM land. Sage-grouse on leks are very sensitive to noise and other disturbances.

GuSG habitat at Poncha Pass is identified as in the PEIS as "BLM lands being analyzed" for possible solar development in the De Tilla Gulch SEZ.

We have extensive grouse use information for the Poncha Pass Population of GuSG from radio telemetry data on over 40 individual birds that were radio collared from 1999-2002. Radio telemetry data collected from 1999 – 2003 show that GuSG use the sagebrush habitat identified in the PEIS as "BLM lands being analyzed".

The noise, dust and road construction necessary for industrial scale solar development have the potential to negatively impact GUSG at Poncha Pass. The necessary surface disturbance would permanently alter sagebrush habitat and the noise, dust and vehicle traffic would have far reaching impacts to GUSG in the surrounding area. Recommendations in the Gunnison Sage-grouse Rangewide Conservation Plan (RCP) outline measures to be taken to minimize impacts to GUSG (Appendix I: GUSG Disturbance Guidelines) and include:

- surface disturbance should be avoided in GUSG seasonal habitats,
- timing restrictions should be implemented,
- any necessary equipment should produce minimal noise and should be equipped with mufflers or noise suppression devices.
- Road construction should be limited
- Seasonal closures during critical sage-grouse use periods should be set

The riparian habitat along San Luis Creek is of particular importance as it provides critical habitat for hens with broods.

The impacts of solar development at this location would be detrimental to Gunnison Sage-grouse. The GUSG population at Poncha Pass is small, declining and vulnerable to disturbance.

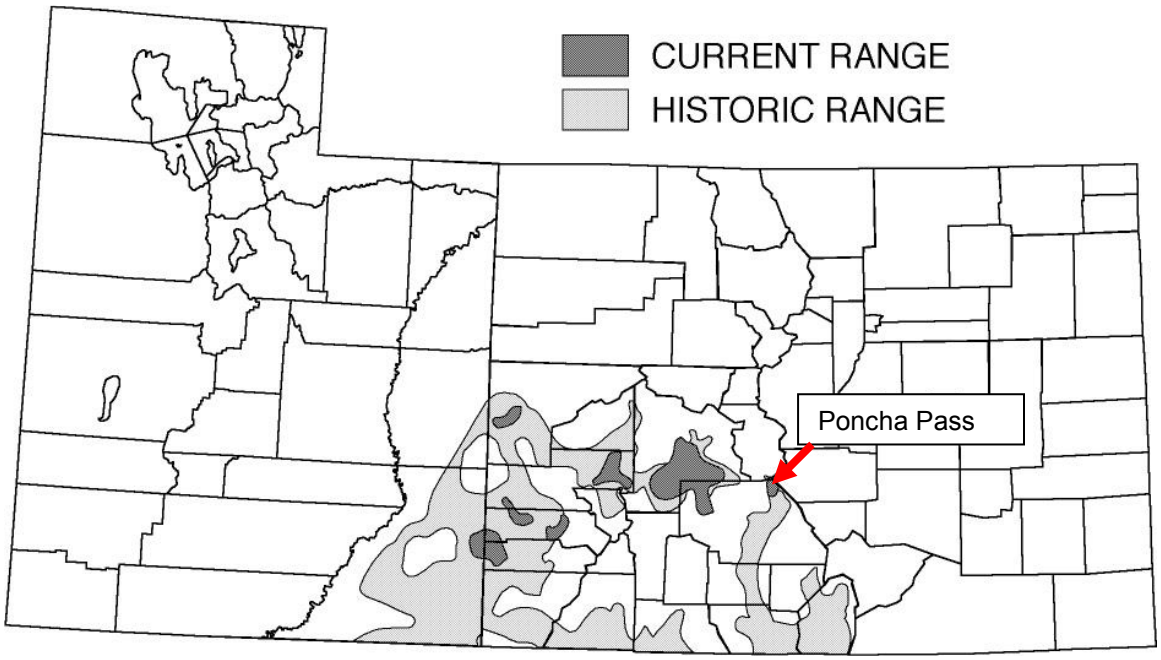
The Poncha Pass Gunnison Sage-grouse Local Working Group therefore requests that all solar develpments be deferred from the Poncha Pass area.

We appreciate the opportunity to comment. Please contact our Local Working Group Coordinator, Jenny Nehring if you have any questions or concerns.

Sincerely,

Jenny Nehring
Poncha Pass Gunnison Sage-grouse Local Working Group Coordinator
jennynehring@hotmail.com
719-852-3619
416 Adams St
Monte Vista, CO 81144

Mapped range of Gunnison Sage-grouse in Colorado and Utah.



Thank you for your comment, Stu webster.

The comment tracking number that has been assigned to your comment is SolarD11878.

Comment Date: May 2, 2011 22:59:12PM
Solar Energy Development PEIS
Comment ID: SolarD11878

First Name: Stu
Middle Initial: s
Last Name: webster
Organization: Iberdrola Renewables
Address: 1125 nw couch st
Address 2: suite 700
Address 3:
City: portland
State: OR
Zip: 97209
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: BLM-DraftSolarPEIS-IRIcomments-02May11.pdf

Comment Submitted:

IBERDROLA RENEWABLES

02 May 2011

Solar Energy Draft PEIS
Argonne National Laboratory
9700 S. Cass Avenue – EVS/240
Argonne, IL 60439

RE: 1610 (300): Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States

To Whom It May Concern,

Iberdrola Renewables, Inc. (IRI) is a developer and owner of wind and solar energy projects, actively developing projects throughout the United States and operating approximately 5,000 megawatts of renewable energy projects nationwide. IRI is providing the following comments for agency consideration, prompted by the Bureau of Land Management's (BLM) and Department of Energy's (DOE) recently released *Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (DPEIS). The effort by BLM and DOE to improve upon the reviewing and processing of applications to develop solar energy projects on BLM property is commendable and consistent with federal policy goals for renewable energy development on public lands. IRI appreciates the opportunity to review and provide comments on the DPEIS, which we believe is a positive progression of current policy but falls short of optimizing what is currently a difficult, unpredictable, and inconsistent process to engage on. Our comments reflect our review of the DPEIS in light of current polices by BLM for processing Right of Way Grant (ROW grant) applications. Our intention is for these comments to lend themselves to the refinement of the current process that we feel is fundamentally flawed in the following ways:

1. There is a lack of true measurement for the BLM to differentiate between substantive (i.e., economically viable) applications versus applications that will not result in development of solar energy projects (a.k.a., land squatters);
2. There is no apparent and predictable manner in which an applicant can reasonably assume preservation of an issued ROW Grant for lack of market demand for, or feasibility of delivering proposed generated solar energy; and

IBERDROLA RENEWABLES, Inc.
1125 NW Couch St., Suite 700
Portland, OR 97209
Telephone (503) 796–7000
www.iberdrolarenewables.us

3. Inconsistent application of land use limitations are imposed on renewable energy projects but not on non-renewable energy development as well as other land uses, some of which have equal or greater impacts as a solar energy project.

These three basic but fundamental issues related to current policies for solar energy development are not sufficiently addressed by the DPEIS. Furthermore, the current proposed modifications to policy in the DPEIS introduce additional complications and challenges for applicants, such as:

1. The DPEIS does not consider a Testing and Monitoring ROW Grant (T&M ROW Grant) process for solar, as is successfully done with wind energy applications. There is a business need for measuring solar intensity on a project site in order to develop project economic forecasting. The use of a T&M ROW Grant serves that purpose as well as practically provides a low impact land right to an applicant to determine the feasibility of the proposed energy development project. Use of T&M ROW Grants with finite terms (e.g., three (3) year term with one (1) extension opportunity) has proven a successful method of eliminating the issue raised in point 1 above concerning the deficiencies in current policy;

2. The DPEIS does not provide any clear method for preserving an issued ROW Grant beyond a limited period of time. If such a concession is in place with current policy, it is not well understood nor provides a sufficient level of assurance to compel an applicant to risk pursuing a ROW Grant that lacks a clear avenue of market for and delivery of derived solar energy. Rather, the DPEIS suggests a continuation of using the National Environmental Policy Act (NEPA) process as a means of forcing applicants to move forward with developing projects that may not be economically viable. This is effectively a cart before the horse scenario – evaluating the environmental benefits and impacts of a project that is not capable of predicting what the market will demand at the time the NEPA process is concluded and a ROW Grant is issued. This issue is reflected in point 2 above with respect to current policy, as detailed in BLM Instructional Memorandum 2011-059; and

3. There is a basic tenet proposed by the DPEIS that much of the complications and controversies experienced by the BLM and renewable energy applicants can be avoided by more mindful sighting of projects in areas of prior disturbance, based on a resource-intensive level of engagement by applicants that is simply unsustainable for the resource constraints of the BLM. Additionally, other development constraints, such as transmission capacity, are proposed by the DPEIS as needing to be addressed much sooner in the development process than is practical, regardless of how much it is viewed by the BLM to inform their decision-making process. These proposed approaches, collectively coined by the BLM as “screening for success” or more

recently "Smart from the Start", are ambitious and ideally compelling concepts. However, they are impractical means of attempting to manage an industry whose actions are a reflection of the nation's current short-term policy structure of enabling growth of renewable energy. To our knowledge, there is no area within the public lands managed by the BLM where a proposed activity, such as a renewable energy project, will not have some form of public opposition. As such, the NEPA process was developed to publicly vet consideration of federal actions. NEPA was not contemplated to be a secondary effort of publically vetting an action already deemed appropriate by a public agency – which is what is implicated by the proposed SEZ concept in the DPEIS.

It is with these thematic comments in mind that IRI feels authorized use of BLM land should be criteria-based, as opposed to some pre-determined, arbitrary zone concept, and it is imperative that the BLM consider working collaboratively with the solar industry when delineating/analyzing lands acceptable for solar development. Additionally, however BLM resolves to address solar development, resources allocated to current projects should not be redirected to the detriment of current endeavors. To that end, IRI is providing the following DPEIS comments for the BLM's consideration:

1. BLM's reasonably foreseeable development scenario (RFDS) for solar development over the next 20 years assumes an upper bound of 75% of development would occur on BLM land. How was this calculated given that, to-date, only one utility-scale solar project proposed on BLM land has moved into the construction phase?

2. Table ES.2-2, "Areas for Exclusion under the BLM Solar Energy Development Program Alternative" lists 25 areas proposed to exclude solar development. Would this prevent the authorization for amendments to land use plans in areas identified for exclusion? IRI feels exclusion of these areas should be considered on a project by project basis as is done with all other types of proposed anthropogenic activities, for example:

    a. Special Recreation Management Areas (SRMAs) are being proposed as exclusionary areas for solar development. It has been shown that developers are able to mitigate for recreational use displaced by solar development and these areas should not necessarily be precluded.

3. Clustering solar projects within small Solar Energy Zone (SEZ) areas could put a significant strain on the electrical load for transmission systems within the vicinity of the SEZs. While the criteria of distance to transmission lines was considered when selecting the proposed SEZs, there is no indication that the more relevant issue of transmission capacity was considered. Additionally, without sustainable, long-term national policy planning for renewable energy, attempting to predict where marketable areas are for future renewable

energy development is futile, with the proposed SEZs rendered potentially useless due to unforeseeable shifts in market demand.

4. The DPEIS allows BLM to continue authorizing non-solar ROW applications in SEZ areas until “solar development is authorized.” If the SEZ alternative is selected, then this will place further restrictions on the total area within the SEZ available for solar development. How is this being considered in DPEIS process?

5. Section 5.2.3 (Impacts and Mitigation) states, "the need for future transmission capacity…should be reviewed." Who has the responsibility to review this need and determine whether there is a need? How can BLM realistically coordinate this with utilities and transmission providers?

6. Section 5.3.3 (Impacts and Mitigation) states, "Lands identified in citizens' proposals should be evaluated for wilderness characteristics prior to solar development action being approved". Citizens' proposals for designating lands with wilderness characteristics should not burden the review process for solar energy or other proposals, particularly if submitted just prior, or in response to a Solar ROW application. BLM is responsible for managing wilderness characteristics through regular updates to its RMPs. Like any other ROW applicant, a proposing citizen entity should be responsible for financing necessary studies to demonstrate the area's ecological value, which should be evaluated and determined through a full NEPA process that includes ROW application, cost recovery fees, and POD, at that proposer's expense (not BLM's). That or some other manner of controlling arbitrary petitions needs to be in place and applied homogeneously to all proposed activities on BLM land, not just solar energy development.

7. Section 5.9.3.1 (Impacts and Mitigation) states, "Siting in identified 100-year floodplains should not be allowed within the development". The FEMA 100-year floodplain should not be used as a standard for siting suitability. The FEMA flood insurance program is administered at the discretion of Counties for residential flood insurance, only. Projects of this nature can use appropriate design to manage potential flood hazards.

8. Table 11.1.1.3-1 (Nevada) states, “Within the SEZ, in areas visible from and within 5 mi (8 km) of Death Valley National Park, visual impacts associated with solar energy project operation should be consistent with VRM Class II management objectives, as experienced from KOPs (to be determined by BLM) within the National Park.” This seems restrictive to solar development since the level of change to the characteristic landscape should be low.

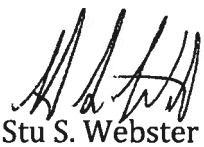
9. Table 12.1.1.3-1 (New Mexico) states, “Water resource analysis indicates that wet-cooling and dry-cooling options would not be feasible; other technologies should incorporate water conservation measures.” What is BLM proposing if these technologies aren't sufficient to address water resource concerns?

10. Section 12.1.2.2.2 (New Mexico), DPEIS assumes that all necessary transmission lines will be constructed within SEZ. What happens if line needs to be partially constructed outside of SEZ. Will it be given similar considerations?

IRI would also like to note that we support comments submitted by Peter H. Weiner, Partner of Paul, Hastings, Janofsky & Walker LLP, on behalf of the Center for Energy Efficiency and Renewable Technologies (CEERT), Large-Scale Solar Association (LSA), and Solar Energy Industries Association (SEIA). In short, we do not advocate the SEZ-only alternative. The zone concept ignores the unpredictable, near-term national renewable energy policies that do not provide sufficient certainty for long-term development planning that are more suited for zoned management designs. Finally, IRI fully supports and embraces the concept of *responsible* energy development. However, much like *sustainable development*, it remains merely a concept without definition. BLM should work towards developing a transparent, consistent, repeatable criteria by which all proposed energy development on public lands is evaluated equally, benefits as well as impacts. This would establish a definition to *responsible*, moving beyond a subjective concept, prone to being reduced to merely a source of endless debate.

We look forward to continuing to work with the BLM to find mutually acceptable and effective methods of promoting solar development on BLM-administered land. Feel free to contact me at your convenience at (503) 796-6951 to discuss these comments if further information or clarification would be helpful.

Best Regards,



Stu S. Webster
Iberdrola Renewables, Inc.
Director, Permitting and Environmental Affairs
1125 NW Couch St., Suite 700
Portland, OR 97209

Thank you for your comment, Richard Arnold.

The comment tracking number that has been assigned to your comment is SolarD11879.

Comment Date: May 2, 2011 23:01:28PM
Solar Energy Development PEIS
Comment ID: SolarD11879

First Name: Richard
Middle Initial: W
Last Name: Arnold
Organization: Pahrump Paiute Tribe
Address: P.O. Box 3411
Address 2:
Address 3:
City: Pahrump
State: NV
Zip: 89041
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

The Pahrump Paiute Tribe opposes the consideration and potential siting of Solar Projects in Amargosa Valley, Nevada. This location is situated within close proximity to numerous unrecorded archaeological sites, religious sites, songscapes and storyscapes important to Southern Paiute people and more specifically, the Pahrump Paiute Tribe. We know there are known sites that will be significantly and adversely impacted by the siting of the proposed projects. To date, no ethnographic studies have been conducted with the Pahrump Paiute Tribe, as requested and approved by the Program Manager and Document Manager of Bureau of Land Management. The Pahrump Paiute Tribe participated in a public meeting in Goldfield, Nevada expressing the concerns of our tribe. Subsequent to meeting, correspondence was received by the BLM office administering this EIS, that ethnographic interviews would indeed be conducted. After repeated requests, the BLM has failed to uphold this commitment and has not allowed the Pahrump Paiute Tribe to engage in this project and fulfill the requirements under NEPA. Consideration of the Amargosa, NV site will perpetuate additonal concerns relating to Environmental Justice that have not been properly evaluated absence of ethnographic studies. The Pahrump Paiute Tribe will suffer adverse impacts if the Amargosa Valley, NV site is considered due to the holyland violations that are not experienced by any other groups.

The Pahrump Paiute Tribe again requests the opportunity to participate in the approved ethnographic project supported jointly by the BLM and the Department of Energy, to assist in the identification and documentation of significant cultural resource sites.

Lastly, we are aware and have traditonal cultural knowledge about the impacts deriving from this proposed solar projects on socioeconmics, geology and soils, hyrology, air quality, human health and lastly environmental justice.

The Pahrump Paiute Tribe along with other Southern Paiute tribes are aware of the cultural implications associated with the artifical harnesssing of the power from the Sun and what will occur to the landscape. Accordingly, the Draft EIs does ot address any of the issues raised by the Pahrump Paiute Tribe.

Richard W. Arnold, Chairperson
Pahrump Paiute Tribe

Thank you for your comment, Milan Mitrovich.

The comment tracking number that has been assigned to your comment is SolarD11880.

Comment Date: May 2, 2011 23:14:22PM
Solar Energy Development PEIS
Comment ID: SolarD11880

First Name: Milan
Middle Initial:
Last Name: Mitrovich
Organization: Solution Strategies, Inc.
Address: 5777 W. Century Boulevard
Address 2: Suite 900
Address 3:
City: Los Angeles
State: CA
Zip: 90045
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Comments on Draft Solar Energy Development Programmatic EIS.pdf

Comment Submitted:

CORPORATE OFFICE
5777 W. Century Blvd., Suite 900
Los Angeles, CA 90045
310 641 0920 *Telephone*
310 641 0915 *Facsimile*

May 2, 2011

U.S. Department of the Interior
Bureau of Land Management
BLM Washington Office
Attn: Draft Solar Energy PEIS

Re: Comment on the Draft Solar Energy Development Programmatic EIS

To Whom It May Concern:

We have reviewed the Draft Solar PEIS for the proposed Solar Energy Development in Six Southwestern States (Solar Energy Development PEIS) and are providing comment on the document as follows:

Utility-scale solar energy development within the Pisgah Solar Energy Zone (SEZ) has the potential to effectively isolate Critical Habitat for the desert tortoise in the Ord-Rodman Desert Wildlife Management Area (DWMA) from Critical Habitat areas in the Superior-Cronese DWMA and Eastern Mojave and Northern Colorado Recovery Units (as defined in the 1994 Desert Tortoise Recovery Plan). By compromising a northwest-southeast linkage between the Ord-Rodman and Superior-Cronese DWMAs and an east-west linkage between Ord-Rodman and the Eastern Mojave and Northern Colorado Critical Habitat areas, development within the Pisgah SEZ could hamper the recovery of the desert tortoise.

Although the Draft Solar PEIS acknowledges: (1) the potential for a northwest-southeast linkage for desert tortoise between the Superior-Cronese and Ord-Rodman Critical Habitat units in the area of the Pisgah SEZ; and (2) development on the SEZ may impact tortoise populations in nearby DWMAs and Critical Habitat[1], the document does not go far enough in describing future development scenarios within the SEZ and what the resulting cumulative impacts will have on this linkage and ultimately the recovery of the desert tortoise.

As recognized in the PEIS, the USGS desert tortoise model (*Nussear et al. 2009*) predicts the presence of highly suitable habitat throughout the majority of the Pisgah SEZ.[2] In addition to being throughout the Pisgah SEZ, the high quality habitat predicted by the

USGS model also extends from the Ord-Rodman DWMA east along I-40 forming a contiguous connection of potentially high quality habitat between the Ord-Rodman DWMA and Critical Habitat for the desert tortoise in the Eastern Mojave Recovery and Colorado Desert Recovery Units.

What assurances will be provided that the cumulative effects of multiple projects within the Pisgah SEZ and other BLM lands "open" to solar energy development will not threaten the viability of a possible east-west linkage for desert tortoise between the Ord-Rodman DWMA and Critical Habitat areas to the east (along I-40)? The potential for protecting a viable east-west linkage is already constrained by the location of 29-Palms Marine Base, Interstate-40, and the limited extent of high quality habitat in the area.

Given the predicted high value of the Pisgah SEZ for regional desert tortoise connectivity, we strongly suggest the BLM review and discuss the issue of cumulative impacts resulting from multiple permitted renewable energy development projects occurring within this single SEZ. Given the size and geographic extent of the already approved Calico project, scenarios in which additional solar-energy development projects are also permitted for development within the Pisgah SEZ must be reviewed and discussed in the Final Solar PEIS.

The U.S. Fish and Wildlife Service is in the process of developing spatial-models of least-cost linkages for the desert tortoise connecting critical habitat areas.
We strongly recommend the BLM review the Service's most recent linkage models for the tortoise when evaluating the potential effects of multiple projects within the Pisgah SEZ on the desert tortoise as elimination of these linkages could hamper the recovery of the species.

Thank you for this opportunity to provide comments to the BLM on the Solar Energy Development PEIS. We look forward to your response.

Sincerely,

Milan Mitrovich, Ph.D.
Director of Ecological Services
Solution Strategies, Inc.

[1]*The SEZ is situated between the Ord-Rodman and Superior-Cronese DWMAs (these DWMAs also contain USFWS-designated critical habitat), and terrestrial habitats within the SEZ may provide important linkages between the DWMAs. Therefore, development on the SEZ may disrupt desert tortoise population dynamics in nearby DWMAs and designated critical habitat. Lines 31-35, 9.3-157, Volume 3, Part 2.*

[2]*Much of this habitat within the SEZ is considered to be highly suitable (modeled suitability value ≥0.8 out of 1.0) according to the USGS desert tortoise habitat suitability model (Nussear et al. 2009). Lines 19-21, 9.3-157, Volume 3, Part 2.*

Thank you for your comment, Michael Heizer.

The comment tracking number that has been assigned to your comment is SolarD11881.

Comment Date: May 2, 2011 23:42:21PM
Solar Energy Development PEIS
Comment ID: SolarD11881

First Name: Michael
Middle Initial:
Last Name: Heizer
Organization: Triple Aught Foundation
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment: PEIS Heizer comments 042.pdf

Comment Submitted:

May 2, 2011

To: Solar Energy Programmatic Impact Statement (PEIS)
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

RE: Excluding Coal Valley and Garden Valley, Nevada from PEIS consideration

To Whom It May Concern:

I am writing to strongly urge that Coal Valley and Garden Valley in Nevada not be considered for solar development in the Department of Interior's ("DOI") Solar PEIS until all other development options are exhausted. As a long time resident, my livelihood is intricately tied to these regions through my significant earth artwork that has taken decades to evolve. Including Coal and Garden Valleys in the Solar PEIS would irreparably alter the unique character and solitary nature of the region, as well as undermine the true value of my life's work.

I purchased my land in Hiko, Nevada, near Garden Valley in 1972 to begin work on *City*, an unparalleled work of earth art that I continue to work on through today. Believed to be one of the largest sculptures ever constructed, *City* has grown to encompass a land area roughly the size of the National Mall. The project has earned international renown, largely due to the size of the project and its isolated location that few people have yet seen. Coal and Garden Valleys flank both sides of the immense project, offering an undisturbed backdrop essential to conveying *City's* overarching message.

Allowing solar energy development in Coal and Garden Valleys would threaten the isolation and natural surroundings of *City* that provided the allure of the region to begin with. The unsurpassed beauty and privacy of Coal and Garden Valleys, and the massive, inspiring work of art it houses should be preserved in its natural state for future generations. Given the exceptional quality of life in this region, DOI should not include either Valley in their Solar PEIS before exploring all other potential site candidates.

Thank you for your time and consideration.

Sincerely,

Michael Heizer

Thank you for your comment, Ceal Smith.

The comment tracking number that has been assigned to your comment is SolarD11882.

Comment Date: May 2, 2011 23:53:18PM
Solar Energy Development PEIS
Comment ID: SolarD11882

First Name: Ceal
Middle Initial:
Last Name: Smith
Organization: San Luis Valley Renewable Communities Alliance
Address: P.O. Box 447
Address 2:
Address 3:
City: Saguache
State: CO
Zip: 81149
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: SLVRCA draft solar PEIS comment.pdf

Comment Submitted:

See attached file "SLVRCA draft PEIS comments"

San Luis Valley Renewable Communities Alliance

April 2, 2011

San Luis Valley Renewable Communities Alliance
PO Box 477
Saguache, Colorado 81131

US Bureau of Land Management
Draft Solar PEIS Comments
Argonne National Laboratory
9700 S. Cass Avenue, EVS/240
Argonne, IL 60439

Submitted electronically via: http://solareis.anl.gov/involve/comments/index.cfm

RE: Draft Solar Programmatic Environmental Impact Statement

To whom it may concern:

On behalf of the San Luis Valley Renewable Communities Alliance (SLVRCA), its members and associates, we submit the following comments on the Draft Solar Programmatic Environmental Impact Statement (DPEIS).

SLVRCA is a coalition of ranchers, biologists, renewable energy advocates and local citizens who view with great concern the industry and government momentum behind siting industrial scale, centralized solar power stations on large swaths of ecologically valuable public lands, particularly in the San Luis Valley, Colorado.

We have come together to urge local, state and national government, utilities, regional environmental groups and the public to abandon this destructive path, and to work toward generating the power we need in the built environment.

SLVRCA holds that there is a proper hierarchy of priority for strategies to end our nation's addiction to fossil fuels. We should start the switch by using the most cost-effective strategies for renewable energy production, which also happen to be the least environmentally destructive. In

descending order of priority:

1. Reduce demand. According to some estimates, an aggressive program of conservation and energy efficiency using currently available technology could reduce US power consumption by nearly one third.[1]
2. Generate renewable energy at or near the point of use. Distributed solar generation on homes and businesses is cost-competitive and does not incur the energy loss of distribution through transmission lines. Users can benefit through reduced utility bills or sales of power into the grid, or both. Installation time from project conception to completion is measured in weeks rather than years.
3. Generate renewable energy on a larger scale within the built environment. Most cities possess large industrial spaces including warehouse roofs, brownfields, large parking lots, airports, and other areas that could be either converted to or augmented with renewable energy production using existing technology. Emerging technologies offer promise for additional methods to incorporate solar energy production into new residential and commercial construction.

We maintain that a mixture of these techniques can meet our electrical energy needs without sacrificing biologically valuable ecosystems in Colorado and other southwestern states with large scale concentrating solar power plants.

Should these common-sense methods fail to meet our society's long-term demand for renewable energy, centralized solar power plants should be sited only on available disturbed, degraded and contaminated lands that offer little carbon sequestration, wildlife habitat or other natural resource values. Renewable technologies that do not deplete scarce arid land water resources should be prioritized. In any event, prudent and responsible renewable energy development should always steer large-scale renewable energy production away from intact public and private wildlands and prime agricultural lands.

I. Background

The need to make a rapid transition to a renewable-based energy economy is urgent. Global warming threatens to unwind the relatively stable climate regime that has supported the

[1] http://www.grist.org/article/2009-09-11-how-much-energy-does-the-us-waste/

evolution of present human and ecological systems.[2] At the same time, our economy has been rocked by global financial market crises that threaten to undermine our long-term economic security. It is imperative that we target the most efficient, rapid and cost-effective path to a renewable energy future that creates quality employment, revitalizes local economies, protects the environment and renews our communities.

The beauty of renewable energy is its ubiquity. Solar in particular is available globally at the point of use. Advances in renewable energy, including smart grid technologies, are revolutionizing our energy systems. Many experts agree that decentralized generation and distribution is the wave of the future. If we are to realize our full renewable energy potential, we must make a major departure from the old energy business model dependent on a constantly expanding, centralized utility system.

In the US, utility monopolies have dominated our energy sector for more than half a century. Resistance to change permeates the highest echelons of government. The push for industrial-scale remote central station renewable energy power plants reflects this old energy paradigm.

Reducing CO2 emissions has been cited by the California Energy Commission as an "overriding consideration" for permitting solar projects that have otherwise fail to meet environmental standards. DOI and DOE need to review the effectiveness of RES's in reducing emissions before pursuing a national RES policy. By mandating a market "add-on," rather than a substitution, RES's may be ineffective in reducing emissions or climate change. Because there is no requirement to reduce fossil-fuel-generated power by an equivalent megawattage, RES mandates are being used by Investor Owned Utilities (IOU's) to create an artificial market above existing generation, even as efficiency and conservation reduce overall demand. In addition, utilities are playing the green card to justify lucrative new transmission infrastructure.[3] If left unchecked, RES policies could undermine efforts to reduce CO2 emissions, unnecessarily increase the cost

---

[2] Overland, Carol A, Attorney, "Transmission: It's all connected," Slide 13, public presentation, January 20, 2011, Adams State College, Alamosa, Co, http://legalectric.org/?s=San+Luis+Valley

[3] US Department of Interior, Bureau of Land Management, Fast-Track Renewable Energy Projects, updated: January 6, 2011: http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/fast-track_renewable.html

of renewable energy, and delay by decades our transition to a new energy economy.

II. Business as usual

"Leading" in the wrong direction

Against this backdrop, the Administration claims to be making sweeping changes in the way we generate energy in this country, yet there is nothing new or innovative about this policy other than that it uses solar in place of traditional fossil fuel energy to power massive centralized generation stations on a scale never before seen.

Even many purported progressives have taken the approach that we must "do it all, everywhere" in order to confront the climate crisis—yet ignored in the analysis are the environmental damage and counter-productivity of siting industrial-scale solar development on carbon-sequestering, ecologically valuable intact public lands. Though allusions are frequently made to the need to site solar power plants wisely and in an "environmentally responsible" manner, serious efforts to act on these concerns are sorely lacking.

There is a severe lack of proper leadership on renewable energy policy in the US. SLVRCA believes this leadership vacuum will endure as long as the Bureau of Land Management remains in charge of solar energy development. As long as remote, pristine and near-pristine desert in the public sphere is the centerpiece of solar development siting, the BLM remains indispensable and has no reason to relinquish its current role.

Same old energy interests

By offering up public resources, the BLM is subsidizing the same energy interests that have profited by oil and gas development on public lands and waters (BP, Chevron). Taxpayer-funded subsidies in the form of cash grants and federal loan guarantees are going to the same financial players that helped bring the country to the edge of financial meltdown (Morgan Stanley, Goldman Sachs).

By converting public lands to industrial energy factories in fragile, remote areas with massive requirements for transmission at great cost to ratepayers and the environment, our renewable energy policy is taking the least enlightened path possible, staying close to the status quo while attempting to create the illusion of change.

Fourteen solar projects on over 60,000 acres and more than 750 miles of new high-voltage transmission projects have been fast-tracked on public lands.3[4] The projects range from 516 to 7,840 acres, with the average power plant exceeding 4,300 acres. This scale and intensity of development on public lands is unprecedented. Massive solar power plants pose irreversible, long-term, cumulative ecosystem and species-level threats to fragile desert and grassland biomes. In addition, expediting so many fast-tracked projects all at once has rendered public review of environmental impact studies nearly impossible.

Failure to meet environmental standards

Numerous deficiencies in meeting National Environmental Policy Act (NEPA) legal requirements have been documented by agencies and environmental groups4, including, but not limited to:

- Inadequate or completely lacking biological surveys
- Failure to adequately assess indirect impacts
- Failure to consider a reasonable range of project alternatives
- Narrow purpose and need statements
- Absence of baseline visual and noise resource analysis
- Inadequate cumulative impacts analysis
- Deficient underlying planning documents that never contemplated this scale of development and have no relevant guidelines that limit acceptable change
- Unresolved, deferred, and inadequate mitigation measures

The fast-track process puts enormous pressure on responsible agencies and staff to rush through evaluations of largely unknown technologies on an unprecedented scale. In acknowledgement of the serious shortcomings of the fast-track process, even otherwise compliant environmental groups issued the following "disclaimer" of the fast-track process:[5]

---

[4] Al Weinrub, *Community Power: Decentralized Renewable Energy in California*, November 2010, page 26: http://www.localcleanenergy.org/Community-Power-Publication

[5] 5NRDC, Sierra Club et al, *Comments on Chevron Energy Solutions Lucerne Valley Solar Project*, May 2010.

> "We urge the BLM and the Interior Department to acknowledge publicly the deficiencies of the current [fast track] process and to commit publicly to improving it. More specifically, we urge both entities to affirm that neither the current process, nor any of the project sites, nor any of the environmental documents, establish any legal or procedural precedents for future decision-making, siting or environmental review."

As of this writing, Secretary Salazar has approved nine of the fourteen fast-tracked utility-scale solar developments on public land, six in the deserts of California and three in Nevada, the proposed plants' maximum generating capacity of approximately 3,200 MW on more than 29,000 acres.

In many cases, agency staff determined projects to have multiple, unmitigatable adverse environmental impacts. Rather than reducing the scale, redirecting projects away from sensitive habitats, or denying project approvals, agencies invoked subjective "overriding considerations" to push otherwise unwarranted approvals through. The move was based on a hypothetical assertion that reduced greenhouse gas emissions resulting from solar generation would offset negative environmental impacts. The Imperial Valley Solar Project offers a point in case:

> "…Staff believes that the direct project impacts to biological resource, and soil and water resources, and visual resources, and the cumulative impacts associated with biological resources, land use, soil and water resources, and visual resources for the Imperial Valley Solar (IVS) Project will be significant. There is no feasible mitigation that would reduce the impacts to a level that is less than significant given the scale of the project, and other projects that were cumulatively considered…staff recognizes that due to a lack of information regarding the long-term performance of this new technology, it is uncertain whether the applicant's claims regarding reliability will be met."[6]

---

[6] California Energy Commission Staff, *Staff's Comments Regarding a Possible Energy Commission Finding of Overriding Considerations – Imperial Valley Solar Project* (08-AFC-5), July 27, 2010: http://faultline.org/images/uploads/TN_57759_07- 27-10_Staffs_Comments_to_Override_Considerations.pdf

Agency staff nevertheless concludes:

> "Notwithstanding the unmitigatable impacts…it will provide critical environmental benefits by helping the state reduce its greenhouse gas emissions, and these positive attributes must be weighed against the projects adverse impacts. It is because of these benefits and the concerns regarding the adverse impacts that global warming will have upon the state and our environment, including desert ecosystems, that staff believes it would be appropriate for the Commission to approve the project based on a finding of overriding considerations…"[7]

No scientific evidence has been presented to support the claim that these projects reduce greenhouse emissions. Indeed, recent evidence suggests that the opposite may be true. In a seven year monitoring study, researchers at the University of Nevada, Las Vegas found that carbon sequestration rates in Mojave Desert ecosystems rival or exceed that of some forest and grassland ecosystems.[8]

More recent work at the Center for Conservation Biology, University of California, Riverside, (Allen, et al) calls for more studies on groundwater depletion, landscape fragmentation, vegetation type conversion and regional carbon budgets. The researchers warn that "moving forward with industrial-scale solar developments in undeveloped desert habitats without quantifying the array of impacts…may unknowingly compromise biodiversity and ecosystem functioning."[9]

In addition, sulfur hexafluoride (SF6), used primarily as an electrical insulator in high voltage transmission of electricity, is the most potent of the six greenhouse gases regulated by the EPA, with a global warming potential 23,900 times that of CO2. One pound of SF6 is equivalent to

---

[7] Ibid.

[8] Richard Stone, "Have Desert Researchers Discovered a Hidden Loop in the Carbon Cycle?" *Science*, June 16, 2008: http://www.allianceforresponsibleenergypolicy.com/CarbonCyclereport.pdf

[9] Allen, Michael, F., McHughen, A, Barrows, C., *Impacts of Large-scale Solar Development on Regional Ecosystem Dynamics: Critical Research Gaps*, Desert Tortoise Council, 36th Annual Meeting and Symposium, Feb. 18-20, 2011, Las Vegas, NV, http://www.deserttortoise.org/abstract/2011DTCSymposiumAbstracts.pdf

eleven tons of CO2, nothing sequesters it and the chemical has a half-life in the atmosphere of 3,200 years.[10] The cost and effect of adding over 750 miles of new transmission infrastructure on SF6 emissions must also be factored into carbon-balance equations.

Unlike other forms of energy extraction, concentrating solar development entails use of 100 percent of the surface of a site. Environmental impacts are long-term (decades to centuries)[11] and the prospect of either short- and long-term reclamation remains purely speculative.

Until sound scientific research confirms the untested assumption that replacing intact desert ecosystems with industrial scale, centralized solar power plants will, in fact, result in a net CO2 reduction, evocation of categorical exclusions or other environmental waivers is arbitrary and unwarranted.

Offsite mitigation and translocation of affected wetlands, migrant bird habitat and federally threatened and endangered species, including Gunnison's Prairie Dog is another severe, unresolved concern. The overall impact of multiple projects will be devastating to vulnerable migrant bird species dependent on these habitats, particularly to unique populations restricted to narrow habitat conditions.

America's newest national heritage area

The vast San Luis Valley, Colorado is the cradle of the nations early settlement and a treasure trove of natural, cultural and historical wonders. The Valley spans six counties and 8,000 square miles at an average altitude of 7,500 feet.

North America's earliest human inhabitants, the Clovis peoples followed the vast herds of elk, pronghorn and the now extinct mammoth that roamed the San Luis Valley more than 12,000 years ago. A continuous stream of people followed including the Ute, Navajo, Apache, Tiwa, Tewa, Comanche, Kiowa and Arapaho. Blanca Peak and numerous sites around the Valley are still sacred to Native Americans. The Spaniards settled here in the mid 1800's, and today nearly

---

[10] US EPA. SF6 *Emission Reduction Partnership for Electric Power Systems*: http://www.epa.gov/electricpower-sf6/basic.html

[11] Ibid.

half of the Valley's residents are of Hispanic descent. Among the many families that have farmed and ranched here for generations, are Interior Secretary Ken Salazar's family.

In recognition of its rich biological and cultural heritage, much of the San Luis Valley was designated a National Heritage Area in 2009. The *Sangre de Cristo National Heritage Area Act* designates more than 3,000 square miles, a landscape larger than the states of Delaware and Rhode Island combined. It is named for the range of jagged, 14,000-foot mountains that defines the eastern edge of the San Luis Valley, one of the largest and highest alpine valleys in North America. One of only 3 National Heritage Areas in the West, the designation underscores the importance of the Valley's natural and cultural heritage as part of Americas national story.

Cultural and historic resources are a primary concern in the San Luis Valley. Based on testimony by local residents familiar with the sites, cultural resource inventories in the 4 proposed Solar Energy Zones are inadequate and incomplete. Conflicts are inevitable, as underscored by the concerns expressed by Native Americans and their legal challenges based on lack of consultation by the BLM on six of the nine projects permitted in California by DOI to date.

Public risk, private gain

Adding to the public burden are government cash grants to private, for-profit consortiums of up to 30 percent of a project's total cost. Much of the momentum behind fast tracking was to meet the December 21, 2010 deadline for solar projects to quality for American Recovery and Reinvestment Act (ARRA) funding. Under industry pressure, Congress is considering extending recovery funds for solar development.

ARRA funds have also been allocated for loan guarantees — that is, loans by US taxpayers through the Treasury Department, guaranteed by taxpayers through the Department of Energy. Two have been issued so far — $1.37 billion to BrightSource for three plants in the Mojave, and $1.45 billion to Abengoa for a plant on private land in Arizona. Solar Millennium is seeking a $1.9 billion loan/guarantee for its projects in Blythe.

The President's proposed budget also includes $73 million to review and permit renewable energy projects on federal lands. In addition to these generous federal subsidies, states have waived millions of dollars in permit-processing fees for private utility-scale solar developers,

with no provision for reimbursement.[12]

The Department of Interior has set as its goal "to permit at least 9,000 megawatts of new solar, wind, and geothermal electricity generation capacity on DOI-managed lands by the end of 2011." Reaching this goal before the end of the year would require fast tracking of an additional 5,800 MW on more than 70,000 acres. Whether or not there are more fast-track proposals, it is clear that the Administration is strongly committed to the current, expedited policy.

Staying the wrong course

Six of the nine fast-tracked solar projects are currently under litigation in response to inadequate, expedited reviews and potentially unwarranted approvals. In addition, some fast tracked projects depend on approvals of new long-distance transmission lines that are, themselves, under litigation. Rather than expediting solar energy generation, the "fast track" process has complicated and delayed our country's progress on renewable energy. Agency deference to entrenched, old energy interests and business models have created policy mire that could be decades or longer to resolve before these projects ever go online.

In an October 2010 conference call to which environmental representatives were invited, Secretary Salazar expressed ambivalence regarding the previous fast-tracked projects, admitting that the "process had not been perfect." The Secretary rationalized project approval on the basis that there had been no renewable energy program before he came in. He alluded to setting aside 1,000 square miles (640,000 acres) for solar—about the amount of land in the Solar Study Areas mapped out prior to issuance of the Draft PEIS.

We expected the problems identified in the course of the fast-track process to be remedied through the Solar PEIS, which DOI and DOE began in 2008, to "establish environmental policies and mitigation strategies (e.g., best management practices and siting criteria) related to solar energy development." Maps of the solar study areas (SSAs), including those encompassing 22,000 acres in the San Luis Valley, Colorado were offered for public review.

---

[12] Jessica Cejnar, "County could establish position on green energy projects," *Desert Dispatch*, April 2010: http://www.desertdispatch.com/news/board-8265-position-energy.html

Late in 2010, as the release of the draft PEIS approached, in the wake of the Secretary's approval of several fast-track projects, we looked ahead to the PEIS for what we hoped would be a more rational and acutely focused analysis. This would in turn result in a legally and biologically defensible program. It was widely assumed, and regularly reinforced through statements from Interior, that the PEIS would begin with the 22,000 acres of SSAs and work from there to narrow appropriate lands for solar development, in the six states.

Thus, the public was unprepared for the choice of a Preferred Alternative that would keep over 160,000 acres of public land in Colorado and nearly 22 million acres—about 33 times as much acreage as the SSAs—open to lease applications.

The Preferred Alternative is directly counter to the intent of the PEIS, which was to introduce some limits and predictability on how development of solar on public lands was to proceed. Caving into industry demands,[13] Interior has essentially said, "We do not wish to establish any meaningful limits on what is available to industry."

III. Applicable Federal Orders and Inapplicable "Mandates"

The myth of the mandate

By pledging to put a "bulls-eye" on public land for solar development and calling on Congress to make a long-term commitment to billions of dollars in public loan guarantees and grants to large scale solar developers, Interior Department Secretary Salazar is in keeping with a time-honored tradition of offering up federal land as a dumping ground for yet another single-use, environmentally damaging form of energy exploitation.

Much of the drive behind solar development on public lands has been predicated on what is often referred to as a "mandate" in the 2005 Energy Policy Act (PL 109-58). Policymakers, agencies, industry, the press, and environmentalists all make reference to it. Yet the short provision regarding renewable energy on public lands in the legislation (Section 211), establishes an

---

[13] Paul, Hastings, Janofsky & Walker, LLP, *Comments of Large-scale Solar Association (LSA), the Solar Energy Industry Association (SEIA), and the Center for Energy Efficiency and Renewable Technologies (CEERT),* Solar Energy PEIS Scopingletter submitted to BLM, September 14, 2009.

aspiration, not a mandate:

> "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."[14]

We agree with our partner organization, Solar Done Right that "A Sense of Congress" resolution has no force of law. The fact that this provision does not establish a mandate does not render it irrelevant, but it does mean that the Secretary of the Interior is not required to promote and sign off on permitting for utility-scale solar power plants. To do so is a policy choice, not a legally binding Congressional mandate.

Amended Federal Order 3285A1, issued by DOI Secretary Salazar on February 22, 2010, is also cited as the basis for using public lands for solar development. The Order takes its authority from the Energy Policy Act of 2005 (Section 3) and therefore also constitutes a DOI policy choice, rather than a legally binding Order. Nevertheless, the Order states that "as the steward of more than one-fifth of our Nation's lands," the department has a significant role in coordinating and ensuring environmentally responsible renewable energy production… [Emphasis added]." The Order clearly states that the department should pursue solar leasing "while protecting and enhancing the Nation's water, wildlife, and other natural resources."

Given the significant impacts from large-scale concentrating solar that cannot be mitigated, the goal of "protecting and enhancing the Nation's water, wildlife, and other natural resources" while implementing large scale "environmentally responsible" solar development, cannot be met through any of the alternatives being analyzed in the DPEIS.

When considering the big picture of renewable energy development, technology and market trends, we believe that the discretionary targeting of intact public lands for industrial solar development is a grave mistake in need of reversal.

---

[14] PL 109-58, Section 211.

IV. Scope, purpose, need and alternatives

Narrow, industry-driven alternatives

The National Environmental Policy Act (NEPA) requires agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14. The courts have found that "The `existence of a viable but unexamined alternative renders an environmental impact statement inadequate.'" And that the "touchstone for our inquiry is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation." As currently defined, the BLM's scope to analyze "use of multiple solar energy technologies at utility-scale over the next 20 years on lands within six southwestern states," and DPEIS purpose and need, "to respond to the high interest in siting utility-scale solar energy development on public lands," reflect the priorities of the solar industry to gain maximum access to public lands for industrial-scale development,18 rather than the public interest in identifying the wisest approach to renewable energy development that preserves the long-term value of public lands.

According to the BLM NEPA Handbook H-1790-1 (Section 6.2) and reiterated in Instructional Memorandum No. 2011-059, "The purpose and need statement for an externally generated action must describe the BLM purpose and need, not an applicant's interests and objectives or external proponent's purpose and need (40 CFR 1502.13) (emphasis added), but rather "the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action." [15]

The foregone conclusion of all of the alternatives analyzed in the DPEIS is the sacrifice of huge swaths of public lands for another wave of energy exploitation. The DPEIS fails to consider whether siting large-scale solar on public lands is the highest and best use of those lands, nor does it explore alternatives to public lands solar.

Siting industrial scale solar power plants on high-value, intact public lands has come under increasing scrutiny as the public becomes aware of viable alternatives such as large-scale solar "roof-top" PV in the built environment, or siting solar development on the nation's millions of

[15] US Department of Interior, BLM, Instructional Memorandum No. 2011-059, *National Environmental Policy Act Compliance for Utility-Scale Renewable Energy Right-of-Way Authorizations*, Expires: 09-30/2012.

acres of disturbed, degraded and contaminated lands.

Distributed generation

While the DPEIS acknowledges that "[distributed generation] will be an important component of future electricity supplies," it rejects the analysis of a distributed generation alternative based on outdated and incorrect assumptions.

The DPEIS conclusion that only "23% of required of required electricity supplies could be met with roof-top PV systems" is refuted by numerous studies. For example, a 2007 Navigant study prepared for the California Energy Commission (CEC) estimated the combined solar PV capacity potential of residential and commercial rooftops in California to be 50,255 megawatts in 2010 and67,889 megawatts in 2016.[16]

A 2009 Black & Veatch and Energy and Environmental Economics, Inc. (E3) report to the CPUC, found 11,543 megawatts of large (greater than 1/3 acre) urban rooftop capacity and 27,000 megawatts of ground-mounted capacity near existing substations. [17]

A June 2010 update of the study found that California has a capacity of 55,000 megawatts of decentralized solar PV (over 100,000 GWh/year). 22 This is more than enough to meet the estimated 40,000 to 56,000 GWh/year net short in the state. The potential for DG goes well beyond the numbers cited in these studies that only account for the most accessible commercial sites.

It is common knowledge that solar PV prices have fallen dramatically in the past two years. In a recent filing to the state's PUC, Southern California Edison asked for approval of 20 solar PV projects worth 250 MW – all of which are expected to generation 567 gigawatt-hours of

---

[16] Navigant Consulting, California Energy Commission, *California Rooftop Photovoltaic (PV) Resource Assessment and Growth Potential by County*, September 2007, Table B.1: http://www.navigantconsulting.com/downloads/knowledge_center/CECReport-500-2007-048.pdf

[17] Black & Veatch, *Summary of PV Potential Assessment in RETI and the 33% Implementation Analysis*, December 2009: http://www.cpuc.ca.gov/NR/rdonlyres/FBB0837D-5FFF-4101-9014-AF92228B9497/0/ReDECWorkshopPresentation1ExistingAnalyses.ppt.

electricity for less than the price of natural gas.23 Five years ago, solar PV and concentrated solar power were comparable in price, but solar PV is now indisputably cheaper than concentrated solar power.[18]

Solar PV with battery storage has a lower levelized cost than concentrating solar with storage,[19] and many small installations spread widely over a larger geographic area, are far less vulnerable than large central-station solar generation that can be entirely shut down by a single cloud. Advocates of utility-scale solar commonly omit from their calculations avoided costs of new transmission, and the 7.5–15 percent losses from moving solar-generated electricity hundreds of miles to urban demand centers when comparing the cost of centralized vs. distributed solar generation.

In cloudy Germany, 8,000 MW of distributed PV were installed in 2010 alone,[20] more than 80 percent of it on rooftops.

A strategy focused primarily on distributed PV would be the most cost-effective approach to rapidly expanding solar power production in the United States. Germany has demonstrated that a spectacularly high, distributed PV installation rate is sustainable when an appropriate contract structure, the feed-in tariff, is utilized.

Approximately 17,000 megawatts of PV were installed worldwide by the end of 2009. Only 664 megawatts of the global total solar was concentrating solar thermal. Ironically, most of this solar thermal capacity was built in California in the 1980s and early 1990s.[21]

---

[18] Ryan Pletka, Black & Veatch, LTPP Solar PV Performance and Cost Estimates, prepared for CPUC as input to Long-Term Procurement Proceeding, June 18, 2010, slide 37: http://wwwcpuc.ca.gov/NR/rdonlyres/A0CBE958-E2C4-4AC7-9D56-3-AB4D14D723D/)/BVE3PVAssessment.ppt.

[19] Stephen Lacey, "Solar PV Becoming Cheaper than Gas in California?," *Renewable Energy World*, February 8, 2011, http://www.renewableenergyworld.com/rea/news/article/2011/02/solar-pv-becoming-cheaper-than-gas-incalifornia

[20] Kirshbaum, Erik, "Germany to add record 8 GW of solar power in 2010," *Reuters*, December 6, 2010, http://www.reuters.com/article/2010/12/06/us-germany-solar-idUSTRE6B53L220101206

John Farrell, "Busting 4 myths about solar PV vs. concentrating solar," *Grist*, February 17, 2011, http://www.grist.org/article/2011-02-15-busting-4-myths-about-solar-pv-v.-concentrating-solar

[21] Ibid

In a recent publication, “Federal Government Betting on the Wrong Solar, "Horse,” engineer and PV expert Bill Powers points out:

> *The United States is wasting billions of dollars of American Recovery and Reinvestment Act (ARRA) cash grants and loan guarantees on very large, high-cost, high environmental- impact, transmission-dependent desert solar thermal power plants that will be obsolete before they generate a single kilowatt-hour of electricity…*
>
> *The Department of Energy (DOE) is in the process of completing a potentially landmark study, the Solar Vision Study (SVS). It maps out a strategy to provide the United States with 10 to 20 percent of its electric energy from solar power by 2030. The document appears to be intended to serve as technical support for a national strategic commitment to solar thermal development….*
>
> *…The SVS proposes that half of the nation’s solar power will come from solar thermal installations, based on a low and unsupported cost-of-energy forecast for solar thermal plants. The SVS also presumes that the Southwest will be the hub from which this solar power is generated and transmitted to other parts of the country, while estimating an almost trivial transmission expense to make this happen.*
>
> *… A revised and corrected SVS would envision a solar future that is effectively 100 percent solar PV. This PV future would also be predominantly smaller-scale PV connected at the distribution level, to avoid the expense of transmission. Otherwise, enormous costs for the new transmission capacity would be necessary to move remote Southwest solar power to demand centers around the country.* [22]

Generally speaking, “rooftop” solar is shorthand for solar PV installed on commercial and residential rooftops, parking lots, highway easements, and virtually any site in the built environment that has suitable space for distributed generation. When all costs are factored in—including new transmission infrastructure and transmission line losses—local, distributed solar PV is comparable in efficiency, faster to bring online, and more cost-effective than remote

---

[22] Powers, Bill. Federal government betting on the wrong solar horse, *Natural Gas & Electricity Journal*, December 2010: http://www.google.com/search?client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial&channel=s&hl=en&source=hp&biw=856&bih=797&q=Federal+Government+Betting+on+the+Wrong+Solar+Horse&btnG=Google+Search

industrial scale solar thermal power or remote utility-scale PV plants. [23]
Local installations such as rooftop or parking lot solar PV reduce peak load at the source of demand and thus reduce or eliminate the need for additional conventional generation and transmission infrastructure. Yet, because investor-owned utilities are guaranteed a high rate of return for transmission and new generation infrastructure, they oppose large-scale deployment of rooftop solar[24] and thus work to perpetrate the myths surrounding point-of-use solar. [25]

Environmental Protection Agency – RE-Powering America

The Environmental Protection Agency (EPA), which is obligated to review all environmental impact statements, stated strongly in its scoping comments on the PEIS that the BLM should include a DG alternative in its analysis. In addition, the EPA "strongly [encouraged] BLM, DOE, and other interested parties to pursue siting renewable energy projects on disturbed, degraded, and contaminated sites, before considering large tracts of undisturbed public lands."[26]

The EPA's Office of Solid Waste and Emergency Response has been identifying abandoned mine lands, brownfields, Resource Conservation and Recover (RCRA) sites, and federal and nonfederal Superfund cites that may be suitable for solar and other non-fossil-fuel energy projects.[27]

23

[25] Powers, Bill, and Sheila Bowers, SLVRCA Coalition. Distributed Solar PV – Why It Should Be The Centerpiece of US. Solar Energy Policy, http://solardoneright.org/index.php/briefings/post/distributed_solar_pv_why_it_should_be_the_centerpiece_of_u.s._solar_energy_/

[26] Philips, Matthew. *Newsweek,* Taking a Dim View of Solar Energy, Who could possibly be against homeowners using solar panels to power their homes? Utility Companies, August 25, 2009. http://www.newsweek.com/2009/08/24/taking-a-dim-view-ofsolar-energy.html

[27] Scoping letter from EPA Region IX dated September 8, 2009, signed by Ann McPherson, Environmental Review Office. http://www.epa.gov/renewableenergyland/docs/repower_contaminated_land_factsheet.pdf

In its original scoping letter on the Programmatic EIS, EPA identified hundreds of thousands of acres of contaminated sites around the country. Following the same methods used by the National Renewable Energy Lab to identify suitable concentrating solar generation sites, EPA identified a "technical potential" of 920,000 MW of solar generation.[28]

In April 2009, several environmental organizations issued draft recommendations for solar energy development study areas consistent with their own siting criteria. These areas, just in California, comprised 53,400 acres of BLM-managed public land and 242,200 acres of adjacent private lands.[29]

In its Environmental Impact Reviews for fast-track solar projects, the California Energy Commission also identified disturbed public and private land sites as suitable alternatives to some of the proposed undisturbed public land sites. In a compilation of the CEC's comments on these sites and some of his own research, engineer Bill Powers shows yet more alternative sites for several of the projects.[30]

Westland's Solar Park in California's central valley includes approximately 30,000 acres of disturbed land targeted for renewable energy development within the Westland's Water District, where agricultural land has been rendered unusable by salt buildup from long-term, intensive irrigation. The project is believed to be suitable for up to 5 GW of solar power generation.[31]

---

[28] Technical potential is defined as "Potential that is technically possible, without consideration of cost or practical feasibility. Given the hidden financial and externalized environmental costs of the current policy led by the Interior just to site 10,000 MW, we believe it is credible to use the EPA's optimistic estimate for comparison purposes. http://www.epa.gov/renewableenergyland/docs/repower_technologies_solar.pdf.

[29] California Desert & Renewable Energy Working Group, *Recommendations to Secretary of the Interior Ken Salazar on Ways to Improve Planning and Permitting for the Next Generation of Solar Energy Projects on BLM Land in the California Desert*, December 22, 2010, http://http://solardoneright.org/images/uploads/31-jan-_1_BLM_fast_track_projects_list_of_preferred_disturbed_land_alternatives1.pdf

[30] Woody, Todd, "Recycling land for green energy ideas," *New York Times*, August 10, 2010, http://www.nytimes.com/2010/08/11/business/energy-environment/11solar.html *and* http://westlandssolarpark.com/Westlands_Solar_Park/Project_Overview_and_General_Information.html

[31] Ibid.

None of the examples above offers the entire solution, but they do demonstrate the lack of imagination and innovation that is currently guiding site selection. This primitive approach—using public land as the "easy call" for siting renewable energy—is not necessary. There are alternative for siting both large- and small-scale renewables.

Failure to take a "hard look"

Billions have been invested in cash grant and loan guarantees to prop up proposals using 1980s and 1990s-era technologies in remote, intact desert landscapes, when a push for widespread deployment of DG on pavement and rooftops would serve the public interest far better.
Thus we have an exploitive, outmoded approach to siting mired in 19th Century attitudes toward public land, coupled with financially- and environmentally-subsidized, outmoded technology that will fail to achieve a responsible energy future.

There is vast potential to get outmoded and environmentally damaging solar off public lands by prioritizing distributed generation from solar PV installations in the built environment.
The purpose and need for the PEIS fails to take a hard look at distributed generation and siting alternatives that "minimize adverse impacts or enhance the quality of the human environment" in order to inform decision-makers and the public, as required by NEPA.

Instructional Memorandum No. 2011-05938 issued by the Director of the BLM acknowledges that in limited circumstances the agency may choose to evaluate a non-federal land alternative or different technology alternative raised through scoping, "to the extent necessary to support a decision regarding the pending application." The BLM's dismissive stance regarding alternatives to its own narrow proposals, however, suggests that this would be used exclusively to point up the (false) superiority of the public-land, remote, concentrated solar projects it favors. To comply with NEPA, the BLM must analyze these sites and technologies as the legitimate alternatives they are.

The DC Circuit Court of Appeals has found an EIS inadequate for failing to consider eliminating oil import quotas as an alternative to the sale of oil leases on the Outer Continental Shelf, even though the alternative was outside the jurisdiction of Interior. No PEIS was prepared in that instance, but here there is an even stronger case to consider broader alternatives, as a PEIS is meant to address broader policy decisions rather than a specific proposed action.

As the Council on Environmental Quality has stated,

> "Section 1502.14 [of the NEPA regulations] requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."

And,

> "An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. Section 1506.2(d). Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies. Section 1500.1(a)[emphasis added]."[32]

V. Conclusion

In addition to turning to degraded, contaminated sites, there is vast potential to get outmoded, environmentally damaging solar off public lands in the alternative of distributed generation through solar PV installations in the built environment.

The PEIS dismisses alternatives such as Distributed Generation, restricting solar development to populated areas, or conservation and demand-side management, on the basis of defining the purpose and need as "[responding] in a more efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands." This, in turn, the agency relates to "the requirements for facilitating solar energy development on BLM-administered lands established by the Energy Policy Act…"

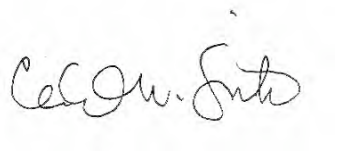
This approach renders the Draft Solar PEIS fundamentally flawed. The DOI, DOE and BLM are

---

[32] http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm

required to consider a far broader range of alternatives. While the Energy Policy Act—upon which Interior leans—expressed Congress' "sense" that Interior "should seek to have approved" a stated amount of non-hydropower renewable energy on public land, it did not establish a mandate. Interior is not required to establish this footprint on public lands, and in light of the evidence regarding the environmental damage it would cause, has the discretion to, and must, change course.

Sincerely,



Ceal Smith
***On behalf of* SLVRCA co-founders, members and affiliates**

APPENDIX OF CONCERNS SPECIFIC TO THE SAN LUIS VALLEY, COLORADO

Water resources

The San Luis Valley is an arid environment where water is scarce and aquifer, wetland and riparian ecosystems are already stressed. The Rio Grande Basin has little water to spare for energy development; is already over-appropriated and facing many challenging issues as a result of new sub-district rules currently being worked out in the San Luis Valley.

The DPEIS fails to conduct a meaningful analysis of the cumulative impacts of solar energy development on water resources and users with its analysis of each SEZ, within flow systems and across the state as a whole. This is particularly true concerning the availability of groundwater for solar projects and the impacts of groundwater withdrawals on special status species, and other public trust resources.

Withdrawal of over thousands of acre-feet of water from these basins will intercept the source of the water that now maintains the numerous springs, seeps, marshes, streams, and riparian and mesquite habitats that support the wildlife and plant resources including migratory birds and threatened and endangered species. Many of these habitats are federally protected wildlife refuges, national parks and monuments, and national recreation areas that are supported by

federally held water rights.

The programmatic EIS that BLM fails to assess the impacts of the loss of interbasin flow and examine the reasonably foreseeable cumulative impacts of water use for solar energy projects on groundwater-dependent species and their habitats. The DPEIS also fails to discuss the potential for increased competition for water resources in the area, and the indirect agricultural, socioeconomic and ecosystem impacts of allocating water to energy production.
The PEIS also fails to include additional analysis and discussion of existing water quality conditions, water treatment, and impacts to water quality in the DPEIS. The DPEIS provides a brief discussion of groundwater quality in the SEZs, but fails to provide any baseline information regarding surface water quality. There is no discussion of the size, type or extent of surface or groundwater quality impacts due to sedimentation, runoff, contaminant spills, herbicide application or wastewater treatment.

In fact, the DPEIS provides little information that discerns any difference between wastewater treatment alternatives or how an alternative might be chosen or any disclosure of contaminants in the wastewater as well as treatment methods, chemicals that may be stored or used, and the potentially affected acreage if treated on-site and the impacts of the increase in vehicle traffic if treated off-site.

Soil erosion and associated vegetation impacts
Impacts to soil resources are some of the most challenging issues for solar projects proposed in the desert. Desert soils are particularly fragile, and development can have significant impact on soil crusts. Soil crusts and vegetation play a vital role in retaining desert topsoil; when areas are bladed, a complex of interrelated negative impacts occur. Biological soil crusts, composed of a community of mosses, lichens, algae, fungi, and bacteria, form a textured, porous layer a few centimeters thick above the ground surface and a fibrous mat that extends below ground, holding topsoil in place, inhibiting the spread of invasive weeds, and facilitating nitrogen fixation and carbon cycling to enhance soil fertility. When these soils are disturbed, the desert land generates more dust and the area is more susceptible to invasive plant species. Native plant communities as well as soil crusts could take many years to re-establish after disturbance in the arid, low productivity environment of the SEZs.

While acknowledging significant impact potentials, the PEIS doesn't provide sufficient analysis of air quality impacts and only contains a short discussion of fugitive dust which states "…exposed soil would provide a continual source of fugitive dust throughout the life of the

facility, resulting in the long-term deposition of particulates onto plants in the vicinity. Such deposition could lead to long-term changes in plant community composition and productivity in the vicinity of a solar energy facility."

The FEIS does not provide adequate analysis of the impacts on the soils, including any biological soil crusts, as well as the potential for introducing non-native invasive plant species. Existing plant communities and variability to changing water regimes is poorly described particularly for sensitive species. Unfortunately, in a dry ecosystem some species are only present or active for a few weeks each year. In dry years, some plant species will not appear at all, although viable root systems are present underground. Therefore, any historical vegetation or wildlife surveys should be considered.

Destruction of surface hydrologic function is another important impact that is not addressed. Many potential development areas are located on extensive alluvial fans, containing many ephemeral drainages and incised washes. Consideration of the cumulative impacts from anthropogenic uses on these streams is critical in watershed-based assessments and land management decisions to maintain overall watershed health and water quality."

Air quality and snowmelt

Solar development will require extensive clearing and leveling of terrain. Such actions destroy soil structures such as biological soil crusts and often include near complete vegetation removal subjecting the soil surface to highly erosive winds. Disturbance of playa soils without biological soil crusts has the largest erosive impact as the crushing of the mineral crust leaves the soil surface unprotected (Belnap 2001). In many areas of the six Southwestern States covered by the PEIS, soil-borne diseases and toxins in dust generated by wind erosion can be transported considerable distances from the disturbed site. In the central Rocky Mountain states of Colorado and Utah, acceleration of snowmelt due to dust accumulation on snowpack has also been indentified as a strong influence on water availability throughout the growing season.

Contrary to popular belief, dust can travel great distances from its source, even across oceans and continents, sometimes having negative impacts on human health and distant ecosystems (Husar et al. 2001, Joy 2005, McClure et al 2009).

In North America, the southwestern deserts are the source of the majority of mineral aerosol emissions. Human activities in these regions have significantly increased the amount of wind

erosion and hence dust production and deposition, with broad implications for biogeochemical cycling and impacts to arctic and mountain snowpack depths and melt rates (Neff et al. 2008).

Of particular importance are the effects of global climate change on the region. It is very likely that desertification will intensify with the effect of increasing the probability of more dust being produced as vegetative cover decreases and soils dry (Morman 2010).

Scientists at the U.S. Geologic Service have been studying the sources and composition of dust across the desert southwest, from both natural and anthropogenic sources, including in terminal lake valleys in southern California and Nevada in which solar developments are being contemplated in this PEIS (Reheis et al. 2009).

The studies are finding that dust from terminal lake basins could be transported hundreds of miles and could be a global source of metal-bearing and potentially toxic dust. Not only are they readily available, the dusts are also easily respired and are highly bioaccessible (Reheis et al. 2003, (Reheis et al. 2003, Morman 2010).

While there is some variability between dust sources, all include a mixture of arsenic, chromium, cadmium, lead, copper, nickel and zinc, all potentially toxic to humans (Reheis et al. 2009, Reheis et al. 2003, Morman 2010).

Recent research has indicated that dust generation has regional effects on snow chemistry and subsequent melting in the Central Rocky Mountain region (Rhoades et al. 2010). Theaccelerated snowmelt from dust deposition changes surface water flow pattern and timing,groundwater recharge, and water availability during the driest parts of the year, and is stronglyinfluenced by destabilization of desert soils (Painter et al. 2010).

Habitat connectivity, corridors, and fencing

The Colorado Division of Wildlife (CDOW) maintains GIS layers of linear migration patterns for selected big game species. Industrial-scale solar development in these linkages could result in their permanent impairment, fragmentation and loss of functionality for certain species. CDOW migration corridor layers for mule deer and pronghorn indicate that several areas contain and provide the critical public lands connectivity to enable pronghorn migration through the Poncha Pass area south of Poncha Springs to Mineral Hot Springs. These migration corridors run north to south through areas identified as open for solar development.

Similarly, the Southern Rockies Wildlands Network Vision defines a pronghorn migration corridor to the south of the towns of Saguache and Moffat. This corridor runs east to west across the San Luis Valley through a mosaic of public and private land. BLM lands in this area that are identified as open for development likely provide critical foraging opportunities and refugia during migration, and removal of these "stepping stone" habitats could have long-term effects on local pronghorn population viability.

Landscape-scale habitats that link large blocks of intact habitat that support and sustain all Special Status Species are not included in the analysis of impacts in each of the alternatives and in the development of impact avoidance mitigation measures. Such measures may require that areas proposed for solar energy development are fully avoided if they fall within an essential habitat connectivity area.

In addition, issues around wildlife movement and habitat corridors are landscape-scale issues that need to be addressed at a regional/landscape scale. The BLM preferred alternative intersects large areas with high biodiversity and/or protected status including:

- 90,297 acres of lands included in the Nature Conservancy's 2001 Ecoregional Portfolio.
- 13,382 acres (over 10 areas) designated by the Colorado Natural Heritage Program (CNHP) as areas of high biodiversity significance.
- 13,301 acres identified by SWReGAP as riparian land.
- 28,017 acres of CNHP Potential Conservation Areas.
- 12,562 acres of the CNHP San Luis Valley Playa Lake network of conservation areas that include several playa lake Potential Conservation Areas.
- 33,357-acres of Southern Rockies Ecosystem Project/Center for Native Ecosystems Wildland Network Design high use areas.
- 9,376-acres of Southern Rockies Ecosystem Project/Center for Native Ecosystems Wildlands Network Design Core Conservation Areas.
- 6,024-acres of the Colorado Natural Areas Program Medano-Zapata Natural Area.
- 561 acres of the CDOW/BLM Hot Creek State Wildlife Area.
- Significant but undetermined ephemeral wetlands.
- Significant but undetermined migrant bird habitat including Sand Hill Crane foraging and migration corridors.

The BLM preferred alternative intersects crucial habitat areas for the following special status or game species:

- ***Gunnison's prairie dog:*** 4,956 acres of CDOW active colonies, 626 acres overlap with inactive colonies, 30,467 acres overlap with colonies of unknown status.
- ***Gunnison sage-grouse:*** 4,140 acres of overlap with CDOW production areas, 52 acres of overlap with lek sites as defined by the Natural Diversity Information Source (NDIS) for the Colorado Oil and Gas Conservation Commission,
- ***Bald Eagle:*** 1,604 acres of overlap with CDOW roost sites, as well as 6,343 acres of overlap with CDOW winter concentration areas.
- ***Elk:*** 10,633 acres of SREP/CNE habitat linkages, 636 acres of CDOW migration corridors, 5,483 acres of CDOW production areas, 72,117 acres of CDOW severe winter range, 12,625 acres of CDOW winter concentration area, and 2530 acres of resident population area.
- ***Mule Deer:*** 1,368 acres of SREP/CNE habitat linkages, 416 acres of CDOW migration corridors, 36,274 acres of CDOW severe winter range, 4596 acres of CDOW critical winter range, 3,915 acres of CDOW winter concentration area, and 13,386 acres of CDOW resident population area.
- ***Pronghorn:*** 246 acres of CDOW migration corridors, 24,733 acres of CDOW severe winter range, 26,342 acres of winter concentration area, 5,471 acres of CDOW concentration area, and 1,703 acres of CDOW resident population area.
- ***Bighorn Sheep:*** 441 acres of CDOW winter range and 277 acres of severe winter range.
- ***Mountain Plover****:* 2743 acres of CNHP high precision element occurrence overlap.
- ***Black-footed Ferret:*** 354 acres of CNHP high precision element occurrence overlap.
- ***Colorado River Cutthroat Trout:*** 3,123 acres of watershed area, 3,307 acres of buffered stream segments designated by CDOW for the Colorado Oil and Gas Conservation Commission as critical habitat.
- ***Greenback Cutthroat Trout:*** 1,093 acres of watershed area.
- ***Rio Grande Cutthroat Trout:*** 48,407 acres of Rio Grande cutthroat watershed.
- ***Roundtail Chub:*** 118 acres of CNHP high precision element occurrence overlap.
- ***Little Penstemon:*** 336 acres of CNHP high precision element occurrence overlap.
- ***Dwarf Milkweed:*** 94 acres of CNHP high precision element occurrence overlap

San Luis Valley, CO Solar Energy Zones

I. DeTilla Gulch

*This SEZ has the highest level of natural resource conflicts of any in Colorado***.**

The following concerns make this SEZ problematic and it should be removed from consideration for solar development.

Gunnison's Prairie Dog Colonies Surround the SEZ on Three Sides

Populations of Gunnison's prairie dog (GPD) within the San Luis Valley have been determined to be warranted for listing, but precluded by pending actions for species with higher listing priority. The species currently has candidate status and a fairly high Listing Priority Number of 3 (the highest possible ranking for this species is 2). The potential for listing will increase if the species continues to decline. Accordingly, active colonies in their most recent CDOW dataset (2007) should be completely avoided. In addition, clearance surveys should be performed in and around colonies classified by CDOW as inactive or unknown, and these areas should be left undeveloped if possible. Preserving habitat linkages between occupied areas is also important; the fencing and siting Best Management Practices BLM has committed to in the solar PEIS emphasize preventing population level habitat connectivity issues for large game species, but these BMPs must extend to GPD as well. Assessments of GPD movements between colonies and avoidance of migration corridors for this species are critical.

There is also a large complex of active and inactive colonies west of Los Mogotes East SEZ that could be a good priority area for mitigation. According to the most recent CDOW data, there is an active Gunnison's prairie dog colony of 207 acres on the northern edge of the SEZ, and another active 161-acre colony 0.3 miles to the west. A 1518-acre inactive colony surrounds the western active colony, and a 12,797-acre inactive colony or colony complex is immediately to the east. The entire SEZ is historic habitat for GPD. The juxtaposition of active and inactive colonies, as well as the species' tendency to re-colonize previously occupied habitat, make it likely that if this area was left undeveloped the species would eventually occupy habitat within the SEZ.

Sage-Grouse

The entire DeTilla Gulch SEZ is historical habitat for the Gunnison sage-grouse. Gunnison sage-grouse is a Candidate for listing under the Endangered Species Act. The conservation context of this species and high likelihood of listing is detailed in Appendix A. It would be unprecedented for USWFS to declare critical habitat for this species so far from currently occupied habitat, but it cannot be totally ruled out under an ambitious recovery program.

Big Game Winter Habitat Use

The DeTilla Gulch SEZ contains several hundred acres of severe winter range for elk and winter

concentration habitat for pronghorn. As with the Antonito Southeast site, disturbance during the winter season should be avoided or minimized in these areas.

Mineral Hot Springs Potential Conservation Area
The portion of this SEZ containing the Gunnison's prairie dog colonies has also been identified by the Colorado Natural Heritage Program as a Potential Conservation Area (PCA) for its high biodiversity value. The PCA, known as the Mineral Hot Springs PCA, "encompasses most of the expanse of shortgrass prairie in Saguache County" and the SEZoverlaps with 1027 acres of this. The PCA was identified primarily for the diversity of small mammals found there, including the Gunnison's prairie dog, the globally vulnerable thirteen lined ground squirrel, and the globally vulnerable silky pocketmouse. The intersection with the SEZ occurs at the south end of the PCA, however, an area mentioned in the official summary as being dominated by greasewood and rabbitbrush. Given that all of the above species feed predominantly on grasses, forbs, sedges, and occasional insects, this habitat at the southern edge of the PCA is likely less suitable than areas further north.

Riparian Areas
The SEZ contains riparian habitat within a watershed that sustains a population of Rio Grande cutthroat trout, a BLM Sensitive Species. Avoidance of riparian habitat as with the Antonito Southeast site, direct impacts to riparian zones and aquatic habitat is likely easy to avoid, but only if the appropriate measures are taken in subsequent stages of the siting, permitting, and development process.

Cultural Resources
The SEZ is located 0.25 miles from the Old Spanish NHT, and the BLM should include analysis of potential impacts associated with development in the FPEIS, as well as measures to avoid, minimize or mitigate such impacts.

II. Antonito Southeast

This area is a Wildland Network Design high use area, and could provide habitat for a range of species besides those mentioned below.

Gunnison's Prairie Dog
Based on official CDOW data, the SEZ is flanked on its northwest edge by a small active prairie dog colony as well as two larger inactive colonies. Unofficial information from CDOW also

indicates that the species may have expanded into the SEZ, and a subsequent site visit by The Wilderness Society staff confirmed that there were burrows within the SEZ. It should be emphasized, though, that for this declining, habitat limited species, currently unoccupied habitat is especially important. Gunnison's prairie dog are known to reoccupy abandoned sites following local population declines from plague or other factors, so areas that are suitable but currently unoccupied are important, particularly if there is evidence of use by the species in the past.

Gunnison Sage-Grouse

The entire Antonito Southeast SEZ is historical habitat for the Gunnison sage-grouse. Gunnison sage-grouse is a Candidate for listing under the Endangered Species Act. The conservation context of this species and high likelihood of listing is detailed in Appendix A.

Elk

Antonito Southeast SEZ has 55% overlap (5430 acres) with CDOW elk severe winter range, which extends to the west in a north-south band 13 miles wide. While the SEZ does not supply irreplaceable winter habitat for the species as a whole, it is important for local populations that wintering herds be protected from extensive disturbance during this precarious part of their life cycle. BLM should consider adding provisions to limit activity outside of project fencing during severe winters when elk are using these areas.

Pronghorn

Similarly, the entire SEZ is within pronghorn winter range, but this is fairly well distributed throughout the area, and there are no severe winter range or winter concentration areas within the SEZ. As with elk, it's not likely that the SEZ provides essential habitat, but it does provide some quality habitat as well as likely movement corridors through the SEZ that should be safeguarded in areas outside project footprints.

III. Fourmile East SEZ

Gunnison's prairie dog colony of unknown status occur in this area. In addition, the SEZ contains winter range for pronghorn as well as overall range for elk, mule deer, black bear, and mountain lion. According to official CDOW data, the southern tip of the SEZ intersects a large GPD colony of unknown status. Surveys for the species have not been conducted within any area defined by CDOW as having colonies of inactive or unknown status.

D. Los Mogotes East SEZ

Gunnison's Prairie Dog Colonies Surround the SEZ on All Sides

According to the most recent CDOW data, there is a 59,300-acre Gunnison's prairie dog colony complex of unknown status that intersects the northwest corner of the SEZ. This colony complex contains 8 active colonies inside it, and is flanked by additional colonies (active and unknown status) to the east that also surround the SEZ. Given this configuration, it seems likely that migrating individuals could move through the SEZ, and that areas within the SEZ could even be colonized in the future (the entire SEZ is historic habitat for the species). A candidate species that has been considered not warranted for listing for the past several years, this species has a fairly high Listing Priority Number of 3; the potential for listing will increase if the species continues to decline. Active colonies on and adjacent to Los Mogotes East SEZ must be protected from development or surface disturbance, as should any movement corridors associated with these colonies.

Large Game Wintering Areas

Los Mogotes East SEZ is also within winter range, severe winter range, and winter concentration areas for pronghorn, severe winter range and winter range for elk, and winter range for mule deer. The area is also a SREP/CNE Wildland Network low use area. Previously stated concerns about blocking mammal movements due to project configuration and fencing also apply here.

Cultural Resources

The SEZ is located immediately west of the Old Spanish NHT, and the area is known by locals to have numerous cultural and historical resources that have not been adequately inventoried.

References

Belnap, J. 2001. Biological soil crusts and wind erosion. IN: Ecological Studies, Vol 150; J. Belnap and O.L. Lange (eds), Biological Soil Crusts: Structure, Function and Management. Springer-Verlag, Berlin Heidelberg. Pages 339-347.

Boyle and Reeder 2005

Husar, R.B. and others. 2001. Asian dust events of April 1998. J. Geophysical Res. Vol106 No.16:18,317-18,330.

Joy, Patrick. 2005. Global Dust-up: Scientists Profile Vast Cloud of Dust from Sahara Desert. Virgin Islands Daily News. Accessed February 17, 2011:http://www.earthchangesmedia.com/cgi-bin/artman/exec/view.cgi/114/8941

Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection

Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

Natureserve 2009

Neff, J.C. and others. 2008. Increasing eolian dust deposition in the western United States linked to human activity. Nature - Geosciences. doi:10.1038/ngeo133.

McClure, Robert. 2009. African dust bringing toxic chemicals to U.S., Caribbean; is it killing corals? Hurting people? Investigate West. Accessed February 17, 2011: http://invw.org/2009/11/african-dust-bringing-toxic-chemicals-to-u-s-caribbean-is-it-killingcorals- hurting-people .

Morman, Suzette A. 2010. Arsenic: a detective story in dusts. Earth, June 2010, pp 40-47. Accessed February 18, 2010 at: www.earthmagazine.org.

Painter, T.H., J. S. Deems, J. Belnap, A. F. Hamlet , C. C. Landry , and B. Udall. 2010.Response of Colorado River runoff to dust radiative forcing in snow. PNAS 2010 Oct 5;107(40): 17125-30.

Reheis, M. C. (2003), Dust deposition in Nevada, California, and Utah,1984–2002, Open-File Rep. 03– 138, 66 pp., U.S. Geol. Surv., Reston, Va.

Reheis, M. C., J. R. Budahn, P. J. Lamothe, and R. L. Reynolds (2009), Compositions of modern dust and surface sediments in the Desert Southwest, United States, J. Geophys. Res., 114, F01028, doi:10.1029/2008JF001009.

Rhoades. C., K. Elder, and E. Green. 2010. The influence of an extensive dust event on snow chemistry in the Southern Rocky Mountains. Arctic, Antarctic, and Alpine Research 42(4):497

Thank you for your comment

The comment tracking number that has been assigned to your comment is SolarD11883.

Comment Date: May 2, 2011 23:56:48PM
Solar Energy Development PEIS
Comment ID: SolarD11883

First Name: [Withheld by requestor]
Middle Initial:
Last Name: [Withheld by requestor]
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold name and address from public record
Attachment:

Comment Submitted:

As one of the permittees who will be affected by the proposed Solar Development, we want you to understand our concerns about this proposal.

1. Private land is available for the development which is closer to existing transmition lines, has water rights available, and is better suited for development.

2. The proposal abandons the multi-use concept which is part of the fabric of BLMs congressionaly mandated direction. This project eliminates not only grazing usage but all other uses except the project. The public will be excluded.

3. From our experience with running cattle on this permit there is barely enough water available from the existing well to water our cattle let alone supply the projected water needs of this project. There is no live water on the permit. Any water acquired in any augmentation plan will almost certainly take prime farm land out of production. Consequently the project should be located on land which has the necessary water rights rather than making two pieces of land less valuable.

4. The proposed location on our permit is significantly elevated from the valley floor and will be visible from a wide distance. This permit is an up slope foothills site. It gains 400 feet in elevation from east to west. Instead of seeing unspoiled western sage country with its abundant wildlife, we and the public will see acres and acres of solar panels. The San Luis Valley is a scenic area, tourist come to the Valley to see beautiful mountain vistas not acres and acres of solar panels. Why should Valley Reisdents give up the beautiful views to export power out of the valley with almost no financial gain and very few jobs created for local residents. We are being asked to sacrifice a lot for no gain.

5. This permit is an essential componet of ranch. We use this permit for fall pasture for our cattle herd. This fall usage allows for a full growing season prior to harvest by the cattle. This grazing plan minimizes impact on the permit. Our family has been ranching in the Valley for over 100 years. For generations we have been good stewards of the land. We have voluntarily limited our use of the permit when the resource was at risk such as during drought periods. We have persued a sensible use of the permit which compliements other public use.

In conclusion common sense would dictate against converting this scenic and nearly unspoiled property to commercial development which takes away from many to benefit a few.

Thank you for your comment, David Schwake.

The comment tracking number that has been assigned to your comment is SolarD11884.

Comment Date: May 3, 2011 00:00:35AM
Solar Energy Development PEIS
Comment ID: SolarD11884

First Name: David
Middle Initial:
Last Name: Schwake
Organization: Tonopah Area Coalition
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment: Solar PEIS response by TAC.doc

Comment Submitted:

Please see attached file for comments. Thank you.

TONOPAH AREA COALITION

Tonopah, AZ

May 2, 2011

Dear Solar Energy PEIS,

Over the past year members of the Tonopah Area Coalition (TAC) have visited many of the current utility-scale solar proposals on public, private, and State trust lands in Arizona. Additionally, the TAC has visited the three Solar Energy Zones (SEZ's) outlined in the Solar Energy Development Draft Programmatic Environmental Impact Statement (Draft Solar PEIS).

The Tonopah Area Coalition review of the Draft Solar PEIS points to numerous advantages of limiting solar development to the SEZ Program Alternative. This alternative is a more refined approach to efficiently identify suitable utility-scale solar sites on BLM land as part of the goal of increasing our Nation's supply of renewable energy.

The SEZ Program Alternative outlines zones where negative impacts maybe low. The SEZ Program Alternative is proactive rather than responding to many current, poorly selected, Solar Right of Way (ROW) Applications in Arizona. The TAC sees that the upfront SEZ analysis as quicker, more efficient, and less harmful than the proposed ROW applications. But the most important reason this Program Alternative should be adopted is that SEZ's will stabilize the market by limiting solar development to lands that are most appropriate.

The initial SEZ's Program Alternative has provided good site reviews but needs the added refinement of an Environmental Impact Statement covering each zone to assure complete evaluation of the cumulative impacts in and near a proposed solar energy project.

Concerns for all three SEZ's are protection of night sky resource (dark sky), water consumption, and the variables of impacts associated with each type of solar technology. The TAC supports the use of the best available, low water consumption technology, for all types of solar technology. With SEZ's (for Gillespie SEZ high amounts of groundwater pumping could 'draw' existing contaminated groundwater plume away from nearby natural gas pumping station) and low groundwater water use is needed to avoid increasing land subsidence.

Another concern is Gillespie SEZ boundary overlays the historic Agua Caliente Scenic Drive (BLM). Moving this road alignment south will negatively impact important bighorn sheep populations and wildlife corridors. The TAC hopes the BLM Final PEIS will move the SEZ boundary north so that the existing historic Agua Caliente road remains on the current alignment and the existing road becomes outside the SEZ's southern boundary. With the proposed boundary change, the Gillespie SEZ would be an important step closer to being a viable BLM solar priority area and one that the TAC would recognize as more appropriate.

However, of the three, the greatest concern is with negative impacts from the proposed Bullard Wash SEZ. This SEZ is proposed in an important transition zone between the Joshua tree (Arizona Upland) forest and the Sonoran desert. Reviewing much of this site, has revealed a wide-range of plants and wildlife plus a drainage that supplies water to important neighboring

destinations. Since negative impacts would be significant, especially on a wide-variety of special statue species, we believe the Bullard Wash SEZ should be dropped from further evaluation as a Solar Energy Zone.

Brenda SEZ is the best suited BLM Solar Energy site TAC members visited. This SEZ demonstrates the effectiveness a screening key issues for identifying a candidate site. Also, the Brenda SEZ planning process demonstrated the effectiveness of the SEZ Program Alternative. Moving the western boundary slightly east, to avoid impacts on a significant wash, and avoiding further land subsidence by utilizing low water consumption solar technologies could make this location (next to a large block of Arizona State Trust land) part of a future cluster of several utility-scale solar sites. This site will facilitate short-term solar energy development in Arizona.

Many current Arizona BLM Solar ROW Applications have been visited by TAC members. Complex siting issues and the many negative impacts associated with utility-scale applications, reveal the Solar Energy Development Program Alternative (SEDP) - the Preferred Alternative - will not adequately protect some of the most fragile BLM land in Arizona.

One problem with the SEDP is because BLM and citizen studies covering southwest Arizona continue to languish. So the result is areas that qualify with wilderness characteristics, or as Areas of Environmental Concern, or need special wildlife management designations have not yet been recognized due to delays with the BLM Phoenix South Resource Management Plan. Simply put, areas not yet designated are not protected on Solar ROW Exclusion and Avoidance list. Some, of the many areas, that merit being listed as 'Exclusion or Avoidance Areas' within southwest Arizona include Saddle Mountain - Palo Verde Hills, Harquahala Mountain complex, Belmont Mountains, Black Butte, Eagletail Mountains, East Clanton Hills, Red Rock Canyon, Face Mountain and the Gila River.

The SEDP Alternative falls short of mitigation measures for the values of that ecoregions. Fragmentation and visual impacts from utility-scale solar development will threaten wildlife corridors, lambing areas for desert bighorn sheep, nesting areas for hawks, geologic scenery, archaeological sites, in this fragile region within the Sonoran desert because this portion of Arizona is not adequately studied - yet. The more defined SEZ's Program Alternative will avoid this type of data shortfall.

Special Recreation Management Areas (SRMA) is an important addition to the list of Exclusions. However, areas defined with wilderness characteristics (by BLM staff, organizations, and citizen analysis) should also be included as Exclusion and Avoidance Areas. While high insolation numbers identifies a sunny climate, it is only one asset for a region where most of BLM land has values far greater than any one value or one use.

In the current race of Solar ROW Applications on public lands, are many ill-conceived sites that are costly for site analyze in time for BLM staff and costly in taxpayer money. (Example: Poorly defined Solar ROW Applications that have sites straddling the Central Arizona Project canal in Arizona.)

The SEZ Program Alternative avoids the problems, like habitat fragmentation, that TAC members identified at many Solar ROW Application locations. Also, the SEZ Program Alternative should end the application race for Solar ROW's based on land speculation relative

to 500kV lines. When compared to the SEDP the SEZ's Program Alternative offers a more refined and efficient method for reaching a starting point for solar applications.

Currently private lands, like fallow farms, are already being utilized for solar development plus the Arizona State Land Department has dozens of solar applications. The TAC is optimistic that the need for utility-scale sites on BLM land could be reduced from the projected 13,735 SEZ acres. Considering this initial phase of utility-scale solar technologies, we encourage the Final PEIS to include a biannual evaluation of all proposed Arizona solar projects and technological changes, relative to the need for future undeveloped land for additional BLM SEZ acreage.

All of the many options for utility-scale solar energy projects include a significant linear burden on BLM land from degradation of areas created by electric transmission corridors and associated infrastructure. In western Arizona, significant amounts of BLM lands are bisected and fragmented by 500kV electric transmission corridors. Negative impacts of expansion are already beginning to occur. The recent start of a line expansion (500kV) near Saddle Mountain (T1N, R8W) already shows soil disturbance that needs immediate BLM oversight and mitigation measures to assure effective fugitive dust control, avoidance of road expansion and off-highway vehicle spur routes, avoidance of excessive native plant damage, and prevention of invasive species from gaining a foothold along these linear developments.

Another positive siting option is new work in reviewing BLM disposal land and brown fields that are being evaluated as Restoration Design Energy Project (RDEP). This effort by the BLM offers another sensible method for determining appropriate solar sites in Arizona.

When RDEP sites are combined with large tracks of private land, often fallow farm land, in areas like Hyder, Arizona (where solar projects are already being built on private lands) and on and State Trust lands near Palo Verde Nuclear Generating Station, the result could be that undeveloped BLM lands represent a very small portion of the total needed to supply solar energy over the next 20 years. The TAC recognizes the BLM review of RDEP lands as an opportunity to avoid the use of natural lands for utility-scale projects.

Current Solar Rights of Way (ROW) Applications are on BLM lands in southwestern Arizona that we know contain significant wildlife habitat, critical wildlife corridors, high scenic values, plus varied front-country and back-county recreational opportunities. Areas like Saddle Mountain represent one example where wilderness characteristics like solitude, unique geologic, spectacular scenery, cultural elements, and critical wildlife connections show the TAC that most of BLM's land in Arizona is inappropriate for utility-scale, Solar ROW Applications.

The TAC believes that with modifications to their boundaries, both the Bouse SEZ and Gillespie SEZ will represent sites identified by the SEZ Programmatic Alternative approach following a method more sensible then 'gold rush like' speculation apparent in current solar ROW applications.

The Tonopah Area Coalition appreciates that solar energy projects are a significant new challenge addressed by the Office of Energy Efficiency and Renewable Energy, Department of Energy, Department of the Interior, and the Bureau of Land Management in preparing the Solar Development - Programmatic Environmental Impact Statement (PEIS).

The TAC appreciates the substantial progress that has been made in defining this new, complex, land use issue for utility-scale solar energy development.

The Tonopah Area Coalition encourages the Final PEIS adoption of the refined SEZ Program Alternative as the best approach to find the most appropriate BLM lands for utility scale solar development.

Sincerely,

David Schwake, President
Tonopah Area Coalition
(via email)

Thank you for your comment, Graeme Baird.

The comment tracking number that has been assigned to your comment is SolarD11885.

Comment Date: May 3, 2011 00:09:49AM
Solar Energy Development PEIS
Comment ID: SolarD11885

First Name: Graeme
Middle Initial: J
Last Name: Baird
Organization:
Address: [Withheld by requestor]
Address 2:
Address 3:
City: [Withheld by requestor]
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

Siting of solar generation sites should be considered in areas where the impacts would be low or non-existent, such as already developed land devoid of a significant biosphere. Empty lots, rooftops, marginal cleared land, etc...

Given the amazing beauty and biodiversity in all of the United States' deserts, I think it would be foolish and needlessly destructive to clear such spaces for development.

Thank you for your comment, Kevin Emmerich.

The comment tracking number that has been assigned to your comment is SolarD11886.

Comment Date: May 3, 2011 00:14:00AM
Solar Energy Development PEIS
Comment ID: SolarD11886

First Name: Kevin
Middle Initial: R
Last Name: Emmerich
Organization: Basin and Range Watch
Address: P.O. Box 70
Address 2:
Address 3:
City: Beatty
State: NV
Zip: 89003
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

Greetings,

Basin and Range Watch signed on to the PEIS comment letter from Solar Done Right which questions the PEIS policy. We would like to add this additional letter to the PEIS which requests that BLM adopt a responsible policy of sighting solar off of undeveloped lands. It is inaccurate to claim that the BLM can no longer use private land alternatives. Because big solar is far from environmentally responsible, BLM should use existing National Environmental Policy Act guidelines to develop renewable energy outside of the jurisdiction of the lead agency. BLM should also adopt a distributed generation alternative.

Basin and Range Watch is a group of volunteers who live in the deserts of Nevada and California, working to stop the destruction of our desert homeland. Industrial renewable energy companies are seeking to develop millions of acres of unspoiled habitat in our region. Our goal is to identify the problems of energy sprawl and find solutions that will preserve our natural ecosystems and open spaces.

Disturbed and Degraded Lands Criteria

Below is a criteria for ranking and rating disturbed and degraded lands that could be used for development of solar energy with the least impacts. The BLM should NEVER site these projects on undeveloped land. Look the disaster that is taking place in Ivanpah Valley. Fast tracking this project and others may lead to the local rt tortoise extinction. They believe that over 600 juvenile desert tortoises will be killed by just that project.

Attempts to site renewable energy sprawl on disturbed or degraded lands have been made, such as the Bureau of Land Management Restoration Design Energy Project (RDEP) in Arizona, but this will not be of much use unless a clear definition of disturbed and degraded lands is agreed upon. The BLM should have done this by now.

All too often, large renewable energy developers undermine a 4,000 acre parcel of land by placing a “disturbed” label on it based on a few tire tracks and some trash. Often these places have not received the large visitation that most National Parks and Wilderness Areas receive. The level of disturbance can be two to three times greater in popular recreation areas. The Ivanpah Solar Electric Generating System is being built in the Mojave Desert in California. The company, BrightSource repeatedly told people that the 4,000 acres is disturbed. The disturbance was defined as a transmission line, a couple of off-road tracks and the location is about three miles from Primm, Nevada. This site is expected to have many more desert tortoises than expected.

It is also important to factor in that no matter how disturbed the site is, any energy facility needs to be hooked into transmission lines. Transmission often needs to pass through sensitive, undeveloped land. The Devers-Palo Verde line was to originally pass over the Kofa Mountains National Wildlife Refuge. Transmission also impacts private land. In the case of the recently approved Sunrise Powerlink in southern California, 350 private properties had to be seized through Eminent Domain.

We have developed our own “Disturbed Lands Criteria” that we would like to see the Department of the Interior adopt.

Defining “Disturbed” or “Degraded” Lands:

We have broken these down in the following four categories; number one being the most inappropriate and number 4, the built environment being the most appropriate.

1. Pristine lands. These lands are the most inappropriate for development. A tire track or transmission line may run through these lands, but those are not significant enough disturbances to justify solar and wind energy sprawl.

2. Agricultural fields. While these lands are disturbed, they have a recovery potential. The landscape has not been altered too dramatically. Sighting renewable energy on this land could still impact flora, fauna and visual resources. In the case of the Beacon Project in California, the land is on an old agricultural field, but after a few decades, the native flora and fauna re-colonized the field. They found rare Mojave ground squirrels on the site and 24 desert tortoises. Using old agricultural fields will also create potential transmission sighting issues on more pristine lands. The term "brownfileds" is sometimes used here, but needs definition, as some brownfields could be in category 3.

3. Geologically Altered or Contaminated Landscapes. Strip mines; areas with high selenium contamination from agricultural practices, such as Westlands Water District area of San Joaquin Valley, California; poisoned lands and EPA Superfund sites. Severely degraded lands. These have longer recovery potential. Like number two, this will create transmission sighting issues on pristine lands and potential visual issues.

4. The Built Environment. Roof tops, parking Lots. This is the most impact free and carbon free solution to using renewable energy. The distributed generation alternative should always be the first alternative.

Thank you,

Kevin Emmerich

Laura Cunningham

Basin and Range Watch

P.O. Box 70

Beatty, NV 89003

Thank you for your comment, Greg Suba.

The comment tracking number that has been assigned to your comment is SolarD11887.

Comment Date: May 3, 2011 00:14:39AM
Solar Energy Development PEIS
Comment ID: SolarD11887

First Name: Greg
Middle Initial:
Last Name: Suba
Organization: California Native Plant Society
Address: 2707 K Street
Address 2: Suite 1
Address 3:
City: Sacramento
State: CA
Zip: 95816
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: CNPS_SolarPEIS_comments.pdf

Comment Submitted:

CALIFORNIA
NATIVE PLANT SOCIETY

May 2, 2011

Delivered via electronic submission to the BLM Solar PEIS website (http://solareis.anl.gov).

Linda Resseguie, BLM Solar PEIS Project Lead
Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue - EVS/240
Argonne, IL 60439

Re: Comments on Draft Programmatic Environmental Impact Statement for Solar Energy Development in California Solar Energy Zones (SEZs) from the California Native Plant Society

Dear Ms. Resseguie:

The California Native Plant Society (CNPS) submits the following comments and recommendations regarding the U.S. Bureau of Land Management's (BLM's) Draft Solar Programmatic Environmental Impact Statement (Draft Solar PEIS) document. In addition to the comments provided in this document, CNPS has provided additional information in comments submitted to BLM on April 29, 2011 by a group of environmental organizations. We incorporate those additional group comments herein by reference. Our comments below address issues at both the programmatic and Solar Energy Zone (SEZ)-specific levels.

CNPS is a non-profit organization working to protect California's native plant heritage and preserve it for future generations. Our nearly 10,000 members professional and volunteers who work to promote native plant conservation through 33 chapters statewide.

CNPS supports renewable energy generation via large-array utility scale projects only when sited on already-disturbed lands, e.g., brownfields and fallow, mechanically disturbed agricultural lands. We oppose the siting of large-array renewable energy projects sited in functionally intact areas on public trust lands, both in the desert and elsewhere.

The Solar PEIS will govern solar development on public lands for at least 20 years. Therefore, development of large-scale projects must be sited on places with the fewest impacts on intact plant and animal habitats, natural resources, and endangered species.

The BLM's Preferred Alternative designates Solar Energy Zones (SEZs), but

also would permit solar development on 22 million more acres on public land. This proposed acreage includes many lands that are simply unacceptable places to develop solar energy, thus defeating the purpose of the zone approach in the first place.

This additional acreage vastly exceeds BLM's own analysis of what is truly needed and cannot be justified under the Reasonably Foreseeable Development Scenario.

Opening this additional acreage won't create a significant change from the current scattered, fast-tracked siting approach. CNPS strongly feels that this approach will involve higher resource conflicts, more public opposition, continued uncertainty both for wildlife managers and developers, and more litigation. It will slow down rather than speed up our clean energy transition.

There should be *no* projects developed outside these zones and if the need should arise, the BLM program must allow for designating additional zones in areas identified as degraded and with lower impacts in the future. This alternative would likely be the only one to comply with the Federal Land and Policy Management Act and ensure federal land resources are sustainable for future generations. Complete conversion of hundreds of thousands of acres in California alone is not sustainable.

CNPS strongly urges BLM to choose the Solar Energy Zone Program Alternative, which would provide a program for developing solar energy while still protecting our public lands.

Programmatic-level comments

- CNPS believes the Iron Mountain SEZ in California must be removed from consideration for renewable energy project development. The public lands in the Iron Mountain SESA represent a wilderness-locked area where botanical characteristics are largely unknown, and whose access is extremely limited. Development of renewable energy projects in the proposed Iron Mountain SEZ would introduce avoidable and immitigable impacts to this area (severing of migration corridors, introduction of invasive plant and animal species into an intact and isolated desert ecosystem). Additionally, renewable energy development within this proposed SEZ would be inconsistent with the Siting Criteria developed by the coalition of desert conservation groups (Attachment B), and with the biological framework and objectives being developed as part of the Desert Renewable Energy Conservation Plan (DRECP) process.

- CNPS believes the Pisgah SEZ in California must be removed from consideration for renewable energy project development. The public lands in the Pisgah SEZ represent known habitat for several sensitive species including populations of *Penstemon albomarginatus*. Additionally, developments in these areas would have unacceptable impacts to desert tortoise.

- In California, both the BLM Solar PEIS, and the joint state / federal Desert Renewable Energy Conservation Plan (DRECP) engage in landscape level analysis for renewable

energy siting and development in the California desert. This type of comprehensive planning is needed to address management actions that will ensure the long-term conservation of the desert ecosystem. Conservation planning through these two processes must be coordinated to consider **all** project applications, including those currently progressing through entitlement and certification phases outside of the more comprehensive landscape-level planning approaches. Finalizing zone designations in California may preclude conservation options in the DRECP. To avoid this problem, a final decision on California zone boundaries should be delayed until the DRECP has been completed.

• BLM has chosen to take a lead role in identifying and establishing solar energy zones in the western United States, including California. CNPS feels strongly that BLM must follow through as leaders in this desert solar PEIS process by employing strong, unambiguous language within the PEIS document regarding requirements and recommendations to be followed in order to avoid, minimize, and/or mitigate negative project affects to the environment in question.

Weak, ambiguous wording found in Appendix A must be strengthened. For example: *" Plant species that positively influence the presence and abundance of the desert bird focal species should be avoided to the extent practicable,*" needs to be reworded to "… **must be avoided** *to the extent practicable*" p. A-120.

"…the project developer could collect and voucher seeds…," changed to "**will be required to collect and voucher** *seeds,*" p. A-61.

" An Integrated Vegetation Management Plan addressing invasive species control, and an Ecological Resources Mitigation and Monitoring Plan addressing habitat restoration should be approved and implemented to increase the potential for successful restoration…" must be changed to "… **must be approved and implemented**…." p. A-126.

BLM has chosen to use weak language throughout the sections and SEZ-specific design feature tables of Appendix A. These are examples of places in the PEIS that must be unequivocal in their recommendations requirements (both at the programmatic, and SEZ-specific scales), but which will still provide a range of choices to the project developer as to how they meet the requirements. The requirements are not optional, but the range to which they apply will differ from project to project.

• In addition to addressing the need to preserve landscape-scale functionality of intact desert habitat when siting and developing large-array solar projects, the BLM must also address the need to conserve individual rare, threatened and endangered plant taxa within California SEZs. BLM must address project impacts to rare, threatened, and endangered plants within zones by following policies and guidelines outlined in BLM Special Status Plan Management Manual 6840-1, and BLM Management Manual Supplement H-6840.06, both available on-line via the BLM website (on September 14, 2009) at (respectively):

http://www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SpecialStatusPlantManagement.pdf and http://www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/6840.06-supplement.pdf.

In particular, CNPS recommends that development within SEZ's maintain the following BLM policies and guidelines:

1. Federally listed threatened and endangered plant taxa, and those proposed for federal listing will be addressed as per the requirements of the federal Endangered Species Act.

2. For Candidate Plant Species, the BLM will carry out management, consistent with the principles of multiple use, for the conservation of candidate plant species and their habitats and will ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as Threatened or Endangered. Specifically, the BLM will adopt the guidelines outlined in BLM Special Status Plant Manual Supplement 6840-06 section C.

3. California State listed plants and California Rare Plant Rank (CRPR) 1B plants are recognized as BLM Sensitive Plant Species and will be given the same level of protection as Candidate Plant Species and all of the policy statements given for candidate species apply equally to sensitive plant species (cf. BLM Special Status Plant Manual Supplement 6840-06 section C).

4. The probability of occurrence of rare plants must be considered as High, project's Habitat Disturbance Level within each SEZ must be considered as High, and therefore all botanical inventories conducted as part of an environmental review within each SEZ must meet a minimum intensity level of Complete as defined in BLM Special Status Plan Management Manual 6840-1 sections III.E.1 and III.E.2.

5. Many special status plant inventories of public lands conducted to assess the impacts of a project are performed by consultants hired by project proponents. Personnel conducting botanical inventories within SEZs must have strong backgrounds in plant taxonomy, plant ecology, field sampling design and methods, and knowledge of the floras of the area to be inventoried. Such qualifications help to ensure that all special status plants occurring in the area to be inventoried will be located, including those that were not predicted to occur at the start of the inventory. Therefore, botanical survey personnel requirements must meet the qualifications outlined in BLM Special Status Plan Management Manual 6840-1 section III.D.1.

6. In order for the BLM to adequately determine the quality of such third party inventories, CNPS recommends botanical surveys be conducted as per the CNPS *Botanical Survey Guidelines* and the California Department of Fish & Game *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened,*

and Endangered Plants and Natural Communities.

7. CNPS recommends that project impacts to plant taxa that are considered rare within California but more common elsewhere (CRPR 2 plants) be assessed during project reviews within SEZs. These taxa represent plants occurring at the periphery of their population ranges and whose genetic stock may represent biological factors critical to a taxon's ability to adapt to changing climatic conditions.

California SEZ-specific comments

Based on botanical information from recent reconnaissance level surveys, we provide the following descriptions of plant communities and our related concerns regarding California SEZs. CNPS provides a list of special-status plants and plant communities found in the proposed CA SEZs and surrounding areas in Attachment A.

Iron Mountain SEZ

We recommend eliminating this SEZ due to the high occurrence of sensitive resources and general inconsistency with siting criteria developed by the coalition of desert conservation groups (Attachment B), and with the biological framework and objectives being developed as part of the Desert Renewable Energy Conservation Plan (DRECP) process.

Description of SEZ location

The Iron Mountain (Iron Mt.) SEZ is located in a remote area of the California desert region, approximately 60 miles from the nearest city, with no small town in the intervening area (with the exception of Vidal). There is no agriculture use of surrounding areas.

There is a small WWII training area, and a utility corridor south of HW 62, and small mine to the north. Recent (December 2010) field reconnaissance surveys observed some disturbance (invasive weed (*Brassica tournefortii*, Sahara mustard) growth) along the utility corridor.

The western half of the Iron Mountain SEZ is microphyll woodland and represents a transition zone between Mojave and Sonoran ecoregions, and as such represents an area of ecologically important vegetation community.

Delineation of wetlands and impacts to groundwater-dependent vegetation

Iron Mt. SEZ is centered on a playa/lake, Danby Lake, which occupies a fairly large portion of the western half of the SEZ. Danby Lake is a playa feature with dunes to the south and mostly intact groundwater dependent (GDE, a.k.a. phryeatophytic) vegetation and riparian/wash features around its margins. Should development be proposed up to the edge of the playa, as has occurred at Palen to the south, groundwater-dependent vegetation could be directly impacted, including rare natural communities (e.g., *Suaeda moquinii* shrubland (bush seepweed) alliance - State Heritage Rank - S3.2. See

Attachment A for full list of special status plant communities known to occur in and around this SEZ).

An intent to pump groundwater carries potential for project impacts to groundwater dependent vegetation. Project-related groundwater pumped from a deep water aquifer might not impact the shallow (alluvial) aquifer that supports phreatophytic vegetation, as the two aquifers are separated by impermeable layers of fine sediments (which do occur around playas). However, geologic faulting can fracture the ground between the shallow and deep aquifers, and lead to leakage between shallow and deep aquifers. The potential impacts of groundwater pumping to GDE communities continues to be an important topic area that needs to be addressed in the Cumulative Impacts analysis of any SEZ, and for Iron Mt. SEZ in particular.

The connection between rare natural GDE communities and solar development near desert playas is an issue that has been largely overlooked to date in the desert solar environmental review process. GDE communities were addressed during the California Energy Commission evidentiary hearings for the Genesis and Palen solar projects, and are addressed within project Conditions of Certification for these projects (see: Condition of Certification BIO-25 and BIO-26 for the Genesis project, and Condition of Certification BIO-23 and BIO-24 for the Palen project).

The larger streams in the Iron Mt. SEZ support a microphyll woodland of smoke tree (*Psorothamnus spinosus*) and palo verde (*Cercidium floridum ssp. floridum*). Currently, the practice by solar project applicants has been to delineate washes only if dominated by tree species. Assessing impacts to GDE communities will require applicants to delineate washes, playas, and associated vegetation, *including smaller washes* dominated by shrub and herb-dominated communities, which have been largely ignored during project reviews to date, in order to conserve important natural communities within this SEZ.

Imperial East SEZ

Description of SEZ vegetation

The majority of the habitat along Hwy 8 is stabilized desert dunes of *Larrea tridentata* (creosote). The area is marked by large plants with hummocks of sand accumulated around the shrubs (coppice dunes), punctuated by scattered, and very large coppice dunes of *Prosopis glandulosa* (mesquite) over 3 meters high, with many animal burrows visible.

The site occurs in a topographic low where very few washes are present. The occurrences of mesquite are a good indication of groundwater dependent vegetation. Groundwater pumping even for a dry-cooled facility could have significant negative affects to GDE communities within and around this SEZ. The potential impacts of groundwater pumping to GDE communities needs to be addressed in the Cumulative Impacts analysis for this SEZ.

The creosote was tall and vigorous in the western half of the SEZ but looked relatively distressed in the eastern half. The reason(s) for this was not obvious. These eastern

creosote stands did not exhibit the depauperate, drought-stressed characteristics sometimes seen in stands deprived of surface flow by canals, dikes, and highways. The plants were predominantly senescent, and over 75% dead in many eastern areas of the SEZ, and in the East Mesa BLM ACEC to the north.

In the eastern and southern portion of the SEZ, especially in the relatively more disturbed areas between Hwy 98 and the canal, the creosote is co-dominated by *Ericameria linearifolia*, with associated *Ambrosia dumosa*, and *Atriplex polycarpa*.

Farther to the west along Hwy 98, the vegetation is dominated by an association of creosote and *Ephedra californica* (ephedra) for several miles. *Ericameria linearifolia* (narrow leafed goldenbush), *Ambrosia dumosa* (white bursage, burrowbush), and *Atriplex polycarpa* (allscale) are also present but the stands were defined predominantly by creosote and ephedra. These observed stands of creosote, ephedra, and narrow leafed goldenbush may be new vegetation associations not currently documented based on available vegetation data (NECO vegetation mapping did not collect data as far south as this SEZ area), and underscore the need for vegetation surveys in this area.

Near the western boundary of the SEZ along Hwy 98, what at first would appear to be canal leaks of tamarisk on aerial photos are actually vast stands of mesquite and *Pluchea sericea* (arrow weed), which occur mostly in separate stands. The BLM Lake Cahuilla ACEC to the west of the Imperial East SEZ, is occupied largely by the mesquite and *Pluchea* communities. The majority of the mesquite is just off-site of the Imperial East SEZ, however it is important to note these occurrences because even dry-cooled solar projects can use a large volume of water during their construction phase. If projects were to rely on groundwater to supplement irrigation water, or as their sole source of water, their impacts to groundwater dependent vegetation could be significant. The zone of influence of groundwater pumping can extend 1 to 2 miles out from the wells and the cumulative effect on nearby groundwater dependent plant communities would most likely be significant.

The Imperial East SEZ vegetation is underlain by fine to medium sand. The location and soil type are definitely potential conditions for *Astragalus magdalenae peirsonii* (Peirson's milkvetch), *Croton wigginsii* (Wiggins' croton), and other dunes rare plant species, as well as an indication of flat-tailed horned lizard habitat.

There is also potential for a number of rare invertebrate species to occur, including the Riverside cuckoo wasp (from the Wiley’s Well area), recently discovered at the Algodones Dunes.

Pisgah SEZ

We recommend removing this zone to avoid impacts to sensitive resources. This area is a focal point of biological landscape connectivity between the western and eastern Mojave Desert Regions and is rich in biological resources. As such it is regionally significant in sustaining biological diversity and gene flow at the landscape level. The description of

the affected environment and impacts of proposed development in the Draft PEIS are not based on the best available information for this specific area.

Recent surveys associated with solar projects permitted in 2010 confirmed that solar development in this area would entail loss of habitat and displacement of many wildlife species, including the state and federally threatened desert tortoise, special-status reptiles, special-status mammals, migratory birds, and numerous rare plant species, including *Penstemon albomarginatus*, a BLM sensitive species. **The BLM should remove the proposed Pisgah SEZ from further consideration because of its location within an area of essential habitat connectivity.** Designation of this area as a SEZ is incompatible with the BLM's conservation responsibilities under the Endangered Species Act, Federal Land Policy and Management Act, and its own wildlife resource manuals.

Riverside East SEZ

We believe the area of the Riverside East SEZ should be reduced to avoid impacts to rare plants and other sensitive resources. In early February, 2011, CNPS Vegetation Program staff conducted a field-based workshop around Palen Lake near Desert Center to identify, survey, and map rare vegetation in this area of the Riverside East SEZ.

Palen Lake is an alkali playa surrounded by series of active, semi-stabilized, and stabilized dunes and areas of desert pavement. It includes a myriad of vegetation patterns including creosote shrublands, mesquite bosques, desert wash woodlands, saltbush scrubs, and groundwater-dependent sink scrubs in addition to the dune and desert pavement habitats.

During the workshop, participants sampled 15 vegetation stands and made several additional observation points. Rare communities documented included *Parkinsonia florida* (blue palo verde), *Olneya tesota* (ironwood), *Propopis glandulosa* (mesquite), and *Psorothamnus spinosus* (smoke tree) woodland alliances; and *Suaeda moquinii* shrubland (bush seepweed) alliance.

As with the other proposed California SEZs, assessing impacts to groundwater dependent communities within the Riverside East SEZ, particularly around dry lakes and playas, will be essential in order to conserve important natural communities.

Summary of CNPS's Concerns with BLM's Solar PEIS:

- Rare natural communities (including alliances and associations) may be present but undetected by the vegetation mapping dataset used by the PEIS;
- If potential impacts to rare natural communities occur, then they should be appropriately addressed and/or avoided;
- New undocumented alliances/association may occur in the region, whereby they would need to be addressed;

- Groundwater pumping for construction and operation needs could lower the groundwater table near wetlands and mesquite stands and cause stress, decline or death. Wells should not be located near stands, and the SEZ should exclude wet-cooled or trough technologies to avoid significant cumulative effects to wetlands and mesquite;

- Invasives could be introduced through soil disturbing activities, roadways and other corridors, and contaminated vehicles and equipment but also via an increased risk of fire;

- Fall surveys must be required to avoid missing significant finds and impacts to plants only detectable during late season surveys;

- Special-status plant surveys should begin ***now*** to facilitate avoidance through site design in the early planning stages; sensitive plants are difficult to impossible to mitigate off-site and avoidance is often the only option;

- Multiple years of spring surveys are necessary to avoid missing sensitive species that may only be detectable in certain years (since germination and growth of plants in the desert is weather dependent);

- High potential for rare and endemic dune insects warrants a specific requirement to conduct invertebrate surveys by qualified specialists;

- Cryptobiotic crusts, where present, should be documented and avoided or salvaged and replaced;

- Transmission corridors must be revegetated; revegetation plans must use only locally collected seed (or progeny), natural seed banks and soil crusts should be salvaged and replaced, and long-term weed monitoring and maintenance required;

- Geomorphic studies of the wind sand transport corridor must be conducted and downwind or "wind shadow" effects from obstructions considered;

- BLM and REAT agencies should assume responsibility for designing and implementing long-term monitoring of cumulative effects, and Before-after Control Impact (BACI) studies need to be initiated *now*;

- Desert washes must be delineated according to guidance for delineating state waters; applicants should coordinate with CDFGs Lake and Streambed Alteration Program *before* beginning delineations surveys;

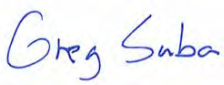
- PEIS should require a non-disturbance buffer between development and wetlands, the width established in consultation with CDFG and FWS to minimize disturbance to sensitive wildlife using the wetlands;

- Mitigation measures described in PEIS are too vague to be enforceable; require more detail, measurable performance standards, and accountability;

- Language in the PEIS regarding avoidance, mitigation requirements and recommendations must be unambiguous.

The California Native Plant Society appreciates the opportunity to provide these comments regarding the scoping requirements of the SEZ PEIS. We will continue to provide information that can help the BLM develop the best possible environmental assessment in a timely manner. We share a common goal to provide effective, long-term protective policies for the preservation of biological resources in the California Desert, while addressing the permitting process for renewable energy projects.

Sincerely,



Greg Suba
Conservation Program Director
California Native Plant Society

ATTACHMENT A

Rare Plants, Sensitive Plant Species, Plant Species of Concern, and Vegetation Types in Each Proposed California SEZ

I. Plant Species - List of Rare Plants known to occur within and around the BLM Solar Energy Zones (SEZ) in Califiornia. These lists were derived from a search of the California Natural Diversity Database (CNDDB), February 2011.

Pisgah SEZ

Scientific Name	**Common name**	***State***	***Fed***	***G-rank***	***S-rank***	**CRPR**
Androstephium breviflorum	Small-flowered androstephium	-	-	G5	S2S3	2.2
Castela emoryi	Emory's crucifixion-thorn	-	-	G2G3	S2S3	2.3
Penstemon albomarginatus	White-margined beardtongue	-	-	G2	S1	1B.1

Iron Mountain SEZ

Scientific Name	**Common name**	***State***	***Fed***	***G-rank***	***S-rank***	**CRPR**
Astragalus insularis var. harwoodii	Harwood's milk-vetch	-	-	G5T3	S2.2?	2.2
Eriastrum harwoodii	Harwood's eriastrum	-	-	G2	S2	1B.2

Riverside East SEZ

Scientific Name	**Common name**	***State***	***Fed***	***G-rank***	***S-rank***	**CRPR**
Astragalus insularis var. harwoodii	Harwood's milk-vetch	-	-	G5T3	S2.2?	2.2
Castela emoryi	Emory's crucifixion-thorn	-	-	G2G3	S2S3	2.3
Colubrina californica	Las Animas colubrine	-	-	G4	S2S3.3	2.3
Coryphantha alversonii	Alverson's foxtail cactus	-	-	G3	S3.2	4.3
Ditaxis serrata var. californica	California ditaxis	-	-	G5T2T3	S2	3.2
Eriastrum harwoodii	Harwood's eriastrum	-	-	G2	S2	1B.2
Koeberlinia spinosa ssp. tenuispina	Slender-spined all-thorn	-	-	G4T4	S2.2	2.2
Mentzelia puberula	Darlington's blazing star	-	-	G4	S2	2.2
Wislizenia refracta ssp. palmeri	Palmer's jackass clover	-	-	G5T2T4	S2?	2.2

Imperial East SEZ
Plants known to occur within 10 kilometers of the SEZ

Scientific Name	Common name	*State*	*Fed*	*G-rank*	*S-rank*	CRPR
Croton wigginsii	Wiggin's croton	Rare	-	G2G3	S1.2	2.2
Palafoxia arida var. gigantean	Giant Spanish-needle	-	-	G5T3	S2	1B.3
Pholisma sonorae	Sand food			G2	S2	1B.2

Status Codes:

Federal: FE - Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT - Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities
<www.fws.gov/migratorybirds/reports/BCC2002.pdf>

State CSC = California Species of Special Concern. Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE - State listed as endangered
ST = State listed as threatened
WL = State watch list

State Rank (S-Rank):
S1—Less than 6 EO, or less than 1,000 individuals, or less than 2,000 acres;
S2—Same as "G2";
S3—Same as "G3".

State Rank Extension:
0.2—threatened;
0.3—no current threats known

Global Rank (G-Rank) is a reflection of the overall condition of an element throughout its global range:
G2—Same as "S2";
G3—Same as "S3";
G4—Apparently secure, this rank is clearly lower than G3, but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat;
G5—Population or stand demonstrably secure to ineradicable due to being commonly found in the world. Subspecies receive a T-rank attached to the G-rank. The G-rank refers to the whole species range, but the T-rank refers to the global condition of taxon variety only.

California Rare Plant Rank (CRPR)
1B - Rare, threatened, or endangered in California and elsewhere
2 - Rare, threatened, or endangered in California but more common elsewhere
3 - Plants which need more information - a watch list
4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

II. Alliances – Draft List of Vegetation Types Known or Likely to Occur in the **Imperial East SEZ and Environs**
California Native Plant Society, February 2011

The alliances and associated listed below include those known to occur within the BLM Solar Energy Zone (SEZ) and those known to occur within 10 kilometers of the SEZs (and therefore have potential to be present in the SEZ. The list for Imperial East was derived from observation in late 2010; thus, additional information could be acquired for this location.
***** = Considered as Statewide Rare or of High Priority for Inventory (with State Rarity ranking of S3 or below). Also, see the DFG natural communities list, which addresses high ranking of vegetation types.

Imperial East SEZ

Tree Dominated:

Prosopis glandulosa* Shrubland Alliance

*Prosopis glandulosa / Pluchea sericea – Atriplex canescens**

Shrub Dominated:

***Ambrosia dumosa* Shrubland Alliance**

Ambrosia dumosa – Ericameria linearifolia (provisional type based on observation)

***Larrea tridentata* Shrubland Alliance**

Larrea tridentata

Larrea tridentata – Ericameria linearifolia (provisional type based on observation)

***Larrea tridentata-Ambrosia dumosa* Shrubland Alliance**

Larrea tridentata – Ambrosia dumosa

Larrea tridentata-Ambrosia dumosa-Ephedra (*californica*)*

*Larrea tridentata – Ambrosia dumosa / Pleuraphis rigida**

Pluchea sericea* Shrubland Alliance

Alliances – Draft List of Vegetation Types Known or Likely to Occur in the **Pisgah SEZ and Environs**
CNPS, February 2011

This list was derived from data included in the Mojave Desert Ecosystem Program (see the report by Thomas et al. 2004 and associated MDEP GIS files). The alliances listed below include those known to occur within this BLM Solar Energy Zone (SEZ) and those known to occur within 10 kilometers of the SEZ (and therefore have potential to be present in the SEZ).
***** = Considered as Statewide Rare or of High Priority for Inventory (with State Rarity ranking of S3 or below). Also, see the DFG natural communities list, which addresses high ranking of vegetation types.

Pisgah SEZ

Tree Dominated:

Chilopsis linearis* Woodland Alliance

Prosopis glandulosa* Woodland Alliance

Shrub Dominated:

Allenrolfea occidentalis* Shrubland Alliance

***Ambrosia dumosa* Shrubland Alliance**

**Some associations may be rare in area*

***Atriplex canescens* Shrubland Alliance**

***Atriplex polycarpa* Shrubland Alliance**

***Atriplex spinifera* Shrubland Alliance ***

***Bebbia juncea* Provisional Shrubland Alliance**

***Castela emoryi* Shrubland Special Stands**

***Coleogyne ramosissima* Shrubland Alliance**

***Ephedra nevadensis* Shrubland Alliance**

***Larrea tridentata* Shrubland Alliance**

***Larrea tridentata – Ambrosia dumosa* Shrubland Alliance**

***Larrea tridentata – Encelia farinosa* Shrubland Alliance**

***Hymenoclea salsola* shrubland Alliance**

Suaeda moquinii* Shrubland Alliance

***Yucca schidigera* Shrubland Alliance**

Herbaceous:

***Pleuraphis rigida* Herbaceous Alliance ***

Dicoria canescens – Abronia villosa* Herbaceous Alliance

(Likely type in areas mapped as Dunes)

Alliances – Draft List of Vegetation Types Known or Likely to Occur in the **Iron Mountain SEZ and Environs**

CNPS, February 2011

This list for Iron Mountain region was derived largely from data collected in preparation of the Northern & Eastern Colorado Desert Coordinated Management Plan (see NECO classification report by Evens and Hartman 2007). The alliances and associated listed below include those known to occur within the BLM Soloar Energy Zone (SEZ) and those known to occur within 10 kilometers of the SEZs (and therefore have potential to be present in the SEZ).

***** = Considered as Statewide Rare or of High Priority for Inventory (with State Rarity ranking of S3 or below). Also, see the DFG natural communities list, which addresses high ranking of vegetation types.

Iron Mountain SEZ

Tree Dominated:

Parkinsonia florida – Olneya tesota* Woodland Alliance

*Parkinsonia florida – Psorothamnus spinosus / Hymenoclea salsola**

***Psorothamnus spinosus* Woodland Alliance**

Psorothamnus spinosus / Ephedra (californica) – Hymenoclea salsola

***Tamarix* spp. Woodland Semi-Natural Stands**

(may include plantings)

Shrub Dominated:

***Ambrosia dumosa* Shrubland Alliance**

Ambrosia dumosa – Ephedra (californica) sandy*

Ambrosia dumosa / Brassica tournefortii

***Ephedra californica* Shrubland Alliance**

*Ephedra (californica) – Psorothamnus emoryi/Pleuraphis rigida**

***Larrea tridentata-Ambrosia dumosa* Shrubland Alliance**

Larrea tridentata – Ambrosia dumosa – Krameria grayi

*Larrea tridentata – Ambrosia dumosa / Pleuraphis rigida**

Larrea tridentata – Ambrosia dumosa – Atriplex polycarpa

Larrea tridentata – Ambrosia dumosa/Brassica tournefortii

Suaeda moquinii* Shrubland Alliance

*Suaeda moquinii – Atriplex canescens – Atriplex polycarpa**

*Suaeda moquinii/sparse playa**

Herbaceous Dominated:

***Brassica (tournefortii)* Herbaceous Semi-Natural Stands**

Pleuraphis rigida* Herbaceous Alliance

*Pleuraphis rigida / Ambrosia dumosa**

Alliances & Associations – Draft List of Known or Likely to Occur Vegetation Types in the **East Riverside SEZ and Environs**

CNPS, February 2011

This list was derived largely from data collected in preparation of the Northern & Eastern Colorado Desert Coordinated Management Plan (see NECO classification report by Evens and Hartman 2007), and from additional data collected in 2011 during a CNPS vegetation mapping workshop at Palen Lake. Because the vegetation communities throughout the entire East Riverside Solar Energy Zone (SEZ) are not yet mapped, the alliances and associated listed below include those known to occur within the SEZ and those that occur within 10 kilometers of the SEZ (and therefore have potential to be present in the SEZ).

***** = Considered as Statewide Rare or of High Priority for Inventory (with State Rarity ranking of S3 or below). Also, see the DFG natural communities list, which addresses

high ranking of vegetation types.

East Riverside SEZ

Tree Dominated Types:

Parkinsonia florida – Olneya tesota* Woodland Alliance

*Parkinsonia florida / Larrea tridentata – Peucephyllum schottii**

*Parkinsonia florida - Olneya tesota**

Parkinsonia florida / (*Psorothamnus emoryi, Pleuraphis rigida*) (provisional dune type)*

*Parkinsonia florida - Olneya tesota / Hyptis emoryi**

*Parkinsonia florida**

*Parkinsonia florida / Hyptis emoryi**

*Olneya tesota**

*Olneya tesota / Psorothamnus schottii**

Prosopis glandulosa* Woodland Alliance

Prosopis glandulosa – Atriplex spp.*

Psorothamnus spinosus* Woodland Alliance

Psorothamnus spinosus / Ephedra (*californica*) *- Ambrosia salsola*

Shrub Dominated Types:

Allenrolfea occidentalis* Shrubland Alliance

*Allenrolfea occidentalis**

*Allenrolfea occidentalis - Suaeda moquinii**

***Ambrosia dumosa* Shrubland Alliance**

*Ambrosia dumosa – Ephedra californica**

*Ambrosia dumosa / Pleuraphis rigida**

***Atriplex canescens* Shrubland Alliance**

Atriplex canescens

***Atriplex polycarpa* Shrubland Alliance**

Atriplex polycarpa Sparse Playa

***Atriplex spinifera* Shrubland Alliance ***

*Atriplex spinifera**

***Encelia farinosa* Shrubland Alliance**

Encelia farinosa

***Larrea tridentata* Shrubland Alliance**

Larrea tridentata

Larrea tridentata – Atriplex polycarpa

Larrea tridentata / Cryptogamic crust

*Larrea tridentata / Pleuraphis rigida**

***Larrea tridentata – Ambrosia dumosa* Shrubland Alliance**

Larrea tridentata – Ambrosia dumosa

Larrea tridentata – Ambrosia dumosa – Krameria grayi

*Larrea tridentata – Ambrosia dumosa – Fouquieria splendens**

*Larrea tridentata – Ambrosia dumosa – Olneya tesota**

*Larrea tridentata – Ambrosia dumosa – Psorothamnus spinosus**

Larrea tridentata – Ambrosia dumosa / Cryptogramic crust

Larrea tridentata – Encelia farinosa Shrubland Alliance

Larrea tridentata – Encelia farinosa

Larrea tridentata – Encelia farinosa – Ambrosia dumosa

Pluchea sericea Shrubland Alliance*

*Pluchea sericea**

Suaeda moquinii Shrubland Alliance*

*Suaeda moquinii**

*Suaeda moquinii – Atriplex canescens**

Herbaceous Types:

***Brassica* (*tournefortii*) Herbaceous Semi-Natural Stands**

Brassica tournefortii / Ambrosia dumosa

***Pleuraphis rigida* Herbaceous Alliance ***

Pleuraphis rigida (in desert washes and on dunes)*

*Pleuraphis rigida / Ephedra (californica)**

Dicoria canescens – Abronia villosa* Herbaceous Alliance

*Dicoria canescens**

Salsola tragus - Oenothera deltoides (provisional dune type based on observation)*

Petalonyx thurberi* Provisional Herbaceous Stands

(provisional sandy type based on observation in area and recent data collection on NPS lands)

Wislizenia refracta Herbaceous Special Stands*

Miscellaneous Land Use Types:

Simmondsia chinensis plantations and other agricultural field

ATTACHMENT B

Environmental Stakeholders
Renewable Energy Siting Criteria for the California Desert Conservation Area

Audubon California
California Native Plant Society * California Wilderness Coalition
Center for Biological Diversity * Defenders of Wildlife
Desert Protective Council * Mojave Desert Land Trust
National Parks Conservation Association
Natural Resources Defense Council * Sierra Club * The Nature Conservancy
The Wilderness Society * The Wildlands Conservancy

Renewable Siting Criteria for California Desert Conservation Area

Environmental stakeholders have been asked by land management agencies, elected officials, other decision-makers, and renewable energy proponents to provide criteria for use in identifying potential renewable energy sites in the California Desert Conservation Area (CDCA). Large parts of the California desert ecosystem have survived despite pressures from mining, grazing, ORV, real estate development and military uses over the last century. Now, utility scale renewable energy development presents the challenge of new land consumptive activities on a potentially unprecedented scale. Without careful planning, the surviving desert ecosystems may be further fragmented, degraded and lost.

The criteria below primarily address the siting of solar energy projects and would need to be further refined to address factors that are specific to the siting of wind and geothermal facilities. While the criteria listed below 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 deserts' undeveloped cores. They were developed with input from field scientists, land managers, and conservation professionals and fall into two categories: 1) areas to prioritize for siting and 2) high conflict areas. The criteria are intended to guide solar development to areas with comparatively low potential for conflict and controversy in an effort to help California meet its ambitious renewable energy goals in a timely manner.

Areas to Prioritize for Siting

- 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).[1]
- Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA:[2]
  - Allow for the expansion of renewable energy development onto private lands.
  - Private lands development offers tax benefits to local government.
- Brownfields:
  - Revitalize idle or underutilized industrialized sites.
  - Existing transmission capacity and infrastructure are typically in place.

- Locations adjacent to urbanized areas:[3]
    - Provide jobs for local residents often in underserved communities;
    - Minimize growth-inducing impacts;
    - Provide homes and services for the workforce that will be required at new energy facilities;
    - Minimize workforce commute and associated greenhouse gas emissions.
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.
- Areas proximate to sources of municipal wastewater for use in cleaning.
- Locations proximate to load centers.
- Locations adjacent to federally designated corridors with existing major transmission lines.[4]

High Conflict Areas

In an effort to flag areas that will generate significant controversy the environmental community has developed the following list of criteria for areas to avoid in siting renewable projects. These criteria are fairly broad. They are intended to minimize resource conflicts and thereby help California meet its ambitious renewable goals. The criteria are not intended to serve as a substitute for project specific review. They do not include the categories of lands within the California desert that are off limits to all development by statute or policy.[5]

- Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant[6] populations of federal or state threatened and endangered species,[7] significant populations of sensitive, rare and special status species,[8] and rare or unique plant communities.[9]
- Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves.[10]
- Lands purchased for conservation including those conveyed to the BLM.[11]
- Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes.[12]
- Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas.[13]
- Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands.[14]
- National Historic Register eligible sites and other known cultural resources.
- Locations directly adjacent to National or State Park units.[15]

EXPLANATIONS

[1] Some of these lands may be currently abandoned from those prior activities, allowing some natural vegetation to be sparsely re-established. However, because the desert is slow to heal, these lands do not support the high level of ecological functioning that undisturbed natural lands do.

[2] Based on currently available data.

[3] Urbanized areas include desert communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

[4] The term "federally designated corridors" does not include contingent corridors.

[5] Lands where development is prohibited by statute or policy include but are not limited to:

National Park Service units; designated Wilderness Areas; Wilderness Study Areas; BLM National Conservation Areas; National Recreation Areas; National Monuments; private preserves and reserves; Inventoried Roadless Areas on USFS lands; National Historic and National Scenic Trails; National Wild, Scenic and Recreational Rivers; HCP and NCCP lands precluded from development; conservation mitigation banks under conservation easements approved by the state Department of Fish and Game, U.S. Fish and Wildlife Service or Army Corps of Engineers a; California State Wetlands; California State Parks; Department of Fish and Game Wildlife Areas and Ecological Reserves; National Historic Register sites.

[6] Determining "significance" requires consideration of factors that include population size and characteristics, linkage, and feasibility of mitigation.

[7] Some listed species have no designated critical habitat or occupy habitat outside of designated critical habitat. Locations with significant occurrences of federal or state threatened and endangered species should be avoided even if these locations are outside of designated critical habitat or conservation areas in order to minimize take and provide connectivity between critical habitat units.

[8] Significant populations/occurrences of sensitive, rare and special status species including CNPS list 1B and list 2 plants, and federal or state agency species of concern.

[9] Rare plant communities/assemblages include those defined by the California Native Plant Society's Rare Plant Communities Initiative and by federal, state and county agencies.

[10] ACECs include Desert Tortoise Desert Wildlife Management Areas (DWMAs). The CDCA Plan has designated specific Wildlife Habitat Management Areas (HMAs) to conserve habitat for species such as the Mohave ground squirrel and bighorn sheep. Some of these designated areas are subject to development caps which apply to renewable energy projects (as well as other activities).

[11] These lands include compensation lands purchased for mitigation by other parties and transferred to the BLM and compensation lands purchased directly by the BLM.

[12] Landscape-level linkages provide connectivity between species populations, wildlife movement corridors, ecological process corridors (e.g., sand movement corridors), and climate change adaptation corridors. They also provide connections between protected ecological reserves such as National Park units and Wilderness Areas. The long-term viability of existing populations within such reserves may be dependent upon habitat, populations or processes that extend outside of their boundaries. While it is possible to describe current wildlife movement corridors, the problem of forecasting the future locations of such corridors is confounded by the lack of certainty inherent in global climate change. Hence the need to maintain broad, landscape-level connections. To maintain ecological functions and natural history values inherent in parks, wilderness and other biological reserves, trans-boundary ecological processes must be identified and protected. Specific and cumulative impacts that may threaten vital corridors and trans-boundary processes should be avoided.

[13] Proposed Wilderness Areas: lands proposed by a member of Congress to be set aside to preserve wilderness values. The proposal must be: 1) introduced as legislation, or 2) announced by a member of Congress with publicly available maps. Proposed National Monuments: areas proposed by the President or a member of Congress to protect objects of historic or scientific interest. The proposal must be: 1) introduced as legislation or 2) announced by a member of Congress with publicly available maps. Citizens' Wilderness Inventory Areas: lands that have been inventoried by citizens groups, conservationists, and agencies and found to have defined "wilderness characteristics." The proposal has been publicly announced.

[14] The extent of upland habitat that needs to be protected is sensitive to site-specific resources. For example: the NECO Amendment to the CDCA Plan protects streams within a 5-mile radius of Townsend big-eared bat maternity roosts; aquatic and riparian species may be highly sensitive to changes in groundwater levels.

[15] Adjacent: lying contiguous, adjoining or within 2 miles of park or state boundaries. (Note: lands more than 2 miles from a park boundary should be evaluated for importance from a landscape-level linkage perspective, as further defined in footnote 12).

Thank you for your comment, Jim Bell.

The comment tracking number that has been assigned to your comment is SolarD11888.

Comment Date: May 3, 2011 00:18:40AM
Solar Energy Development PEIS
Comment ID: SolarD11888

First Name: Jim
Middle Initial:
Last Name: Bell
Organization:
Address: 4862 Voltaire St.
Address 2:
Address 3:
City: San Diego
State: CA
Zip: 92107
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

When Good is Bad
By Jim Bell
www.jimbell.com jimbellelsi@cox.net
619-758-9020

Here we go again, justifying doing something bad to do something supposedly good.

I'm referring to the plan to scrape off hundreds of square miles of desert and other habitat areas to install solar collecting devices that convert direct solar light into electricity. This approach will also require that more plant and animal habitats will have to be damaged to construct and maintain transmission lines to deliver electricity produced by remote solar power plants to cities where most of it is needed.

Obviously, scraping off land to install renewable energy to electricity producing devices will hurt all the plants and animals on the land to be scraped off. It will also hurt animals that now use the land to be scraped off for food, water and migration. But don't we have to have remote solar to electricity sites to become renewably electricity self-sufficient in urban areas?

Absolutely not!!!

In fact, much of the United States can become renewable electricity self-sufficient, and do it in ways that are both cost-effective and life-support-system-effective. Because of laws like AB 117 (CCA or Community Choice Aggregation) in California, this option is already available to cities and counties in some states. Basically it allows cities and counties in those states to become CCA municipalities. This means that cities and counties in those states can choose to become electricity supply and price secure by making their buildings and infrastructure more electricity use efficient and by installing PV panels on roofs and over parking lots.

Assuming 1.000 sq. ft. of roof and parking lot per capita, San Diego County, where I live, can use free-market forces to cost-effectively become renewably electricity self-sufficient. This can be accomplished by increasing the County's electricity use efficiency by 40% and installing 15% efficient PV panels over 17% its roofs and parking lots, (shaded parking).

Other benefits of becoming renewable electricity self-sufficient include:

+ Eliminating the need to scrape off habitat to accommodate remote direct solar installations and transmission lines to deliver the electricity they produce to urban areas. Land under buildings and parking is already disturbed and damaged plant and animal habitat. Installing efficiency improvements in building and PV panels on roofs and over parking lots eliminates the need to impact new land.
+ Being more electricity supply and price secure. The increase in electricity use efficiency and the electricity produced on local roofs and parking lots cannot be cut off by the failure of transmission lines from remote suppliers to urban areas. Increasing electricity use efficiency and installing PV panels on roofs and over parking lots would also make it difficult for acts of nature, accidents or intentional human acts to cause serious damage or disruption to a county's production, distribution and storage of renewably generated electricity.

+ Changing San Diego County's negative-electricity purchase cash-flow into a positive-electricity-purchase-cash-flow. Currently San Diego County exports one billion plus dollars each year to purchase imported electricity or imported natural gas or nuclear fuel to make electricity locally. If the County were renewable electricity self-sufficient today, all the money now exported to pay for imported electricity or fuels to produce it locally will be kept in the County's economy. Initially this money will be used to hire businesses and its employees to make the county more electricity use efficient and install PV panels on roofs and over parking lots. Because the businesses and workers making the county more electricity use efficient and renewable electricity self-sufficient will be local, much of the money they earn will be spent locally, helping everyone's bottom line. Assuming an economic multiplier benefit of two, a renewable electricity self-sufficient San Diego County would add around $3 billion of economic activity to the County's economy each year. This is assuming that electricity is 10 cents per kWh. If the cost of electricity on the Western States Electricity Grid Market is more than 10 cents per kWh, the positive-cash-flow and economic multiplier benefit of becoming renewable electricity self-sufficient in San Diego County will grow accordingly.

+ That local efficiency and PV installations do not require new power lines or existing power line enhancement. The electricity produced with PV on roofs and over parking lots is already grid connected. Excess electricity produced during peak PV output can be sold or traded for electricity through out the Western States Electricity Grid for times when local PV panels are not producing sufficient electricity to meet the county's electricity demand.

+ Eliminating the County's contribution to pollution, general life-support damage and to climate change related to its dependence on producing electricity using fossil and nuclear fuels. It also eliminates the life-support damage connected to producing and delivering remotely produced renewably generated electricity to urban areas.

+ Eliminating price shocks related to the rising cost of electricity; made with price uncertain non-renewable energy resources. Unlike fossil and nuclear fuels, renewable energy resources are free and even delivered free. We are still becoming more cost-effective at becoming more electricity use efficient and making and installing PV panels over roofs and parking lots.

+ Increasing local business and employment. Becoming renewable electricity self-sufficient in San Diego County will create over 400,000 job-years of direct and indirect employment.

+ Changing ratepayers into utility company owners. As owners, ratepayers can meet all their electricity needs. If they produce more than they need, they can sell excess production into the Western States Grid.

+ Fostering the potential for the cost of increasing electricity use efficiency and renewably generated electricity to become less expensive. The manufacture and installation of electricity use efficiency measures and renewable energy collection and conversion to electricity devices is still becoming less expensive and the energy to power them is free and even delivered free.

+ Serving as a free-market example of how communities, in general, can save money and the environment by becoming renewable electricity self-sufficient. With some modifications, this investment strategy can be used by many communities to become completely renewable energy, water and food self-sufficient.

+ Becoming more electricity use efficient and installing PV panels on roofs and over parking lots adds zero heat to the county's incident solar load. When electricity produced in the desert is used locally, it will add heat from the desert to the county's incident solar load. It's a small addition but now is not the time we need more heat.

For details on the free-market plan (zero subsidies needed) to make San Diego County renewable electricity self-sufficient, go to www.jimbell.com and click on "Green Papers"

Thank you for your comment, Heidi Brannon.

The comment tracking number that has been assigned to your comment is SolarD11889.

Comment Date: May 3, 2011 00:20:50AM
Solar Energy Development PEIS
Comment ID: SolarD11889

First Name: Heidi
Middle Initial: L
Last Name: Brannon
Organization: Solution Strategies, Inc.
Address: 5777 W. Century Blvd.
Address 2: Suite 9000
Address 3:
City: Los Angeles
State: CA
Zip: 90045
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: AppleValley_CA_BLM_SolarPEIS_Comments.pdf

Comment Submitted:

To Whom it May Concern:

Attached please find a letter with the Town of Apple Valley's comments regarding the Draft Solar Energy Development PEIS. Please contact me if you have any difficulty opening the attachment.

Sincerely,
Heidi Brannon

CORPORATE OFFICE
5777 W. Century Blvd., Suite 900
Los Angeles, CA 90045
310 641 0920 *Telephone*
310 641 0915 *Facsimile*

April 30, 2011

U.S. Department of the Interior
Bureau of Land Management
BLM Washington Office
Attn: Draft Solar Energy PEIS

Re: Town of Apple Valley, CA Comments on the Draft Solar Energy Development Programmatic EIS

To Whom It May Concern:

The Town of Apple Valley (Town) appreciates this opportunity to provide comments to the Bureau of Land Management (BLM) regarding the Draft Solar PEIS for the proposed Solar Energy Development in Six Southwestern States (Solar Energy Development PEIS).

The Town is in the process of developing a 285-square mile (170,000 acres) Multi-Species Habitat Conservation Plan (MSHCP) for the Town's limits and Sphere of Influence. Of this area, approximately 55,250 acres are BLM Lands. The Town is developing the MSHCP to implement its General Plan and achieve its over-arching vision that the community's quality of life is tied to its rural character and that this character is to be preserved and protected for the long-term health of the community.

While the MSHCP is a local plan, it will employ a regional conservation strategy that protects key linkages in the high desert. Specifically the MSHCP is looking at protecting two critical regional linkages, the Wild Wash Linkage and the San Bernardino-Granite Mountains Linkage, that pass through the Town's planning area. In doing so, the Town's MSHCP integrates well with the goals and objectives of larger conservation planning efforts taking place in the Mojave Desert, including the Desert Renewable Energy Conservation Plan (DRECP).

To preserve the two key regional linkages identified, the Town's MSHCP looks to build on the existing network of BLM lands within its planning area. These nearly

contiguous blocks of federal lands provide important landscape level connections between the coastal and desert mountains and the Ord-Rodman and Freemont-Kramer Desert Wildlife Management Areas (DWMA).

The Draft Solar Energy Development PEIS identifies seven Renewable Energy Project ROW Applications that are pending or authorized for wind site testing or facility development that completely or partially overlap the linkage areas identified in the Town's MSHCP (see table 1).

Table 1. Pending or authorized Renewable Energy Project ROW Applications on BLM-Administered Land overlapping the linkage areas identified in the Town's MSHCP as shown in the Draft Solar PEIS*.

Pending Wind Site Testing	*Authorized Wind Site Testing*	*Pending Wind Development Facility*
CACA 51767	*CACA 44975*	*CACA 48254*
CACA 51772	*CACA 49255*	
CACA 52148		
CACA 52188		

**Figure 9.3.22.2-1 Locations of Renewable Energy Proposals on Public Land within a 50-mi (80-km) Radius of the Proposed Pisgah SEZ.*

**Table 9.3.22.2-2 Pending Renewable Energy Project ROW Applications on BLM-Administered Land within 50 mi (80-km) of the Pisgah SEZ*

In addition, approximately 1,800 acres of "BLM Lands Available" (as identified in Figure 9.3.22.2-1) for solar fall within the linkage areas identified in the Town's MSHCP.

The Town believes that siting large-scale renewable energy projects, as identified in the Solar Energy Development PEIS, on BLM lands within the linkage areas will negate the linkages' functional value and disrupt the Town's comprehensive effort to plan for and solve regional conservation issues.

The Town has taken significant steps to encourage suitable renewable energy development within its limits (photovoltaic projects under 400 acres are allowed in designated areas under the Town's local Ordinances) that maintain the Town's rural character and quality of life. The Town is requesting that the BLM exclude large-scale renewable energy development from federal lands included in the regional linkages identified by the Town's MSHCP.

Thank you again for this opportunity to provide comments to the BLM on the Solar Energy Development PEIS. For addition information on the Town's MSHCP, please contact Lori Lamson, Assistant Director of Community Development, at (760) 240-7000, extension 7200.

We look forward to working with the BLM as they further develop the Solar Energy Development PEIS.

Respectfully,

Heidi Brannon
Vice President, Director of Projects
Solution Strategies, Inc.

cc: Lori Lamson, Assistant Director Community Development

Solution Strategies, Inc. (SSI) is consulting for the Town of Apple Valley on the development of its MSHCP. SSI also represents the Town at the DRECP stakeholder meetings.

Thank you for your comment, Richard Haney.

The comment tracking number that has been assigned to your comment is SolarD11890.

Comment Date: May 3, 2011 00:22:13AM
Solar Energy Development PEIS
Comment ID: SolarD11890

First Name: Richard
Middle Initial:
Last Name: Haney
Organization:
Address: 61843 Terrace Drive
Address 2:
Address 3:
City: Joshua Tree
State: CA
Zip: 92252
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: WrongFromTheStart.pdf

Comment Submitted:

Gentlemen:

The Draft PEIS is fundamentally flawed. The current document follows an exploitive, outmoded approach, mired in 19th Century attitudes toward public land, coupled with financially and environmentally-subsidized, outmoded technology that will fail to achieve a responsible energy future.

The whole PEIS, including specifically the designation of one-stop approval SEZ's, should be thrown out. All big projects should go through full NEPA review and not be excluded from such review because they are in a SEZ.

The alternatives presented in the PEIS are far, far too narrow in scope.

The PEIS dismisses alternatives such as distributed generation, limiting solar development to populated areas, or conservation and demand-side management, on the basis that its purpose and need is "responding in a more efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands." But the agencies are required to consider a far broader range of alternatives. As the Council on Environmental Quality has stated:

"An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS [as well as] alternatives that are outside the scope of what Congress has approved or funded… if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies."

For a complete, well-formulated statement of my views on this subject I refer to the report "Wrong from The Start" on this issue, published by the organization Solar Done Right. I fully endorse the report. Please follow this URL to see the full report on the web: http://solardoneright.org/images/uploads/WrongFromTheStart.pdf .

I am also attaching a copy of the report to this comment message.

Sincerely,

Richard Haney

US Public Lands Solar Policy:

Wrong *from* The Start

A report on the
Draft Solar Programmatic Environmental Impact Statement
of the US Interior and Energy Departments

Solar Done Right

April 4, 2011
available for download at solardoneright.org

Executive Summary

The Departments of Energy and the Interior are preparing a Programmatic Environmental Impact Statement (PEIS) to evaluate utility-scale solar energy development, to establish environmental policies and mitigation strategies for solar energy projects, and to amend relevant BLM land use plans with the consideration of establishing a new BLM Solar Energy Program. Though it is billed as a way of making solar development "Smart From The Start," the PEIS is a significant step further into a reckless, ultimately ineffective energy policy.

The need to move to a renewable-based energy economy, and quickly, is urgent. Global warming threatens to unwind the relatively stable climate regime that has supported the evolution of present human and ecological systems.

But **the Draft PEIS is fundamentally flawed**. The current document follows an exploitive, outmoded approach, mired in 19th Century attitudes toward public land, coupled with financially and environmentally-subsidized, outmoded technology that will fail to achieve a responsible energy future.

The PEIS dismisses alternatives such as distributed generation, limiting solar development to populated areas, or conservation and demand-side management, on the basis that its purpose and need is "responding in a more efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands." But the agencies are required to consider a far broader range of alternatives. As the Council on Environmental Quality has stated:

> *"An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS [as well as] alternatives that are outside the scope of what Congress has approved or funded… if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies."*

Massive solar power plants pose irreversible, long-term, cumulative ecological threats to fragile deserts and grasslands. Unlike other forms of energy extraction, concentrating solar development entails use of as much as 100 percent of the surface of a site. Environmental impacts will endure for decades to centuries, and the prospects for restoration are purely speculative.

Even prior to the PEIS, there were numerous deficiencies in the BLM's National Environmental Policy Act (NEPA) process for these projects. They included:

- Inadequate or absent biological surveys
- Failure to adequately assess indirect impacts
- Failure to consider a reasonable range of project alternatives
- Narrow purpose and need statements
- Absence of baseline visual and noise resource analysis
- Inadequate cumulative impacts analysis
- Deficient underlying planning documents that never contemplated this scale of development and have no relevant guidelines that limit acceptable change
- Unresolved, deferred, and inadequate mitigation measures

Despite the crucial importance of lowering our carbon emissions, no scientific studies have been done to examine the claim that these projects reduce net greenhouse gas emissions once construction, transmission, and the disruption of carbon-sequestering ecosystems on site are taken into account.

Interior's stated goal of "protecting and enhancing the Nation's water, wildlife, and other natural resources" while implementing large scale "environmentally responsible" solar development, cannot be met through any of the alternatives being analyzed in the DPEIS.

Alternative sites and technology

By offering up public resources, the BLM is subsidizing the same energy interests that have profited by oil and gas development on public lands and waters (BP, Chevron). Taxpayer-funded subsidies in the form of cash grants and federal loan guarantees are going to the same financial players that helped bring the country to the edge of financial meltdown (Morgan Stanley, Goldman Sachs). But if we are to realize our full renewable energy potential, we must make a major departure from the old energy business model.

There are sound alternatives to the current path, including sites and technology.

- EPA has identified millions of acres of abandoned mine lands, brownfields, and federal and non-federal Superfund sites that may be suitable for solar and other non-fossil-fuel energy projects.
- In California alone, environmental organizations have identified almost 300,000 acres of BLM land and adjacent private lands that would meet their stricter siting criteria for utility-scale solar.

- The Westlands Water District in California's Central Valley includes approximately 30,000 acres of degraded agricultural land believed to be suitable for up to 5 GW of solar power generation.

Installation in populated areas, the built environment, and/or damaged lands makes infinitely more sense.

Moreover, a strategy focused primarily on distributed PV would be the most cost-effective and fastest way to expand solar power production in the United States. When all costs are factored in—including new transmission infrastructure and transmission line losses—local, distributed solar PV is comparable in efficiency, faster to bring online, and more cost-effective than remote utility-scale solar plants.

In short, we can prevent irremediable damage from utility-scale solar development on our public lands by prioritizing distributed generation from PV installations in the built environment.

We urge government, utilities, the mainstream environmental movement and the public to abandon this destructive path, scrap the PEIS, and help us make distributed generation in the built environment the centerpiece of our energy policy.

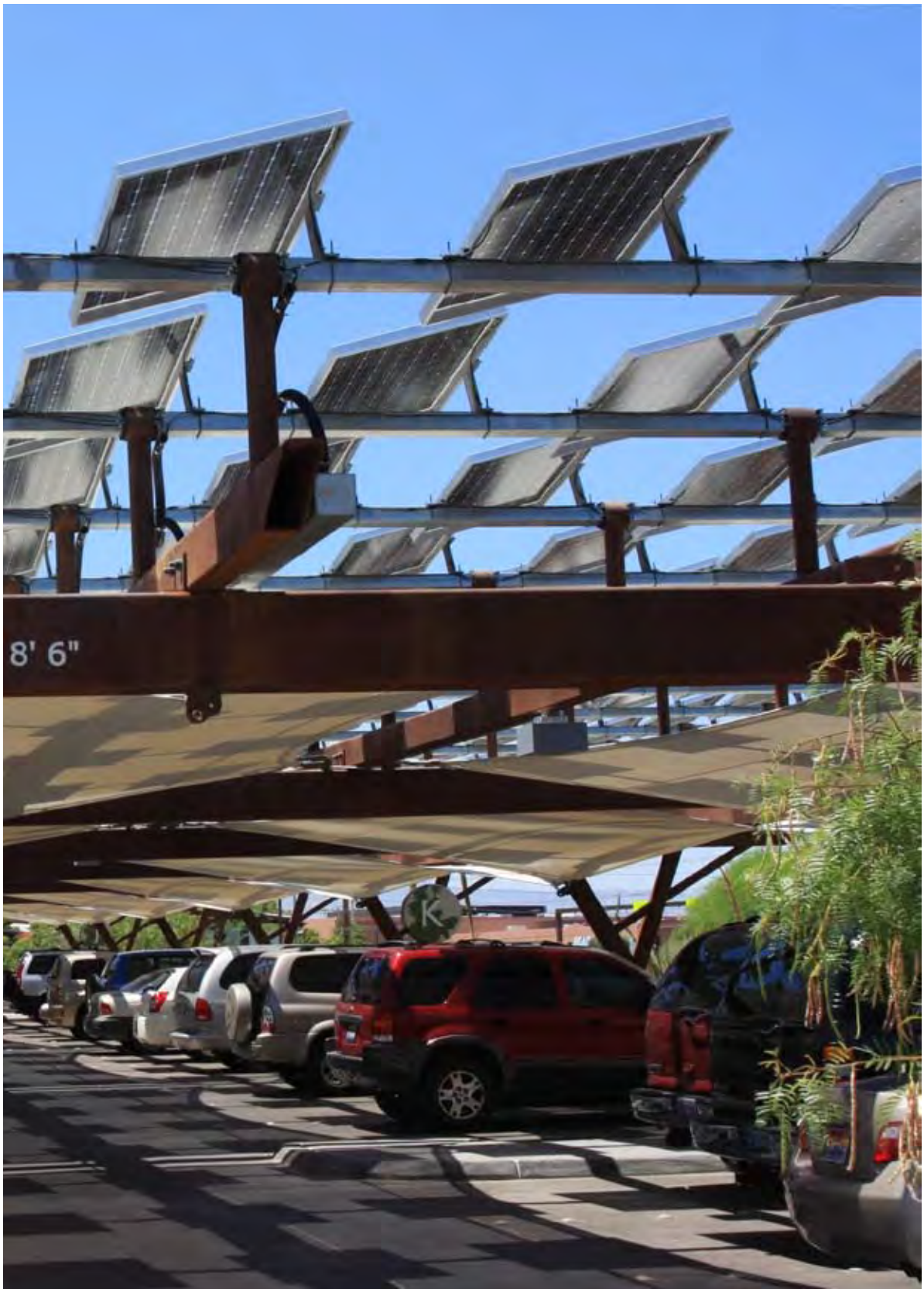
About Solar Done Right

Solar Done Right is a coalition of public land activists, solar power and electrical engineering experts, biologists and renewable energy advocates who view with great concern the industry and government momentum behind siting industrial scale, centralized solar power stations on large swaths of ecologically valuable public lands.

Contents

Shady parking spaces provide power in Las Vegas

The built environment provides potential for thousands of megawatts of electrical generation, but the PEIS ignores this far more practical and economical option. Photo by J. N. Stuart, some rights reserved under Creative Commons



Solar Done Right

Solar Done Right is a coalition of public land activists, solar power and electrical engineering experts, biologists and renewable energy advocates who view with great concern the industry and government momentum behind siting industrial scale, centralized solar power stations on large swaths of ecologically valuable public lands.

We have come together to urge government, utilities, the mainstream environmental movement and the public to abandon this destructive path, and to work toward generating the power we need in the built environment.

Solar Done Right holds that there is a proper hierarchy of priority for strategies to end our nation's addiction to fossil fuels. We should start the switch by using the most cost-effective strategies for renewable energy production, which also happen to be the least environmentally destructive. In descending order of priority:

1. **Reduce demand.** According to some estimates, an aggressive program of conservation and energy efficiency using currently available technology could reduce US power consumption by nearly one third.[1]

1) http://tinyurl.com/m4vphk

2. **Generate renewable energy at or near the point of use.** Distributed solar generation on homes and businesses is cost-competitive and does not incur the energy loss of distribution through transmission lines. Users can benefit through reduced utility bills or sales of power into the grid, or both. Installation time from project conception to completion is measured in weeks rather than years.

3. **Generate renewable energy on a larger scale within the built environment.** Most cities possess large industrial spaces including warehouse roofs, brownfields, large parking lots, airports, and other areas that could be either converted to or augmented with renewable energy production using existing technology. Emerging technologies offer promise for additional methods to incorporate solar energy production into new residential and commercial construction.

We maintain that a mixture of these techniques can meet our electrical energy needs without sacrificing biologically valuable desert and grassland ecosystems with large scale concentrating

solar power plants. Should these common-sense methods fail to meet our society's long-term demand for renewable energy, centralized solar power plants should be sited only on available disturbed, degraded and contaminated lands that offer little carbon sequestration, wildlife habitat or other natural resource values. Renewable technologies that do not deplete scarce arid land water resources should be prioritized. In any event, prudent and responsible renewable energy development should always steer large-scale renewable energy production away from intact public and private wildlands and prime agricultural lands.

Colorado's San Luis Valley, targeted for industrial solar development

Photo by Russ Wayne, some rights reserved under Creative Commons

Background

The need to make a rapid transition to a renewable-based energy economy is urgent. Global warming threatens to unwind the relatively stable climate regime that has supported the evolution of present human and ecological systems. At the same time, our economy has been rocked by global financial market crises that threaten to undermine our long-term economic security. It is imperative that we target the most efficient, rapid and cost-effective path to a renewable energy future that creates quality employment, revitalizes local economies, protects the environment and renews our communities.

The beauty of renewable energy is its ubiquity. Solar in particular is available globally at the point of use. Advances in renewable energy, including smart grid technologies, are revolutionizing our energy systems. Many experts agree that decentralized generation and distribution is the wave of the future. If we are to realize our full renewable energy potential, we must make a major departure from the old energy business model dependent on a constantly expanding, centralized utility system.

In the US, utility monopolies have dominated our energy sector for more than half a century. Resistance to change permeates the highest echelons of government. The adoption of Renewable Energy Portfolio Standards (RES) in many states, including the six states analyzed for solar resources in the PEIS, reflects this old energy paradigm.

Reducing CO_2 emissions has been cited as an "overriding consideration" by the California Energy Commission for permitting solar projects that have otherwise failed to meet environmental standards. DOI and DOE need to review the effectiveness of RESs in reducing emissions before pursuing a national RES policy. By mandating a market "add-on," rather than a substitution, RESs may be ineffective in reducing emissions or climate change. Because there is no requirement to reduce fossil-fuel-generated power by an equivalent megawattage, RES mandates are being used by Investor Owned Utilities (IOUs) to create an artificial market above existing generation, even as efficiency and conservation reduce overall demand. In addition, utilities are playing the green card to justify lucrative new transmission infrastructure.[2] If left unchecked, RES policies could undermine efforts to reduce CO_2 emissions, unnecessarily increase the cost of renewable energy, and delay by decades our transition to a new energy economy.

2) Overland, Carol A, Attorney; "Transmission: It's all connected," Slide 13, public presentation, January 20, 2011, Adams State College, Alamosa, CO, http://tinyurl.com/4eznf6c

A federally listed threatened desert tortoise in the Mojave Desert

Massive solar power plants pose irreversible, long-term, cumulative ecosystem and species-level threats to the tortoise's fragile desert habitat. Photo by Bryant Olson, some rights reserved under Creative Commons

Business as usual

"Leading" in the wrong direction

The Administration claims to be making sweeping changes in the way we generate energy in this country, yet there is nothing new or innovative about its policy other than that it uses solar in place of traditional fossil fuel energy to power massive centralized generation stations on a scale never before seen.

Even many purported progressives have taken the approach that we must "do it all, everywhere" in order to confront the climate crisis, yet ignored in the analysis are the environmental damage and counter-productivity of siting industrial-scale solar development on carbon-sequestering, ecologically valuable intact public lands. Though allusions are frequently made to the need to site solar power plants wisely and in an "environmentally responsible" manner, serious efforts to act on these concerns are sorely lacking.

There is a severe lack of proper leadership on renewable energy policy in the US. Solar Done Right believes this leadership vacuum will endure as long as the Bureau of Land Management remains in charge of solar energy development. As long as remote, pristine and near-pristine desert in the public sphere is the centerpiece of solar development siting, the BLM remains indispensable and has no reason to relinquish its current role.

Same old energy interests

By offering up public resources, the BLM is subsidizing the same energy interests that have profited by oil and gas development on public lands and waters (BP, Chevron). Taxpayer-funded subsidies in the form of cash grants and federal loan guarantees are going to the same financial players that helped bring the country to the edge of financial meltdown (Morgan Stanley, Goldman Sachs).

By converting public lands to industrial energy factories in fragile, remote areas with massive requirements for transmission at great cost to ratepayers and the environment, our renewable energy policy is taking the least enlightened path possible, staying close to the status quo while attempting to create the illusion of change.

Fourteen solar projects on over 60,000 acres and more than 750 miles of new high-voltage transmission projects have been fast-tracked on public lands.[3] The projects range from 516 to 7,840 acres, with the average power plant exceeding 4,300 acres. This scale and intensity of development on public lands is unprecedented. Massive solar power plants pose irreversible, long-term, cumulative ecosystem and species-level threats to fragile desert and grassland biomes.

3) BLM, Fast-Track Renewable Energy Projects, updated: Jan. 6, 2011: http://tinyurl.com/y8n6z99

In addition, expediting so many fast-tracked projects all at once has rendered public review of environmental impact studies nearly impossible.

Failure to meet environmental standards

Numerous deficiencies in meeting National Environmental Policy Act (NEPA) legal requirements have been documented by agencies and environmental groups[4], including, but not limited to:

- Inadequate or completely lacking biological surveys
- Failure to adequately assess indirect impacts
- Failure to consider a reasonable range of project alternatives
- Narrow purpose and need statements
- Absence of baseline visual and noise resource analysis
- Inadequate cumulative impacts analysis
- Deficient underlying planning documents that never contemplated this scale of development and have no relevant guidelines that limit acceptable change
- Unresolved, deferred, and inadequate mitigation measures

4) Al Weinrub, *Community Power: Decentralized Renewable Energy in California*, November 2010, page 26: http://tinyurl.com/4o2l2kj

The fast-track process puts enormous pressure on responsible agencies and staff to rush through evaluations of largely unknown technologies on an unprecedented scale. In acknowledgement of the serious shortcomings of the fast-track process, even otherwise compliant environmental groups issued the following "disclaimer" of the fast-track process:[5]

> *"We urge the BLM and the Interior Department to acknowledge publicly the deficiencies of the current [fast track] process and to commit publicly to improving it. More specifically, we urge both entities to affirm that neither the current process, nor any of the project sites, nor any of the environmental documents, establish any legal or procedural precedents for future decision-making, siting or environmental review."*

5) NRDC, Sierra Club *et al*, Comments on Chevron Energy Solutions Lucerne Valley Solar Project, May 2010.

As of this writing, Secretary Salazar has approved nine of the fourteen fast-tracked utility-scale solar developments on public land, six in the deserts of California and three in Nevada, the proposed plants' maximum generating capacity totalling approximately 3,200 MW on more than 29,000 acres.

In many cases, agency staff determined projects to have multiple, unmitigatable adverse environmental impacts. Rather than reducing the scale, redirecting projects away from sensitive habitats, or denying project approvals, agencies invoked subjective "overriding considerations" to push otherwise unwarranted approvals through. The move was based on a hypothetical assertion that reduced greenhouse gas emissions resulting from solar generation would offset negative environmental impacts. The Imperial Valley Solar Project offers a case in point:

> *"…Staff believes that the direct project impacts to biological resource, and soil and water resources, and visual resources, and the cumulative impacts associated with biological resources, land use, soil and water resources, and visual resources for the Imperial Valley Solar (IVS) Project will be significant. There is no feasible mitigation that would reduce the impacts to a level that is less than significant given the scale of the project, and other projects that were cumulatively considered…staff recognizes that due to a lack of information regarding the long-term performance of this new technology, it is uncertain whether the applicant's claims regarding reliability will be met."*[6]

Agency staff nevertheless concludes:

> *"Notwithstanding the unmitigatable impacts…it will provide critical environmental benefits by helping the state reduce its greenhouse gas emissions, and these positive attributes must be weighed against the projects adverse impacts. It is because of these benefits and the concerns regarding the adverse impacts that global warming will have upon the state and our environment, including desert ecosystems, that staff believes it would be appropriate for the Commission to approve the project based on a finding of overriding considerations…"*[7]

No scientific evidence has been presented to support the claim that these projects reduce greenhouse emissions. Indeed, recent evidence suggests that the opposite may be true. In a seven-year monitoring study, researchers at the University of Nevada, Las Vegas found that carbon sequestration rates in Mojave Desert ecosystems rival or exceed that of some forest and grassland ecosystems.[8]

More recent work at the Center for Conservation Biology, University of California, Riverside, suggests that soil disturbance from large-scale solar development may disrupt Pleistocene-era caliche deposits that release carbon to the atmosphere when exposed to the elements, thus "negat[ing] the solar development C gains."

6) California Energy Commission Staff, Staff's Comments Regarding a Possible Energy Commission Finding of Overriding Considerations – Imperial Valley Solar Project (08-AFC-5), July 27, 2010: http://coyot.es/x2dd

7) Ibid.

8) Richard Stone, "Have Desert Researchers Discovered a Hidden Loop in the Carbon Cycle?" *Science*, June 16, 2008: http://tinyurl.com/4jmhawk

Allen, *et al.* call for more studies on groundwater depletion, landscape fragmentation, vegetation type conversion and regional carbon budgets. The researchers warn that "moving forward with industrial-scale solar developments in undeveloped desert habitats without quantifying the array of impacts…may unknowingly compromise biodiversity and ecosystem functioning."[9]

Soil disturbance from large-scale solar development may disrupt Pleistocene-era caliche deposits that will release carbon to the atmosphere when exposed to the elements.

In addition, sulfur hexafluoride (SF_6), used primarily as an electrical insulator in high voltage transmission of electricity, is the most potent of the six greenhouse gases regulated by the EPA, with a global warming potential 23,900 times that of CO_2. One pound of SF_6 is equivalent to eleven tons of CO_2, nothing sequesters it and the chemical has a half-life in the atmosphere of 3,200 years.[10] The cost and effect of adding over 750 miles of new transmission infrastructure on SF_6 emissions must also be factored into carbon-balance equations.

Unlike other forms of energy extraction, concentrating solar development entails use of 100 percent of the surface of a site. Environmental impacts are long-term (decades to centuries)[11] and the prospect of either short- and long-term reclamation remains purely speculative.

Until sound scientific research confirms the untested assumption that displacing intact, carbon sequestering desert and grassland ecosystems with solar power plants will, in fact, result in a net CO_2 reduction, evocation of categorical exclusions or other environmental waivers is arbitrary and unwarranted.

Offsite mitigation and translocation of affected federally threatened and endangered species, including the desert tortoise, Mojave fringe-toed lizard, flat-tailed horned lizard, golden eagle and desert bighorn, is another severe, unresolved concern. Translocation efforts for sensitive species are still experimental.[12] Inadequately assessed and mitigated impacts from developing large swathes of desert are highly likely to undermine vital conservation and recovery efforts.[13]

It is impossible to determine how much land would be required as mitigation habitat for affected species such as the desert tortoise, because it is not known how many projects could ultimately be permitted. Further, there is little suitable habitat available on private lands in the areas most heavily targeted for industrial solar development, providing narrow opportunities to acquire whatever mitigation habitat might be needed.

9) Allen, McHughen, Barrows; *Impacts of Large-scale Solar Development on Regional Ecosystem Dynamics: Critical Research Gaps,* Desert Tortoise Council, 36th Annual Meeting and Symposium, Feb. 18-20, 2011, Las Vegas, NV, http://tinyurl.com/4qg8uw8

10) US EPA. SF6 Emission Reduction Partnership for Electric Power Systems: http://tinyurl.com/46sjujz

11) Ibid.

12) Field, Kimberleigh, Desert Tortoise Recovery Office, US Fish and Wildlife Service, Reno, NV, *Minimizing Risks When Translocating Desert Tortoises*, DTC Annual Meeting *op.cit*.

13) Belenky, Lisa, Fast-Tracking the Death by a of Thousand Cuts: *How Sprawling Industrial Renewable Energy Development in the Desert is Undermining Conservation of the Desert Tortoise*, DTC Annual Meeting *op.cit*.

The prospects for the species survival, upon which "takings" permits are based, are likely overly optimistic. The overall impact of multiple projects will be devastating to vulnerable species dependent on these habitats, particularly to unique populations restricted to narrow habitat conditions.

There is a broad misconception among the public (and to some extent among scientists and land managers), that scientists have completed the floristic inventory of the California desert, and that the remaining hotbeds for botanical discovery are limited to places like Indonesia and the Brazilian Amazon. Yet the California desert is, in fact, one of the remaining floristic frontiers in the United States. Using the trends from the past 50 years and extrapolating forward in time, we can expect to discover another 200 native plant species in the California deserts over the next 50 years. Thus, approximately nine percent of today's California desert plants are not yet named by science. Given the scale and rapid pace of energy development in the desert regions, we are likely to incur extinctions, and many will be species we never had the opportunity to discover and name.[14]

In addition, cultural resource conflicts are rife, as underscored by the concerns expressed by Native Americans and their legal challenges based on lack of consultation by the BLM on six of the nine projects permitted by DOI to date.

14) André, James; director, University of California Granite Mountains Desert Research Center. Email communication to Solar Done Right, February 17, 2011.

Public risk, private gain

Adding to the public burden are government cash grants to private, for-profit consortiums of up to 30 percent of a project's total cost. Much of the momentum behind fast tracking was to meet the December 21, 2010 deadline for solar projects to quality for American Recovery and Reinvestment Act (ARRA) funding. Under industry pressure, Congress is considering extending recovery funds for solar development.

ARRA funds have also been allocated for loan guarantees – that is, loans by US taxpayers through the Treasury Department, guaranteed by taxpayers through the Department of Energy. Two have been issued so far – $1.37 billion to BrightSource for three plants in the Mojave, and $1.45 billion to Abengoa for a plant on private land in Arizona. Solar Millennium is seeking a $1.9 billion loan/guarantee for its projects in Blythe.

The President's proposed budget also includes $73 million to review and permit renewable energy projects on federal lands. In addition to these generous federal subsidies, states have waived millions of dollars in permit-processing fees for private utility-scale solar developers, with no provision for reimbursement.[15]

15) Jessica Cejnar, "County could establish position on green energy projects," *Desert Dispatch*, April 2010: http://tinyurl.com/y3wm4vz

The Department of Interior has set as its goal "to permit at least 9,000 megawatts of new solar, wind, and geothermal electricity generation capacity on DOI-managed lands by the end of 2011." Reaching this goal before the end of the year would require fast tracking of an additional 5,800 MW on more than 70,000 acres. Whether or not there are more fast-track proposals, it is clear that the Administration is strongly committed to the current, expedited policy.

Staying the wrong course

Six of the nine fast-tracked projects are currently under litigation in response to inadequate, expedited reviews and potentially unwarranted approvals. In addition, some fast tracked projects depend on approvals of new long-distance transmission lines that are, themselves, under litigation. Rather than expediting solar energy generation, the "fast track" process has complicated and delayed our country's progress on renewable energy. Agency deference to entrenched, old energy interests and business models have created policy mire that could be decades or longer to resolve before these projects ever go online.

In an October 2010 conference call to which environmental representatives were invited, Secretary Salazar expressed ambivalence regarding the previous fast-tracked projects, admitting that the "process had not been perfect." The Secretary rationalized project approval on the basis that there had been no renewable energy program before he came in. He alluded to setting aside 1,000 square miles (640,000 acres) for solar – about the amount of land in the Solar Study Areas mapped out prior to issuance of the Draft PEIS.

We expected the problems identified in the course of the fast-track process to be remedied through the Solar PEIS, which DOI and DOE began in 2008, to "establish environmental policies and mitigation strategies (e.g., best management practices and siting criteria) related to solar energy development." Maps of the solar study areas (SSAs), encompassing 676,000 acres, were offered for public review.

Late in 2010, as the release of the draft PEIS approached in the wake of the Secretary's approval of several fast-track projects, we looked ahead to the PEIS for what we hoped would be a more rational and acutely focused analysis. This would in turn result in a legally and biologically defensible program. It was widely assumed, and regularly reinforced through statements from Interior, that the PEIS would begin with the 676,000 acres of SSAs and work from there to narrow appropriate lands for solar development, in the six states.

Thus, the public was unprepared for the choice of a Preferred Alternative that would keep 22 million acres of public land – about 33 times as much acreage as the SSAs – open to lease applications.

The Preferred Alternative is directly counter to the intent of the PEIS, which was to introduce some limits and predictability on how development of solar on public lands was to proceed. Caving into industry demands,[16] Interior has essentially said, "We do not wish to establish any meaningful limits on what is available to industry."

16) Paul, Hastings, Janofsky & Walker, LLP, Comments of Large-scale Solar Association, the Solar Energy Industry Association, and the Center for Energy Efficiency and Renewable Technologies, Solar Energy PEIS Scoping letter submitted to BLM, Sept. 14 2009.

Intact creosote-yucca habitat in the Ivanpah Valley.

Chris Clarke photo

Inset: Interior Secretary Ken Salazar speaks at the groundbreaking ceremonies for the Ivanpah Solar Electric Generation System

Interior Department photo

Applicable federal orders and inapplicable "mandates"

The myth of the mandate

By pledging to put a "bulls-eye" on public land for solar development and calling on Congress to make a long-term commitment to billions of dollars in public loan guarantees and grants to large-scale solar developers, Interior Department Secretary Salazar is in keeping with a time-honored tradition of offering up federal land as a dumping ground for yet another single-use, environmentally damaging form of energy exploitation.

Much of the drive behind solar development on public lands has been predicated on what is often referred to as a "mandate" in the 2005 Energy Policy Act (PL 109-58). Policymakers, agencies, industry, the press, and environmentalists all make reference to it. Yet the short provision regarding renewable energy on public lands in the legislation (Section 211), establishes an aspiration, not a mandate:

> *"It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."*[17]

17) PL 109-58, Section 211.

A Sense of Congress resolution has no force of law. The fact that this provision does not establish a mandate does not render it irrelevant, but it does mean that the Secretary of the Interior is not required to promote and sign off on permitting for utility-scale solar power plants. To do so is a policy choice, not a legally binding Congressional mandate.

Amended Federal Order 3285A1, issued by Interior Secretary Ken Salazar on February 22, 2010, is also cited as the basis for using public lands for solar development. The Order takes its authority from the Energy Policy Act of 2005 (Section 3) and therefore also constitutes a DOI policy choice, rather than a legally binding Order. Nevertheless, the Order states that "as the steward of more than one-fifth of our Nation's lands," the department has a significant role in coordinating and ensuring **environmentally responsible** renewable energy production… [Emphasis added]." The Order clearly states that the department should pursue solar leasing "while protecting and enhancing the Nation's water, wildlife, and other natural resources."

Given the significant impacts from large-scale concentrating solar that cannot be mitigated, the goal of "protecting and enhancing the Nation's water, wildlife, and other natural

resources" while implementing large scale "environmentally responsible" solar development, cannot be met through any of the alternatives being analyzed in the PEIS.

When considering the big picture of renewable energy development, technology and market trends, we believe that the discretionary targeting of intact public lands for industrial solar development is a grave mistake in need of reversal.

An ancient Galleta grass meadow in Southern California's Colorado Desert, habitat for the flat-tailed horned lizard (inset), both of which are threatened by solar and other renewable energy development.
Inset: Basin and Range Watch photo
Meadow: Chris Clarke photo

Scope, purpose, need and alternatives

Narrow, industry-driven alternatives

The National Environmental Policy Act (NEPA) requires agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14. The courts have found that "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." And that the "touchstone for our inquiry is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."

As currently defined, the BLM's scope to analyze "use of multiple solar energy technologies at utility-scale over the next 20 years on lands within six southwestern states," and DPEIS purpose and need, "to respond to the high interest in siting utility-scale solar energy development on public lands," reflect the priorities of the solar industry to gain maximum access to public lands for industrial-scale development,[18] rather than the public interest in identifying the wisest approach to renewable energy development that preserves the long-term value of public lands.

18) Paul, Hastings, Janofsky & Walker, *op. cit.*

According to the BLM NEPA Handbook H-1790-1 (Section 6.2) and reiterated in Instructional Memorandum No. 2011-059, "The purpose and need statement for an externally generated action must describe the BLM purpose and need, **not an applicant's interests and objectives or external proponent's purpose and need** (40 CFR 1502.13) (emphasis added), but rather "the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action."[19]

19) US Department of Interior, BLM, Instructional Memorandum No. 2011-059, National Environmental Policy Act Compliance for Utility-Scale Renewable Energy Right-of-Way Authorizations, Expires: 09-30/2012.

The foregone conclusion of all of the alternatives analyzed in the DPEIS is the sacrifice of huge swaths of public lands for another wave of energy exploitation. The DPEIS fails to consider whether siting large-scale solar on public lands is the highest and best use of those lands, nor does it explore alternatives to public lands solar.

Siting industrial-scale solar power plants on high-value, intact public lands has come under increasing scrutiny as the public becomes aware of viable alternatives such as large-scale solar "roof-top" PV in the built environment, or siting solar development on the nation's millions of acres of disturbed, degraded and contaminated lands.

Distributed generation

While the DPEIS acknowledges that "[distributed generation] will be an important component of future electricity supplies," it rejects the analysis of a distributed generation alternative based on outdated and incorrect assumptions.

The DPEIS conclusion that only 23 percent of required of required electricity supplies could be met with roof-top PV systems is refuted by numerous studies. For example, a 2007 Navigant study prepared for the California Energy Commission (CEC) estimated the combined solar PV capacity potential of residential and commercial rooftops in California to be 50,255 megawatts in 2010 and 67,889 megawatts in 2016.[20]

A 2009 Black & Veatch and Energy and Environmental Economics, Inc. (E3) report to the CPUC, found 11,543 megawatts of large (greater than 1/3 acre) urban rooftop capacity and 27,000 megawatts of ground-mounted capacity near existing substations.[21]

A June 2010 update of the study found that California has a capacity of 55,000 megawatts of decentralized solar PV (over 100,000 GWh/year).[22] This is more than enough to meet the estimated 40,000 to 56,000 GWh/year net short in the state. The potential for DG goes well beyond the numbers cited in these studies that only account for the most accessible commercial sites.

Five years ago, solar PV and concentrated solar power were comparable in price, but solar PV is now indisputably cheaper than concentrated solar power.

It is common knowledge that solar PV prices have fallen dramatically in the past two years. In a recent filing to the state's PUC, Southern California Edison asked for approval of 20 solar PV projects worth 250 MW – all of which are expected to generation 567 gigawatt-hours of electricity for less than the price of natural gas.[23] Five years ago, solar PV and concentrated solar power were comparable in price, but solar PV is now indisputably cheaper than concentrated solar power.[24]

Solar PV with battery storage has a lower levelized cost than concentrating solar with storage,[25] and many small installations spread widely over a larger geographic area, are far less vulnerable than large central-station solar generation that can be entirely shut down by a single cloud.

Advocates of utility-scale solar commonly omit from their calculations avoided costs of new transmission, and the 7.5–15 percent losses from moving solar-generated electricity hun-

20) Navigant Consulting, CEC, California Rooftop PV Resource Assessment and Growth Potential by County, Sept. 2007 http://tinyurl.com/4glyzs4

21) Black & Veatch, Summary of PV Potential Assessment in RETI and the 33% Implementation Analysis, Dec. 2009: http://tinyurl.com/45n2j7x.

22) Ryan Pletka, Black & Veatch, LTPP Solar PV Performance and Cost Estimates, prepared for CPUC as input to Long-Term Procurement Proceeding, June 18, 2010, slide 37: http://tinyurl.com/4vg3zum

23) Stephen Lacey, "Solar PV Becoming Cheaper than Gas in California?," Renewable Energy World, Feb. 8, 2011,http://tinyurl.com/4nhdx9q

24) John Farrell, "Busting 4 myths about solar PV vs. concentrating solar," Grist, Feb. 17, 2011, http://tinyurl.com/4cprzhl

25) Ibid.

dreds of miles to urban demand centers when comparing the cost of centralized vs. distributed solar generation.

In cloudy Germany, 8,000 MW of distributed PV were installed in 2010 alone,[26] more than 80 percent of it on rooftops.

A strategy focused primarily on distributed PV would be the most cost-effective approach to rapidly expanding solar power production in the United States. Germany has demonstrated that a spectacularly high, distributed PV installation rate is sustainable when an appropriate contract structure, the feed-in tariff, is utilized.

Approximately 17,000 megawatts of PV were installed worldwide by the end of 2009. Only 664 megawatts of the global total solar was concentrating solar thermal. Ironically, most of this solar thermal capacity was built in California in the 1980s and early 1990s.[27]

In his recent article "Federal Government Betting on the Wrong Solar 'Horse,'" engineer and PV expert Bill Powers points out:

> *The United States is wasting billions of dollars of American Recovery and Reinvestment Act (ARRA) cash grants and loan guarantees on very large, high-cost, high-environmental-impact, transmission-dependent desert solar thermal power plants that will be obsolete before they generate a single kilowatt-hour of electricity…*
>
> *The Department of Energy (DOE) is in the process of completing a potentially landmark study, the Solar Vision Study (SVS). It maps out a strategy to provide the United States with 10 to 20 percent of its electric energy from solar power by 2030. The document appears to be intended to serve as technical support for a national strategic commitment to solar thermal development….*
>
> *…The SVS proposes that half of the nation's solar power will come from solar thermal installations, based on a low and unsupported cost-of-energy forecast for solar thermal plants. The SVS also presumes that the Southwest will be the hub from which this solar power is generated and transmitted to other parts of the country, while estimating an almost trivial transmission expense to make this happen.*
>
> *…A revised and corrected SVS would envision a solar future that is effectively 100 percent solar PV. This PV future would also be predominantly smaller-scale PV connected at the distribution level, to avoid the expense of transmission. Otherwise, enormous costs for new transmission capacity would be necessary to move remote Southwest solar power to demand centers around the country.*[28]

Generally speaking, "rooftop" solar is shorthand for solar PV installed on commercial and residential rooftops, parking lots, highway easements, and virtually any site in the built

26) Kirshbaum, Erik, "Germany to add record 8 GW of solar power in 2010," Reuters, Dec. 6, 2010, http://tinyurl.com/4fwt3ub

27) Powers, Bill. "Federal government betting on the wrong solar horse," *Natural Gas & Electricity Journal*, Dec. 2010: http://tinyurl.com/6c8uzwz

28) Ibid.

environment that has suitable space for distributed generation. When all costs are factored in – including new transmission infrastructure and transmission line losses – local, distributed solar PV is comparable in efficiency, faster to bring online, and more cost-effective than remote utility-scale solar thermal power or remote utility-scale PV plants.[29]

Local installations such as rooftop or parking lot solar PV reduce peak load at the source of demand and thus reduce or eliminate the need for additional conventional generation and transmission infrastructure. Yet, because investor-owned utilities are guaranteed a high rate of return for transmission and new generation infrastructure, they oppose large-scale deployment of rooftop solar[30] and thus work to perpetrate the myths surrounding point-of-use solar.[31]

Environmental Protection Agency – RE-Powering America

The Environmental Protection Agency (EPA), which is obligated to review all environmental impact statements, stated strongly in its scoping comments on the PEIS that the BLM should include a DG alternative in its analysis. In addition, the EPA "strongly [encouraged] BLM, DOE, and other interested parties to pursue siting renewable energy projects on disturbed, degraded, and contaminated sites, before considering large tracts of undisturbed public lands."[32]

EPA identified hundreds of thousands of acres of contaminated sites around the country with a technical potential of 920,000 MW of solar generation and strongly encouraged BLM and DOE to seek alternatives to siting solar developments on intact public lands.

The EPA's Office of Solid Waste and Emergency Response has been identifying abandoned mine lands, brownfields, Resource Conservation and Recover (RCRA) sites, and federal and non-federal Superfund cites that may be suitable for solar and other non-fossil-fuel energy projects.[33]

In its original scoping letter on the Programmatic EIS, EPA identified hundreds of thousands of acres of contaminated sites around the country. Following the same methods used by the National Renewable Energy Lab to identify suitable concentrating solar generation sites, EPA identified a "technical potential" of 920,000 MW of solar generation.[34]

29) Powers, Bill, and Bowers, Sheila; Solar Done Right. "Distributed Solar PV – Why It Should Be The Centerpiece of US. Solar Energy Policy," http://tinyurl.com/49n3vxm

30) Haugen, Dan, "Why Isn't the U.S. Embracing Feed-in Tariffs?," *Solve Climate News*, March 24, 2009, http://tinyurl.com/4qazjwf

31) Philips, Matthew. *Newsweek*, Taking a Dim View of Solar Energy, Who could possibly be against homeowners using solar panels to power their homes? Utility Companies, August 25, 2009. http://tinyurl.com/4uj33mb

32) Scoping letter from EPA Region IX, Sept. 8, 2009, signed Ann McPherson, Environmental Review Office.

33) http://tinyurl.com/4gcm222

34) http://tinyurl.com/6xqumcs. Technical potential is defined "without consideration of cost or practical feasibility." Given true financial and environmental costs of the current policy led by the Interior just to site 10,000 MW, we believe it is credible to use the EPA's optimistic estimate for comparison purposes.

In April 2009, several environmental organizations issued draft recommendations for solar energy development study areas consistent with their own siting criteria. These areas, just in California, comprised 53,400 acres of BLM-managed public land and 242,200 acres of adjacent private lands.[35]

In its Environmental Impact Reviews for fast-track solar projects, the California Energy Commission also identified disturbed public and private land sites as suitable alternatives to some of the proposed undisturbed public land sites. In a compilation of the CEC's comments on these sites and some of his own research, engineer Bill Powers shows yet more alternative sites for several of the projects.[36]

Westland's Solar Park in California's Central Valley includes approximately 30,000 acres of disturbed land targeted for renewable energy development within the Westland's Water District, where agricultural land has been rendered unusable by salt buildup from long-term, intensive irrigation. The project is believed to be suitable for up to 5 GW of solar power generation.[37]

None of the examples above offers the entire solution, but they do demonstrate the lack of imagination and innovation that is currently guiding site selection. This primitive approach – using public land as the "easy call" for siting renewable energy – is not necessary. There are alternative for siting both large- and small-scale renewables.

35) California Desert & Renewable Energy Working Group, *Recommendations to Secretary of the Interior Ken Salazar on Ways to Improve Planning and Permitting for the Next Generation of Solar Energy Projects on BLM Land in* the California Desert, Dec. 22, 2010

36) http://tinyurl.com/685oo7z

37) Woody, Todd, "Recycling land for green energy ideas," *New York Times*, August 10, 2010, http://tinyurl.com/29kga5s and http://tinyurl.com/4c646sx

Failure to take a "hard look"

Billions have been invested in cash grant and loan guarantees to prop up proposals using 1980s- and 1990s-era technologies in remote, intact desert landscapes, when a push for widespread deployment of DG on pavement and rooftops would serve the public interest far better.

Thus we have an exploitive, outmoded approach to siting mired in 19th Century attitudes toward public land, coupled with financially- and environmentally-subsidized, outmoded technology that will fail to achieve a responsible energy future.

There is vast potential to get outmoded and environmentally damaging solar off public lands by prioritizing distributed generation from solar PV installations in the built environment.

The purpose and need for the PEIS fails to take a hard look at distributed generation and siting alternatives that "minimize adverse impacts or enhance the quality of the human environment" in order to inform decision-makers and the public, as required by NEPA.

Instructional Memorandum No. 2011-059[38] issued by the Director of the BLM acknowledges that in limited circumstances the agency may choose to evaluate a non-federal land

38) Ibid.

alternative or different technology alternative raised through scoping, "to the extent necessary to support a decision regarding the pending application." The BLM's dismissive stance regarding alternatives to its own narrow proposals, however, suggests that this would be used exclusively to point up the (false) superiority of the public-land, remote, concentrated solar projects it favors. To comply with NEPA, the BLM must analyze these sites and technologies as the legitimate alternatives they are.

The DC Circuit Court of Appeals has found an EIS inadequate for failing to consider eliminating oil import quotas as an alternative to the sale of oil leases on the Outer Continental Shelf, even though the alternative was outside the jurisdiction of Interior. No PEIS was prepared in that instance, but here there is an even stronger case to consider broader alternatives, as a PEIS is meant to address broader policy decisions rather than a specific proposed action.

As the Council on Environmental Quality has stated,

> *"Section 1502.14 [of the NEPA regulations] requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."*

And,

> *"An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. Section 1506.2(d). Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable,* ***because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies****. Section 1500.1(a)[emphasis added]."*[39]

39) http://tinyurl.com/4kdtcvf

Conclusion

In addition to turning to degraded, contaminated sites, there is vast potential to get outmoded, environmentally damaging solar off public lands in the alternative of distributed generation through solar PV installations in the built environment.

The PEIS dismisses alternatives such as distributed generation, restricting solar development to populated areas, or conservation and demand-side management, on the basis of defining the purpose and need as "[responding] in a more efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands." This, in turn, the agency relates to "the requirements for facilitating solar energy development on BLM-administered lands established by the Energy Policy Act…"

This approach renders the Draft Solar PEIS fundamentally flawed. The DOI, DOE and BLM are required to consider a far broader range of alternatives. While the Energy Policy Act – upon which Interior leans – expressed Congress' "sense" that Interior "should seek to have approved" a stated amount of non-hydropower renewable energy on public land, it did not establish a mandate. Interior is not required to establish this footprint on public lands, and in light of the evidence regarding the environmental damage it would cause, has the discretion to, and must, change course.

Thank you for your comment, Steve Saway.

The comment tracking number that has been assigned to your comment is SolarD11891.

Comment Date: May 3, 2011 00:33:11AM
Solar Energy Development PEIS
Comment ID: SolarD11891

First Name: Steve
Middle Initial:
Last Name: Saway
Organization:
Address: 533 Suffolk Drive
Address 2:
Address 3:
City: Sierra Vista
State: AZ
Zip: 85635
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Comments re Draft Solar Programmatic Environmental Impact Statement.doc

Comment Submitted:

May 2, 2011

533 Suffolk Drive
Sierra Vista, AZ 85635

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

Dear Sir:

I have reviewed the Draft Programmatic Environmental Impact Statement (DPEIS) and offer the following comments.

1. Alternatives. The Solar Energy Development Program Alternative (the Preferred Alternative) would allow solar energy applications on nearly 22 million acres of BLM lands in six states. I believe the DPEIS makes a compelling case to select this alternative as it best meets the purpose and need of the DPEIS. However, since solar energy development is an exclusive use of the public lands and could displace other important multiple use activities, I believe that the Solar Energy Development Program Alternative should be more carefully defined to further narrow the types of lands that would be potentially available for right of way (ROW) application. In addition to the areas for exclusion listed in Table ES.2-2 (page ES-8), recommend the following areas for exclusion be added: (a) High Value Recreation Settings; (b) Transportation and Public Access Routes; and (c) Areas of Known Mineral Deposits. In my view, these exclusions would help steer solar energy applications to areas where there are fewer conflicts with public uses and less chance for controversy. In addition, I believe the Arizona BLM Restoration Design Energy Project (RDEP) offers a good example of further refining the categories of lands suitable for solar energy development. Its emphasis on previously disturbed or developed lands gives the public more confidence that solar energy development will not come at the expense of the public's ability to enjoy a diverse range of multiple uses on their public lands. Perhaps the Solar Energy Development Program Alternative could be modified to adopt that same approach. Using the same theme of previously disturbed lands, another option to consider is solar energy development on public lands withdrawn by the Department of Defense. I believe a very compelling business case could be made to locate solar utility plants on military lands that have suitable characteristics for solar energy development. For example, portions of the Barry Goldwater Range and Yuma Proving Ground in southwestern Arizona could likely offer opportunities for solar energy development on disturbed lands that are not subject to hazardous operations.

2. Solar Energy Zones. In my view, one of the solar energy zones proposed for Arizona should be re-considered for the following reasons:
a. Public Access, Safety, and Recreation. The Gillespie Solar Energy Zone (SEZ) is located along and contiguous to Agua Caliente Road, a scenic 49 mile long unpaved county road in western Maricopa County. This road provides access to spectacular BLM lands with high value recreation settings, including Fourth of July Butte, Face Mountain, and the Gila Bend Mountains. Agua Caliente Road is expected to be designated a backcountry byway in the Lower Sonoran RMP that is underway. The BLM lands traversed by

Agua Caliente Road offer exceptional opportunities for both motorized and non-motorized recreation, including hiking, hunting, wildlife viewing, camping, backcountry touring, outdoor photography, sightseeing, and rock-hounding, and offer stunning views of pristine Sonoran Desert landscapes. In addition, access to the Signal Peak and Woolsey Peak Wilderness areas is via a jeep road that extends south from Agua Caliente Road. The Gillespie SEZ would close access to this OHV route and thus would close the primary access to these wilderness areas. It would also pose safety concerns to travelers on Agua Caliente Road who would have to drive through a gauntlet of solar utility plant equipment with glint and glare impacts. It would seem that solar energy developers would want to avoid placing expensive solar utility equipment so close to a public road, a situation inviting potential damage and liability concerns.

b. Visual Resource Management. The Gillespie SEZ would be visible from various National Landscape Conservation System (NLCS) units, including Signal Peak Wilderness, Woolsey Peak Wilderness, and the Sonoran Desert National Monument. The visual impact of solar utility plants and associated disturbed lands is not compatible with NLCS values. Woolsey Peak and Signal Peak Wilderness areas are only 2 and 3.5 miles respectively from the Gillespie SEZ.

c. Groundwater. The Gillespie SEZ is located in the Phoenix Active Management Area (AMA). Use of groundwater for solar energy equipment will be very problematic in this AMA.

d. Air Quality. The Gillespie SEZ is also located in Maricopa County, much of has been designated by the EPA as a non-attainment area for ozone and PM-10 dust particles. Ground disturbance associated with solar utility plant construction and operations will further exacerbate the County's PM-10 and air pollution impacts.

In summary, I recommend the Gillespie SEZ either be deleted from further consideration or else relocated to the north of Agua Caliente Road.

Thank you for the opportunity to submit these comments. Please keep my name on your mailing list for future updates and notices of public comment periods.

Sincerely,

//signed//

Steve Saway

May 2, 2011

533 Suffolk Drive
Sierra Vista, AZ 85635

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

Dear Sir:

I have reviewed the Draft Programmatic Environmental Impact Statement (DPEIS) and offer the following comments.

1. Alternatives. The Solar Energy Development Program Alternative (the Preferred Alternative) would allow solar energy applications on nearly 22 million acres of BLM lands in six states. I believe the DPEIS makes a compelling case to select this alternative as it best meets the purpose and need of the DPEIS. However, since solar energy development is an exclusive use of the public lands and could displace other important multiple use activities, I believe that the Solar Energy Development Program Alternative should be more carefully defined to further narrow the types of lands that would be potentially available for right of way (ROW) application. In addition to the areas for exclusion listed in Table ES.2-2 (page ES-8), recommend the following areas for exclusion be added: (a) High Value Recreation Settings; (b) Transportation and Public Access Routes; and (c) Areas of Known Mineral Deposits. In my view, these exclusions would help steer solar energy applications to areas where there are fewer conflicts with public uses and less chance for controversy. In addition, I believe the Arizona BLM Restoration Design Energy Project (RDEP) offers a good example of further refining the categories of lands suitable for solar energy development. Its emphasis on previously disturbed or developed lands gives the public more confidence that solar energy development will not come at the expense of the public's ability to enjoy a diverse range of multiple uses on their public lands. Perhaps the Solar Energy Development Program Alternative could be modified to adopt that same approach. Using the same theme of previously disturbed lands, another option to consider is solar energy development on public lands withdrawn by the Department of Defense. I believe a very compelling business case could be made to locate solar utility plants on military lands that have suitable characteristics for solar energy development. For example, portions of the Barry Goldwater Range and Yuma Proving Ground

in southwestern Arizona could likely offer opportunities for solar energy development on disturbed lands that are not subject to hazardous operations.

2. Solar Energy Zones. In my view, one of the solar energy zones proposed for Arizona should be re-considered for the following reasons:

a. Public Access, Safety, and Recreation. The Gillespie Solar Energy Zone (SEZ) is located along and contiguous to Agua Caliente Road, a scenic 49 mile long unpaved county road in western Maricopa County. This road provides access to spectacular BLM lands with high value recreation settings, including Fourth of July Butte, Face Mountain, and the Gila Bend Mountains. Agua Caliente Road is expected to be designated a backcountry byway in the Lower Sonoran RMP that is underway. The BLM lands traversed by Agua Caliente Road offer exceptional opportunities for both motorized and non-motorized recreation, including hiking, hunting, wildlife viewing, camping, backcountry touring, outdoor photography, sightseeing, and rock-hounding, and offer stunning views of pristine Sonoran Desert landscapes. In addition, access to the Signal Peak and Woolsey Peak Wilderness areas is via a jeep road that extends south from Agua Caliente Road. The Gillespie SEZ would close access to this OHV route and thus would close the primary access to these wilderness areas. It would also pose safety concerns to travelers on Agua Caliente Road who would have to drive through a gauntlet of solar utility plant equipment with glint and glare impacts. It would seem that solar energy developers would want to avoid placing expensive solar utility equipment so close to a public road, a situation inviting potential damage and liability concerns.

b. Visual Resource Management. The Gillespie SEZ would be visible from various National Landscape Conservation System (NLCS) units, including Signal Peak Wilderness, Woolsey Peak Wilderness, and the Sonoran Desert National Monument. The visual impact of solar utility plants and associated disturbed lands is not compatible with NLCS values. Woolsey Peak and Signal Peak Wilderness areas are only 2 and 3.5 miles respectively from the Gillespie SEZ.

c. Groundwater. The Gillespie SEZ is located in the Phoenix Active Management Area (AMA). Use of groundwater for solar energy equipment will be very problematic in this AMA.

d. Air Quality. The Gillespie SEZ is also located in Maricopa County, much of has been designated by the EPA as a non-attainment area for ozone and PM-10 dust particles. Ground disturbance associated with solar utility plant construction and operations will further exacerbate the County's PM-10 and air pollution impacts.

In summary, I recommend the Gillespie SEZ either be deleted from further consideration or else relocated to the north of Agua Caliente Road.

Thank you for the opportunity to submit these comments. Please keep my name on your mailing list for future updates and notices of public comment periods.

Sincerely,

//signed//

Steve Saway

Thank you for your comment, MAURICE FRANK-CHURCHILL.

The comment tracking number that has been assigned to your comment is SolarD11892.

Comment Date: May 3, 2011 00:44:09AM
Solar Energy Development PEIS
Comment ID: SolarD11892

First Name: MAURICE
Middle Initial:
Last Name: FRANK-CHURCHILL
Organization: DUCKWATER SHOSHONE TRIE
Address: 511 DUCKWATER FALLS ROAD
Address 2:
Address 3:
City: DUCKWATER
State: NV
Zip: 89314
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: DUCKWATERTRIBESOLARPEISCOMMENTMAY2011.docx

Comment Submitted:

My comments are on the Commulative Impacts.
11.7.22.1 Geographic Extent of the Cummmulative Impact: Dust hazard needs to be considered. A study of the APE and immediate area up to 100 miles should be considered.
11.7.22.3.4 Climate change: Due to a vast numer of solar panels, cummulative impacts need to e considered to the valley and as i have stated above-100 area. Dramatic climate change can affect the plat and animal life in the surrounding areas.
11.7.22.4.1 Land and Realty; The area is too remote to consider industrial parks. But before such a determination can be made-in my opinion-a feasibility study should be completed to determine if an industrial park is feasable.
11.7.22.4.6 Soil Resources: A wind study nees to be conducted to determine the cummulative affects of fugutive soil and also the impacts to the soil from solar panels and its affect on the soil. Cummulative affects to consider is as the land is removed of vegetation especially when area that trial people go to gather medicinal and and food plants. Another consideration is what is the cummulative affect to places that give songs to Native people. Are the songs still there? Or are thery gone forever?
11.7.22.4.8 Water Resources: As stated earlier, water resources are over-appropiated-where will the water come from to continue the operation for the life of the solar project? What will the cummulative affects to the farms and ranches in the area as well as near by towns such as hadley, Silver Peak, Goldfield, Round Mountain, Carvers, and Tonopah that also used ground as well as surface water? What will the quality of the water be as ancient lake Tonopah is covered with alkali?
11.7.22.4.9 Vegetation: During the field trip by Duckwater Tribal representatives, concerns were made aout the rice grass fields, sgae brush in the washes, wolfberries, and other plants used for medicinal, ceremonial, and for food. The concern was they will not be ale to come to this area to gather the plants required for their use.
11.7.22.4.10: Wildlife and Aquatic Biota: Dust from the land during windy days will have an affect on the wildlife. The ground squirrels, rabits, big horn sheep, antelope.

Duckwater Shoshone Tribe's comments to the Solar PEIS (Miller's-Tonopah, Nevada)

11.7.22.4.10; Wildlife and Biota: As stated in the previous comment, concerns are about the plant communities that both the birds and animal use for survival.

11.7.22.4.12 Air Quality: Aggressive dust control-water is listed. The Tribes question is for how long and how much water will be used? For the duration of the project? As with fugitive dust, air quality will be greatly affected in the towns of Tonopah, Belmont, Manhattan, Round Mountain, Hadley, Carvers, Goldfield, Silver Peak, and Dyer; as well as Yomba to the North.

11.7.22.4.12.16 Cultural Resources: Trails will be lost when the earth is scraped void of brushes and land marks. Songs will be lost from the land, because of the landscape change, plant communities will be removed from the places Native People went to gather their food, medicinal, and ceremonial plants. Adverse effect will happen to the area if the area is clean and void of things the People need to survive. More in-depth interviews should be conducted to gather the Tribe's concerns.

11.7.22.19 Environmental Justice: The statement that no minority or low income population is incorrect. The Yomba Shoshone Tribe to the North, The Timbisha Shoshone Tribe to the South, to the West is Owens valley which has several reservations, and to the East are the Duckwater and Ely Tribe. These various Tribes need to be considered and included in the interview and future interviews should include the above mentioned tribes to gather their comments and concerns.

Environmental Justice should include economic, cultural, spiritual, and other changes that can have an adverse effect.

Thank you for your comment, Michael Quinlan.

The comment tracking number that has been assigned to your comment is SolarD11893.

Comment Date: May 3, 2011 00:50:21AM
Solar Energy Development PEIS
Comment ID: SolarD11893

First Name: Michael
Middle Initial: C
Last Name: Quinlan
Organization:
Address: 323 East Solana Drive
Address 2:
Address 3:
City: Tempe
State: AZ
Zip: 85281
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

I'm very appreciative of the BLM's efforts to expedite the development of solar power on BLM land. However, I feel that the BLM's preferred alternative - the Solar Development Program (SDP) - opens far too much land to potential development. Some 4.5 million acres in Arizona alone would be potentially available for solar power facilities. A much better choice, in my opinion, would be the Solar Energy Zones (SEZ) Alternative, in which conflicts with wildlife and outdoor recreation are minimized. The SEZ Alternative would focus development on areas that are appropriate for solar development and have the best chance for easy development. Further, the SEZ Alternative would have the smallest impact on the biological and scenic aspects of the BLM's holdings in Arizona.

Thank you for your comment, Samuel Cunningham.

The comment tracking number that has been assigned to your comment is SolarD11894.

Comment Date: May 3, 2011 00:57:14AM
Solar Energy Development PEIS
Comment ID: SolarD11894

First Name: Samuel
Middle Initial: L
Last Name: Cunningham
Organization:
Address: 2651 S 8th Ave #1047
Address 2:
Address 3:
City: Yuma
State: AZ
Zip: 85364
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Sam Cunningham Response to Proposed Solar Project.docx

Comment Submitted:

Samuel Cunningham
2651 S 8th Ave Apt 1047 Yuma Arizona, 85364

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439
To Whom it May Concern
Although I have just recently become to know the natural beauty of Desert Center, California, a small unincorporated city in California's Colorado Desert between Indio and Blythe California respectively, I still feel compelled to pose questions concerning the proposed solar farms in the area. All life in the area will be disrupted by this project and some concerns should be addressed. I have many concerns about such a proposal and would like to have the following accepted as my official comment for matters that I would like to see addressed and mitigated.
CONCERNS
Ecosystem Concerns- Desert Tortoise
Desert Center and the surrounding desert area is home to a host of indigenous plant and animal life which will be affected by any proposed development in these previously undisturbed areas. The PEIS documents list a number of plant and animals that were considered and of those, there is the Desert Tortoise. The proposal is to relocate the tortoises as they have been in so many other instances. My concern was just how these animals fare when moved and found the following.
" During an Evidentiary Hearing on September 20, 2010 in which the California Energy Commission sought final comment on their plan to approve the gigantic solar sprawl at Calico, CEC biologist Chris Huntley stated that, " For the control site for a tortoise that's just handled, blood tested, and radio tagged, we placed a 5 percent mortality rate on that based on feedback from the Fish and Game. For the translocated tortoise, the tortoise physically moved from the project site and placed in a translocation site, we assumed a 50 percent mortality figure."
http://faultline.org/index.php/site/item/desert_tortoise_relocation_is_desert_tortoise_eradication/)
My question concerning the tortoises is what types of consideration has been given to minimizing or forgoing the relocation of the tortoises given this potential mortality rate?
Ecosystem Concerns- Ironwood Trees
My understanding is that, the Midland Ironwood Forest is the largest concentration of desert ironwood trees (Olneya tesota) in California. The area is in the Palen-McCoy Wilderness area between the Palen Mountains and the McCoy Mountains, a few miles northwest of Blythe, California. According to www.desertmuseum.org/programs/flora, there is a disturbing trend in the natural decline of old ironwood trees in large parts of the Chuckwalla Valley but in some cases, it is believed these trees are more than 800 years old.
Given the noted decline, the extended maturation period, and the importance of the Ironwood tree to so much of the desert wildlife, what are plans to avoid or minimize the tree's destruction during this development? Will areas be excluded or will they all are be cleared for equipment?
Safety
From my research, it appears that most solar farm projects are located in remote areas, and employ little to no perimeter fencing or other protective measures.

Will this project be fenced? If not, what steps will these companies take to provide a safe environment for children being that these are so close to communities? If they will be fenced, how much of it will be fenced and where will it begin and end?

Proximity

In reviewing the maps provided on the EIS site, it appears that some of the panels are within just hundreds of feet from the homes of Desert Center and Lake Tamarisk residents.

Is there a reason that the physical location of these projects can't be moved to approximately 20 miles outside of the nearest home or business? This would be much less intrusive on residents and the visual landscape.

Failure Rate and Infrastructure

There is a disturbing number of articles that talk about the failure rate of solar farms for a number of different reasons. It is difficult to determine what the rate is and what has happened when they have failed. Of course, with over 200,000 acres of proposed projects in the Desert Center area, my concern is both how we minimize the intrusion and secondly, how we handle it if it comes…and fails.

What are the plans if a solar company deploys thousands of panels and associated equipment and it fails to deliver what is needed to be profitable /viable? Additionally, because this technology could very well be obsolete in 5 years and a smaller, more effective product appears what is the plan to remove all the equipment in place?

I understand that excess capacity that is produced by solar farms cannot always be stored thereby reducing the chance of profitability and increasing the chance that a company may walk away, what are the plans for this excess capacity storage?

Reflective Danger

In my research I have noticed that the glare or reflection of the solar panels is a concern for many. Are the panels that will be deployed less reflective to neighboring aircraft, cars, or people?

Final Comments

My only final comment is simply why this close to people? It appears to me that the project could be much less invasive if the proposed sites were pushed 20-30 miles outside of inhabited areas. The ecosystems would obviously still be affected but if the project is a foregone conclusion, this would minimize the effect. We are not anti growth and certainly understand the need to reduce dependency on foreign oil/fossil fuels. I just think we need to rethink this before we end up with skeletons of failed projects across the desert.

Sincerely,
Samuel Cunningham

Samuel Cunningham
2651 S 8th Ave Apt 1047 Yuma Arizona, 85364

Solar Energy PEIS
Argonne National Laboratory
9700 S. Cass Avenue
EVS/240
Argonne, IL 60439

To Whom it May Concern

Although I have just recently become to know the natural beauty of Desert Center, California, a small unincorporated city in California's Colorado Desert between Indio and Blythe California respectively, I still feel compelled to pose questions concerning the proposed solar farms in the area. All life in the area will be disrupted by this project and some concerns should be addressed. I have many concerns about such a proposal and would like to have the following accepted as my official comment for matters that I would like to see addressed and mitigated.

CONCERNS

Ecosystem Concerns- Desert Tortoise

Desert Center and the surrounding desert area is home to a host of indigenous plant and animal life which will be affected by any proposed development in these previously undisturbed areas. The PEIS documents list a number of plant and animals that were considered and of those, there is the Desert Tortoise. The proposal is to relocate the tortoises as they have been in so many other instances. My concern was just how these animals fare when moved and found the following.

" During an Evidentiary Hearing on September 20, 2010 in which the California Energy Commission sought final comment on their plan to approve the gigantic solar sprawl at Calico, CEC biologist Chris Huntley stated that, " For the control site for a tortoise that's just handled, blood tested, and radio tagged, we placed a 5 percent mortality rate on that based on feedback from the Fish and Game. For the translocated tortoise, the tortoise physically moved from the project site and placed in a translocation site, we assumed a 50 percent mortality figure."
http://faultline.org/index.php/site/item/desert_tortoise_relocation_is_desert_tortoise_eradication/)

My question concerning the tortoises is what types of consideration has been given to minimizing or forgoing the relocation of the tortoises given this potential mortality rate*?*

Ecosystem Concerns- Ironwood Trees

My understanding is that, the Midland Ironwood Forest is the largest concentration of desert ironwood trees (Olneya tesota) in California. The area is in the Palen-McCoy Wilderness area between the Palen Mountains and the McCoy Mountains, a few miles northwest of Blythe, California. According to www.desertmuseum.org/programs/flora, there is a disturbing trend in the natural decline of old ironwood trees in large parts of the Chuckwalla Valley but in some cases, it is believed these trees are more than 800 years old.

Given the noted decline, the extended maturation period, and the importance of the Ironwood tree to so much of the desert wildlife, what are plans to avoid or minimize the tree's destruction during this development? Will areas be excluded or will they all are be cleared for equipment?

Safety

From my research, it appears that most solar farm projects are located in remote areas, and employ little to no perimeter fencing or other protective measures.

Will this project be fenced? If not, what steps will these companies take to provide a safe environment for children being that these are so close to communities? If they will be fenced, how much of it will be fenced and where will it begin and end?

Proximity

In reviewing the maps provided on the EIS site, it appears that some of the panels are within just hundreds of feet from the homes of Desert Center and Lake Tamarisk residents.

Is there a reason that the physical location of these projects can't be moved to approximately 20 miles outside of the nearest home or business? This would be much less intrusive on residents and the visual landscape.

Failure Rate and Infrastructure

There is a disturbing number of articles that talk about the failure rate of solar farms for a number of different reasons. It is difficult to determine what the rate is and what has happened when they have failed. Of course, with over 200,000 acres of proposed projects in the Desert Center area, my concern is both how we minimize the intrusion and secondly, how we handle it if it comes…and fails.

What are the plans if a solar company deploys thousands of panels and associated equipment and it fails to deliver what is needed to be profitable /viable? Additionally, because this technology could very well be obsolete in 5 years and a smaller, more effective product appears what is the plan to remove all the equipment in place?

I understand that excess capacity that is produced by solar farms cannot always be stored thereby reducing the chance of profitability and increasing the chance that a company may walk away, what are the plans for this excess capacity storage?

Reflective Danger

In my research I have noticed that the glare or reflection of the solar panels is a concern for many. Are the panels that will be deployed less reflective to neighboring aircraft, cars, or people?

Final Comments

My only final comment is simply why this close to people? It appears to me that the project could be much less invasive if the proposed sites were pushed 20-30 miles outside of inhabited areas. The ecosystems would obviously still be affected but if the project is a foregone conclusion, this would minimize the effect. We are not anti growth and certainly understand the need to reduce dependency on foreign oil/fossil fuels. I just think we need to rethink this before we end up with skeletons of failed projects across the desert.

Sincerely,

Samuel Cunningham

Thank you for your comment, Randy Banis.

The comment tracking number that has been assigned to your comment is SolarD11895.

Comment Date: May 3, 2011 01:28:26AM
Solar Energy Development PEIS
Comment ID: SolarD11895

First Name: Randy
Middle Initial:
Last Name: Banis
Organization:
Address: 44404 16th St W, Ste 204
Address 2:
Address 3:
City: Lancaster
State: CA
Zip: 93534
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

The recreation analysis is incomplete. Although it does look at recreational activities taking place in the solar energy zones, it does not consider impacts on recreation on acquisition, mitigation or compensatory lands. Recreation stands to loose twice but this was not considered in the analysis.

I do not support the proposed alternative. I prefer the alternative that is less in acreage.

Thank you for your comment, Cory Briggs.

The comment tracking number that has been assigned to your comment is SolarD11896.

Comment Date: May 3, 2011 01:34:38AM
Solar Energy Development PEIS
Comment ID: SolarD11896

First Name: Cory
Middle Initial:
Last Name: Briggs
Organization: Briggs Law Corporation
Address: 99 East "C" Street, Suite 111
Address 2:
Address 3:
City: Upland
State: CA
Zip: 91786
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: Comment Letter_2011-05-02_FINAL_ALL.pdf

Comment Submitted:

Please see the attached letter.

BRIGGS LAW CORPORATION

San Diego Office:
814 Morena Boulevard, Suite 107
San Diego, CA 92110

Telephone: 619-497-0021
Facsimile: 619-515-6410

Inland Empire Office:
99 East "C" Street, Suite 111
Upland, CA 91786

Telephone: 909-949-7115
Facsimile: 909-949-7121

Please respond to: Inland Empire Office

BLC File(s): N/A

14 April 2011

Solar Energy Draft Programmatic EIS
Argonne National Laboratory
9700 South Cass Avenue, EVS/240
Argonne, IL 60439

Re: Comments on the Draft Programmatic Environmental Impact Statement for Solar Energy Development in the Six Southwestern States

These comments are submitted on behalf of CAlifornians for Renewable Energy regarding the Draft Programmatic Environmental Impact Statement ("PEIS") for Solar Energy Development in the Six Southwestern States issued by the Bureau of Land Management ("BLM") and the Department of Energy ("DOE"). The comments supplement any other comments that may have been submitted by my client.

While the development of renewable energy is critical to our country's energy dependence and efforts to reduce air pollutants including greenhouse gases, renewable energy projects, like any other project, should be done in a way that minimizes the impacts to the environment and cultural resources. The following comments are submitted with the goal of promoting the balance between developing renewable energy and the protection of environmental and cultural resources.

A. The Purpose and Need Statements Are Too Narrowly Construed

An agency "cannot define its objectives in unreasonably narrow terms." *City of Carmel-by-the-Sea v. U.S. Dept. of Transportation*, 123 F.3d 1142 (9th Cir. 1997). The statement of purpose and alternatives are closely linked since "the stated goal of a project necessarily dictates the range of 'reasonable' alternatives." *Id*. Both BLM and DOE have based their purpose and need sections on an unduly restrictive reading of applicable statutes and orders.

For BLM's part, the purpose and need section says that the Solar Energy Program will further BLM's ability to meet the mandates of Executive Order 13212 and the Energy Policy Act of 2005 and has been designed to meet Secretarial Order 3285A1. However, none of these items is as narrowly tailored as requiring the siting of utility-scale solar energy development on public lands. Executive Order 13212 calls for energy-related projects to be expedited, while maintaining safety, public health, and environmental protections. Ex. A1. The Energy Policy Act of 2005 encourages the Secretary of Interior to approve non-hydropower renewable energy projects on public lands with a generation capacity of at least 10,000 megawatts of electricity. Ex. A2. Secretarial Order 3285A1 calls for the identification and prioritization of specific locations in the United States best suited for large-scale production of solar, wind, geothermal, incremental or small hydroelectric power on existing structures, and biomass energy (*e.g.* renewable energy zones). Ex. A5. Altogether, none of these policies is so narrowly construed as to limit their application to a six-state study area or to solar energy.

For DOE's part, the purpose and need section says that DOE is required to take actions to meet mandates under Executive Orders 13212 and 13514, as well as Section 603 of the Energy Independence and Security Act. Executive Order 13212 calls for energy-related projects to be expedited while maintaining safety, public health, and environmental protections. Ex. A1. Executive Order 13514 declares that it is the policy of the United States that federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources; eliminate waste, recycle and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies; design, construct and operate high performance sustainable buildings; strengthen the vitality and livability of communities in which federal facilities are located; and inform federal employees and involve them in the achievement of these goals. Ex. A4. With respect to renewable energy, the Executive Order calls for aligning federal policies to increase the effectiveness of local planning for energy choices such as locally generated renewable energy and identifying impacts from alternative energy sources in EISs. Finally, Section 603 of the Energy Independence and Security Act of 2007 calls on the Secretary to conduct a study on the methods to integrate concentrating solar power and utility-scale photovoltaic systems into regional electricity transmission upgrades needed to bring electricity from high-concentrating solar power resource areas to growing electric power load centers throughout the United States and to report on the results of a study on methods to reduce the amount of water consumed by concentrating solar power systems. Ex. A3. In other words, the focus of the executive orders is not limited to utility-scale solar projects, and the Energy Independence and Security Act does not limit its scope to a six-state study area.

Altogether, the purpose and need for a Solar Energy Program such as the one proposed is much narrower and limited than the executive orders and laws that the program is said to be fulfilling. As discussed in more detail below, the narrow focus on utility-scale solar projects in a six-state area unduly restricts the alternatives analysis.

B. The Project Description Is Inadequate

The project description is too vague. The goal of the project is not clearly articulated, which makes it difficult to articulate alternatives that would meet the goal but have a less significant environmental impact. For example, on page 2-28, the PEIS rejects the proposed alternative of limiting development to the fast-track applications because the "restriction would arbitrarily limit solar development on BLM-administered lands over the next 20 years." However, not setting forth a goal is even more arbitrary. Similarly, the PEIS rejects an analysis of development on the maximum amount of public lands allowable because of conflicts with potential uses of the land and long-term commitment of resources. But on page 1-13, the PEIS explains that its geographic scope for BLM includes all BLM-administered lands in the six-state study area. By failing to clearly articulate a goal, BLM has arbitrarily restricted the range of alternatives examined in the PEIS and thwarted informed decision-making.

Along the same lines, the project baseline is not properly described. Agencies are required to "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 CFR § 1502.15. The establishment of the baseline conditions of the affected environment is a practical requirement of the NEPA process. In *Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988), the Ninth Circuit stated that "without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA." The PEIS fails to provide enough information about the baseline and description of the environmental setting in order to adequately assess the impacts of the proposed action.

C. The PEIS Fails to Look at a Reasonable Range of Alternatives

NEPA requires that an EIS contain a discussion of the "alternatives to the proposed action." 42 U.S.C. §§ 4332(2)(C)(iii) & (E). The discussion of alternatives is at "the heart" of the NEPA process and is intended to provide a "clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14. An agency must look at all reasonable alternatives. *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233 (9th Cir. 2005).

Renewable Distributed Generation

The elimination of a distributed-generation alternative is unreasonable for a number of reasons. DOE is a lead agency in this action and the evaluation of distributed generation ("DG") falls within the scope of DOE's mission. In fact, DOE's purpose and need statement indicates that "DOE proposes to further integrate environmental considerations into its analysis and selection of solar projects that it will support." DOE cannot accomplish that goal by focusing only on a narrow subset of solar energy projects. Further, the PEIS states that "Western's purpose and need for participating in this PEIS is to identify potential transmission impacts and recommend mitigation measures for transmission lines associated with solar energy projects." DG (including renewable DG) offers benefits over utility-scale solar projects in terms of transmission. Rooftop and other localized placement of photovoltaics reduces transmission congestion because less electricity is being transmitted over the energy grid. Furthermore, more energy is captured because at least some portion of energy is lost (the amount depends on a variety of factors) when electricity is transmitted over long distances. *See* Exs. C77-C80. A broader look at both utility-scale solar and renewable DG is needed to provide the basis for informed decision-making about the environmental impacts of transmission. Therefore, this alternative should have been considered in the PEIS.

Although a DG alternative may be outside BLM's jurisdiction, the alternatives analysis is not limited to an agency's jurisdiction. *See* 40 C.F.R. § 1502.14©. Distributed rooftop photovoltaics ("PV") has a much less significant environmental impact than utility-scale concentrated solar. As recognized by the National Renewable Energy Lab, distributed PV has benefits such as low land use and no transmission. Ex. C1. The National Renewable Energy Lab has further recognized that DG sources such as rooftop PV and small wind turbines have substantial potential to provide electricity with little impact on land, air pollution, or CO_2 emissions. *Id.*

Without quantifying how much capacity DG has and without articulating the goals, the PEIS concludes that distributed solar cannot meet the goals. If the goal is 10,000 MW of electricity by 2015 as articulated under the Energy Policy Act of 2005, distributed solar can meet that goal. On page 193 of the California Energy Commission Integrated Energy Policy Report (December 2009), it states that a 2007 estimate from the Energy Commission suggests that there is roof space for over 60,000 MW of PV capacity. Ex. C2. *See also* Exs. C3 & C4. In other words, California alone has the capacity to meet the goals of providing well over 10,000 MW of electricity through distributed generation. Combined with the other five states, one would be hard-pressed to determine that DG, particularly DG focused on renewable energy (or even more narrowly, distributed PV), could fail to meet the goals with respect to capacity.

Section 5(a)(8) of Secretarial Order 3285A1 calls upon the Task Force on Energy and Climate Change to work with individual states, tribes, local governments, and other interested stakeholders to identify appropriate areas for generation and necessary transmission. Significant progress has been made in the six states comprising the study area to promote DG, including progress with the development of grid-monitoring technologies which are often touted as being an

impediment to the deployment of DG. Arizona requires utilities to satisfy a DG renewable-energy requirement. Ex. C5 (ARIZ. ADMIN. CODE §§ 14-2-1802-1805). Arizona also provides for tax incentives for using and installing solar energy and has implemented other measures. Exs. C6-C13. Colorado requires a certain amount of retail sales to be from solar DG. Exs. C26-27. Colorado requires utilities to allow net metering. Exs. C28-C30. Utah, New Mexico, and Nevada have similar programs that promote renewable DG and net metering. *See* Exs. C14-25 & C31-45. Finally, California has taken great strides in promoting renewable DG with Governor Schwarzenegger's Million Solar Roofs program and the legislation that followed. Exs. C52-C56. California has also gone a long way in not only implementing legislation, but actually getting a smart-grid system into operation. Exs. C59-C64 & C66. Altogether, a renewable DG alternative would encourage cooperation between states and the federal government to implement a comprehensive renewable-energy strategy.

Furthermore, the federal government has undergone a number of projects to promote distributed PV, demonstrating that a DG alternative is a reasonable alternative. For example, photovoltaics have been installed on rooftops of federal correctional facilities, military bases, and postal service buildings. Exs. C68-C70, C72-C76.

Altogether, an analysis of a DG alternative or an alternative that includes at least some DG component would allow for a meaningful review of the appropriate balance to strike between environmental impacts caused by land-intensive utility-scale generation and the electricity-generation capacity. Without an analysis of this alternative, the decision-makers cannot make an informed decision about what impacts are an acceptable cost for the benefit attained.

Conservation and Demand-Side Management

As with the rejection of a DG alternative, the elimination of a conservation and/or other demand-side management alternative is unreasonable for a number of reasons. Again, DOE is a lead agency in this action and the evaluation of conservation and/or demand-side management is not outside the scope of DOE's mission. The PEIS states that "Western's purpose and need for participating in this PEIS is to identify potential transmission impacts and recommend mitigation measures for transmission lines associated with solar energy projects." Conservation, demand response and other demand-side measures can reduce congestion on the grid. Conservation and other demand-side alternatives are needed to provide the basis for informed decision-making about the environmental impacts of increased transmission. Therefore, this alternative should have been considered in the PEIS.

Again, although a demand-side management alternative may be outside BLM's jurisdiction, the alternatives analysis is not limited to an agency's jurisdiction. *See* 40 C.F.R. § 1502.14©. The benefits of energy efficiency and demand response have landed these issues at the top of the California loading order. Ex. C81. There has been a significant amount of new research emerging on the demand side of energy management and a push both at the state and federal level for improving demand. *See* Exs. C81-C85.

Other Federal, State, or Private Land

The rejection of an alternative based on development of renewable energy on other federal land, state land, or private land is based on inaccurate information. Page 2-26 of the PEIS states that alternatives based on these suggestions do not meet "the objectives established for the BLM by the Energy Policy Act of 2005 and Secretarial Order 3285A1, both of which require BLM to facilitate renewable energy development on public lands." Neither the Energy Policy Act nor the Secretarial

Order mandates any action by BLM; the Energy Policy Act encourages the Secretary of the Interior to seek to have approved non-hydropower renewable energy located on public lands with a generation capacity of at least 10,000 megawatts of electricity, and the Secretarial Order requires the Task Force on Energy and Climate Change to identify and prioritize the specific locations in the United States best suited for large-scale production of solar, wind, geothermal, incremental or small hydroelectric power on existing structures, and biomass energy (e.g. renewable energy zones). In other words, the reason for rejecting this alternative is based on an inaccurate premise.

As shown in the preceding section, there are a number of examples of siting renewable-energy developments on federal, state, or private land. Exs. C68-C76. Looking at such an alternative is reasonable here.

Renewable Energy Zones

There is no alternative that looks at establishing renewable-energy zones rather than focusing exclusively on solar, either within the six-state study area or on all public lands in the United States. Secretarial Order 3285A1 requires the Task Force on Energy and Climate Change to identify and prioritize the specific locations in the United States best suited for large-scale production of solar, wind, geothermal, incremental or small hydroelectric power on existing structures, and biomass energy (*i.e.*, renewable-energy zones).

Looking at renewable-energy zones as an alternative to focusing exclusively on solar energy zones provides decision-makers with valuable insight as to the best way to prioritize land-use decisions. When BLM looked at the potential for renewable energy on public lands in 2003, there were places in the six-state study area that were determined to be appropriate for multiple types of renewable energy. Ex. C86. There are likely to be places within areas identified for solar energy zones that would also be effective, but where wind energy would also be feasible, have a less significant environmental impact, and/or be more compatible with alternative uses for the site (*e.g.*, agriculture or grazing). Exs. C86-C89.

Fast-Track Application Restriction

If the goal of the project is to comply with Executive Order 13212, then restricting development to the fast-track applications is a reasonable alternative. Executive Order 13212 aims to expedite energy-related projects, while maintaining safety, public health, and environmental protections. Focusing on the fast-track renewable energy projects (including solar, wind, and geothermal) would meet this goal. Similarly, the fast-track projects contribute to the goal of 10,000 megawatts of electricity generated from renewable energy projects located on public lands as set forth in the Energy Policy Act of 2005. *See* PEIS 2-28. Furthermore, when preparing a similar program for implementation of a wind energy development program on BLM-managed lands, BLM and DOE considered a similar alternative. Ex. C90.

10,000 Megawatts of Electricity by 2015 Alternative

If the goal of the project is to comply with the Energy Policy Act of 2005, a reasonable alternative is to look at the locations most appropriate to reach the 10,000 megawatts ("MW") of electricity goal from non-hydropower renewable energy on public lands. Congress is responsible for setting energy policies, and it has articulated a goal of siting 10,000 MW of electricity generated from renewable energy on public lands; it may have a different plan for furthering renewable energy in the future. Going beyond the policies in the Energy Policy Act of 2005 is overreaching and, in this case, furthering an energy policy that will be outdated due to new technology by the time that

it is implemented. Therefore, a reasonable alternative would be to look at siting projects that meet Congress's goal without presuming that Congress intended to use public land for additional renewable energy projects beyond that goal.

According to a BLM fact sheet, 3,572 MW of solar energy have been approved through fast-track applications, 437 MW of wind energy have been approved, and 1,300 MW of capacity from geothermal plants that are in use. Ex. C91. After consideration of the approved projects, approximately 5,000 MW of renewable energy is left to be approved on public lands by 2015 to reach the Energy Policy Act of 2005 goal. Within this goal, one approach would be for BLM to identify and prioritize specific locations with the land available to support 5,000 MW of renewable energy in the United States best suited for large-scale production of solar, wind, geothermal, and biomass energy on public lands in accordance with Secretarial Order 3285A1.

The assumption that the 10,000 MW of electricity by 2015 must be achieved entirely on BLM-controlled land in six states through solar energy, which underlies the rejection of the distributed generation alternative by BLM is false. Furthermore, over 5,000 MW of renewable energy have already been approved on public lands; distributed generation would not need to achieve 10,000 MW of electricity by 2015 to reach the 10,000-MW goal. Ex. C91.

Even if this alternative looked exclusively at BLM-administered land in the six-state study area and focused only on solar energy zones ("SEZ"), this alternative would be feasible. The proposed SEZs are estimated to generate somewhere between 60,212 to 108,381 MW of electricity depending on what technology is used on 677,357 acres of land. A 10,000 MW alternative would allow BLM to meet the 10,000 MW goal with a much less significant impact by streamlining review on a fraction of the land that is currently being considered under the PEIS.

This alternative avails itself to a number of potential sub-alternatives that look at prioritizing available land for renewable energy based on impacts. For example, under this alternative, it would be feasible to look at locations that are identified as being feasible for utility-scale solar development and are already within close proximity to transmission that has the capacity for the additional load, areas of already disturbed land, areas that have minimal cultural and biological impact, and areas where the impacts to water supply would be minimal, which is also a goal under the Energy Independence and Security Act of 2007.

D. The Alternatives Analysis Is Inadequate

NEPA requires that an EIS contain a discussion of the "alternatives to the proposed action." 42 U.S.C. §§ 4332(2)(C)(iii) & (E). Agencies must "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits." 40 C.F.R. § 1502.14(b). To begin, there is no clear indication of what the proposed action is. Thus, there are no alternatives *to* the proposed action, but instead to alternative actions and a no action alternative for BLM's part.

On page 6-48, BLM identifies the solar energy development program to be the preferred alternative. However, the analysis of this alternative is critically flawed because the geographic scope has not been clearly articulated. Among the considerations in Table 2.2-2, the areas for exclusion have yet to be thoroughly vetted. For example, the PEIS acknowledges that consultation with the U.S. Fish and Wildlife Service is ongoing and could result in the modification, refinement, or addition of exclusion areas. Although not acknowledged in Table 2.2-2, consultation has also not been completed for important cultural and archaeological resources and this consultation process could also result in the modification, refinement, or addition of exclusion areas. In fact, page 2-10

of the PEIS acknowledges that identification of areas of tribal concern is underway as part of the ongoing tribal consultation process. In other words, the consultation process is not complete. Furthermore, most, if not all, of the SEZs (the narrower category of sites analyzed in the PEIS) will impact Native American tribes, yet are being analyzed. The PEIS also acknowledges that some exclusion areas could not be mapped due to lack of data that would be identified at a later date through pre-application consultations. In the end, the public and decision-maker are left without a clear understanding of what areas are being considered under the solar energy development program and which areas will be excluded.

Additionally, there is no meaningful comparison between the no-action, solar energy development program alternative, and the SEZ program alternative. While thousands of pages are devoted to looking at the SEZs, minimal attention is given to the no-action alternative and solar energy development program. For example, the PEIS does not quantify how many acres of wetlands would be impacted under the no-action alternative versus the SEZ alternative, how much lands of Native American significance would be impacted by comparison under the alternatives, or how much grazing land would be lost under each of the alternatives. Instead, the PEIS simply states that the alternatives have the same impacts except for the geographic area of impact, which, as explained above, is not clearly articulated in the PEIS for the solar energy development program.

E. The PEIS Fails to Adequately Analyze Direct and Indirect Impacts

NEPA requires agencies to take a "hard look" at the effects of proposed actions; a cursory review of environmental impacts will not stand. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146 (9th Cir. 1998). NEPA requires an agency to do the necessary work to obtain sufficient information. *National Parks & Conservation Ass'n v. Babbitt,* 241 F.3d 722 (9th Cir. 2001). Even for a programmatic environmental document, BLM and DOE have failed to take a hard look at a number of impacts.

In addition, the PEIS is required to look at cumulative impacts. A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. . . ." 40 C.F.R. § 1508.07. NEPA requires that the cumulative impacts analysis provide "some quantified or detailed information," because "[w]ithout such information, neither courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide." *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372 (9th Cir. 1988).

California Desert Conservation Area

All four SEZs in California are within the California Desert Conservation Area ("CDCA"). As part of the Federal Land Policy and Management Act, Congress designated approximately 25 million acres of southern California as the CDCA. 43 U.S.C. § 1781. Congress found that "the California desert contains historical, scenic, archeological, environmental, biological, cultural, scientific, educational, recreational, and economic resources that are uniquely located adjacent to an area of large population." 43 U.S.C. § 1781(a)(1). Congress has recognized that "the California desert environment is a total ecosystem that is extremely fragile, easily scarred, and slowly healed." 43 U.S.C. § 1781(a)(2). As a special area, Congress required that a "comprehensive, long-range plan for the management, use, development and protection of the public lands within the California Desert Conservation Area" be prepared. *Id*. at § 1781(d). For the CDCA and other public lands, Congress mandated that the BLM "shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands." 43 U.S.C § 1732(b).

There are four classes of land in the CDCA: Class C, Class L, Class M, and Class I. Class L (Limited Use) denotes a protection of sensitive, natural, scenic, ecological, and cultural resource values and its lands are to be managed to provide for generally lower-intensity uses, carefully controlled multiple uses of resources, while making sure that sensitive values are not significantly diminished. Class M (Moderate Use) lands are designated to promote more of a balance between higher intensity of uses and protection of public uses, including energy development. Class I (Intensive Use) lands are intended for concentrated use of lands and resources. The SEZs are comprised mostly of Class L and Class M lands under the CDCA, with only a small fraction using Class I lands. While renewable-energy projects are permitted on Class L lands, the type of concentrated, utility-scale projects examined under the PEIS are best suited for Class I lands and potentially some Class M lands. The intensity of development is not appropriate for Class L lands. Even for Class M lands, the intent is to allow for multiple uses of the land. The PEIS acknowledges that the SEZs require the exclusive use of the land for the utility-scale solar development. While wind farms, for example, could be used in conjunction with grazing or other agricultural uses, the technology examined in the PEIS does not allow for multiple uses of land.

Furthermore, the PEIS does not disclose how many CDCA plan amendments will be required and does not address the cumulative impacts within the CDCA plan. The cumulative impacts analysis looks at an arbitrary geographic distance without considering the impacts based on resources. Particularly with a plan like the CDCA, it is important to see how resources are being balanced within the entirety of the plan.

Wildlife: Desert Tortoise

The PEIS fails to take a hard look at the potential for impacts to the desert tortoise. While the PEIS acknowledges that there will be impacts to the desert tortoise, there is no comprehensive analysis of the proposed action's impact on the desert tortoise. The desert tortoise is susceptible to impacts due to fragmentation of habitat. Ex. E2. Furthermore, relocation can have serious consequences that need to be considered when examining programs and policies for large projects such as the ones proposed here. Exs. E3-E7.

Additionally, the construction of utility-scale solar facilities is harmful to the desert tortoise. The BLM recently ordered the Ivanpah Project to cease construction activities because at least two tortoises were killed during those activities.

Native American Resources

The PEIS defers analysis of Native American concerns until project-specific consultation is conducted. However, the PEIS provides an opportunity to look at appropriate siting of solar energy facilities in relation to cultural sites. As the PEIS acknowledges on page 8.1-15, for example, Native American tribes encourage looking at landscapes and resources as a whole. Waiting for project-specific consultations further exacerbates the piecemeal problem.

The impacts to wildlife should be considered in the context of Native American importance. For example, the desert tortoise holds special significance to Native Americans. Ex. E8.

The cumulative impact analysis discounts impacts to cultural resources and Native American Tribes. For many Native American sacred sites, the importance derives not only from the sites themselves but also from how they relate to one another. Ex. E9. Furthermore, there are a number of sacred trails that traverse the boundaries of the various SEZs that should be examined. Exs. E10-E11. Looking at the SEZs in isolation unduly minimizes the impacts.

Water Supply

Water supply is an important consideration in utility-scale solar development. In fact, Congress required a study on methods to reduce the amount of water consumed by concentrating solar power systems. Ex. A3. Notably, Chapter 5 of the PEIS is silent on the Colorado River. The Colorado River has been under an enormous amount of pressure and is anticipated to be under even more pressure in the future due to climate-change impacts. Exs. E13-E18.

Fire Hazards

The technology contemplated for utility-scale solar energy development poses a high fire risk, as indicated on page 5-15 of the PEIS. Parabolic-trough and power-tower facilities present fire risks as a result of extremely hot heat-transfer fluids, and solar dish engine facilities present unique fire risks because of their use of highly flammable hydrogen gas. Given such a high risk, more attention should have been given to fire hazards and the ability to prevent fires at the various locations.

F. The PEIS Fails to Identify Appropriate Mitigation

"Implicit in NEPA's demand that an agency prepare a detailed statement on 'any adverse environmental effects which cannot be avoided should the proposal be implemented,' 42 U.S.C. § 4332(C)(ii), is an understanding that an EIS will discuss the extent to which adverse effects can be avoided." *Robertson v. Methow Valley Citizens*, 490 U.S. 332 (1989). NEPA requires that an EIS discuss mitigation measures with "sufficient detail to ensure that environmental consequences have been fairly evaluated." *Id*. A mitigation discussion must have at least some evaluation of the effectiveness of the mitigation. *South Fork Band Council of Western Shoshone v. Department of the Interior*, 588 F.3d 718 (9th Cir. 2009).

The PEIS fails to evaluate the effectiveness of the mitigation or even provide enough information about the proposed mitigation to gauge effectiveness. While potential mitigation measures are listed, there is no analysis about the effectiveness of the measures in the PEIS. Many of the proposed mitigation measures do not include any objective. A number of plans are suggested, such as the preparation of a Fire Management and Protection Plan and a Nuisance Animal and Pest Control Plan, without any further detail about what these plans should be comprised of or what the plans should accomplish. Furthermore, there is inadequate information about what each of the mitigation measures entails. Very few of the mitigation measures refer to any evidentiary support for why they are being proposed.

There is no criteria for when the "potentially applicable mitigation measures" will be implemented, if at all. BLM's objective for the PEIS is to evaluate a proposed program to further support utility-scale solar energy development on BLM-administered land. PEIS, p. 1-7. The Solar Energy Program is intended to establish mitigation requirements for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy. PEIS, p. 1-8. By including only "potentially applicable mitigation measures," this goal is not being achieved.

The proposed potential mitigation measures are unenforceable. For example, Section 5.3.3 states that solar facilities "should be located and designed to minimize impacts on specifically designated areas and lands with wilderness characteristics," "[p]rotection of existing values of specially designated areas and land with wilderness characteristics should be evaluated during the environmental analysis of solar energy project applications," and lands that have not been recently inventoried for wildness characteristics "should be inventoried for wilderness characteristics prior

to solar development action being approved within these areas." This pattern of indicating what "should" be done at future stages repeats itself throughout the PEIS. *See* Sections 5.2.3, 5.4.2, 5.4.3, 5.5.3, 5.6.3, 5.7.4, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3, 5.16.3, 5.17.3, 5.18.3, 5.19.3, 5.20.3 and 5.21.4. This type of "mitigation" is neither enforceable nor effective. Recommendations are not the same as legally enforceable, binding mitigation measures.

Because this letter is being submitted electronically, my office has mailed you a DVD containing copies of the exhibits cited above; if you do not receive the DVD within a few days, please do not hesitate to let me know. An index of the forthcoming exhibits accompanies this letter.

Thank you for your consideration of my client's comments.

Sincerely,

BRIGGS LAW CORPORATION

Cory J. Briggs

INDEX OF EXHIBITS

Exhibit	Description	DATE
A. Purpose and Need		
A1	Executive Order 13212	May 22, 2001
A2	Energy Policy Act of 2005	2005
A3	Energy Independence and Security Act of 2007	2007
A4	Executive Order 13514	October 8 2009
A5	Department of the Interior Secretarial Order 3285A1	February 22, 2010
C. Range Alternatives		
Distributed Generation		
C1	Solar Power and the Electric Grid	Unknown
C2	California Energy Commission, 2009 Integrated Energy Policy Report, Final Commission Report	December 2009
C3	California Rooftop Photovoltaic Resource Assessment and Growth Potential by County	September 2007
C4	Los Angeles Rooftop Solar Atlas	2011
C5	Arizona Admin Code § R14-2	
C6	Arizona Rev. Stat. § 43-1090	
C7	Arizona Rev. Stat. § 41-1510	
C8	Arizona Rev. Stat. § 41-1510.01	
C9	Arizona Rev. Stat. § 43-1083	
C10	Arizona Rev. Stat. § 43-1085	
C11	Arizona Rev. Stat. § 43-1164	
C12	In the Matter of Interconnection of Distributed Generation Facilities in the Generic Investigation of Distributed Generation	
C13	Executive Order 2010-15	
C14	Utah Admin. Code § R746-312	
C15	Utah Code Ann. § 10-19-201	

C16	Utah Code Ann. § 54-15-101	
C17	Utah Code Ann. § 54-15-102	
C18	Utah Code Ann. § 54-15-103	
C19	Utah Code Ann. § 54-15-104	
C20	Utah Code Ann. § 54-15-105	
C21	Utah Code Ann. § 54-15-106	
C22	Utah Code Ann. § 54-15-107	
C23	Utah Code Ann. § 54-15-108	
C24	Utah Code Ann. § 54-17-602	
C25	H.B. 145: Renewable Energy Financing Provision	
C26	4 Colo. Code Regs. § 723-3	
C27	Colo. Rev. Stat § 40-2-124	
C28	Colo. Rev. Stat § 40-9.5-118	
C29	House Bill 1001: Concerning Incentives for the Installation of New Distributed Renewable Energy Generation Facilities in Colorado	
C30	Senate Bill 09-051: Concerning Measures to Facilitate the Financing of Energy-Efficient Structures	
C31	N.M. Admin. Code § 17.9.572	
C32	N.M. Stat. Ann. § 7-36-21.2	
C33	N.M. Stat. Ann. § 62-16-1	
C34	N.M. Stat. Ann. § 62-16-2	
C35	N.M. Stat. Ann. § 62-16-3	
C36	N.M. Stat. Ann. § 62-16-4	
C37	N.M. Stat. Ann. § 62-16-5	
C38	N.M. Stat. Ann. § 62-16-6	
C39	N.M. Stat. Ann. § 62-16-7	
C40	N.M. Stat. Ann. § 62-16-8	

C41	N.M. Stat. Ann. § 62-16-9	
C42	N.M. Stat. Ann. § 62-16-10	
C43	New Mexico Clean Energy Incentives	
C44	NRS-701	
C45	NRS-704	
C46	Cal. Pub. Res. Code § 25740	
C47	Cal. Pub. Res. Code § 25780-25784	
C48	Cal. Pub. Util. Code § 399.15	
C49	Cal. Pub. Util. Code § 2581	
C50	Cal. Pub. Util. Code § 2827-2830	
C51	Cal. Rev. and Tax Code § 73	
C52	Senate Bill No. 1: An Act to Add Sections 25405.5 and 25405.6 to, and to Add Chapter 8.8 to Division 15 of, the Public Resources Code, and to Amend Section 2827 of, and to Add Sections 387.5 and 2851 to, the Public Utilities Code, Relating to Solar Electricity	
C53	Executive Order S-14-08	
C54	Executive Order S-21-09	
C55	Governor Signs Legislation to Complete Million Solar Roofs Plan	August 21, 2006
C56	About the California Solar Initiative	
C57	Electricity and Natural Gas Regulation in California	
C58	California Solar Initiative Success and Request for Comment on Budget Issues	July 2010
C59	San Diego Smart Grid Study Final Report	October 2006
C60	About Edison SmartConnect	
C61	Edison SmartConnect Installation Schedule	
C62	Smart Meter Installation Schedule	
C63	Full Installation Schedule	

C64	Senate Bill 17: An Act to Add Chapter 4 to Division 4.1 of the Public Utilities Code, Relating to Electricity	
C65	“CPUC Reports on Success of California’s Solar Program”	June 30, 2009
C66	“Freeing the Grid, Best Practices in State Net Metering Policies and Interconnection Procedures”	December 2010
C67	“Solar Salt Lake Project Receives Top Score from Peer Review Session of the U.S. Department of Energy Solar Technologies Program”	February 3, 2011
C68	Federal Energy Management Program, Federal Correctional Institution-Phoenix, Arizona	April 8, 2011
C69	“Navy Region Southwest Saves Energy, Money with Solar Project”	April 30, 2009
C70	Superior Solar Systems, LLC Completes 79-Kilowatt Solar Electric Installation for NASA	April 8, 2011
C71	Nellis Air Force Base Builds Largest Solar Photovoltaic Power Plant in North America with SunPower	
C72	VanGuard Energy Partners LLC-Fairton Federal Correctional Institution	April 8, 2011
C73	United States Navy, Pearl Harbor-Case Study	
C74	“U.S. Navy’s Solar Power Push”	November 22, 2010
C75	“Solar Panels for Federal Building Awaiting Final Ok”	March 18, 2011
C76	The United States Postal Service Generates Clean Energy with 4 SunPower Systems-Case Study	
C77	Energy Efficiency in the Power Grid	
C78	“Optimization of Distributed Generation Capacity for Line Loss Reduction and Voltage Profile Improvement Using PSO”	2008
C79	“Quantitative Assessment of Distributed Generation Benefits to Improve Power System Indices”	

C80	FERC, “The Potential Benefits of Distributed Generation and Rate-Related Issues that May Impede Their Expansion”	February 2007
Demand Response		
C81	“Implementing California’s Loading Order for Electricity Resources”	July 2005
C82	“Impact Assessment of Plug-In Hybrid Vehicles on Electric Utilities and U.S. Power Grids; Part 1: Technical Analysis”	
C83	FERC’s Solicitation of Comments on the Frequency Response Report: An Opportunity for Energy Storage?	February 7, 2011
C84	Energy Law Journal, “Recognizing the Importance of Demand Response: The Second Half of the Wholesale Market Equation”	2007
C85	FERC Final Rule 18 CFR Part 35	March 15, 2011
Renewable Energy Zones		
C86	Farming the Wind: Wind Power and Agriculture	April 11, 2011
C87	Assessing the Potential for Renewable Energy on Public Lands	February 2003
C88	Solar Energy: Better Than Fossil Fuels, Worse than Anything Else	April 11, 2011
C89	Distributed Energy Resources Guide: Wind Turbines-Strengths and Weaknesses	January 18, 2002
Fast Track		
C90	Record of Decision, Implementation of a Wind	
10000 MW Alternative		
C91	BLM Fact Sheet-Renewable Energy and the BLM	December 2010
E. Impacts		
CDCA		
E1	Solar Energy Project-California Desert District, Bureau of Land Management California	January 21, 2011
Tortoise		

E2	Commutative Impacts on Large-Scale Renewable Energy Development in the West Mojave	May 8, 2009
E3	“SoCal Solar Project Could Displace 140 Tortoises”	March 31, 2011
E4	“Concerns as Solar Installations Join a Desert Ecosystem”	November 16, 2010
E5	“Army Suspends Fort Irwin Tortoise Relocation Plans After Deaths of 90 Animals”	October 9, 2008
E6	“Fast-Tracked Solar Project Could Speed Mojave Desert’s Demise”	November 12, 2009
E7	“Desert: BLM Gets an Earful About the Ivanpah Valley”	April 1, 2011
Native American Resources		
E8	The Desert Tortoise and Early Peoples of the Western Deserts	March 1996
E9	The Ivanpah Generating Station Project Ethnographic (Native American) Resources	September 1981
E10	The Salt Song Trail Map: The Sacred Landscape of the Nuwuvi Peopke	
E11	“Run to Save the Geoglyphs from Giant Solar Project”	October 30, 2010
Water		
E12	“Park Service Warns of Solar Projects’ Impacts to Mojave Desert”	April 23, 2009
E13	“Western Reservoirs Could be Dry by 2050"	July 20, 2009
E14	Future of Western Water Supply Threatened by Climate Change	
E15	The Colorado River’s Uncertain Future	
E16	Managing the Uncertainties on the Colorado River System	
E17	Scripps News: Climate Change Means Shortfalls in Colorado River	

E18	Sustainable Water Deliveries from the Colorado River in a Changing Climate	

Thank you for your comment, anthony madrigal.

The comment tracking number that has been assigned to your comment is SolarD11897.

Comment Date: May 3, 2011 01:48:11AM
Solar Energy Development PEIS
Comment ID: SolarD11897

First Name: anthony
Middle Initial:
Last Name: madrigal
Organization: San Manuel Band of Mission Indians
Address: 26569 Community Center D
Address 2:
Address 3:
City: Highland
State: CA
Zip: 92346
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: scan0001_SMBMIcommentsSolar-PEIS.pdf

Comment Submitted:

May 2, 2011

U.S. Bureau of Land Management

Re: Comments of San Manuel Band of Mission Indians on Solar-PEIS

Dear Gentlepersons:

By way of background, the San Manuel Band of Mission Indians, a Serrano people, maintains close ties to its traditional lands located in the Mohave Desert of California. Areas in the California desert surveyed for the Solar-PEIS are significant in that they are an important part of the Serrano ancestral homeland. These include but are not necessarily limited to areas where there are numerous significant cultural resources including Traditional Cultural Properties, village sites, gathering areas, ceremonial areas, rock art landscapes, pre-historic quarries, Mojave River habitation landscapes, desert dry lake habitation sites, Mojave trail, Bradshaw trial Serrano traditional trials, and other pre-historic trails.

In fashioning a Programmatic EIS, the BLM, DOI, DOD and other agencies should look to the experience of the so called "fast track" large solar projects in the California desert. These are largely on BLM lands and have not allowed adequate time for deliberate and meaningful consultation with Tribes. These fast track projects were originally sited without the benefit of any input from Native American tribes or the environmental community. These projects overwhelmed tribes as consultation was not initiated early enough and tribes had limited or no opportunity to recommend alternative footprints, nor were Tribes afforded sufficient time or resources to gather or develop sufficient information regarding their sacred places and landscapes at an early time in the project. The volume of projects and timeframe outstripped resources so that Tribes could often not meaningfully comment in the section NHPA 106 process and NEPA process. As a result tribal opportunity to advocate for real alternatives for avoidance, protection and preservation was limited and many sites and landscapes are being impacted and destroyed. The Interior Department and BLM must make a commitment to improving the current process. The P- EIS should address this by mandating early regular consultation and require assembly and provision of all relevant cultural information to Tribes.

The Genesis project in the California desert provides a specific example of the need for better planning and assessment for solar projects. The Genesis project 30 miles east of Blythe, near the Ford Dry Lake and within 9 miles of the extensive rock art site at McCoy springs, contains numerous sites recorded in the surrounding area of the project and approximately 30 archaeological sites have been identified in the project and transmission line APE. These will be impacted and some will be destroyed. Only after project approval, is Lowell Bean authorized to undertake an ethnographic study of the area as part of the HPTP mitigation for the project. Lowell Bean has prepared a preliminary report of the Chuckwalla Valley which includes area of Genesis as well as the other projects sited therein. He has talked to Native informants and has identified the critical need to continue to access more detailed information in regard to Native people's knowledge about their cultural landscape and Native utilization of landscape resources including plants and animals. Bean's information demonstrates that the area contains Native

26569 Community Center Drive • Highland, CA 92346 • Office: (909) 864-8933 • FAX: (909) 864-3370
P.O. Box 266 • Patton, CA 92369

sacred places that should have been considered in the review process and were not. Serrano, Chemehuevi, Mohave, Maricopa, Cahuilla and Quechan peoples all have knowledge of places of ceremonial significance and of places and trails in the area described in their songs, stories. Native Americans continue traditional religious practice in funerary rites, in traditional songs where participants re-visualize places that are mentioned in a creation of the sacred past. Some of these sacred places are mountains, stands of plants that people in the sacred past harvest with due ritual and some are habitats of animals and some are places that may be marked by petroglyphs or rock features. Some respondents in Bean's report indicate they still make journeys to the area to seek religious power. The report indicates that Native people have current use of desert area for hunting, gathering, trail running. The Bean report strongly recommends archival research and interviews with Chemehuevi, Mohave and Quechan informants to further develop information on these areas. This work should have been done at an early stage of the project, when Tribes could utilize it to make recommendations for protection and preservation.

It is critical that funding for this kind of ethnographic work take place when required and that resources for this critical work at early stages of future projects be made a requirement by BLM and the Department of Interior. The Solar-PEIS should require this in all individual projects where there is the requirement of further development of ethnographic landscape.

There are numerous other areas in the desert near ancient shoreline where people would have temporary camps and in an area utilized as a travel corridor to access resources and undertake trade and there is the likely hood of additional discoveries of cultural items during ground disturbing activities. There are numerous areas where Native American people practiced ceremony and gathered medicinal plants. There are numerous areas that relate to sacred events taking place in story and song.

Specifically the San Manuel Band of Mission opposes the location of SEZs in the Pisgah and Iron Mountain areas which are within Serrano traditional lands. There will be adverse impact to significant cultural resources. As indicated in S-PEIS, direct impacts on significant cultural resources could occur in the proposed Pisgah SEZ; however, as stated in Section 9.3.17.1, further investigation is needed in a number of areas. A cultural resource survey of the entire area of potential effect (APE) of a proposed project would first need to be conducted to identify archaeological sites, historic structures and features, and traditional cultural properties, and an evaluation would need to follow to determine whether any are eligible for listing in the NRHP. Numerous sites, both prehistoric and historic, have been identified within the SEZs. All the possible impacts from solar energy development on cultural resources that are encountered within the SEZ or along related ROWs, are not known at this point. Location of these SEZs at this time is premature.

The San Manuel Band of Mission Indians also opposes the location of the Iron Mountain SEZ for the above reasons.

In general the San Manuel Band of Mission Indians prefers that solar development be limited only to discrete areas such as in a SEZ. Since each solar project will be extensive, SEZs should be located where feasible on already disturbed land.

In the development of this Solar-PEIS the lead federal agency, the BLM and DOD have failed to engage in meaningful government to government consultation with the affected Tribes on the issues described above. The unique government to government relationship with Tribes requires federal agencies to obtain meaningful and timely input from tribes on matters that significantly or uniquely affect tribal communities. Executive Order #13084, May 14, 1998 Consultation and Coordination with Indian Tribal Government, acknowledges unique government to government relationship with tribes and that the burden is on the federal government not tribes to obtain meaningful and timely input from tribes on matters that significantly or uniquely affect tribal communities. Per Executive Order 12875 the federal government must consult with Indian Tribal governments on matters that significantly or uniquely affect tribal government and per executive memorandum April 29, 1994 the federal government must consult with federally recognized tribal governments prior to taking actions that affect them. Per Executive Order 13175 of November 6, 2000, executive departments and agencies (agencies) are charged with engaging in regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, and are responsible for strengthening the government-to-government relationship between the United States and Indian tribes.

The San Manuel Band of Mission Indians requests that BLM engage in the mandated consultation with the Tribe.In light of the failure of BLM to engage in meaningful consultation t he San Manuel Band of Mission Indians requests an extension of time to offer comments on the Solar PEIS.

Respectfully submitted,

Anthony Madrigal
Director Cultural Resources San Manuel Band of Mission Indians

Thank you for your comment, Colin Safranek.

The comment tracking number that has been assigned to your comment is SolarD11898.

Comment Date: May 3, 2011 01:49:50AM
Solar Energy Development PEIS
Comment ID: SolarD11898

First Name: Colin
Middle Initial: M
Last Name: Safranek
Organization:
Address:
Address 2:
Address 3:
City:
State: [Withheld by requestor]
Zip: [Withheld by requestor]
Country: [Withheld by requestor]
Privacy Preference: Withhold address from public record
Attachment:

Comment Submitted:

The big solar projects make no sense. By the time the projects are completed, the technology used will be out of date and not competitive. The large solar farms proposed are too far away from the metropolitan areas they are intended to serve, rendering them inefficient due to the required long-distance transport of the energy generated. The fact that we, the tax payers, are in large part subsidizing these inefficient projects is infuriating. The companies winning the bids and breaking ground will destroy enormous acreages of wild desert land, home to hundreds of unique (and some endangered) flora/fauna species, marring the desolately beautiful landscape of the Southwest. Their enterprise will fail ultimately, due to design flaws, but they will make a quick and undeserved profit, simply because they pretended to be a "green" energy alternative. There are far better and more efficient ways of generating electricity for our growing, energy consuming populations. We do not need to destroy the beautiful, ever more rare, open spaces of our country.

- Colin Safranek

Thank you for your comment, Melanie Anderson.

The comment tracking number that has been assigned to your comment is SolarD11899.

Comment Date: May 3, 2011 01:49:54AM
Solar Energy Development PEIS
Comment ID: SolarD11899

First Name: Melanie
Middle Initial:
Last Name: Anderson
Organization:
Address:
Address 2:
Address 3:
City:
State: CA
Zip: 95064
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment:

Comment Submitted:

(Supposedly) Save the turtles, kill the tortoises. This is condemning an endangered species to an unacceptable fate. Centralized solar is not the answer, especially during a period where technology is constantly improving in the alternative energy field. Or, if this is a necessity, change the location! Choose an abandoned army base, or a Superfund site; not a place where an important species--among a habitat of unbelievably rich biodiversity--is being put at risk.

Thank you for your comment, Anne Alexander.

The comment tracking number that has been assigned to your comment is SolarD11901.

Comment Date: May 3, 2011 02:06:05AM
Solar Energy Development PEIS
Comment ID: SolarD11901

First Name: Anne
Middle Initial:
Last Name: Alexander
Organization: Katten Muchin Rosenman LLP
Address: 2029 Century Park East
Address 2: Suite 2600
Address 3:
City: Los Angeles
State: CA
Zip: 90067
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: BNSF Comments to Draft Solar PEIS Part 1.pdf

Comment Submitted:

Name
Title

BNSF Railway Company
P.O. Box 961073
Fort Worth, Texas 76161-0073
2500 Lou Menk Drive
Fort Worth, Texas 76131-2828

May 2, 2011

Solar Energy Draft PEIS
Argonne National Laboratory
9700 S. Cass Avenue – EVS/240
Argonne, Illinois 60439

Re: Comments on Draft PEIS

The following comments are submitted on behalf of BNSF Railway Company ("BNSF"). BNSF appreciates the opportunity to comment on the Draft PEIS.

1. Overview

BNSF is one of two Class 1 railroads operating in the Southwestern United States. BNSF appreciates the opportunity, as a part of the Bureau of Land Management ("BLM") and Department of Energy's ("DOE)" review process relating to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (the Draft "PEIS"), to provide comments to develop an agency-specific program to facilitate responsible utility-scale solar energy development in western states.

BNSF provides long-haul freight service throughout the U.S. over a 32,000-mile route. Its double-track transcontinental mainline, traversed by as many as 80 trains per day, carries interstate commerce from the Ports of Los Angeles and Long Beach to U.S. Midwestern, Southwestern and Eastern markets. The BNSF mainline is adjacent to BLM lands in California, Arizona and New Mexico which are proposed to be made available for application for solar development under the Preferred Solar Energy Development Program Alternative ("Preferred Alternative") evaluated in the Draft PEIS. In addition, the BNSF mainline is situated within or in close proximity to a number of Solar Energy Zones ("SEZ") being evaluated in the SEZ Alternative of the Draft PEIS. [1]

BNSF disagrees with the summary conclusion that "utility scale solar energy projects are expected to have an insignificant impact on railroad operations." [PEIS at 5-253.] In addition to

[1] The BNSF mainline runs directly through the center of the Pisgah SEZ. [PEIS at 9.3-1.] The BNSF mainline connects to the ARZC railroad through an interchange with the ARZC railroad, which is within the Iron Mountain SEZ [PEIS at 9.2-299] and Riverside East SEZ [PEIS at 9.4-365]. The BNSF mainline (as well as the Union Pacific mainline) run within 1-5 miles of the border of the Afton SEZ. [PEIS at 12.1-1; Figure 12.1.1.1-1.]

an "increased risk of collision between a train and a vehicle ... most notably from drivers trying to beat a train because of frustration with site-related traffic congestion," [PEIS at 5-254.] there are other significant impacts to rail operations which have been testified to in the siting of a utility-scale solar energy project, the Calico Solar Project, in San Bernardino, California.

These impacts include glare and glint impacts from solar technology which would have adverse impacts, including health impacts, on rail employees, agents or contractors, and operations, including a train crew's ability to accurately see and respond to signals. Associated glint and glare from solar technologies could interfere with the ability of train crews to obtain and maintain this visual contact. If visual contact is broken, under GCOR Section 9.4 the engineer must immediately stop the train. This often requires an emergency application of the brakes, risking derailment of the train, collision with another train, and other catastrophic events. When a train has been stopped through emergency application of the brakes, GCOR Section 6.23 requires the engineer to inspect all cars, units, equipment and track pursuant to BNSF special instructions and rules. This can cause significant delays to rail operations with ramifications reaching from the Ports of Los Angeles and Long Beach to Chicago and beyond. Thus, glint and glare are critical safety and operational issues. We attach as ***Exhibit A*** the prepared direct testimony of Joseph Schnell, a BNSF employee, ***Exhibit B*** the prepared direct testimony of Dennis Skeels, a BNSF employee, and ***Exhibit C*** the prepared direct testimony of Dr. David Krauss and Dr. Genevieve Heckman, experts in the field of neuroscience, all of whom provided testimony regarding the Calico Solar facility's potential impact on BNSF rail operations from glare and glint. Dr. Krauss identified the need for a site-specific glare and glint study to identify site-specific mitigation measures on the footprint of the solar project. Given the discussion in Chapter 5 with respect to the reflective surfaces of all solar technology, absent the site-specific modeling described below, BNSF requests BLM and DOE require a buffer zone of two miles on both sides of all rail lines and explicitly provide that no exception to the buffer be granted without the modeling having confirmed that no adverse impacts, including health impacts, to rail employees, operations, and right of way would result, and that any mitigation measures be imposed on the footprint of the proposed project.

In addition to the glare and glint impacts from the solar technology, placement of a transmission line in the vicinity of a rail line may result in interference with signals, equipment malfunction, and rail employees being shocked, even fatally. See ***Exhibit A*** and ***Exhibit B***, prepared direct testimony of Joseph Schnell and Dennis Skeels in the Calico Solar proceeding. Mitigation measures for adverse induction impacts include requiring transmission lines to be set back 300 feet from the edge of the railroad right-of-way and requiring any crossing of the transmission line over the rail line to be at a 90-degree angle. These impacts should be discussed in at least sections 5.13.1.5 on page 5-208 and 5.19.1.1 Transportation Siting on page 5-253.

The impacts from stormwater runoff and sediment transport can have significant adverse impacts on nearby rail rights-of-way. BNSF concurs with the discussion in the PEIS on pages 5-19 through 5-26 regarding utility-scale solar projects' potential impacts on the Geologic Setting and Soil Resources. We attach as ***Exhibits D*** and ***E***, respectively, the prepared direct testimony of Thomas Schmidt and David Miller, BNSF employees, and as ***Exhibits F*** and ***G***, respectively, the prepared direct testimony of Steve Metro and Doug Hamilton, experts in the field of hydrology, all of whom testified to the significant stormwater runoff and sediment transport impacts onto,

across and off the Calico Solar Project onto the BNSF right-of-way absent the installation of proper mitigation measures. It is imperative that the proper studies be performed to evaluate potential adverse impacts and to identify appropriate project elements or mitigation measures to address those impacts. In some instances geologic factors should be used to exclude portions of BLM and private lands from solar development. In all cases, these site-specific studies need to be prepared early enough in the application process to inform responsible and commenting agencies, stakeholders and interested parties prior to the performance of environmental reviews and the submission of comments.

BNSF concurs with the PEIS's conclusions in 5.7.1.4 regarding the range of impacts involved in the decommissioning/reclamation of a utility-scale solar facility and requests BLM and DOE to require a thorough analysis of each of the elements of decommissioning and reclamation and their associated costs. Once the true cost is established, BLM and DOE should create a financial mechanism by which the availability of decommissioning/reclamation funds can be ensured throughout the life of the project. Otherwise, adjacent landowners such as the railroad may be severely adversely impacted by ill-maintained or abandoned utility-scaled facilities the size of small cities.

Water usage and depletion of groundwater by solar facilities can result in the undermining of rail infrastructure. The effects of subsidence can cause a need for increased maintenance and increase derailments. See ***Exhibit D***, prepared direct testimony of Thomas Schmidt in the Calico Solar proceeding.

A major area of concern for the railroads, as will be more fully discussed below, is ensuring that the project proponent provide access to all portions of its facility using existing public crossings of any nearby rail lines. There is an ongoing effort by railroads, in conformance with federal and state policies, to eliminate private crossings thereby reducing their related hazards and risks. The PEIS and subsequent site-specific environmental analyses should incorporate this requirement into their analysis of transportation impacts.

Given the critical importance of rail infrastructure to the movement of goods, emergency access to all rail right-of-way needs to be preserved in the granting of any right-of-way for a solar development project. We attach as ***Exhibit H*** the prepared direct testimony of Edward Phillips, a BNSF employee, who testified to the need for emergency access to the rail line in the Calico Solar proceeding.

Clearly there are further analyses that need to be performed, with respect to the impact of utility-scale solar energy facilities, on rail operations than have currently been performed in the PEIS. We request BLM and DOE to address these concerns prior to the preparation of the FEIS.

2. Comments on Cooperating Agencies

The PEIS identifies a list of cooperating agencies for the preparation of the PEIS. [PEIS at1-19-20.] BNSF requests that BLM and DOE also consult with the Federal Railroad Administration (FRA) as to those aspects of the proposed actions and alternatives which could impact rail employees and operations under the Preferred Alternative or SEZ Alternative. In addition,

BNSF requests the list of laws, ordinances, regulations and standards (LORS) applicable to the proposed Solar Development Program Alternative and SEZ Alternative set forth in Appendix H be augmented with a Table H-16 to include applicable LORS relating to rail, including the Supremacy Clause, U.S.C.A. Const. Art. VI, cl. 2, the Commerce Clause, U.S.C.A. Const. Art. 1, §8, cl. 2, the Federal Railroad Safety Act of 1970, 49 U.S.C. §§20101-20144; 21301-21304 ("FRSA"); the Rail Safety Improvement Act of 2008, Public Law 110-432 ("RSIA"); the Interstate Commerce Commission Termination Act of 1995, 49 U.S.C. §§10101, et seq. ("ICCTA"), and the BNSF General Code of Operating Rules ("GCOR"), BNSF's federally-regulated operating procedures. [2]

3. Comments on BLM Planning Criteria

BNSF requests BLM to add the coordination with rail lines "in the PEIS and plan amendment process to strive for consistency with existing plans and policies..." [PEIS at 1-15, seventh bullet point.] BNSF also requests BLM add a planning criteria to address the needs of transportation infrastructure and operations, such as highways and railroad rights-of-way, adjacent to or within the areas affected by the Preferred Alternative or SEZ Alternative. [PEIS at 1-15.] More specifically, we request a criterion that "the BLM will protect pre-FLPMA rights-of-way, including rail rights-of-way, from the impacts of solar projects."

4. Further Comments on Project Impacts

Given the critical importance of this transcontinental rail corridor, it is essential that safety along BNSF's mainline be maintained. Accordingly, BNSF has significant concerns that the construction and operation of any solar energy project not adversely impact BNSF operations or otherwise impose unacceptable safety risks to BNSF personnel and operations. While BNSF appreciates that "site-specific and species-specific issues [will] be addressed during individual project reviews," there are several issues that can and should be identified on a programmatic level. [PEIS at ES-5.] BNSF's comments are focused on the Draft PEIS objective of "identif[ying] relevant design features (i.e., mitigation requirements) applicable to solar energy development in general." [PEIS at ES-5.]

---

[2] Railroads are required to file their operating rules and any amendments thereto with the FRA. The operating rules are intended to ensure safety in railroad operations (GCOR Section 1.1), and railroads are required to periodically monitor compliance with their operating rules. 49 C.F.R. 217.9. Railroads must periodically instruct their employees on the meaning and application of the operating rules (49 C.F.R. Part 217.11), and must have a program to monitor the conduct of their certified locomotive engineers and their compliance with "provisions of the railroad's operating rules that require response to signals that display less than a 'clear' aspect..." 49 C.F.R. Part 240.303(d)(1)(i). A railroad is required to revoke the certificate of an engineer who fails to meet the qualification requirements of Part 240, which may be established by an engineer's failure to control a train in accordance with a signal. 49 C.F.R. Part 240.307. A railroad's failure to comply with the provisions of these regulations may subject the railroad to civil penalties.

BNSF operates in 28 states in the midwestern and western United States and Canada. It is the product of hundreds of predecessor companies that were merged or acquired over the past 150 years to form a unified interstate system. It is the second largest railroad in North America, and has a large freight rail presence in California, Arizona, and New Mexico. Railroads provide the most efficient, environmentally protective, and safest form of overland freight transportation in the United States, and it is the policy of the Federal Government to promote freight rail transportation.

As noted in the PEIS, "the BLM currently evaluates solar energy ROW [right-of-way] applications on a project-specific basis, a process that involves assessment in accordance with the requirements of NEPA, Title V of the Federal Land Policy Management Act of 1976 (FLPMA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and other applicable statutes and regulations." As of February 2010, BLM was in the process of reviewing 127 applications for FLPMA ROW authorizations for solar facilities to be located on BLM-administered lands. [PEIS at ES-1.] While recognizing the potential benefits of a programmatic approach to the evaluation of the impacts of solar energy projects, it is BNSF's position that the Preferred Alternative is overly broad with respect to the BLM lands which it would make available for application for solar energy development. The approach taken in the SEZ Alternative is preferable in that it strictly limits the areas for solar energy project development to those areas identified by BLM as best-suited for large scale power generation. Nonetheless, it is BNSF's position that the SEZ Alternative is also overly broad. In this early stage of the development of solar energy, it is possible that many impacts of such projects are as yet unstudied or unknown. Adoption of the Preferred Alternative would lessen the requirements for environmental review for nearly 22 million acres of BLM lands. As such, it could result in the approval of solar projects in areas where such development would result in adverse impacts, including health impacts, from glare and glint on BNSF's employees, agents or contractors and operations, including a train crew's ability to accurately see and respond to signals.. The SEZ Alternative is more conservative, facilitating development of utility scale solar energy projects on 677,400 acres of BLM managed lands. However, the SEZs have been established directly adjacent to BNSF and other rail lines throughout much of the six-state area, and BNSF is concerned that the development of such projects adjacent to its rail lines would result in significant adverse impacts, including health impacts, to BNSF's employees and contractors, and critical rail operations. As discussed, BNSF requests BLM and DOE exclude from the Preferred Alternative and the SEZ Alternative all lands, public or private, within two miles of a rail right-of-way in their siting of utility-scale solar facilities.

BNSF's mainline is within BNSF's right-of-way ("ROW"), which is a pre-FLPMA right-of-way. A right-of-way issued by the Secretary of the Interior under FLPMA must contain terms and conditions that "protect Federal . . . economic interests . . . [and] protect the other lawful users of the lands adjacent to or traversed by such a right-of-way." [43 U.S.C. §1765(b).] A right-of-way granted pursuant to FLPMA must be compatible with an adjacent pre-FLPMA right-of-way. FLPMA does not grant the Secretary of the Interior the right to terminate, restrict, or impede the rights of the holder of a pre-FLPMA right-of-way. [43 U.S.C. §1769.]

As a major transcontinental transportation corridor responsible for the shipment of a significant portion of the goods to and from the west coast, the federal government has an important

economic interest in ensuring that rail traffic is not interrupted. FPLMA makes it clear that it does not grant the Secretary the right to terminate a right-of-way that was issued before the FLPMA – such as the BNSF ROW. 43 U.S.C. §1769(a). Nor can the Federal government take any action to restrict or impede the rights of a holder of a pre-FLPMA right-of-way.[3] *See, e.g., City and County of Denver, by and Through Bd. Of Water Comm'rs v. Bergland*, 695 F.2d 465 10th Cir. 1082) (US Forest Service cannot impede City's planned water project inasmuch as it is an authorized use of a pre-FLPMA right-of-way through national forest lands).

A. Hydrology

The Draft PEIS notes that BLM "Staff was asked to identify areas that were near existing transmission or designated corridors, near existing roads, generally had a slope of 1 to 2% or less, and were a minimum of 2,500 acres (10.1km^2)." [PEIS at ES-7.] Because BNSF's mainline traverses and its ROW is within or immediately adjacent to utility corridors and transmission lines, BLM Staff has been asked to identify potential SEZ's that are in close proximity to BNSF's mainline and ROW. BNSF's mainline has, in many areas, been in place for over a hundred years. The BNSF mainline has countless bridges, trestles, culverts and other features designed to protect it from normal and sudden hydrologic runoff over and within the topography within which BNSF's mainline is situated. While the Draft PEIS asks BLM Staff to identify potential SEZ's with a slope of 1 – 2% or less, there are a number of proposed SEZ's that have slopes in excess of 1 – 2%.[4]

A natural consequence of any solar development project is a change, both temporarily during construction and permanently throughout the life of the project, to the respective hydrology associated with the project site. Accordingly, it is critical that appropriate, site-specific hydrological studies[5] be conducted well in advance of the emplacement of the respective technology. BNSF's experience with the Calico Solar Project has made it abundantly clear that these studies will establish the locations of any hydrological features – such as but not limited to

[3] FLPMA and NEPA require that lands adjacent to the proposed Project right-of-way be protected. Such protection cannot be accomplished without "full and fair discussion of significant environmental impacts" (40 C.F.R. 1502.1) and a discussion of the "means to mitigate adverse environmental impacts" (*Id.*) as required by NEPA, 42 U.S.C. 4321 *et seq.*).

[4] For example, the Draft PEIS refers to "[s]ix fast-track projects" in California, to include the Calico Solar Project. The Calico Solar Project is within the proposed Pisgah SEZ. The Calico Solar Project has a slope that ranges from 3 - 6%. [See Staff Assessment and Draft Environmental Impact Statement, Calico Solar Project, (08-AFC-13), dated March 30, 2010, at B.2-52.]

[5] Typical hydrology studies include a Drainage Erosion and Sedimentation Control Plan ("DESCP"), a Storm Water Damage Monitoring and Response Plan, a Decommissioning Plan, a Groundwater Level Monitoring and Reporting Plan, Storm Water/Flood Control Protection Design Plans (ensuring protection from 100-year, 24-hour storms), and a Storm Water Pollution Prevention Plan ("SWPPP"). See table 5.1-1 Mitigation Plans to Minimize Environmental Impacts of Utility-Scale Solar Energy Facilities. [PEIS at 5-3.]

retention basins, detentions basins, debris basins and floodwater channels – that are necessary to protect not only the project itself but adjacent properties such as the BNSF mainline and ROW. BNSF strongly encourages BLM and DOE to incorporate standard mitigation measures within the Draft PEIS that require such hydrology studies to ensure that the BNSF mainline and ROW and other adjacent landowners are protected from the impact of future solar development projects.

B. Glint and Glare

Solar development projects employ a variety of technologies, to include parabolic mirrors and photovoltaic panels. These technologies have associated glint and glare which can have a direct negative impact on adjacent properties.[6] In addition to visual impact, some technologies – such as but not limited to SunCatchers and other parabolic mirror technologies – have known adverse health impacts to humans.[7]

BNSF's specific concerns relate to the health and safety of its train crews on its mainline travelling through the BNSF ROW. In addition to potential adverse health impacts to its train crews, BNSF is concerned that glare and glint from solar technologies could adversely impact its train crews ability to observe and respond to train signals. Both Federal Railway Administration ("FRA") regulations and the GCOR require BNSF to maintain visual contact with signals.

Accordingly, BNSF requests that BLM incorporate standard mitigation measures within the Draft PEIS to address these glare and glint impacts. BNSF suggests that at a minimum a buffer of at least two miles be created on either side of a rail right-of-way and any solar development project. In any case where an alternative to the establishment of a buffer is requested by a project proponent, BLM should require that site-specific, technology-specific glare and glint modeling be conducted, taking into account the terrain, the height and orientation of the rail line, the effect of the geometry of the track, the changes in elevation, the direction of travel, and the time of day and year on the magnitude and pattern of glare, among other factors. Such modeling should be taken into account prior to the finalization of site plans for the proposed solar development project. Affected railroads should be provided the opportunity to participate in such studies or offer rail-specific data and information on the project and its potential adverse impacts, including health impacts. Attached as ***Exhibit A*** hereto is a proposed Scope of Work for such a glare and glint study, which BNSF has proposed in connection with the Calico Solar

[6] For example, the Calico Solar Final Environmental Impact Statement ("FEIS") issued by the BLM on August 6, 2010, found that a project may have an adverse impact if, among other things it would alter rail traffic or conflict with existing policies, plans, or programs. [FEIS 4-319 – 4-320.] The FEIS acknowledges the visual impacts to rail where it states: "From [the BNSF Railroad], the Proposed Action would create a strong degree of contrast. The magnitude of change from this viewpoint would be very high, and the Proposed Action would dominate the landscape." [FEIS 4-345.] The FEIS, however, does not address the potential for glint and glare to adversely affect the safety of rail operations and personnel on BNSF property adjacent to the proposed right-of-way for the Project. See also PEIS Section 5.12.2 at p. 5-175 through 5-191.]

[7] For example, studies have shown that, at a minimum, the offset for the employment of SunCatchers should be at least 223 feet to avoid adverse impact to human observers.

Project in San Bernardino County, California. BNSF believes this level of analysis of glare and glint impacts is critical to ensure that the BNSF employees, operations, mainline and ROW, and other adjacent landowners, are protected from the impact of future solar development projects.

C. Access Issues

Because of the unique nature of the pre-FLPMA ROW granted to BNSF for its mainline and rail operations, any crossing of the BNSF mainline, either at-grade or through a grade-separated crossing, has potential adverse impacts to the safety of BNSF train crews and to BSNF rail operations. Accordingly, BLM should explicitly exclude any access on, over, across or under any railroad right-of-way as part of a proposed solar energy project. Before any proposed solar development project is considered that envisions access onto or across the BNSF or other rail right-of-way, the proponent of the proposed solar development project should be required to coordinate directly with BNSF or other railroad and conduct all appropriate and necessary studies, to include hydrology and glint and glare studies, to ensure that any such crossing can be accomplished in a safe manner and without adversely impacting rail operations. Only after any access issues have been resolved at the discretion of the affected railroad should BLM consider the application.

5. Comments on Appendices

Appendix C. BNSF objects to BLM Land Use Pan Amendments under BLM Action Alternatives of the PEIS absent conditions such as affected areas exclude land within two miles of either side of any rail right-of-way, and the studies and mitigation measures identified above be implemented.

Appendix H. Please see comment above.

6. Conclusion

BNSF continues to support the need for site-specific plans as contemplated by the PEIS. "Many of the potential mitigation measures indicate the need for project-specific plans (see Table 5.1-1). The content of these plans will depend on specific project requirements and locations, and their applicability and effectiveness also needs to be evaluated at the project specific level. The authorizing agency or agencies (e.g., BLM, DOE, or state agencies) would need to determine the adequacy of such plans for specific projects. [PEIS 5-2]

For all the foregoing reasons, BNSF respectfully requests that the BLM supplement the Draft PEIS to include a general requirement that in connection with consideration of any solar development project, BLM make a finding that the particular technology proposed in that particular location will not result in adverse impacts, including health impacts, from glint and glare on rail employees, agents or contractors and operations, including a train crew's ability to accurately see and respond to signals. In addition, BNSF requests that the BLM include in the Draft PEIS the requirement that a solar project applicant: (1) perform comprehensive hydrology studies to determine project impacts on any rail line in the vicinity of the proposed project and implement appropriate mitigation measures on the project site; (2) perform a site-specific, and

technology-specific glare and glint study to include modeling; (3) a subsidence monitoring plan and mitigation measures; (4) a thorough decommissioning/reclamation study and establish funding for the life of the project; (5) maintain emergency access for rail operations on the rail right-of-way; and (6) to the extent an applicant anticipates requiring access rights across, on, over or under a railroad right-of-way, secure such access rights directly with the applicable rail operator prior to submittal of an application for the solar development project.

Respectfully submitted,

/s/

Cynthia L. Burch
On Behalf of BNSF Railway

Exhibit A

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF JOSEPH SCHNELL
BNSF RAILWAY COMPANY

August 17, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

Exhibit 1203

PREPARED DIRECT TESTIMONY

OF

Joseph Schnell

Manager Special Projects – Signal, BNSF

Q.1 Please state your name and occupation?

A.1 My name is Joseph Schnell. I am the Manager Special Projects – Signal, for BNSF Railway Company ("BNSF"). My resume is attached to this testimony.

Q.2 What is the purpose of your testimony in this proceeding?

A.2 I will testify transportation (glint and glare).

Q.3 Why does BNSF have concerns regarding the Calico Solar Project?

A.3 BNSF is one of two Class 1 railroads operating in California. BNSF's mainline, which is traversed by as many as 80 trains per day, carries interstate commerce from the Ports of Los Angeles and Long Beach to U.S. Midwestern, Southwestern and Eastern markets. BNSF's mainline has operated through the section of the proposed Project since the late 19th Century. Preliminarily, whether emplacing tens of thousands of SunCatchers immediately adjacent to both sides of one of only two strategic transcontinental transportation corridors for rail traffic from the west coast to all points east is a compatible use has not been addressed or analyzed. The proposed Project would surround both sides of several miles of BNSF's mainline tracks. Accordingly, BNSF has significant concerns that the construction and operation of the Project do not

adversely impact BNSF operations or otherwise impose unacceptable safety risks to BNSF personnel and operations. BNSF must continue to maintain sole and independent discretion to ensure that its rail operations are safe and efficient. In addition, as a transcontinental railroad impacting interstate commerce, BSNF is subject to federal regulations and oversight.

The consummation of the Project would require the granting of several licenses and permits from BNSF, which Applicant Calico Solar ("Calico Solar") has requested in a piecemeal fashion over the course of the past year. To date, only preliminary access agreements have been granted. Before BNSF can grant such licenses and permits, BNSF must be assured that its significant safety and operational concerns are addressed.

Q.4 What are BNSF's safety and operational concerns in relation to transportation (glint and glare)?

A.4 BNSF's mainline, along which the Project is proposed to be built, is curved. An essential signal for rail traffic is located in the vicinity near Hector Road. Signals are critical safety features. Calico Solar's Project certification application seeks authority to emplace up to 34,000 SunCatchers within a 6,215 acre tract that falls on both sides of BNSF's right of way.

While there are no drawings or diagrams that specify precisely where the SunCatchers will be emplaced, Calico Solar proposes to locate the nearest SunCatchers as close as 100' from the BNSF

right of way, on both sides of the transcontinental mainline track, for approximately five miles.

Q.4 Why does the emplacement of the SunCatchers cause operational and safety concerns for BNSF?

A.4 Because daytime glint and glare from the 34,000 SunCatcher mirrors and associated structures, in particular when the mirrors are in offset tracking position, may significantly impact BNSF engineers' ability to see the signal. The situation would be exacerbated by the site elevations which Calico Solar has proposed.

Q.5 In addition to the safety concerns, are there federal regulations that govern signals?

A.5 Yes. BNSF is required by federal regulations and the Federal Railway Administration ("FRA") to maintain visual contact with signals. If a train's contact with a signal is lost and cannot be regained, the engineer is required to stop the train. This often requires an emergency application of the brakes, risking derailment of the train. When a train has been stopped through emergency application of the brakes, BNSF General Code of Operating Rule 6.23 requires the engineer to inspect all cars, units, equipment and track pursuant to BNSF special instructions and rules. This can cause significant delays to rail operations with ramifications reaching from the Ports of Los Angeles and Long Beach to Chicago and beyond.

Q.6 Have you had an opportunity to review the SSA Part II as it pertains to Traffic and Transportation (glare & glint)?

A.6 Yes.

Q.7 Does it adequately address BNSF's concerns?

A.7 No, it does not. To date, there is no study that has been performed that:

a. analyzes and measures the impact on BNSF rail operations;

b. analyzes and measures the glint and glare that will be produced from the SunCatchers in relation to the specifics heights, elevations, and angles relating to an engineer traveling along the curved track along the BNSF RoW;

c. ascertains what, if any, measures could be implemented to adequately mitigate the impact of the SunCatchers' glint and glare to ensure the safe operation of rail services along the BNSF RoW;

d. ascertains what evaluation, testing, coordination, and approval would be necessary to obtain government approval for any such mitigating measures.

Q.8 The SSA Part II represents at C.11-31 that "Staff has been working with representatives from BNSF Railways since July 16, 2010, to resolve BNSF Railway's concerns with glint and glare. As its usual procedure, staff commissioned a glint and glare study, which is attached to this document." Has that occurred?

A.8 Somewhat, but that is, at best, incomplete. Initially, the study did not address the rail safety and operational issues raised by BNSF. We were told that Staff was going to expand the scope of its glare/glint study to address these issues. In a call facilitated by CEC Staff person Marie McLean, I initially spoke with Cliff Ho of Sandia labs. Mr. Ho explained that he had been asked to perform some calculations to determine what the appropriate safe distance was from the SunCatcher for a motorist. His work was not specific to the Calico Solar facility, nor did it address rail operations and safety. Ms. McLean then facilitated a second call, to James Jewell, the consultant retained by Staff to head the study. Mr. Jewell requested information from BNSF that he represented was essential for him to complete his study. Attached hereto as Exhibit "A" is a string of emails that started on July 29, 2010 from Mr. Jewell. In his July 29th email, Mr. Jewell asked BNSF to provide him with information regarding:

1. height of signal poles,

2. height of the mid-point of the signal above the track,

3. height of the eyes of the average engineer above the track,

4. distance from a signal pole at which an engineer is expected to recognize and act upon a signal,

5. average width or consistent width of the BNSF ROW, and

6. number and location of signal poles within the solar plant area and just before or after the plant boundary.

Mr. Jewell represented that he needed this information to "establish the viewing angles and distances and then to discern just which signals may be seen against the SunCatcher mirrors and at what angular relationships. All of this information will make it possible for me to establish the requirements of a study."

Accordingly, as can be seen from the string of emails, there is no glare/glint study that addresses the issues raised by BNSF and confirmed as appropriate for a study by CEC's own consultant.

Q.9 Was the requested information provided to Mr. Jewell?

A.9 In part. We began providing the requested information but received an email from Mr. Jewell on August 3, 2010, stating "the Commission staff (including me) will not work on this further since there is a COC requiring collaboration on a solution. But there will be a 'workshop' and I will, . . . Be Prepared. Thanks for all your help. I think I can help at the workshop." [See Exhibit "A."]

Q.10 When did you receive the SSA Part II?

A.10 August 9, 2010.

Q.11 Were you surprised when you read it?

A.11 Absolutely. The SSA Part II could be misread and misinterpreted to read as if BNSF fully participated, there was a study performed to address the specific

rail safety and operations concerns raised by BNSF, we came to an agreement, and BNSF is satisfied that its safety concerns have been addressed and will be mitigated. That did not happen. We were told that Mr. Jewell was going to prepare a study that analyzed the glare and glint issue in relation to the unique angles and field of vision that an engineer would encounter while traveling along the RoW. We provided information that Mr. Jewell represented he needed to perform his study. That information was not used or referenced in the study. Then Mr. Jewell sent us an email saying no further work would be done and that we would collaborate on a solution. He said there would be a workshop. There was no workshop.

Q.12 The SSA Part II states at C.11-31 that "staff reviewed the glint and glare study and mitigation measures with BNSF Railway representatives. The review included telephone conversations with Energy Commission glint and glare consultants to ensure BNSF Railway's concerns were addressed." Were BNSF's concerns addressed.

A.12 First of all, the telephone conversations with the CEC consultants took place without the benefit of a draft report or any supporting information or consultants. While we were told it would be available before the issuance of the Supplemental Staff Report, that did not occur. Accordingly, the conversations were very general in nature and did not address BNSF's specific concerns. Because no study had been performed, there was no meaningful discussion regarding mitigation measures. At the time that the CEC decided that it would not perform its own study to address BNSF's

rail safety issues and concerns, we were advised that CEC was going to require: (1) a 300 foot setback from the edge of the BNSF RoW for the closest SunCatcher; (2) a site-specific study on the effects of the SunCatcher's glint and glare on BNSF's safety, operations and signals, funded by Calico Solar; and (3) workshops to be held to resolve BNSF's concerns. The CEC also offered to assist BNSF find a glint/glare expert with appropriate expertise. Moreover, we only had a little over a week between the issuance of the SSA Part II and the hearing. This is not adequate time to address all of the issues raised for the first time in the SSA Part II. When I actually read TRANS-7 it was clear that BNSF's concerns had not been addressed and that conclusions had been drawn about purported mitigation measures that were not based on any actual scientific study. We consistently told the Commission and Calico Solar that before BNSF can consider approving any further access to the BNSF RoW, the following Condition of Certification must be incorporated into the Project:

> Prior to the first SunCatcher disc being mounted on a pedestal, a site-specific Glare/Glint study shall be performed at Calico Solar's expense to address the Glare/Glint issues raised by BNSF with respect to the potential impact of the proposed Calico Solar SunCatchers on BNSF rail operations. The recommended mitigation measures shall be reviewed by BNSF. If BNSF approves the recommended mitigation measures, they will be

implemented by Calico Solar at its expense. The site specific study shall commence immediately upon BNSF's selection of the experts to perform the study.

Q.13 The SSA Part II also states at C.11-32 that "BNSF Railway's representatives also expressed a concern about glint and glare and its effects upon the railroad engineer's ability to correctly perceive the color of the signal. Through several telephone conversations, staff and commission's glint and glare consultants discussed with BNSF Railway representatives their specific concerns about the signal lights. Staff determined that measures exist, if needed, to ensure that BNSF Railway engineers will be able to correctly perceive the color of the signal. Those procedures involve hooding and increasing the intensity of the lights." Is that accurate?

A.13 No. Again, as stated above, we only had two general conversations with the CEC consultants. We talked about our concern about seeing the signal, identifying the color of the signal, being able to identify the signal if the background consisted of thousands of mirrored surfaces, our concerns regarding "phantom signals" where the light reflected inside the signal gives a false reading that the signal is on, and a potential "funhouse" effect where a signal is reflected in a mirror that is one of a bank of thousands of mirrors and gives the false appearance that it is in a location other than the one it is actually in. We consistently told the Commission and its consultants that BNSF must exercise its independent judgment to protect the safety and operations of its transcontinental rail system. Some of the options that might be considered after a thorough study

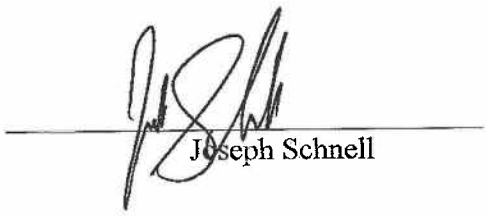
of the potential impact on rail safety and operations of Calico Solar's proposed facility on BNSF may, in addition, require federal government approval. BNSF has specifically advised CEC's consultant, pending ongoing studies in other arenas, it did not know if signal light strength could be increased or if alternative methods of "hooding" a signal would help the engineer identify the signal. To date, I have seen no studies or technical data regarding hooding, increased light signal strength, use of LED lights, or other signal mitigation measures that would support Staff's conclusions in this regard.

Q.14 Does this complete your direct testimony?

A.14 Yes, it does.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: August 16, 2010



Joseph Schnell

Joseph D. Schnell

669 Cattlemans Way
Fort Worth, TX 76131
(425) 213-7284
Joseph.Schnell@BNSF.com

Education:

Electrical Engineering Degree with emphasis in Electronics and Management, University of Nebraska-Lincoln, Lincoln, Nebraska
Graduation Date: May 2006

Internship Experience:

Summer 2005: Engineering Intern, Burlington Northern Santa Fe Railway, based in Amarillo, Texas.
Duties included traveling across Texas, Oklahoma and Kansas working with different level employees within the signal department in the areas of construction and maintenance.

May 2004 to December 2004: Project Engineer Co-op, Nebraska Public Power District, Beatrice Power Station, Beatrice, Nebraska.
Duties included functional location tagging, document control, and database management.

Summer 2003: Technical Director Management Intern, General Electric Transportation Systems, Bailey Yard, North Platte, Nebraska.
Duties included heading up EOA satellite communications system implementation, numerous software upgrades, and quality control projects. Completed first step of six sigma training.

Research Experience:

January 2003 to May 2004: Undergraduate Research, Centre of Electro Optics, University of Nebraska-Lincoln.
Performed laser induced breakdown spectroscopy research under Dr. Dennis R Alexander.

Volunteer Experience:

February 2002 to May 2006: Teachers Aide, Norwood Park Elementary School, Lincoln, Nebraska.
Helped with clerical work, assisted with teaching, and worked one-on-one with students in the areas of reading, math and English.

Honors and Awards:

Passed Fundamentals of Engineering Exam, October 2005
Holling Memorial Scholarship, 2005
VIP Outstanding Volunteer Award, 2003
UNL Undergraduate Creative Activities and Research Experiences Award, 2003
UNL Engineering Departmental Scholarship, 2001
UNL Canfield Scholarship, 2001

BNSF Experience:

April 2010 to Present: Manager Special Projects – Signal, Fort Worth, Texas.
As the manager of special projects, I am responsible for the signal departments reporting to the FRA, as well as notifications to the BRS. I manage several databases and sections for the signal scorecard and website. Along with these duties I manages other engineering projects such as power line mitigation, work equipment issues, and other issues the directly effect the signal department.

February 2009 to April 2010: Supervisor Signals, Vancouver, Washington.
I made a developmental move to coordinate the signal maintenance activities on the Fallbridge, Yakima Valley and Stampede Subdivisions. In making that move I was afforded the opportunity to expand my knowledge base and improve my skills as a supervisor. During my as the Vancouver supervisor I became intimately knowledgeable in CTC signaling, as well as educated in train operations on high traffic lines. I have planned windows around and with major production gangs and for pole line contractors. On the construction side I have surveyed several crossings and solar locations for pole line removal. I have also been fortunate in that I was able to participate in several major cut-over's with our Northwest Signal Construction team.

I was also given the opportunity to attend an FLS forum at Garret Creek Ranch. During my time at the forum was able to give input on everything from manpower issues to our current computer system.

April 2007 to February 2009: Supervisor Signals, Bend, Oregon.
Duties have included the coordination of maintenance activities on the Oregon trunk and Gateway sub-divisions through the Maintenance Excellence system. Included within this system are managing a capital and operating budget, keeping up on FRA mandated testing, tracking service bulletin upgrades, managing vehicle maintenance and upkeep, ordering and tracking material and coordinating the training and progression of my team.

My main two focal points while in Bend have been team development and physical plant improvement. The Signal Team lacked cohesiveness and a proper sense of direction, but has now developed into a real team with focused job priorities. We have been able to improve numerous crossings with new installations of motion sensing devices, event recorders, and gate mechanisms. We have also upgraded commercial power service and standby power across the board, improving reliability greatly.

I have attended a management trainee forum at Garret Creek Ranch and become a part of the recruiting team for the University of Nebraska-Lincoln. I am also scheduled to begin the signal apprentice classes in the fall of 2008.

December 2006 to April 2007: Assistant Supervisor Signals Construction, Northwest Division based out of Seattle, Washington.
Duties included working on signal construction projects with the Northwest signal construction team, as well as spending time assisting maintenance supervisors with projects and vacation relief. Notable projects worked on are listed as follows:

- Crossing installations in Bellingham, Washington
- Electrocode upgrades in New Westminster, British Columbia
- Electrocode upgrades on the Fallbridge subdivision, Wishram, Washington
- Electrocode upgrades, switch upgrades and crossing upgrades in the Vancouver Yard, Vancouver, Washington
- Running signal crews during the 2007 Fallbridge Maintenance Blitz, Vancouver, Washington to Pasco, Washington

Time was spent surveying projects, working with crew foremen on scheduling construction activities, overseeing construction and pre cut-over breakdowns, helping to plan and run cutovers and in-servicing projects.

June 2006 to December 2006: Management Trainee, Completed formal training in Ft. Worth, Texas and Kansas City, Kansas with the engineering department.
Finished a six month management trainee program under Signal Manager Doug Proffitt in Seattle, Washington. Duties included completing cross-departmental training, as well as reaching set goals for training within the signal department.

BNSF Formal Training
Engineering Frontline Supervisor, June 2010
Engineering Frontline Supervisor, July 2009
Engineering Frontline Supervisor, June 2008
Engineering Frontline Supervisor, September 2007
Formal Investigation Training, May 2007
Fast Track Signal Training Program, January 2007
Engineering Operations Testing, December 2006
Leading People Successfully Engineering Part 2, November 2006
Engineering Frontline Supervisor, October 2006
Functional Engineering, September 2006
Supervisor FRA Track Safety, August 2006

From: James Jewell [mailto:jjewell@arch-light.com]
Sent: Tuesday, August 03, 2010 11:41 AM
To: Alexander, Anne
Subject: Re: BNSF/Calico - Large Scale Map and Additional Measurement

ANNE -- You have been a great help. As you probably know the Commission staff (including me) will not work on this further since there is a COC requiring collaboration on a solution. But, there will be a "workshop" and I will, as they are saying at the Jamboree this week in Virginia, Be Prepared. Thanks for all the data. I think I can help at the workshop. JAMES

On 8/3/10 11:07 AM, "Alexander, Anne" <anne.alexander@kattenlaw.com> wrote:

> All:
>
> Attached is an electronic version of a map of the BNSF right of way requested last week. Also, our client has informed us that the distance at which an engineer needs to be able to

Exhibit "A" to Schnell

see a signal is 1500 feet. Please let us know if you need anything else.

Anne

ANNE ALEXANDER
Associate
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2600 / Los Angeles, CA 90067-3012
p / (310) 788-4496 f / (310) 712-8232
anne.alexander@kattenlaw.com <mailto:william.kong@kattenlaw.com>

www.kattenlaw.com <http://www.kattenlaw.com/>

From: Alexander, Anne
Sent: Friday, July 30, 2010 3:30 PM
To: 'jjewell@arch-light.com'; 'alindsley@lindsleylighting.com'
Cc: 'Mmclean@energy.state.ca.us'; 'Dflores@energy.state.ca.us'; Burch, Cynthia Lea; Lamb, Steven A.
Subject: BNSF/Calico - Additional Measurements

James and Alan:

Again, we very much appreciate the quick turnaround on information requests. I am restating below the measurements from the signal head to the ground for the two signals at Hector Road (one signal for each track) which we sent yesterday, and have added some of the other information you requested yesterday. The height of the mid-point of the signal above the track would be the height of the yellow signal.

Main Track 1

Green signal to grade	30' 9"
Yellow signal to grade	29' 9"
Red signal to grade	28' 9"
Rail to grade	10'
Thus:	
Green signal to rail:	20' 9"
Yellow signal to rail:	19' 9"
Red signal to rail:	18' 9"

Main Track 2

Green signal to grade	30'
Yellow signal to grade	29'
Red signal to grade	28'
Rail to grade	9'
Thus:	

Green signal to rail: 21'
Yellow signal to rail: 20'
Red signal to rail: 19'

The engineer's eyes will be between 13 and 14 feet off the tracks. The width of the right of way is 100 feet through the project. There are a total of two signal poles within the Project site. We will provide you the distance from a signal pole at which an engineer is expected to recognize and act upon a signal on Monday.
Please do not hesitate to contact us with further questions or requests for information.

Have a great weekend,
Anne

ANNE ALEXANDER
Associate
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2600 / Los Angeles, CA 90067-3012
p / (310) 788-4496 f / (310) 712-8232
anne.alexander@kattenlaw.com <mailto:william.kong@kattenlaw.com>

www.kattenlaw.com <http://www.kattenlaw.com/>

From: Burch, Cynthia Lea
Sent: Thursday, July 29, 2010 2:43 PM
To: 'jjewell@arch-light.com'; Alexander, Anne
Cc: 'Mmclean@energy.state.ca.us'; 'alindsley@lindsleylighting.com'; 'Dflores@energy.state.ca.us'
Subject: Re: BNSF/Calico

James, thank you forquick turn around on data requests. We will forward them to BNSF.
Cynthia

From: James Jewell
To: Burch, Cynthia Lea
Cc: Marie McLean ; Lindsley, AIA, IESNA Alan ; David Flores
Sent: Thu Jul 29 12:45:18 2010

Subject: BNSF/Calico

CYNTHIA — It was good to talk with you, Steve Ramsey, and the representative of BNSF. In our extended conversation there was some data that I didn't get to ask for so that I might make an initial estimate of the view angles involved. The conversation was helpful in that the applicants drawings do not show a double track installation.

I'll be away until Saturday, but perhaps your office or BNSF could send this along so I have it over the weekend. My colleague Alan Lindsley, who has been the lead light and vision consultant on Calico SPP, may have some further questions. If we can establish clearly the viewing angles, we may be able to predict and restrict the points of visual conflict for trainmen.

The following would be helpful:

1) height of the signal poles,
2) height of the mid-point of a signal above the track,
3) height of the eyes of the average engineer above the track; that is cab floor height plus seated viewer height,
4) distance from a signal pole at which an engineer is expected to recognize and act upon a signal,
5) average width or consistent width of the BNSF ROW, and
6) number and location of signal poles within the solar plant area and just before or after the plant boundary.

I think you can see that I want to establish the viewing angles and distances and then to discern just which signals may be seen against the Suncatcher mirrors and at what angular relationships. All of this information will make it possible for me to establish the requirements of a study. Thanks for your help. JAMES

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION

***For the CALICO SOLAR** (Formerly SES Solar One)*

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 8/9/10)

APPLICANT
Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd.,
#1000
San Diego, CA 92108
angela_leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
richard_rotte@blm.gov

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer,
County Counsel
Bart W. Brizzee,
Deputy County Counsel
385 N. Arrowhead Avenue,
4th Floor
San Bernardino, CA 92415-
bbrizzee@cc.sbcounty.gov

California Unions for Reliable
Energy (CURE)
c/o: Loulena A. Miles,
Marc D. Joseph
Adams Broadwell Joseph
& Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham &
Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

*indicates change

INTERVENORS CONT.

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochsjack@earthlink.net

Gloria D. Smith, Senior Attorney
***Travis Ritchie**
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org
travis.ritchie@sierraclub.org

Newberry Community
Service District
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East,
Ste. 2700
Los Angeles, CA 90067-3012
Cynthia.burch@kattenlaw.com
Steven.lamb@kattenlaw.com
Anne.alexander@kattenlaw.com

ENERGY COMMISSION

ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Harriet Vletas, declare that on August 17, 2010, I served and filed copies of the attached Prepared Direct Testimony of Joseph Schnell, BNSF Railway Company, dated August 17, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.govlsitingcaseslsolarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_x__ sent electronically to all email addresses on the Proof of Service list;

___ by personal delivery;

___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

___ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

HARRIET VLETAS

*indicates change

Exhibit B

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF DENNIS SKEELS
BNSF RAILWAY COMPANY

August 17, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

Exhibit 1204

PREPARED DIRECT TESTIMONY

OF

Dennis Skeels

Manager Signals California Division – BNSF

Q.1 Please state your name and occupation?

A.1 My name is Dennis Skeels. I am the Manager Signals, California Division, for BNSF Railway Company ("BNSF"). My resume was attached to my previous testimony.

Q.2 What is the purpose of your testimony in this proceeding?

A.2 I will testify regarding transportation (glint and glare).

Q.3 Why does BNSF have concerns regarding the Calico Solar Project?

A.3 BNSF is one of two Class 1 railroads operating in California. BNSF's mainline, which is traversed by as many as 80 trains per day, carries interstate commerce from the Ports of Los Angeles and Long Beach to U.S. Midwestern, Southwestern and Eastern markets. BNSF's mainline has operated through the section of the proposed Project since the late 19th Century. Preliminarily, whether emplacing tens of thousands of SunCatchers immediately adjacent to both sides of one of only two strategic transcontinental transportation corridors for rail traffic from the west coast to all points east is a compatible use has not been addressed or analyzed. The proposed Project would surround both sides of several miles of BNSF's mainline tracks. Accordingly, BNSF has significant

concerns that the construction and operation of the Project do not adversely impact BNSF operations or otherwise impose unacceptable safety risks to BNSF personnel and operations.

The consummation of the Project would require the granting of several licenses and permits from BNSF, which Applicant Calico Solar ("Calico Solar") has requested in a piecemeal fashion over the course of the past year. To date, only preliminary access agreements have been granted. Before BNSF can grant such licenses and permits, BNSF must be assured that its significant safety and operational concerns are addressed.

Q.4 What are BNSF's safety and operational concerns in relation to transportation (glint and glare)?

A.4 BNSF's mainline, along which the Project is proposed to be built, is curved. An essential signal for rail traffic is located in the vicinity near Hector Road. Signals are critical safety features and engineers must be able to see signals in sufficient time to respond accordingly to avoid potentially life-threatening events such as a derailment. Calico Solar's Project certification application seeks authority to emplace up to 34,000 SunCatchers within a 6,215 acre tract that falls on both sides of BNSF's right of way.

While there are no drawings or diagrams that specify precisely where the SunCatchers will be emplaced, Calico Solar proposes to locate the nearest

SunCatchers as close as 223' from the BNSF right of way, on both sides of the transcontinental mainline track, for approximately five miles.

Q.5 Why does the emplacement of the SunCatchers cause operational and safety concerns for BNSF?

A.5 Because daytime glint and glare from the 34,000 SunCatcher mirrors and associated structures, in particular when the mirrors are in offset tracking position, may significantly impact BNSF engineers' ability to see the signal. The situation would be exacerbated by the site elevations which Calico Solar has proposed. Additionally, refracted light radiating back from the SunCatchers could possibly introduce a light source that may cause a signal to display an aspect more favorable than what is intended. This can result in a phantom signal. Attached hereto as Exhibits "A" and "B" are photos showing a phantom signal.

Q.6 In addition to the safety concerns, are there federal regulations that govern signals?

A.6 Yes. BNSF is required by federal regulations and the Federal Railway Administration (the "FRA") to maintain visual contact with signals. If a train's contact with a signal is lost and cannot be regained, the engineer is required to stop the train. This often requires an emergency application of the brakes, risking derailment of the train. When a train has been stopped through emergency application of the brakes, BNSF General Code of Operating Rule 6.23 requires the engineer to inspect all cars, units,

equipment and track pursuant to BNSF special instructions and rules. This can cause significant delays to rail operations with ramifications reaching from the Ports of Los Angeles and Long Beach to Chicago and beyond.

Q.7 Have you had an opportunity to review the SSA Part II relating to traffic and Safety (Glint and Glare)?

A.7 Yes, I have.

Q.8 Does it adequately address BNSF's concerns?

A.8 No, it does not. To date, there is no study that has been performed that:

a. analyzes and measures the impact on BNSF rail operations;

b. analyzes and measures the glint and glare that will be produced from the SunCatchers in relation to the specifics heights, elevations, and angles relating to an engineer traveling along the curved track along the BNSF Right of Way ("RoW");

c. ascertains what, if any, measures could be implemented to adequately mitigate the impact of the SunCatchers' glint and glare to ensure the safe operation of rail services along the BNSF RoW;

d. ascertains what evaluation, testing, coordination, and approval would be necessary to obtain FRA approval for any such mitigating measures.

Q.9 Are there signals in the vicinity of the proposed Project that would be impacted by the project?

A.9 Yes, there are. Attached hereto as Exhibit "C" is an extract from a Track Chart, Needles Subdivision, which shows the locations of the signals in the proposed Project area. Starting on the page denoted with a circled 8 at the top right corner and reflecting mile markers 710 through 715 and then the following page denoted with a circled 9 at the top right corner and reflecting mile markers 705 through 710, these are the pages that relate to the proposed Project site. Various features are pointed out, to include train speed, crossings, signals, and hot box detectors, as well as curves and grade. As you can see, train speed varies based on whether it is freight or passenger and also varies based on the grade and curves. There are currently two crossings, one near Hector and one near West Pisgah. The Hector crossing has a signal before and after the crossing. The West Pisgah crossing has several signals on either side of the crossing and is near a 2 degree 10 minute turn.

BNSF is also concerned that the SunCatchers may impact the signals and hot boxes along the mainline because the signals and hotboxes are solar-powered. Accordingly, if the SunCatchers are too close to the mainline, the shadow from the SunCatchers could shade the signals and hotboxes, thereby eliminating their energy source and causing failure or malfunction. BNSF understands that Calico Solar has agreed not to emplace any SunCatcher within 223 feet of the RoW, which would mitigate this issue.

Finally, there is always a concern regarding transmission lines interfering with signals. BNSF understands that Calico Solar has agreed not to emplace any transmission line within 300 feet of the RoW and to only cross the RoW at a right angle sufficiently distant from a signal, thereby mitigating this issue.

Q.10 Does the SSA Part II account for the signals?

A.10 No. I am not aware of any maps or drawings that show the signals and the SSA Part II does not make any reference to where the signals are located.

Q.11 Based on these stated concerns, what is BNSF's proposal in relation to the glare and glint issue?

A.11 Before BNSF can consider approving any further access to the BNSF RoW, the following Condition of Certification must be incorporated into the Project:

> Prior to the first SunCatcher disc being mounted on a pedestal, a site-specific Glare/Glint study shall be performed at Calico Solar's expense to address the Glare /Glint issues raised by BNSF with respect to the potential impact of the proposed Calico Solar SunCatchers on BNSF rail operations. The recommended mitigation measures shall be reviewed by BNSF. If BNSF approves the recommended mitigation measures, they will be implemented by Calico Solar at its expense. The site specific study

shall commence immediately upon BNSF's selection of the experts to perform the study.

Q.12 The SSA Part II at C.11-36-37 makes reference to signal light modifications. Have you reviewed it?

A.12 Yes, I have.

Q.13 Are the suggested modifications feasible?

A.13 SSA Part II at C.11-36 refers to "current LED signal technology." Based on my extensive experience, I am not aware of any such current approved LED signal technology. BNSF is currently conducting testing of LED signal lights, but there presently is no standard LED signal that has been tested and approved for use by BNSF. Moreover, shielding or hooding of signals requires coordination with federal authorities before we make any changes.

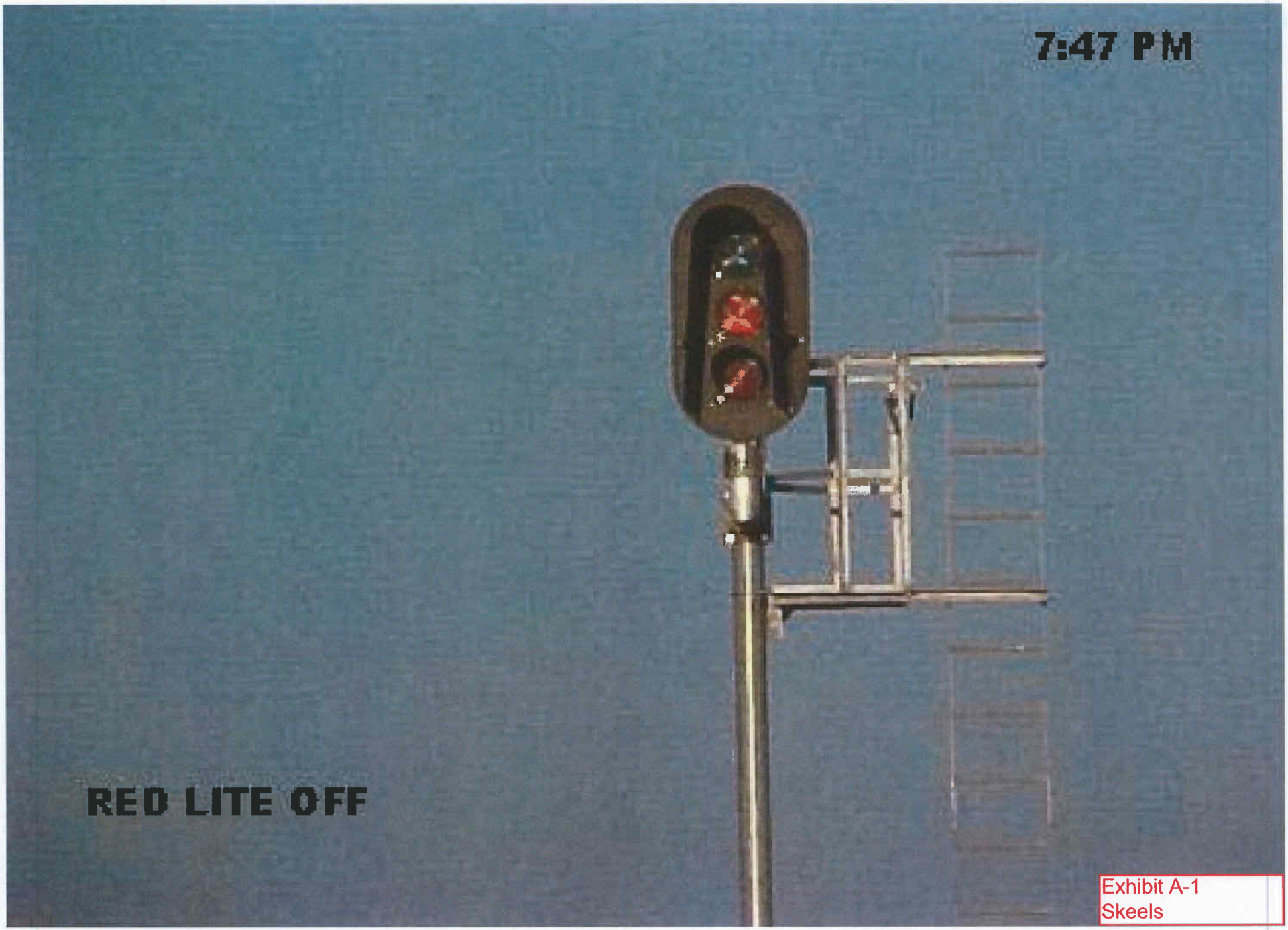
Q.14 Does this complete your direct testimony?

A.14 Yes, it does.

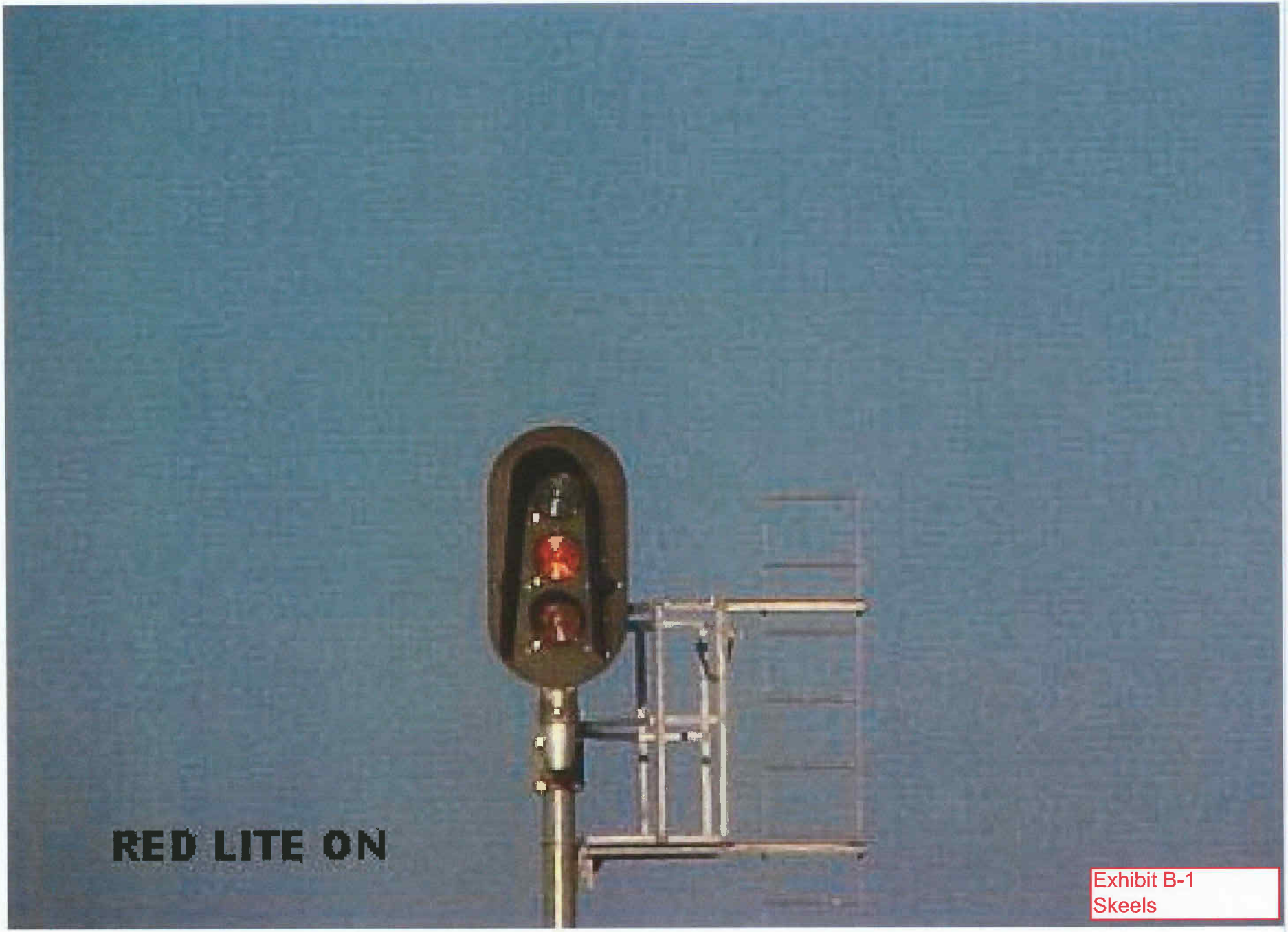
I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

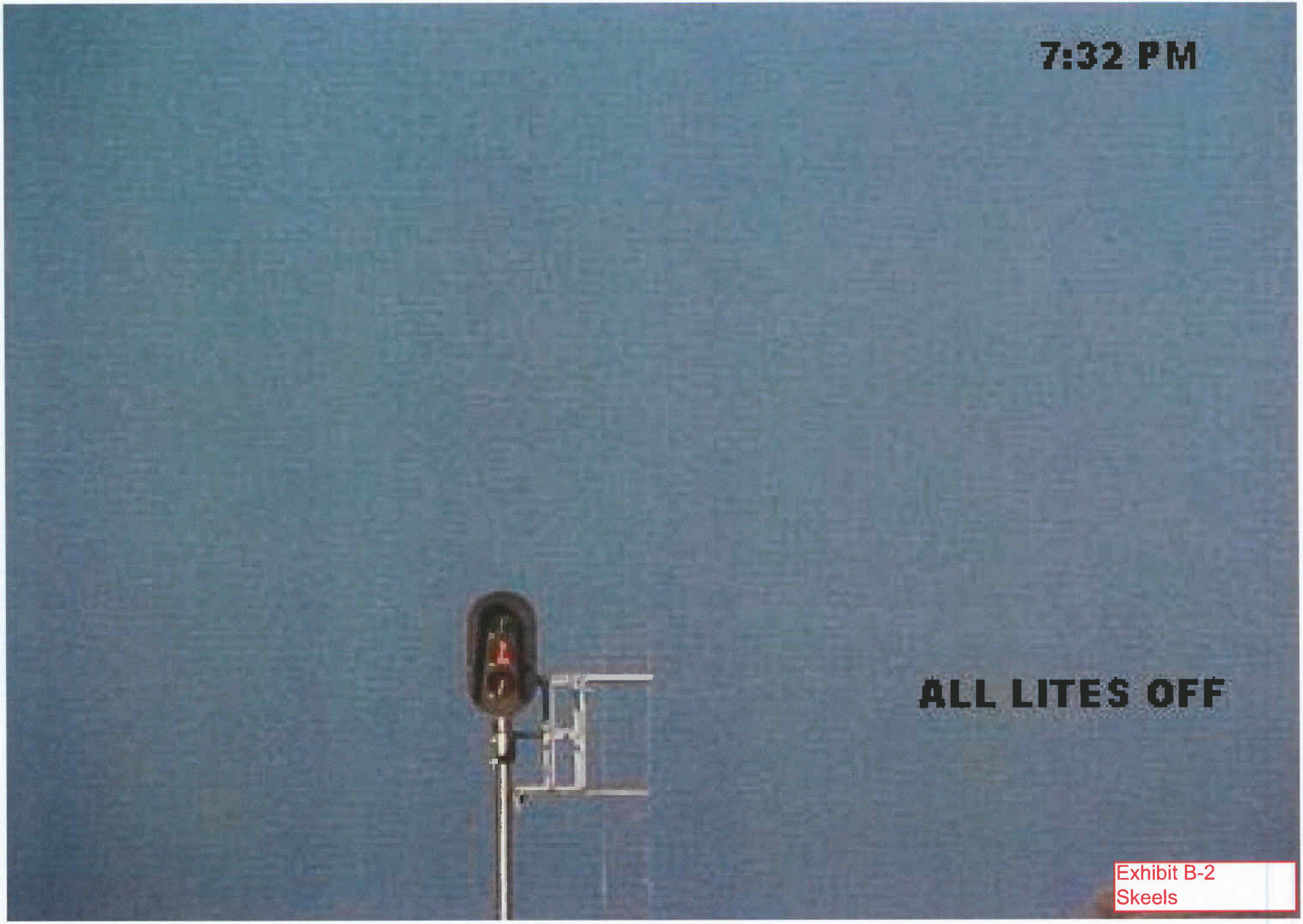
Dated: August 17, 2010

Dennis Skeels
Dennis Skeels


7:47 PM
RED LITE OFF
Exhibit A-1
Skeels


6:25 PM
MAIN
SIDING
ALL SIGNALS WAS DARK
Exhibit A-2
Skeels


RED LITE ON
Exhibit B-1
Skeels


7:32 PM
ALL LITES OFF
Exhibit B-2
Skeels

Track Chart

Needles Subdivision

Needles, CA (M.P. 578.0) to Barstow, CA (M.P. 745.83)

See each page for latest revised date

To view on the intranet or print this Track Chart go to:
http://kcintvpd0001.iss.bnr.com/maprec/mapsrechome.htm

To order this Track Chart in Sourcenet or
Millennium, use: 1363651

If you have any corrections or changes to these pages, either mail to the Manager of Maps and Records at 4515 Kansas Ave., Kansas City, KS 66106 or FAX to 913-551-4285. Mailing is preferred.

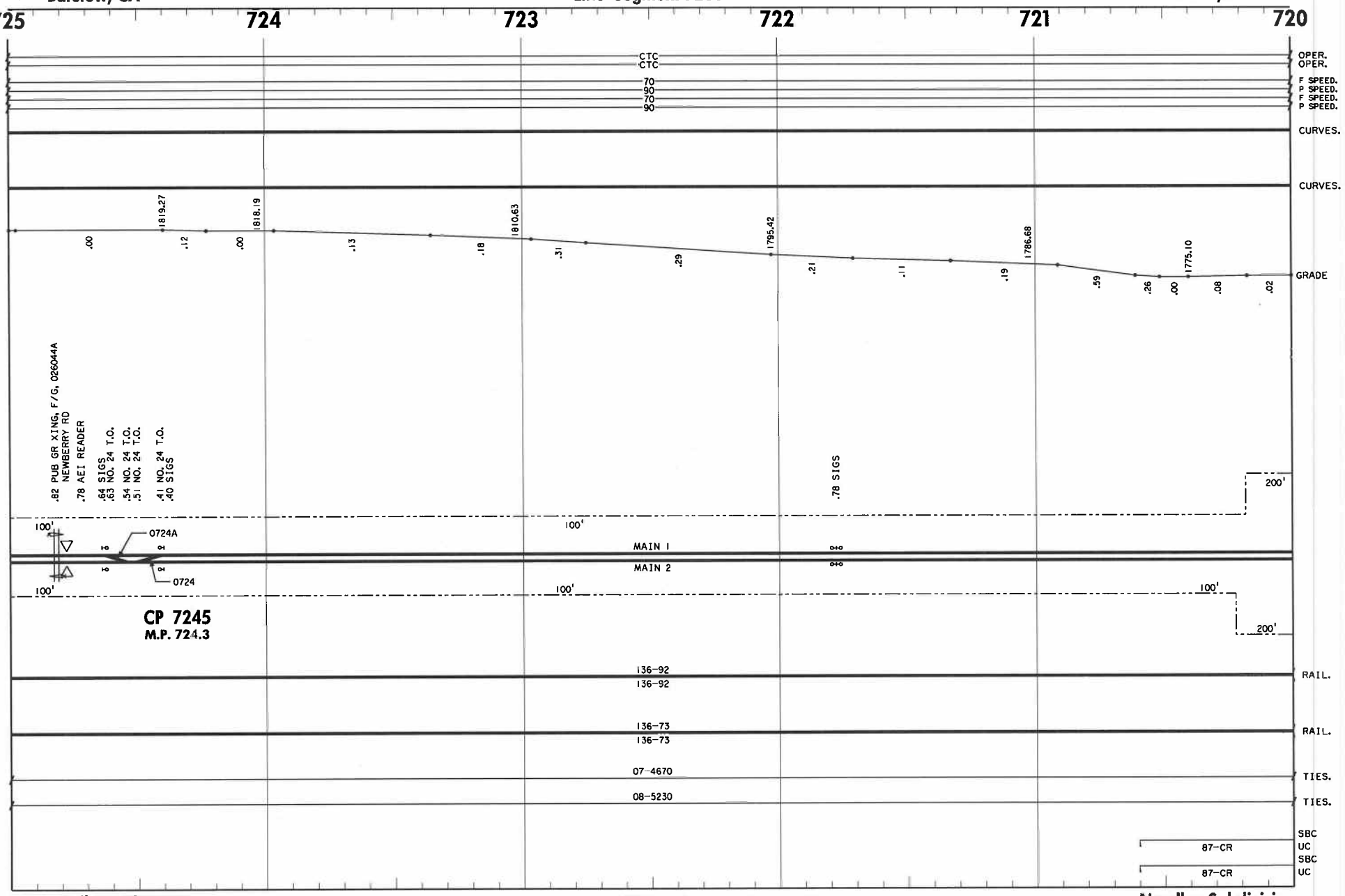
Notes:

NEE000.DGN

BNSF System Maintenance and Planning

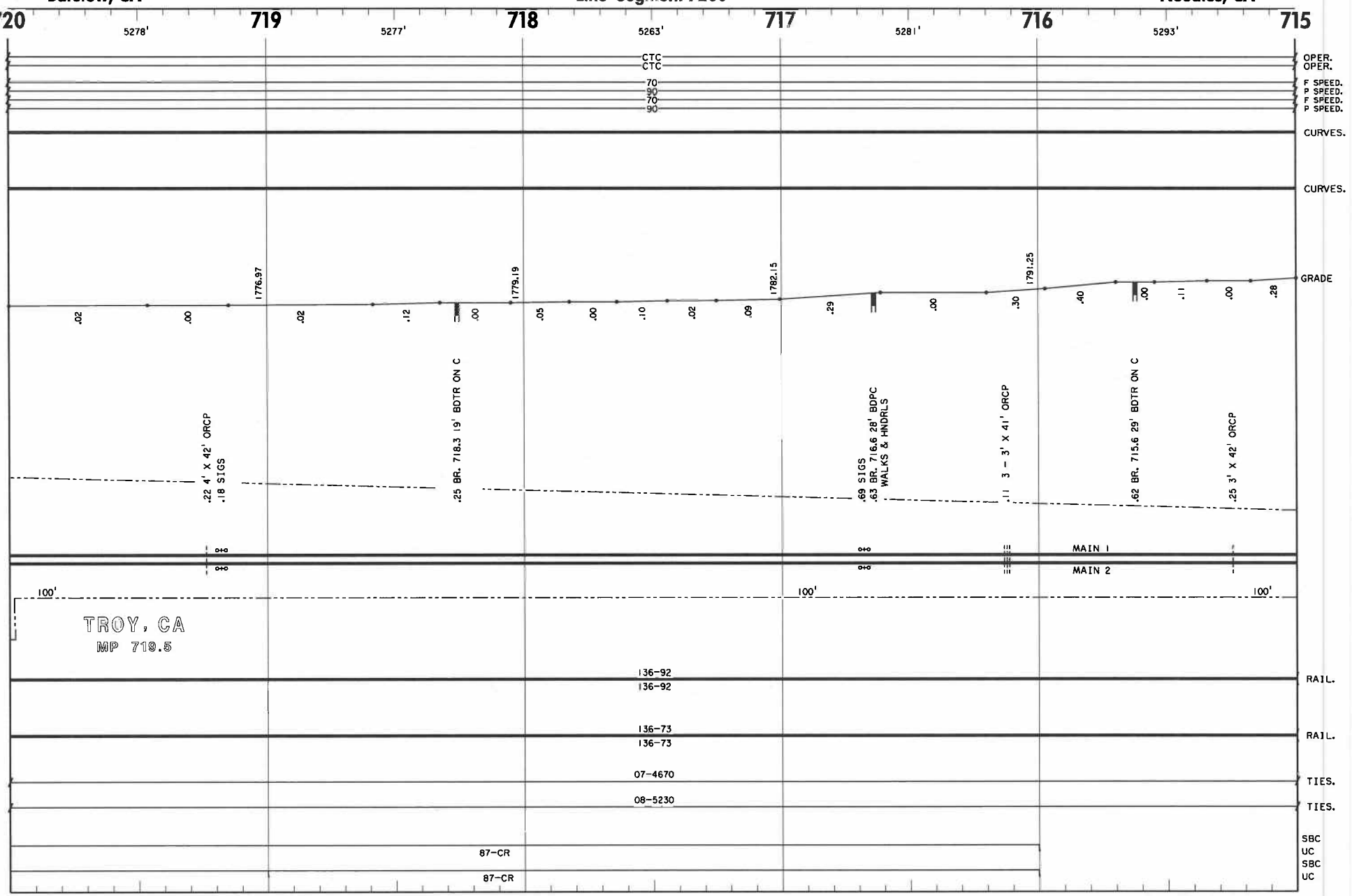
Exhibit C to Skeels

← Barstow, CA — Line Segment 7200 — Needles, CA →



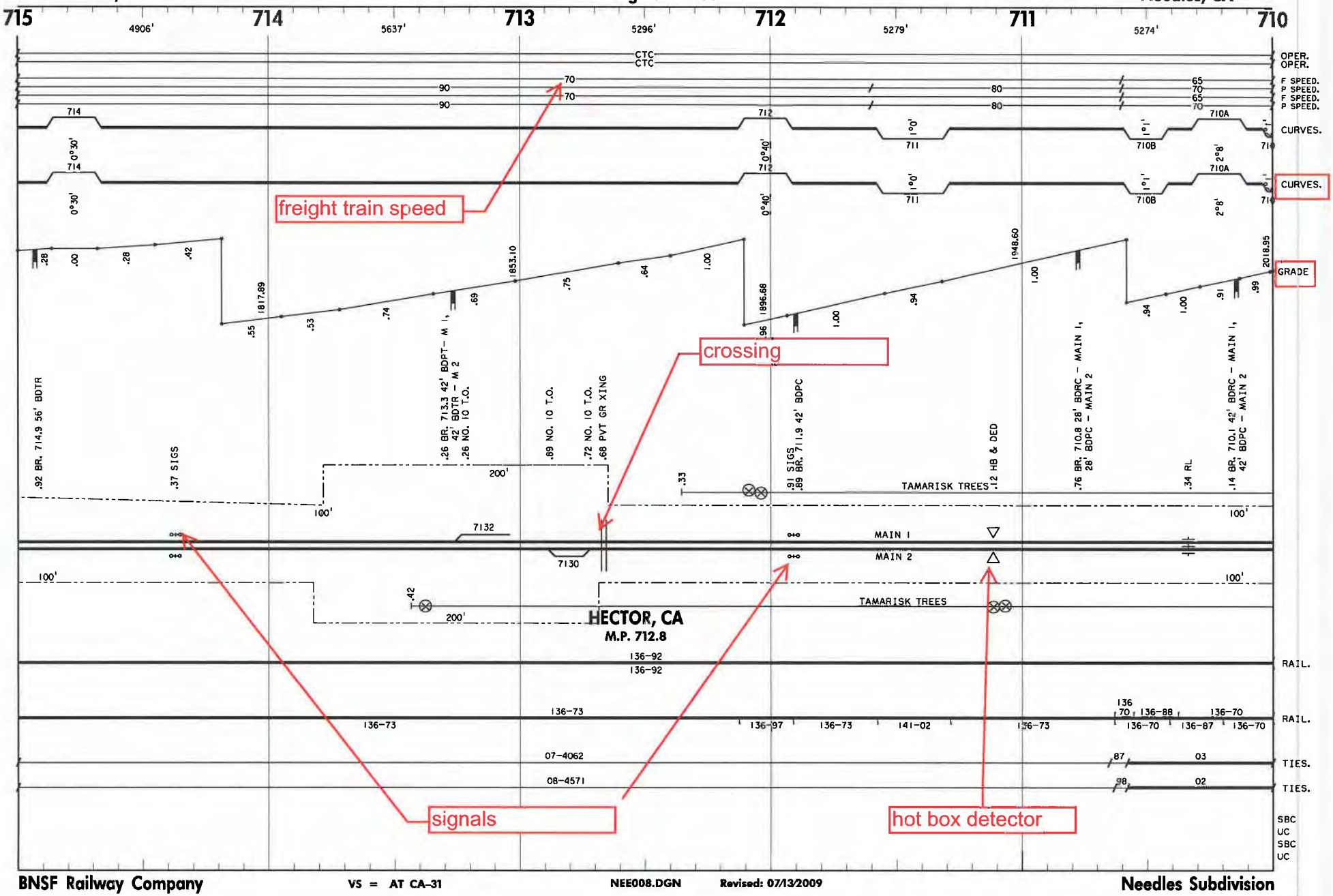
BNSF Railway Company — VS = AT CA-31 — NEE006.DGN — Revised: 07/13/2009 — Needles Subdivision

← Barstow, CA — Line Segment 7200 — Needles, CA →



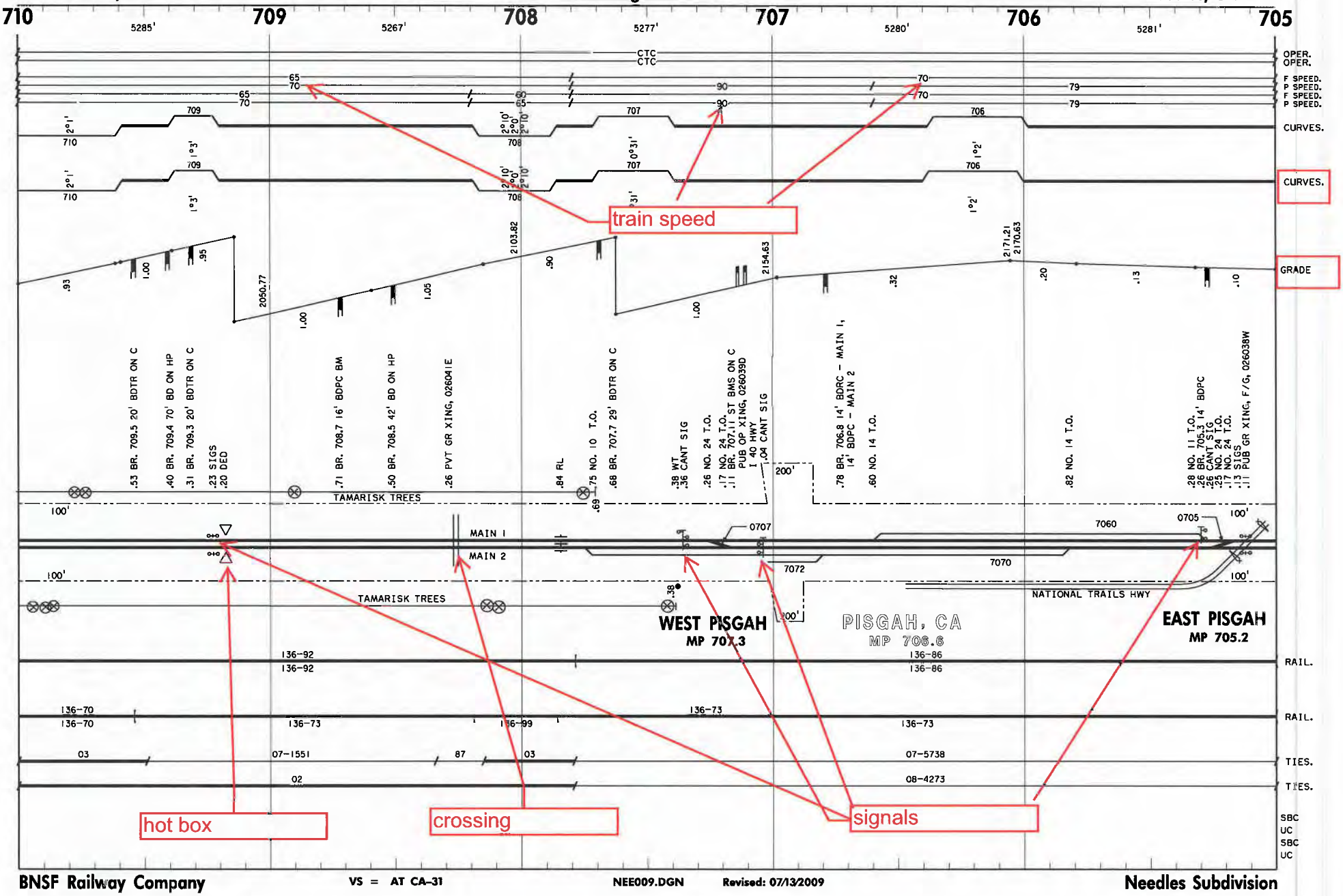
BNSF Railway Company — VS = AT CA-31 — NEE007.DGN — Revised: 07/13/2009 — Needles Subdivision

← Barstow, CA — Line Segment 7200 — Needles, CA →



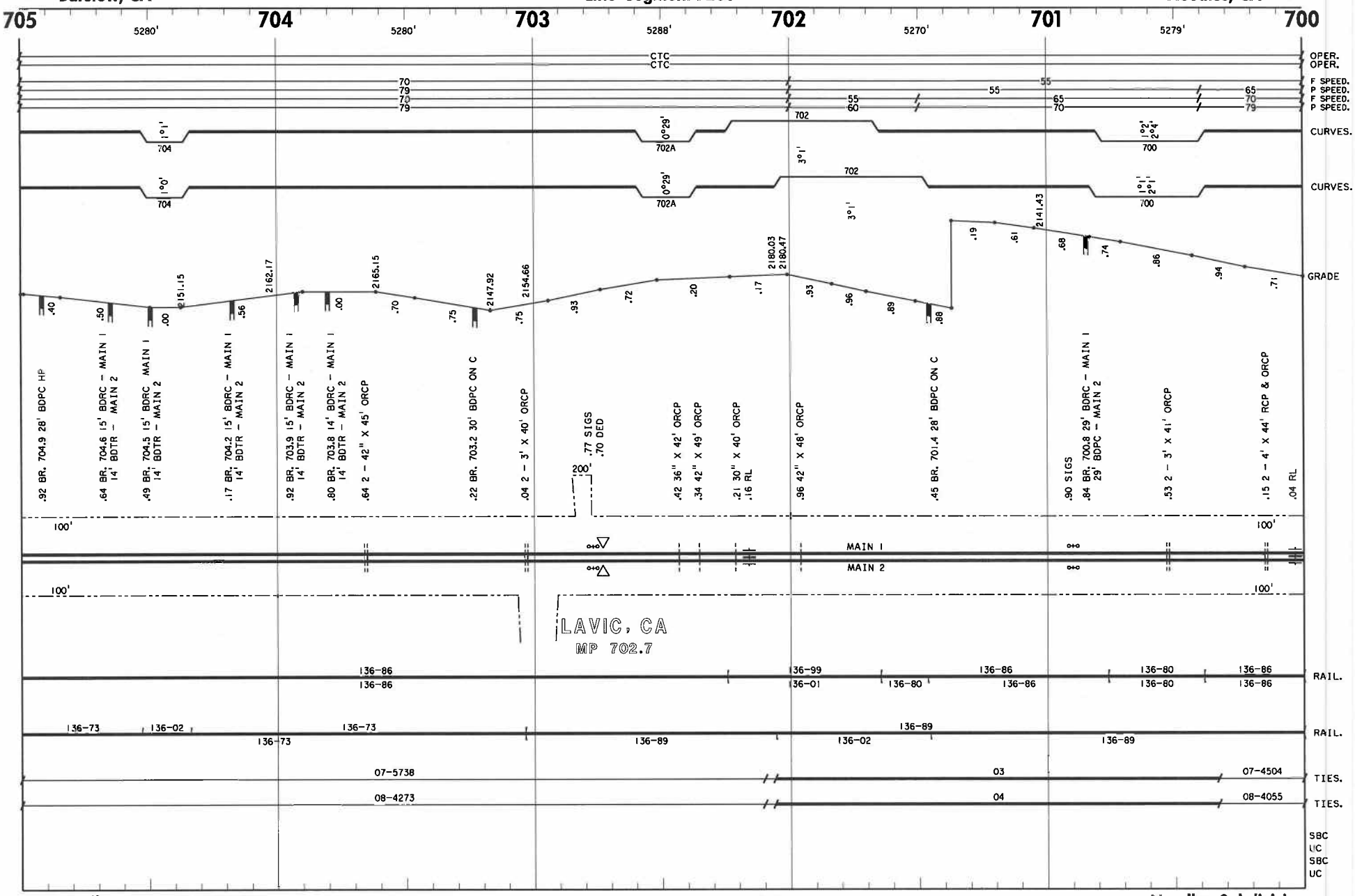
BNSF Railway Company — VS = AT CA-31 — NEE008.DGN — Revised: 07/13/2009 — Needles Subdivision

← Barstow, CA — Line Segment 7200 — Needles, CA →



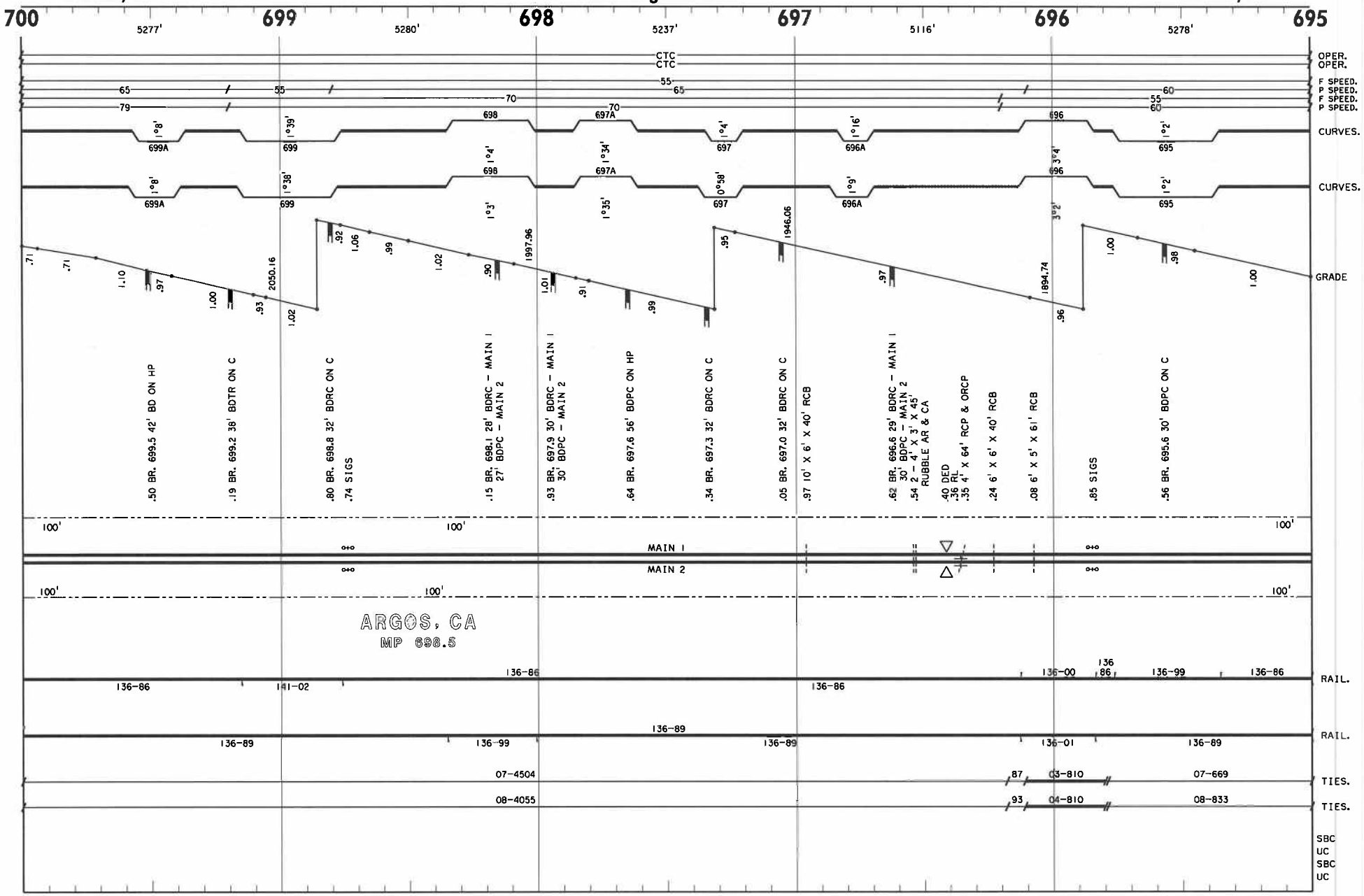
BNSF Railway Company — VS = AT CA-31 — NEE009.DGN — Revised: 07/13/2009 — Needles Subdivision

← Barstow, CA — Line Segment 7200 — Needles, CA →



BNSF Railway Company — VS = AT CA-31 — NEE010.DGN — Revised: 07/13/2009 — Needles Subdivision

← Barstow, CA — Line Segment 7200 — Needles, CA →



BNSF Railway Company — VS = AT CA-31 — NEE011.DGN — Revised: 07/13/2009 — Needles Subdivision

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION

***For the CALICO SOLAR** (Formerly SES Solar One)*

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 8/9/10)

APPLICANT
Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd.,
#1000
San Diego, CA 92108
angela_leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
richard_rotte@blm.gov

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer,
County Counsel
Bart W. Brizzee,
Deputy County Counsel
385 N. Arrowhead Avenue,
4th Floor
San Bernardino, CA 92415-
bbrizzee@cc.sbcounty.gov

California Unions for Reliable
Energy (CURE)
c/o: Loulena A. Miles,
Marc D. Joseph
Adams Broadwell Joseph
& Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham &
Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

*indicates change

INTERVENORS CONT.

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochsjack@earthlink.net

Gloria D. Smith, Senior Attorney
***Travis Ritchie**
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org
travis.ritchie@sierraclub.org

Newberry Community
Service District
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East,
Ste. 2700
Los Angeles, CA 90067-3012
Cynthia.burch@kattenlaw.com
Steven.lamb@kattenlaw.com
Anne.alexander@kattenlaw.com

ENERGY COMMISSION

ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Harriet Vletas, declare that on August 17, 2010, I served and filed copies of the attached Prepared Direct Testimony of Dennis Skeels, BNSF Railway Company dated August 17, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.govlsitingcaseslsolarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_x__ sent electronically to all email addresses on the Proof of Service list;

___ by personal delivery;

___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

___ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Harriet Vletas
HARRIET VLETAS

*indicates change

Exhibit C

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF DAVID A. KRAUSS, Ph.D.
Senior Managing Scientist, Exponent

and

GENEVIEVE M. HECKMAN, Ph.D.
Senior Scientist, Exponent

August 16, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

Exhibit 1205

PREPARED DIRECT TESTIMONY

OF

David A. Krauss, Ph.D.

Senior Managing Scientist, Exponent

and

Genevieve M. Heckman

Senior Scientist, Exponent

Q.1 Please state your name and occupation?

A.1 Our names are David A. Krauss, Ph.D. and Genevieve M. Heckman, Ph.D. Dr. Krauss is a Senior Managing Scientist with Exponent; Dr. Heckman is a Senior Scientist with Exponent. Exponent is a multidisciplinary organization of scientists, physicians, engineers, and regulatory consultants that performs in-depth investigations in more than 90 technical disciplines. Exponent evaluates complex human health and environmental issues, assesses risks related to exposure to certain environmental conditions, and analyzes failures and accidents to determine their causes and to understand how to prevent them. We also evaluate complex human health and environmental issues to find cost-effective solutions.

Q.2 What is your particular area of expertise?

A.2 We have both obtained Ph.D.'s in neuroscience and have specialized knowledge in human perception and cognition, reaction time, attention, the effects of lighting conditions on vision, and how stress affects behavior. We

assess risk associated with and investigate human factors in a wide array of scenarios. A copy of our respective *curriculum vitae* are attached hereto as Exhibits "A" and "B."

Q.3 Have you the studied the impact of glare and glint in your area of expertise?

A.3 Yes. This is typically done to determine the impact, if any, that glare or glint may have on a particular environment or has had on an accident.

Q4 Is there a body of professional literature that discusses and analyzes the effect of glint and glare?

A.4 Yes. There is an extensive body of literature that deals with both the effects of vehicle operators encountering bright lights during operation and the more physiological studies that deal with the changes to the retina when the retina is bombarded with bright light under various states of light adaptation.

Q.5. What have you been asked to do in relation to the Calico Solar Project?

A.5 We were asked to review and have reviewed the Staff Assessment and Supplemental Staff Assessment, Part II, on Traffic and Safety, as it relates to glare and glint, the associated study referenced in Appendix A, and to render an opinion as to the adequacy of the study and conclusions contained therein.

Q.6 After reviewing these materials, did you develop an understanding about the nature and purpose of the Calico Solar Project?

A.6 Yes, we did. As we understand it, this is relatively large solar energy project to be located in the Mojave Desert near Barstow. The proposed Project is to include 34,000 SunCatchers – 40 foot tall, 25-kilowatt-electrical (kWe) solar dishes developed by Stirling Energy Systems. [Supplemental Staff Assessment, Part II ("SSA Part II") at C.11-4];

Q.7 What is your opinion of the adequacy of the Supplemental Staff Assessment and associated study and the conclusions contained therein?

A.6 The Supplemental Staff Assessment, Part II, specifically makes a number of findings, three of which we focus on:

1. the SunCatchers could pose a significant risk to BNSF engineers and train crews, to include but not limited to temporary flash blindness, which would adversely impact the ability to see train signal lights [SSA Part II at C-11-19];

2. train signal lights are significant to the operational safety of the crews and trains [SSA Part II at C-11-19]; and

3. any escaping or itinerant glint and glare that may affect the railroad engineer's ability to clearly and accurately see signals is mitigable through shielding, LED lights, or other means designed to increase the contrast and intensity of the signal light [SSA Part II at C-11-19].

Q.8 What is your opinion of the adequacy of the first finding – the SunCatchers could pose a significant risk to BNSF engineers and train crews, to include but not limited to temporary flash blindness, which would adversely impact the ability to see train signal lights?

A.8 There is sufficient material in the SSA Part II, in particular the study attached as Appendix A ("Daytime Intrusive Brightness Analysis of Stirling Engine Solar Systems, by James Jewell, et al., (hereafter the "Jewell Report") that supports this finding. Although requested, we have not seen and there is not adequate time to review the underlying data associated with the Jewell Report. However, the Jewell Report states that the authors calculated the amount of light that is both captured by and escapes from a single SunCatcher. Based on their calculations, which at this point we assume to be accurate, they found that

"significant glare impacts (temporary flash blindness) would occur to any receptor within 223 feet of any SunCatcher unit." [SSA Part II, Appendix A at A-8] Accordingly, the Jewell Report establishes that at least 223 feet must be maintained between any receptor and any SunCatcher. [See Jewell Report at SSA Part II, Appendix A at A-10 ("At any distance less than 223 feet from the SunCatcher units, construction and operational workers will experience hazardous levels of irradiance.").] The proposed Project, however, does not envision a single SunCatcher; it calls for 34, 000 SunCatchers. Moreover, the Jewell Report is a static evaluation – both the SunCatcher and the receptor are stationary. Here, we have a dynamic situation – we know the engineer will be in a moving train that is not traveling in a straight line. The Jewell Report does not analyze, calculate or measure the impact of thousands of SunCatchers specifically on a train engineer moving over tracks within the Right-of-Way (RoW). The adverse impact, therefore, may be greater than that stated in the Jewell Report.

Q.9 What is your opinion of the adequacy of the second finding – train signal lights are significant to the operational safety of the crews and trains?

A.9 This finding is supported by the SSA and the Jewell Report. Moreover, we have spoken with several personnel from BNSF in order to gain a better perspective of the importance of train signals to BNSF and the actual operators. Based on our discussions, it is clear that being able clearly to see train signals from an appropriate distance given the train's speed (varying between approximately 60-75 mph) and to respond accordingly is critical to the safety of the train and its crew. At these speeds, and depending upon the grade, it is our understanding that it can take over a mile of track to stop a train.

Q.10 What is your opinion of the adequacy of the third finding – any escaping or itinerant glint and glare that may affect the railroad engineer's ability to clearly and accurately see

signals is mitigable through shielding, LED lights, or other means designed to increase the contrast and intensity of the signal light?

A.10 There is no scientific basis for this finding. No study has been performed that addresses these issues. According to the SSA, Part II at C.11-32, "Staff determined that measures exist, if needed, to ensure that BNSF railway engineers will be able to correctly perceive the color of the signal. Those procedures involves hooding and increasing the intensity of the lights." There is no analysis or data that supports this finding. The Jewell Report makes no mention of shielding, LED lights or other measures to increase the contrast and intensity of signal lights. While various mitigation measures may be helpful to reduce the impact of the glint and glare from the SunCatchers, to date no site-specific studies have been done to verify which measures, if any, would be able to mitigate the hazards identified in the above two findings. To reiterate, the Jewell Report is a static analysis of a single SunCatcher and a single receptor. Here, we have a dynamic situation and, to date, there has been no study or analysis to evaluate an engineer's ability to see a signal under such conditions.

Q.11 In your opinion, what needs to be done to properly assess the impact of glint and glare from the SunCatchers?

A.11 In addition to modeling the impact from a single SunCatcher, to fully evaluate this dynamic situation, the following factors, among others, need to be analyzed, measured and/or calculated:

1. The engineer's vantage point changes with respect to the location of SunCatchers in his visual field and the number of SunCatchers in his visual field as the engineer travels along the RoW;

2. The magnitude of glare may be affected by the geometry of the track, the changes in elevation, and the direction of travel;
3. The pattern of glare may have a differential effect on engineers depending on the time of day;
4. The pattern of glare may have a differential effect on engineers depending on the time of year;
5. There also may exist a level of glare that engineers may experience as a result of the SunCatchers that does not rise to a level that would induce the temporary flash blindness measured by the Jewell Report, but nonetheless causes discomfort that makes it difficult to focus in the direction of the SunCatchers;
6. While mitigation measures, including high contrast LED lights or black shielding, were suggested to enhance the conspicuity of railroad signals, the ability for engineers to perceive these signals out of a potentially bright, dynamically changing background has not been assessed to understand any possible discomfort or delays in detection that might arise out of the signal being viewed against a field of SunCatchers;
7. The perceived glint (high-contrast flicker) in the engineers' peripheral visual field may cause engineers involuntarily to orient their eyes and attention away from where they would otherwise be focusing their vision;
8. The size of the SunCatchers (up to 40 feet tall) may cause visual obstructions, independent of glare, that prevent engineers from perceiving job-critical information;

9. Light reflecting off the SunCatchers may result in a phenomenon known as a "phantom signal" whereby unlit signals appear to be illuminated because of abundant light striking them at low angles;

10. Since the trains are moving through the RoW, the distance traveled during expected look-away times as a result of the SunCatchers' presence should be calculated and the consequences of such travel should be assessed;

11. The effects of viewing multiple, indeed thousands, of SunCatchers simultaneously, rather than just one, must be analyzed to understand any cumulative glare effects that may arise;

12. The effects of viewing multiple SunCatchers simultaneously, for the entire period of time that the engineer is passing through the RoW, must be analyzed to understand any cumulative glare effects that may arise over time.

Q.12 The SSA Part II refers to "temporary flash blindness," (see, e.g., SSA Part II at C.11-19). Is this the only condition that could impair a train engineer's ability to see a signal and react in a timely manner?

A.12 No. In addition to temporary flash blindness, the Jewell Report refers to veiling reflections and/or distracting glare. [See SSA Part II, Appendix A at A-7.] Again, while the Jewell Report appears to account for temporary flash blindness from a single SunCatcher with a single receptor at a fixed point, it does not measure or otherwise account for the situation we have here, which involves multiple SunCatchers (i.e., thousands) at different elevations and different angles in a dynamic, moving scenario. This needs to be fully analyzed before one can render an opinion as to whether or not the 223-foot setback necessary for a single SunCatcher is sufficient for multiple SunCatchers.

Moreover, veiling effects and/or distracting glare are clearly noted in the Jewell Report as phenomena that are expected to occur as a result of light emitted from the SunCatcher. As the Jewell Report notes, it is well known that veiling reflections and/or distracting glare impact receptors "[b]eyond the distance that may cause temporary flash blindness [i.e., beyond 223 feet] and "may cause nuisance distraction or veil other objects (e.g., signal indicators for train operators) in the visual field." [SSA Part II, Appendix A at A-7.] In short, even with a single SunCatcher, the veiling reflection and/or distracting glare from the single SunCatcher may cause a disturbance in the train engineer's visual field such that the engineer cannot see the signal. The SSA Part II does not even mention these phenomena or otherwise attempt to account for them. The Jewell Report recognizes these phenomena but has done nothing to measure or quantify their impact. Moreover, as with temporary flash blindness, the Jewell report fails to account for, analyze, or measure the cumulative effect of thousands of SunCatchers on veiling reflections and/or distracting glare at different heights and angles in a dynamic, moving scenario.

Q.13 Have you reviewed TRANS-7 in the SSA Part II and do you have an opinion regarding whether it will adequately address the significant safety issues regarding the impact of glint and glare on train operators?

A.13 Yes. There is a discussion of TRANS-7 at C.11-19 and the actual proposed Condition of Certification is set forth at C.11-36-39 and is divided into two parts, "Signal Light Modifications," and "General Location, Operating, and Reporting Procedures." During the discussion on C.11-19, Staff notes that glare and glint is "mitigable" and that TRANS-7 is "designed to reduce to less than significant the operational impacts of the SunCatchers … to BNSF Railway and AMTRAK crews and

passengers." The scientific analysis performed in the Jewell Report is insufficient to support this conclusion or the separate or collective potential, and as yet untested, mitigation measures suggested therein. For example, the Signal Light Modifications section assumes without any analysis or study that signals can be modified by affixing shields and/or utilizing what is referred to as "current LED signal technology." Without more information there is simply no basis for this assumption. The Jewell Report itself has no such reference to signal light modification, shielding, or "current LED signal technology." The General Location, Operating, and Reporting Procedures section sets forth numerous requirements regarding offset tracking procedures and stow positions. While there is reference to offset tracking and stow positions in the Jewell Report (e.g., the reference to modifying offset tracking from 10 degrees to 25 degrees [SSA Part II, Appendix A-11]), there is no accompanying calculation to establish the sufficiency of this proposed offset. Additionally, the Jewell Report is based on a single SunCatcher and a single receptor; it does not take into account the dynamic situation here. With thousands of SunCatchers at different elevations and a train moving along a curved track for several miles, the view of the engineer and the angle between the engineer and the respective SunCatchers will change constantly. This has not been quantified or otherwise taken into account. Not until the full effects of the SunCatchers' field are studied and determined, is one able to propose, evaluate, and select potential mitigation measures.

Q.14 Did you prepare any demonstratives to illustrate some of these concepts?

A.14 Yes.

Q.15 Please explain how these relate to the present discussion.

A.15 Exhibits 1-2 demonstrate an important concept in visual search – that is, that the background against which a target (in this case, the upward tilted line) is viewed

has a significant and measurable impact on the ease with which that target is located. Exhibit 3 illustrates the "phantom signal" phenomenon, in which direct external illumination can hinder a driver or operator's ability to discern whether a signal light is illuminated. Finally, Exhibit 4 depicts a simple demonstration of the spatial summation of light.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: August 16, 2010

David A. Krauss, Ph.D.

Genevieve M. Heckman, Ph.D.

Exponent
Failure Analysis Associates

Exponent
5401 McConnell Avenue
Los Angeles, CA 90066

telephone 310-754-2700
facsimile 310-754-2799
www.exponent.com

David A. Krauss, Ph.D.

Senior Managing Scientist

Professional Profile

Dr. David A. Krauss is a Senior Managing Scientist in Exponent's Human Factors practice. Dr. Krauss has specialized knowledge in human perception and cognition, reaction time, attention, the effects of lighting conditions on vision, and how stress affects behavior. He uses this experience to investigate human factors in a wide array of scenarios such as automobile accidents, industrial and occupational accidents, structure fires, and slip-and-fall incidents. Dr. Krauss has investigated accidents associated with industrial safety, motor vehicles, and consumer products, among others.

Dr. Krauss' analysis methods include programming custom image-processing software to quantify visibility and conspicuity for many applications, including product development and recreating accident scenarios. He has also developed, published, and implemented a method to accurately capture and display digital photographs of low-visibility or nighttime accident scenes. Additionally, he performs quantitative injury and risk analyses using large-scale incident and injury data from various sources including the Consumer Product Safety Commission (CPSC), Centers for Disease Control (CDC), Food and Drug Administration (FDA), and manufacturer trade associations.

As part of his consulting practice, Dr. Krauss oversees human-subject testing to assess product usability and to gather user opinions for various products. He incorporates elements of anthropometry, visual assessments, psychophysics, questionnaires, and observational techniques to conduct comprehensive evaluations of a variety of consumer and industrial products.

Dr. Krauss' doctoral dissertation addressed human visual perception and reading. His familiarity with the cognitive-psychology literature has been applied to the development of warnings, instructions, and safety information for various products as well as to the assessment of the role of warnings in accidents.

Academic Credentials and Professional Honors

Ph.D., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2003
M.A., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2000
B.S., Biopsychology and Cognitive Science, University of Michigan, 1998

Pauley Graduate Fellowship, University of California, Los Angeles (1998)
Undergraduate honors, University of Michigan (1994)

Licenses and Certifications

OSHA-Qualified General Industry Safety Trainer; Certified Forklift Operator

Exhibit A Krauss-Heckman

Publications

Khan F, Arndt S, Krauss D. Understanding the relationship between safety climate and warning compliance in occupational settings. Proceedings, 14th Annual International Conference on Industrial Engineering: Theory, Applications and Practice, Anaheim, CA, 2009.

Polk TA, Lacey HP, Nelson JK, Demiralp E, Newman LI, Krauss D, Raheja A, Farah MJ. The development of abstract letter representations for reading: Evidence for the role of context. Cognitive Neuropsychology 2009; 26(1):70–90.

Kubose T, Krauss D. Methodological considerations for using the English XL tribometer for post-hoc slip-and-fall evaluations. Proceedings, 52nd Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2008.

Krauss D, Arndt S, Lakhiani S, Khan F. Additional considerations when applying the "Safety Engineering Hierarchy" in industrial work settings. Proceedings, 13th Annual International Conference on Industrial Engineering: Theory, Applications and Practice, Las Vegas, NV, 2008.

Arndt S, Krauss D, Weaver B. A previously unidentified failure mode for ladder-climbing fall-protection systems. Proceedings, American Society of Safety Engineers Professional Development Conference and Exposition, Las Vegas, NV, 2008.

Arndt S, Young D, Krauss D. Human factors issues in trucking—What does a qualified expert need to know? Trucking Law Seminar, Phoenix, AZ, April 17, 2008.

Krauss D, Lieberman D, Grossman H, Ray R, Scher I. An evaluation of perceptual experience of skiers using quantitative image processing. Journal of ASTM International 2008; 5(4).

Kuzel M, Krauss D, Moralde M, Kubose T. Comparison of subjective ratings of slipperiness to the measured slip resistance of real-world walking surfaces. International Conference on Slips, Trips and Falls, From Research to Practice, 2007.

Krauss DA, Kuzel MJ, Cassidy P, Goodman J. A review of technologies for studying visual perception under low-illumination conditions. Proceedings, 50th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2006.

Arndt SR, Wood CT, Delahunt PB, Wall CT, Krauss DA. Who's in the back seat? A study of driver inattention. Proceedings, 50th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2006.

Krauss DA, Kuzel MJ, Arndt SR, Delahunt PB. Validation of digital image representations of low-illumination scenes. SAE Paper 2006-01-1288, Society for Automotive Engineers, Inc., 2006.

Young D, Huntley-Fenner G, Trachtman D, Krauss D. Human performance issues in auditory collision-avoidance systems. Proceedings, 10th Annual International Conference on Industrial Engineering—Theory, Applications and Practice, pp. 64–68, Clearwater, FL, 2005.

Al-Tarawneh IS, Cohen WJ, Trachtman D, Bishu RR, Krauss DA. The effect of hands-free cellular telephone conversation complexity on choice response time in a detection task. Proceedings, 48th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2004.

Krauss DA. Mechanisms of letter perception. Doctoral Dissertation, Department of Psychology, University of California, Los Angeles, June 2003.

Presentations and Posters

Clausner TC, Fox JR, Krauss DA. Comprehension and production of graphs that metaphorically express linguistic semantic event structure. 8th International Cognitive Linguistics Conference, La Rioja, Spain, 2003.

Krauss DA, Engel SA. Effects of stimulus crowding in human extrastriate cortex. Meeting of the Society for Neuroscience, San Diego, CA, 2001.

Krauss DA, Engel SA. Differential effects of crowding on feature detection and letter recognition. Meeting of the Cognitive Neuroscience Society, New York, NY, 2001.

Krauss DA, Engel SA. Perceptual learning in color classification. Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, 2000.

Polk TA, Krauss D, Nelson J, Pond H, Raheja A, Farah MJ. The development of abstract letter identities: Evidence for a contextual hypothesis. Annual Meeting of the Psychonomics Society, 1998.

Project Experience

Evaluated the visibility of pedestrians, tractor-trailer combinations, and other parked vehicles on roadways under various reduced-lighting conditions.

Analyzed the performance capabilities, including perception-response time, for drivers and pedestrians under a variety of lighting and traffic conditions.

Created representative low-light photographs to use as demonstrative exhibits using recently developed and validated software and photography techniques.

Used the English XL tribometer to evaluate slip resistance on various flooring surfaces and correlated these measurements with pedestrian expectations of surface traction.

Programmed custom software in Matlab® to assess the visibility of terrain on a ski mountain under a variety of lighting conditions. These measurements were correlated with skier and

snowboarder subjective ratings to understand perceptual biases to aid in predicting potentially hazardous visibility conditions.

Assisted companies with development and revision of product warnings and instructions for a wide range of products including those used in home, occupational, recreational, and agricultural settings.

Academic Appointments

- Lecturer, University of California, Los Angeles Department of Psychology
- Instructor, University of California, Los Angeles Extension

Peer Reviewer

- Human Factors and Ergonomics Society
- Worth Publishers

Professional Affiliations

- Human Factors and Ergonomics Society (member)
- Society for Automotive Engineers (member)

Exponent
Failure Analysis Associates

Exponent
5401 McConnell Avenue
Los Angeles, CA 90066

telephone 310-754-2700
facsimile 310-754-2799
www.exponent.com

Genevieve M. Heckman, Ph.D.

Senior Scientist

Professional Profile

Dr. Genevieve Heckman is a Senior Scientist in Exponent's Human Factors practice. Dr. Heckman has specialized expertise in human perception and cognition, reaction time, and decision-making, as well as lighting and illumination, inattention and distraction, and the effects of training and experience on performance. Dr. Heckman uses her knowledge of fundamental human sensory and cognitive processes to evaluate human factors and human performance issues in a wide variety of scenarios including trips, slips, and falls; motor vehicle and pedestrian accidents; occupational and industrial accidents; on-product warnings and safety information; child safety and hazards; and the use and misuse of consumer products. She has experience conducting visibility and conspicuity analyses; evaluating optical radiation hazards in industrial settings; and assessing the factors influencing driver and pedestrian behavior, reaction time, performance in sports and recreation, and compliance with warnings and instructions. In her work, Dr. Heckman uses a variety of analysis methods, including human subjects testing, quantitative injury and risk analyses, and use of image-processing techniques to quantify visibility, conspicuity, and discriminability under diverse viewing conditions.

Prior to joining Exponent, Dr. Heckman completed a Ph.D. in psychology, with specialization in cognitive neuroscience, at the University of California, Los Angeles. Her work during that time used a combination of behavioral, neuroimaging, and mathematical techniques to study human perception of color and lighting, the effects of experience on perceptual capabilities, and optimal experimental design in fMRI experiments. Her graduate work was supported by awards from the University of California, the National Institutes of Health, and the National Science Foundation.

Academic Credentials and Professional Honors

Ph.D., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2007
M.A., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2004
B.A., Psychology, Wake Forest University, 2002

Hobson Dissertation Year Fellow, University of California, Los Angeles, 2006; National Science Foundation Graduate Research Fellow, University of California, Los Angeles, 2003–2006; Phi Beta Kappa Honor Society, Wake Forest University, 2002

Exhibit B Krauss-Heckman

Publications

Heckman GM, Jackson GW, Keefer RE, Ray R, Harley EM, Young DE. Mechanisms of automatic transmission console shift selection and driver egress. Society of Automotive Engineers 2009 World Congress, April 2009. Paper judged to be among the most outstanding SAE Technical Papers of 2009 and thus further published in the SAE International Journal of Engines, Volume 2, September 15, 2009.

Harley EM, Trachtman D, Heckman GM, Young DE. Driver gear-shifting behaviors and errors. Proceedings, Human Factors and Ergonomics Society, 52nd Annual Meeting, New York, NY, 2008.

Heckman GM, Bouvier SE, Carr VA, Harley EM, Cardinal KS, Engel SA. Nonlinearities in rapid event-related fMRI explained by stimulus scaling. Neuroimage 2007; 34:651–660.

Heckman GM, Muday JA, Schirillo JA. Chromatic shadow compatibility and cone-excitation ratios. Journal of the Optical Society of America A 2005; 22:401–415.

Presentations and Published Abstracts

Heckman GM. Mechanisms of learning in a color detection task. Invited talk given at the Smith-Kettlewell Eye Research Institute Colloquim Series, San Francisco, CA, November 2006.

Heckman GM, Engel SA. Perceptual learning of contrast detection is color selective. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2006.

Harley EM, Bouvier SE, Heckman GM, Engel SA. Figure-ground effects in V1 measured with functional MRI. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2006.

Heckman GM, Cardinal KS, Harley EM, Bouvier SE, Carr VA, Engel SA. Characterizing contrast response functions measured with rapid event-related fMRI. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2005.

Cardinal KS, Harley EM, Heckman GM, Bouvier SE, Carr VA, Engel SA. Comparison of contrast response functions measured with rapid and spaced event-related fMRI. Poster session presented at the annual meeting of the Society for Neuroscience, San Diego, CA, October 2004.

Heckman GM, Engel SA. Spatial frequency modulates color selectivity of adaptation to contrast patterns. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2003.

Schirillo JA, Heckman GM, Barra T. A chromatic test of shadow compatibility and equal cone excitation ratios. Poster session presented at the annual meeting for the Vision Sciences Society, Sarasota, FL, May 2003.

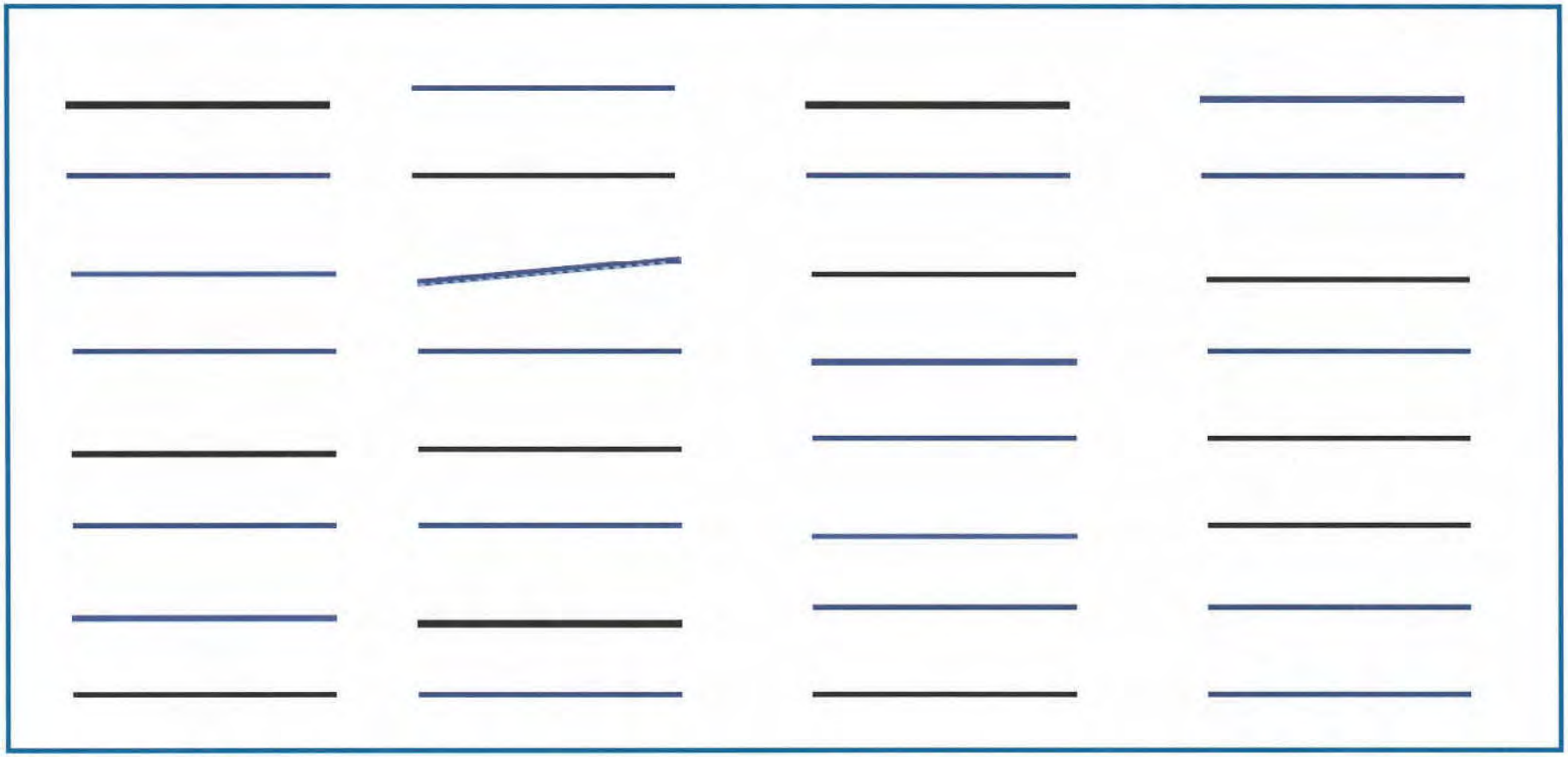
Peer Reviewer

- Human Factors and Ergonomics Society

Professional Affiliations

- Human Factors and Ergonomics Society
- Vision Sciences Society

Visual Search:
Find the upward tilted purple line



Visual Search:
Find the same upward tilted purple line

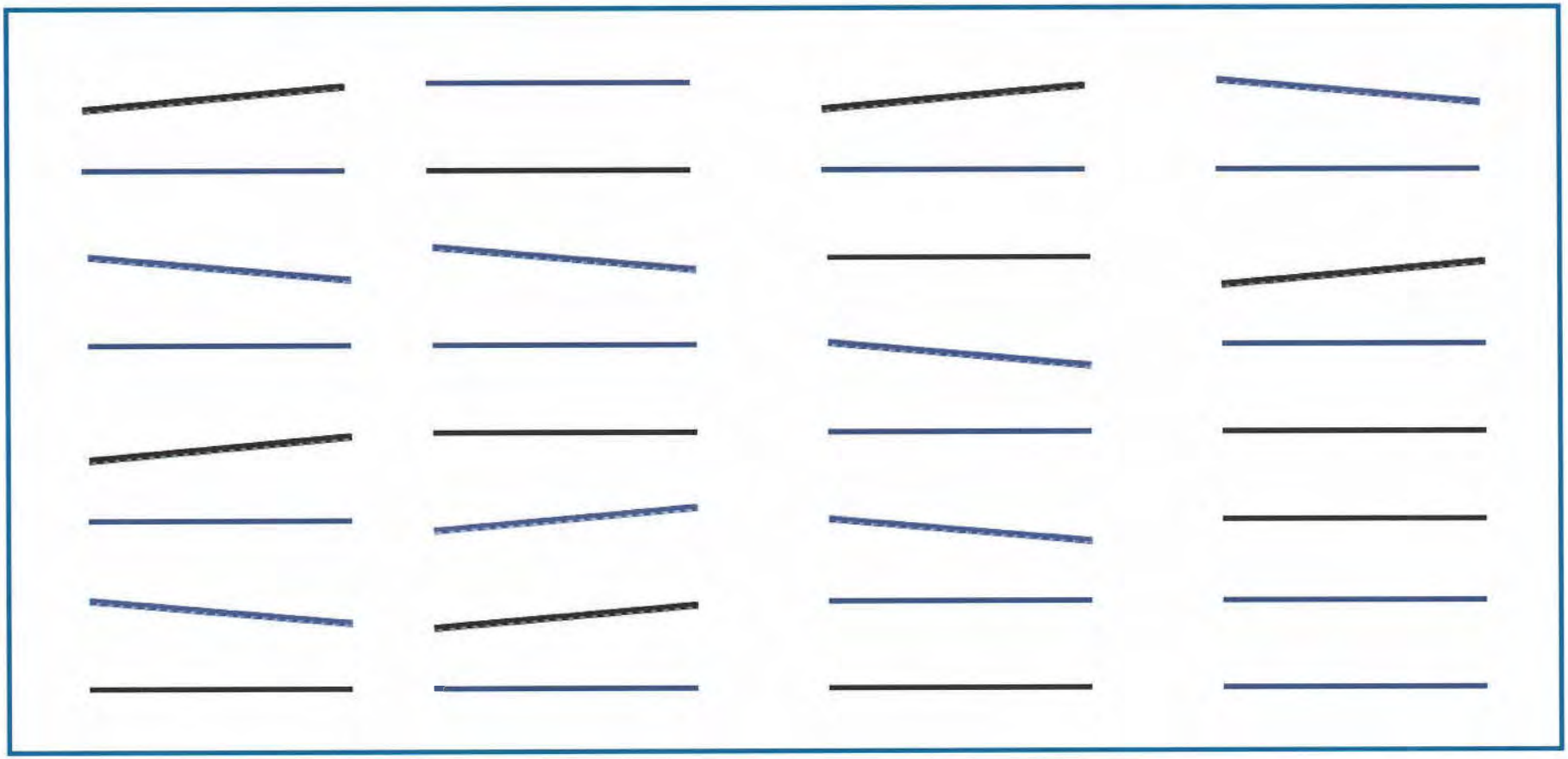


Exhibit 2 Krauss-Heckman

"Phantom Signals"

Excess of direct external illumination on a signal makes it difficult to discern which signal is illuminated.

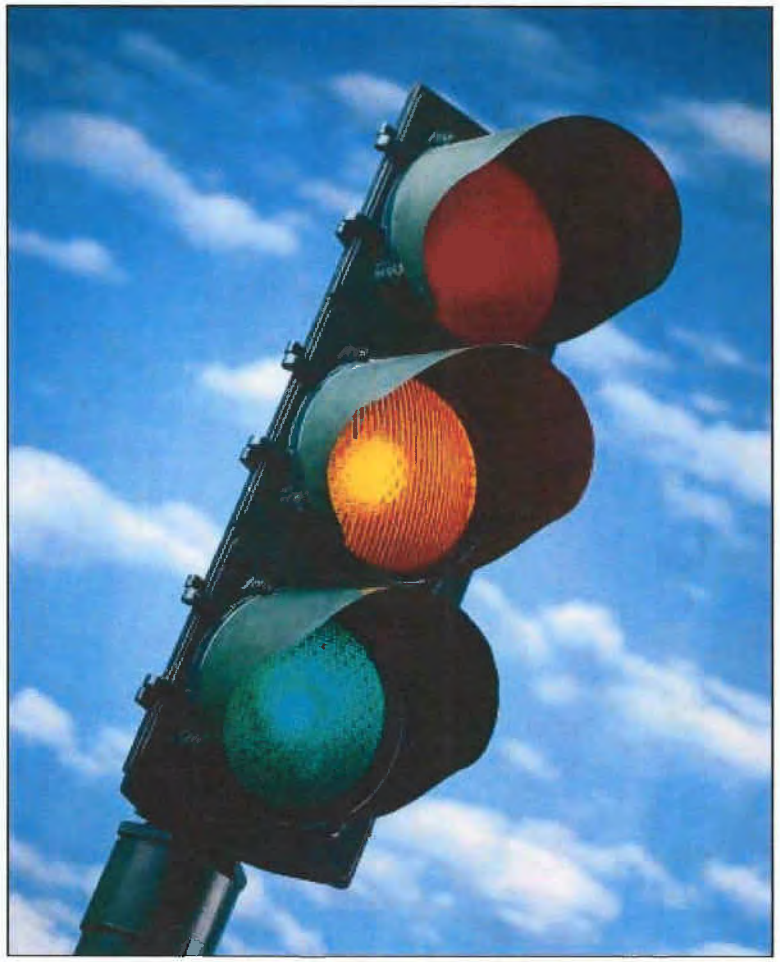
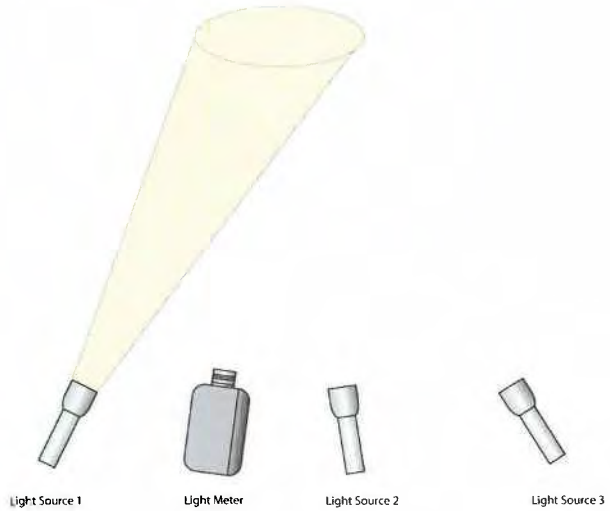
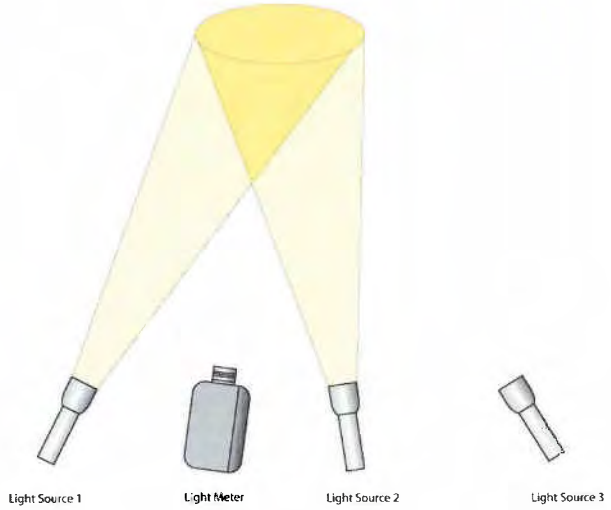


Exhibit 3 Krauss-Heckman

Spatial Summation of Light





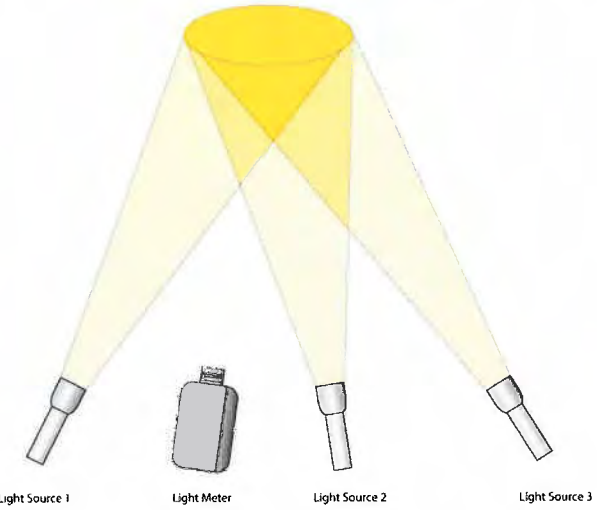


Exhibit 4 Krauss-Heckman

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION

***For the CALICO SOLAR** (Formerly SES Solar One)*

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 8/9/10)

APPLICANT
Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd.,
#1000
San Diego, CA 92108
angela_leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
richard_rotte@blm.gov

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer,
County Counsel
Bart W. Brizzee,
Deputy County Counsel
385 N. Arrowhead Avenue,
4th Floor
San Bernardino, CA 92415-
bbrizzee@cc.sbcounty.gov

California Unions for Reliable
Energy (CURE)
c/o: Loulena A. Miles,
Marc D. Joseph
Adams Broadwell Joseph
& Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham &
Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

*indicates change

INTERVENORS CONT.

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochsjack@earthlink.net

Gloria D. Smith, Senior Attorney
***Travis Ritchie**
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org
travis.ritchie@sierraclub.org

Newberry Community
Service District
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East,
Ste. 2700
Los Angeles, CA 90067-3012
Cynthia.burch@kattenlaw.com
Steven.lamb@kattenlaw.com
Anne.alexander@kattenlaw.com

ENERGY COMMISSION

ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Harriet Vletas, declare that on August 17, 2010, I served and filed copies of the attached Prepared Direct Testimony of David A. Krauss, Ph.D and Genevieve M. Heckman, Ph.D. dated August 16, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.gov/siting/cases/solarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_x__ sent electronically to all email addresses on the Proof of Service list;

___ by personal delivery;

___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

___ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Harriet Vletas
HARRIET VLETAS

*indicates change

Exhibit D

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF THOMAS SCHMIDT
BNSF RAILWAY COMPANY

July 29, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

PREPARED DIRECT TESTIMONY

OF

Thomas Schmidt

Director Engineering Services – BNSF

Q.1 Please state your name and occupation?

A.1 My name is Thomas Schmidt. I am Director of Engineering Services, BNSF Railway Company ("BNSF"). My resume is attached to this testimony.

Q.2 What is the purpose of your testimony in this proceeding?

A.2 I will testify on two areas of concern to BNSF:

(1) soil and water resources (detention basins); and

(2) hydrology (subsidence).

Q.3 Why does BNSF have concerns regarding the Calico Solar Project?

A.3 BNSF is one of two Class 1 railroads operating in California. BNSF's mainline, which is traversed by as many as 80 trains per day, carries interstate commerce from the Ports of Los Angeles and Long Beach to U.S. Midwestern, Southwestern and Eastern markets. The proposed Project would surround both sides of several miles of BNSF's mainline tracks. Accordingly, BNSF has significant concerns that the construction and operation of the Project do not adversely impact BNSF operations or otherwise impose unacceptable safety risks to BNSF personnel and operations.

The consummation of the Project would require the granting of several licenses and permits from BNSF, which Applicant Calico Solar ("Calico Solar") has requested in a piecemeal fashion over the course of the past year. To date, none of these requested licenses or permits have been granted. Before BNSF can grant such licenses and permits, BNSF must be assured that its significant safety and operational concerns are addressed.

Q.4 What are BNSF's safety and operational concerns in relation to soil and water resources (detention basins)?

A.4 BNSF is concerned that detention basins in the present documentation are possibly not sufficient to protect the tracks and their supporting structures. The Project incorporates detention basins that have been designed for a 100 year flood. SSA. P. C.7-26. Given the gradient of the Project site, BNSF is concerned that the steps being proposed are not adequate to ensure protection of the tracks and their supporting structures or soil. A characteristic of high desert environs such as the Project site is an increased likelihood of flash floods, which over a sustained period of hours or days may cause the detention basins to overflow and cause a high volume of water in a concentrated flow to wash through the area, eroding the terrain around and supporting the tracks. As the former roadmaster for territory adjacent to this portion of the mainline, I have personal experience with sudden flash floods in the desert.

Q.5 Are you aware of any site specific studies that address the potential impact to the rail if there is a sudden and catastrophic rupture or overtopping of one or more of the detention basins?

A.5 No. It needs to be determined whether Calico Solar should be required to fund the reinforcement of rail infrastructure.

Q.6 What are BNSF's safety and operational concerns in relation to hydrology (subsidence)?

A.6 BNSF understands that, under the current application, Calico Solar intends to draw water from a water well on the Project site. BNSF is concerned the potential drawdown of the groundwater basin by the newly proposed water well may cause subsidence which might adversely affect rail track alignment, increasing the risk of increased maintenance of a derailment. While the SA/DEIS briefly addresses the issue of possible subsidence due to groundwater pumping at p. C.4-12, and the SSA discusses the issue at C.4-13 (Geology and Paleontology), BNSF is concerned that the analysis may not be sufficient. In addition, while Calico Solar represents that it is currently the only water user in the groundwater basin, BNSF notes that it intends to preserve the option of replacing its abandoned wells in the Hector Road location.

BNSF understands that Calico Solar is required to conduct groundwater monitoring on a quarterly basis. BNSF requests that as a Condition of Certification, Calico Solar be required to provide BNSF with such quarterly reports, and that a notification procedure be put in place for any

noted subsidence, whereby BNSF maintenance teams would be alerted of the issue.

Q.7 Does this complete your direct testimony?

A.7 Yes, it does.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: July 29, 2010

Thomas B Schmidt PE

Thomas Schmidt

Thomas Schmidt, P.E.

Curriculum Vitae

As Director Engineering Services – BNSF Railway Company, Mr. Schmidt is responsible for management of construction activities within the BNSF railway system from Chicago to Los Angeles. As part of his 34-year tenure with BNSF, Mr. Schmidt spent 14 years working in BNSF's track department handling the issues to which the railroad is exposed on a regular basis throughout the country arising from flooding and other natural disasters. During this time, Mr. Schmidt spent six months in Needles, California, where, among other things, he handled the specific flood and disaster issues which arise in a desert environment.

1990-current **BNSF Railway Engineering Department**

Director Engineering Services (1995-current)

- Responsible for management of new construction and expansion of facilities and physical plants pertinent to railroads, including mainlines, sidings and intermodal facilities.
- Assist track department with maintenance of track and roadbed.
- Responsible for permitting, mitigation, and reconstruction both for new development and in response to catastrophic events, as needed.

Construction Engineer (1990-1995)

1976-1990 **BNSF Railway Track Department**

Assistant Division Engineer (1982-1990)

Roadmaster (1980-1982)

Assitant Roadmaster, Management Trainee (1976-1980)

Education

B.S. Civil Engineering University of Kansas 1975
Licensed Professional Engineer licensed in State of Kansas

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-922-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the CALICO SOLAR (Formerly SES Solar One)

Docket No. 08-AFC-13
PROOF OF SERVICE
(Revised 7/12/10)

APPLICANT
Felicia Bellows
Vice President of Development & Project Manager
Tessera Solar
4800 North Scottsdale Road, #5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd., #1100
San Diego, CA 92108
angela_leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com
Jim Stobaugh
BLM – Nevada State Office
P.IO. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
Richard_rotte@blm.com

Becky Jones
California Department of Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer, County Counsel
Bart W. Brizzee, Deputy County Counsel
385 N. Arrowhead Avenue, 4th Floor
San Bernardino, CA 92415-0140
bbrizzee@cc.sbcounty.gov

California Unions for Reliable Energy (CURE)
c/o: Loulena A. Miles, Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham & Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochasjack@earthlink.net

Gloria D. Smith, Senior Attorney
Sierra Club
85 Second Street, Second Floor
San Francisco, CA 94105
gloria.smith@sierraclub.org

***Newberry Community Service District**
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

ENERGY COMMISSION
ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BRYON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Advisor to Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Harriet Vletas, declare that on July 30, 2010, I served and filed copies of the attached Prepared Direct Testimony of Thomas Schmidt, dated July 29, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/solarone]**.

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_x__ sent electronically to all email addresses on the Proof of Service list;

___ by personal delivery;

___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

___ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

HARRIET VLETAS

*indicates change

Exhibit E

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF DAVID MILLER
Manager Engineering, BNSF Railway Company

September 17, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: (310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

PREPARED DIRECT TESTIMONY

OF

David Miller

Manager Engineering, BNSF Railway Company

Q.1 Please state your name and occupation?

A.1 My name is David Miller. I am Manager Engineering with BNSF Railway Company ("BNSF"). I have been with BNSF for twenty-eight years and I have an engineering degree.

Q.2 What is your particular area of expertise?

A.2 I oversee construction for BNSF throughout southeastern California and all of New Mexico and Arizona. I am called upon to respond to emergency situations for the railroad. For example, I am called upon to respond to situations where high water erodes track embankment or bridges.

Q.3 What is the purpose of your testimony?

A.3 To outline the concerns that BNSF has regarding the current two alternatives being proposed by Applicant, Alternative 5.5 and 6, which completely eliminate the debris basins and detention basins that were critical safety features and mitigation measures of the proposed project for many months.

Q.4 Why did BNSF not question Calico Solar's hydrology witnesses at the hearings in August?

A.4 BNSF relied on Calico Solar's statements at the hearing in August and Calico Solar's stipulation that it agreed to put detention basins in the project, fund

additional studies, and fully mitigate the anticipated flood hazards associated with its project.

Q.5 In your opinion, given the recent change in alternatives, which delete the debris and retention basins, the current lack of a hydrological study to support the new alternatives, and new issues raised by Calico Solar, does BNSF have sufficient information to analyze and grant Calico Solar's four requests for licenses and crossings on the BNSF ROW?

A.5 No. As of last Friday, September 10, 2010 it was BNSF's understanding Calico Solar was going to again redesign its proposed facility and present an alternative 5.5 and an alternative 6. We received conceptual designs of those 2 alternatives on Friday night. On Monday we received additional reports and declarations by a number of Calico Solar's experts. The alternatives and the expert reports and declarations delete debris and retention basins, provide analyses and conclusions that contradict previous reports, declarations and testimony before the CEC and contain significant changes from what was BNSF's understanding of the potential hydrological impact of the proposed project on the BNSF ROW.

Understandably, our experts have only begun to analyze the new situation. Among Calico Solar's Monday declarations is one by Matt Moore of URS which states "Existing sedimentation and maintenance issues at railroad facilities represent an existing condition that would not be significantly altered by Scenario 5.5 or 6." BNSF does not know what this statement is referring to and will need to know the basis for this statement before it can proceed further with the Applicant's requests of BNSF. If Calico Solar has any concerns with the BNSF ROW, BNSF needs to know what they are at this time as Calico

Solar is requesting: (1) BNSF allow it to drive hundreds of trucks and cars over the ROW; (2) BNSF build a new temporary at-grade crossing for Calico Solar's use in the ROW; (3) BNSF allow it to build a bridge over the BNSF ROW; and (4) BNSF allow an expansion of an at-grade crossing's use to allow for emergency access to the Calico Solar site. BNSF must be advised of and allowed time to evaluate any concerns Calico Solar may have before BNSF can determine if such uses and infrastructure are compatible with railroad infrastructure and operations and where they might best be located. BNSF has asked for a precise location of all SunCatchers and related infrastructure so we can assess potential impacts on the ROW that need to be considered in processing Calico Solar's applications. These include hydrological impacts. To date BNSF has not been provided this information.

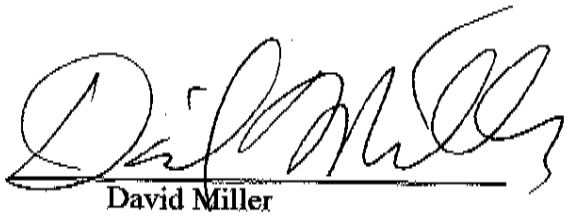
Because of the impact these changes may have on BNSF's analysis of the safety and protection of the ROW and whether Calico Solar's proposed uses are compatible with existing rail operations, BNSF has been delayed in processing Calico Solar's applications. There have been numerous changes to the Calico Solar project over the past year and the BNSF staff trying to process Calico Solar's applications has had to redirect its efforts several times. Given the 10 day old change in direction and the presentation of 2 alternatives, BNSF does not know which is the preferred alternative to analyze. Under these circumstances, BNSF is not able to process Calico Solar's four requests and is unable to grant the licenses, easements and crossings at this time.

Q.6 Is there a historical basis for BNSF's concerns relating to heavy rainfall and flooding in the area of the project site?

A.6 Yes. The BNSF Railway Company has experienced heavy rainfall events in this area with the water surface rising as high as the bridge girders. However, there is no record of historic floods overtopping the tracks. This historic flooding demonstrates that the current drainage system does not have additional capacity to spare and it is critical that the proposed Calico Solar development maintain historic flows. Any increases in flows or sediment to the railroad drainage could result in overtopping of the railroad tracks. Therefore the BNSF Railway Company requires more substantial analysis for the hydrology of the proposed development to demonstrate that the construction of 24,000 sun catcher, miles of maintenance roads, a 90 acre substation and the associated construction disturbance to the desert top soils will not change the existing drainage to the railroad structures.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: September 17, 2010



David Miller

Exhibit F

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF STEVEN J. METRO, PE
Senior Civil Engineer, Wilson Company

September 14, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

PREPARED DIRECT TESTIMONY

OF

Steven J. Metro, PE

Senior Civil Engineer, Wilson Company

Q.1 Please state your name and occupation?

A.1 My name is Steven J. Metro. I am a Senior Civil Engineer with Wilson Company. Wilson Company is a civil engineering and consulting company. Approximately one fourth of all of our work is for the railroads. The company has completed at least 30 drainage and flood studies for railroad bridges throughout the Southwest.

Q.2 What is your particular area of expertise?

A.2 I am a licensed professional engineer. I have particular experience in drainage and flooding issues and have worked on numerous matters involving the railroads. I have worked on over twenty matters involving drainage and flooding issues in a desert environment with alluvial fans. I have seen first hand the effects of flooding caused by structural improvements placed upgradient from a railroad right-of-way. In my practice, I routinely interface with Army Corps of Engineers and local flood control districts. I have provided expert testimony regarding flood damage to railroad infrastructure. A copy of my *curriculum vitae* is attached hereto as Exhibit "A."

Q.3 What is the purpose of your testimony?

A.3 To outline the concerns that BNSF has regarding the current two alternatives being proposed by Applicant, Alternative 5.5 and 6, which completely eliminate the debris basins and detention basins that were critical safety features and mitigation measures of the proposed project for many months. The Record in this matter clearly reflects that upon reviewed of the proposed project, Applicant experts acknowledged and Staff experts found that the proposed project would adversely impact the storm water runoff over and through the area encompassing the proposed project. This adverse impact is a result of the fact that the placement of over 24,000 SunCatchers, foundations and pads for the main service complex and substation, the hundreds of miles of access and service roads, and associated structures required to support the proposed project, which will necessarily decrease the surface area that will allow absorption of storm water and the day-to-day operations associated with the facility that will create new channels throughout the site. The impervious nature of these structures and facilities and the newly created channels will result in an increase flow of stormwater and will alter the already shifting and unpredictable nature of the streambeds within the alluvial fans in the proposed project area. In turn, this will have an adverse impact on the BNSF Right-of-Way that runs through the proposed project in that the BNSF Right-of-Way will necessarily encounter increased flows and sediment deposits along the Right-of-Way as a result of the proposed project. This will result in an increased risk of flooding and scour that the existing trestles and Right-of-Way grade may not be able to accommodate. Ultimately this could result in an increased potential to wash out portions of the BNSF Right-of-Way and

portions of the transcontinental mainline track, interrupting a critical interstate transportation artery. To mitigate this significant safety risk and environmental hazard, both Applicant and the Staff proposed a network of debris basins on the northern boundary of the proposed project site, upgradient of the BNSF Right-of Way. These debris basins would be designed to capture some but not all of the storm water and associated debris from the Cady Mountains. Through storage and a gradual release of the storm water from the debris basins down to a series of detention basins strategically located within the proposed project site itself, Applicant and Staff planned to abate and mitigate the adverse and potentially catastrophic impact of storm water runoff on the BNSF Right-of-Way. Staff found that the installation of these basins would reduce the project's impact on site hydrology to less than significant. While the specific plans for the debris basins and detention basins had not been designed and were pending a comprehensive hydrology study, the general scheme of debris basins and detention basins was a major component of the proposed project for well over a year. The Energy Commission Certification Committee for the Calico Solar Project issued an order on September 3, 2010 finding that it could not support certification of the proposed project. The Committee order was based on a finding that the proposed project's impact on critical habitat outweighed the potential benefit of the proposed project. The September 3rd order noted that it would reconsider the proposed project if it were revised to reflect a smaller footprint that did not adversely impact so much critical habitat. In response, Applicant proposed six alternatives on September 7, 2010, all of which eliminated the

debris and detention basin safety and mitigation measures. After a workshop on September 9, 2010, the Applicant further refined its proposed revised project to two alternatives, 5.5 and 6. Again, both of these alternatives eliminate the debris and detention basin safety and mitigation measures. Before further discussing these alternatives, however, I think it is important to review the Record in this matter in relation to debris and detention basins. I have reviewed the history of debris and detention basins in the Record in this matter in order to form the opinions contained herein. My observations follow:

Chronology of References to Debris and Detention Basins

December 2, 2008. Application for Certification ("AFC"). AFC notes that the Project Area is an unmapped area by FEMA. FEMA designates the Project Area as a "Zone D" area – meaning it is possible but undetermined flood hazards. [AFC at 5.5-6.] AFC notes that a 100-year flood[1] will flow southwest from the Cady Mountains through the Project Area. Flooding will pass through the BNSF RoW trestles and along the RoW. According to the AFC, "[t]he Project will not adversely affect existing drainage features. The existing flooding patterns will remain once the Project is constructed. [AFC at 5.5-10.]

By April 2009, Applicant had responded to numerous data adequacy requests and noted that, "[f]rom a surface water perspective, the Project will create new impervious surfaces that will have the potential to create additional runoff and subsequent erosion and sedimentation." [Supplemental Response

[1] To put this in perspective, there is a one percent probability that a catastrophic storm of a specific magnitude could occur in any given year. Personally, I am aware of two 100-year intensity flood events happening in 2006 in Albuquerque, NM.

at WATER-1.] Best Management Practices ("BMP's") being considered by the Applicant include "sediment basins" and "detention/infiltration basins." [Supplemental Response at WATER-11.]

After a series of workshops covering various aspects of the Project, Applicant submitted in February 2010 a Drainage Layout Figure that reflects a series of "debris basins" along the northernmost border of the Project Site. [February 12, 2010 Drainage Layout Figure.]

On March 30, 2010, the CEC and BLM issued the Staff Assessment/Draft Environmental Impact Statement ("SA/DEIS"). According to the Executive Summary, "[t]hese project debris basins are designed to retain storm water discharge and associated debris resulting from a 100-year flood." [SA/DEIS at ES-5.] The SA/DEIS noted that the debris basins were located on the northernmost border of the Project Site and, if the Site footprint was reduced under the Reduced Acreage Alternative [as it was], that the "flood intercept debris collection and flow detention basins would need to be similarly designed and constructed downstream from the southern boundary [of the lands no longer included in the Project Site as a result of the Reduced Acreage Alternative]." Assuming this was done, there would be "no change to the CEQA Level of Significance Impact." [SA/DEIS at ES-24 (implying that failure to do so would constitute a change to CEQA Level of Significance Impact).

Under the Biological Resources Section, the SA/DEIS identified thirteen major components of the Proposed Project, including "[s]tormwater

detention basins, debris basins, and diversion channels." [SA/DEIS at C.2-11.]

The SA/DEIS Section on Hydrology,/Soil & Water makes a finding that the proposed project "could result in impacts that would be significant with respect to California Environmental Quality Act significance criteria specified herein and National Environmental Policy Act significant criteria specified in 40 CFR 1508.27," and makes it clear that the detention basins are an essential mitigation measure in the Project.

> "A Draft Drainage, Erosion, and Sedimentation Control Plan mitigates the potential project-related storm water and sediment impacts. However, the calculations and assumptions used to evaluate potential storm water and sedimentation impacts are imprecise and have limitations and uncertainties associated with them such that the magnitude of potential impacts that could occur cannot be determined precisely. Based on these factors, the proposed project could result in impacts that would be significant with respect to California Environmental Quality Act significance criteria specified herein and National Environmental Policy Act significant criteria specified in 40 CFR 1508.27. Therefore, Conditions of Certification **SOIL&WATER-1, SOIL&WATER-2** and **SOIL&WATER-3** have been developed that define specific methods of design analysis, development of best management practices, and monitoring and reporting procedures to mitigate impacts related to flooding, erosion, sedimentation, and stream morphological changes. Compliance with

[Laws, Ordinances, Regulations and Standards ("LORS")], particularly the Clean Water Act requirements, will insure no adverse impacts to waters of the U.S. **With implementation of these Conditions,[2] the potential effects of the proposed project would be less than significant**. The applicant has not provided information necessary to complete the development of requirements for dredge and fill in waters of the state. Once the applicant provides this information staff can complete the development of requirements that will be included in Condition of Certification."

[SA/DEIS at C.7-1-C.7-2 (emphasis added).]

The SA/DEIS makes it clear that there will be impacts to the BNSF RoW:

"Localized channel grading is proposed to take place on a limited basis to improve channel hydraulics in the vicinity of BNSF railway right-of-way to control the surface runoff. In addition, the Main Services Complex will be protected from a 100-year flood by berms and/or channels that will direct the flow around the perimeter of the building site, if required.

The proposed arterial roadway section between the Main Services Complex and I-40 will be a designated evacuation route. As such, the driving surface will be constructed at an elevation above the projected profile of a 25-year storm event. In addition, overflow resulting from the 100-year storm event will be limited to a depth not to exceed 7 inches. It is anticipated that roadway maintenance will be required after rainfall events. For minor storm events, in

[2] These Conditions of Certification evolved into SOIL&WATER-8.

addition to the aforementioned maintenance, roadway repairs may be required due to possible damage to pavement where the roadway crosses the channels and where the flows exceed the culvert capacity. Soft bottom storm water detention basins will be constructed to mitigate the increase in runoff from the proposed building sites. Rainfall from paved areas and building roofs will be collected and directed to the storm water detention basins. The storm water detention basins will be sized to hold the entire volume from the proposed building sites resulting from a 24-hour, 100-year storm. The detention basin will be designed so that the retained flows will empty within 72 hours after the storm to provide mosquito abatement. This design can be accomplished by draining, evaporation, infiltration, or a combination thereof. The post-development flow rates released from the project site are expected to be less than the pre-development flow rates. Except for the building sites, the majority of the project site will remain pervious, as only a negligible portion of the site will be affected by pavement and SunCatchers foundations. Site drainage during construction will follow predevelopment flow patterns, with ultimate discharge to the BNSF ROW and ultimately at the westernmost property boundary.

Debris basins and/or low-flow culverts consisting of a small diameter storm drain with a perforated stem pipe will be installed for sediment control and to provide for storm peak attenuation.

BMPs for erosion and sediment control will be used in combination with debris basins for roadway crossing of major washes. In the Main Services Complex, the storm water will be directed to a detention basis, where the site runoff will infiltrate and/or evaporate. The detention basin will be sized to meet the San Bernardino County development criteria.

The temporary erosion and sedimentation control measures to be used during construction will be designed to prevent sediment from being displaced and carried off-site by storm water runoff. Before beginning excavation activities, debris basins, silt fence, straw bales, or other BMPs will be constructed/installed along the perimeter of the Project, where minor runoff to off-site areas could occur. Debris basins will be constructed for the major site runoff discharge and will also provide for low flow detention. The silt fence will filter sediments from construction runoff. Berms with perforated risers will be used at road crossings and other locations as needed to control sediment transportation. During construction, the extent of earth disturbances will be minimized as much as practical. A sediment trap will be located immediately upstream of the property boundary.

Diversion swales with berms will be constructed as necessary to divert runoff from off-site areas and on-site undisturbed areas around the construction site. Temporary BMP control measures

will be maintained during the rainy season as necessary throughout the construction period.

[SA\DEIS at C.7-29.]

The Supplemental Staff Assessment of July 21, 2010 ("SSA") notes that large debris basins are being designed to control runoff and sedimentation. The SSA makes the following finding: "Impacts due to flooding in these areas are potentially significant without adequate mitigation. This leaves portions of the project subject to significant adverse impact due to flooding." [SSA at C.7-2.]

During the evidentiary hearings, Mr. Byall testified for Applicant extensively about the detention basins. According to Mr. Byall, the detention basins are designed, among other things, to reduce the impact on the RoW due to sediment buildup as a result of storms:

> What we're trying to do is not create an adverse condition where we will increase scour within the washes themselves and cause degradation of the washes; so we're trying to come up with a balance between what naturally occurs and the interference we're going to cause by installing the SunCatchers and the maintenance that would be required because of that. So it's a little bit of a balancing act.
>
> What we're trying to do is make it so that we don't have to go out after every storm that creates a fair amount of flow and go out and remove a whole bunch of sediment from our at-grade crossings, ...

[Testimony of R. Byall, 8/6/2010 TR at 35:12-24 (emphasis added).]

Staff Counsel extensively cross examined Mr. Byall and Mr. Moore of Applicant regarding the detention basins and the fact that Applicant kept changing the numbers and sizes of the detention basins. Staff expert Mr. Weaver testified extensively about how Applicant kept changing the numbers and sizes of the detention basins. [See Testimony of C. Weaver, 8/6/2010 TR at 41:11-46:21.]

Moreover, there was extensive cross examination designed to establish that, as of the hearing, Applicant still did not have an actual layout and design of the detention basins. Indeed, Mr. Weaver noted that Applicant testified to yet additional changes to the design plans for the detention basins on the third day of evidentiary hearings in Barstow.

MS. HOLMES: And this morning you heard testimony about yet additional changes to the proposed plans; is that correct?

MR. WEAVER: Yes, just this morning.

[Testimony of C. Weaver, 8/6/2010 TR at 46:22-25.]

Mr. Weaver explained that it was very difficult for Staff to deal with the uncertainty regarding the design of the debris and detention basins, but that "Soil and Water 8 was written to assure that the applicant will develop an appropriate design and will construct adequate flood control features that will protect the site from flooding hazards."]Testimony of C. Weaver, 8/6/2010 TR at 47:17-20.] As Mr. Weaver further explained, "[c]ompliance with Soil and Water 8 will protect the project from flow – excuse me, from flood hazards resulting from the hundred-year storm while allowing pass-through of flows resulting from smaller storms to replenish sediment in channels allowing groundwater recharge along the drainages which will maintain the function of the desert washes." [Testimony of C. Weaver, 8/6/2010 TR at 47:21-48:2.] After Staff counsel noted that Applicant had asked that same morning to substitute SOIL&WATER-8 and that Staff opposed this request, counsel for applicant stipulated to SOIL&WATER-8:

MS FOLEY GANNON: Hearing Officer Kramer, Ms. Holmes, we have an offer to make that may simplify some of this discussion.

The applicant is willing to stipulate to Soil and Water 8 and agree with its inclusion.

[8/6/2010 TR at 49:1-5.]

Until the development of Alternatives 1 through 6 and Dr. Chang's report of September 8 with requested change to SOIL&WATER-8, SOIL&WATER-8 clearly called for detention basins. In reliance on Applicant's stipulation, Staff shifted to a different topic. Moreover, BSNF did not examine Mr. Weaver based on Applicant's stipulation to SOIL&WATER-8. Furthermore, the day before, on August 5th, counsel for BNSF specifically asked Applicant if it would agree that the proposed Condition of Certification in the written testimony of Thomas Schmidt, Exhibit 1102, was reasonable, to include the following language – "applicant represents that applicant will deliver the following documents to BNSF: 1) Final drainage report; 2) final detention basin designs/plans; and 3) maintenance plan. At the time of delivery applicant will address any comments or concerns of BNSF. If there are any amendments to these documents or if there are alterations to any of the detention basins applicant will deliver such revisions to BNSF. " [8/5/2010 TR at 330:18-25.] Hearing Officer Kramer asked, "Does any party want to comment on that, including the applicant, on that? I guess it's more or less a stipulation." [8/5/2010 TR at 331:20-222.] To which counsel for Applicant responded, "No, we agree to the language." [8/5/2010 TR at 331:23.][3]

[3] Consistent with this stipulation, before the close of the evidentiary hearings on August 25th, counsel for Applicant confirmed the stipulation. Applicant clarified that Applicant agreed to pay for a hydrology study by an expert of BSNF's choosing and that Applicant would pay for all necessary mitigation measures: "MS. FOLEY GANNON: So we said, 'Prior to installing any SunCatchers or construction of the detention basins, project owners shall pay for a hydrology study commissioned by BNSF, which will determine the impact, if any, on the rail safety and BNSF operation of its planned placement of SunCatchers and detention basins and determined appropriate mitigation measures, if necessary, to be paid for by project owner.'" [8/25/2010 TR at 317:10-17.]

The Bureau of Land Management ("BLM"), issued its Final Environmental Impact Statement ("FEIS") on August 3, 2010. The FEIS indicates that the detention basins were included as part of the proposed project to mitigate the adverse impacts that would result from the project. The FEIS Hydrology section states: "Due to the project area's susceptibility to flash flooding and prolonged periods of precipitation, high intensity and short duration runoff events coupled with earth disturbance activities could result in accelerated on-site erosion.... Off-site flow would be intercepted prior to entering the project site using large debris basins constructed on-site and located at the toe of each mountainous drainage basin.... On-site runoff would be intercepted in detention basins which would be sized to retain the 100-year on-site stormwater discharge runoff and debris flows...." [FEIS at 4-362.]

The FEIS further provides that, "The Applicant has conducted mathematical calculations and probabilistic modeling to estimate anticipated potential impacts. Site development for the Proposed Action would result in direct, adverse, long-term impacts on surface hydrology on the project site due to a loss of on-site ephemeral drainages which promote groundwater recharge, flood peak attenuation, floodwater storage, and wildlife corridors and habitat. However, impacts would be localized and would be effectively mitigated with the implementation of mitigation measures required for the Proposed Action." [FEIS at 4-364.]

The FEIS further states: "Migration of channels and local scour caused by stormwater flows could remove sediment supporting individual poles and cause them to fall to the ground. Once on the ground during a storm event, the broken

glass associated with the mirrors could further break and be transported downstream. Also, the SunCatcher structure itself and the associated wiring, could be transported downstream. Although the security fence located on the downstream side of the project site could stop larger pieces from leaving the property, it would not stop small glass fragments. Also, the fence itself could be damaged by stormwater flows and may not guarantee the onsite capture of all damaged materials. The detention/debris basins inside the northern boundary of the project site would be of sufficient size to completely retain flood flows resulting from a 100-year flood. Following significant storms, retained water would be released into the existing channels in a controlled and metered manner at a rate that is designed to not cause damage to SunCatcher pole foundations located within the channels." [FEIS at 4-371-372.]

Under the FEIS, the proposed mitigation measures for the proposed project include that the Applicant must obtain both BLM's Authorized Officer's and the Committee Presiding Member's approval for a site specific Drainage, Erosion and Sediment Control Plan (DESCP) that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project, and the DESCP must meet a number of requirements set forth in the FEIS. [FEIS at 4-379.] Also, the Applicant must ensure that all SunCatcher pole foundations are designed to withstand stormwater scour from surface erosion and/or channel migration, and that a stormwater Damage Monitoring and Response Plan be developed to evaluate potential impacts from stormwater. [FEIS at 4.382.]

As recently as August 26, 2010, Applicant submitted its proposed SOIL&WATER-8 to the CEC Committee. SOIL&WATER-8 specifically included detention basins. [See Exhibit 113.]

On September 8, 2010, in response to the CEC Committee's request that the Applicant consider a smaller project site, Applicant submitted a report by Howard Chang, Ph.D, P.E., which now recommends that detention basins not be installed. Dr. Chang's report contains a revised SOIL&WATER-8 that excludes any reference to detention basins.

On September 13, 2010, Applicant submitted testimony in support of two proposed reduced acreage sites within the proposed project area – Alternate 5.5 and 6. Both Alternatives eliminate any debris or detention basins. Dr. Chang makes no reference to the fact that Applicant and Staff had, for over a year, recommended that the project site be constructed with a scheme of debris and detention basins to control stormwater impact. According to Dr. Chang's testimony he does not recommend the installation of detention basins because they "can be a safety hazard for SunCatchers" and because of the "potential adverse impacts of the detention basins on the fluvial system." [Chang Report at p. 14.] Mr. Byall made no reference to his prior recommendation that the project site include detention basins and testified in a conclusory manner that "[n]o debris or detention basins are planned for the site." [Byall at p. 1.] Mr. Moore testified that "[i]t is likely that additional maintenance will be required on the project site in the absence of the previously proposed detention basins." [Moore at ¶6.] Ms. Bellows has requested that SOIL&WATER-8 be modified to delete any reference to debris and detention basins. [Bellows at pp. 3-4.]

Q4 Have you reviewed the testimony of Dr. Chang and Messrs. Byall and Moore submitted by Applicant in support of Alternatives 5.5 and 6?

A.4 Yes, I have.

Q.5. In your opinion, is there adequate support for Dr. Chang's conclusion that detention basins are not recommended?

A.5. No.

Q.6 Why not?

A.6 Dr. Chang asserts that "the proposed solar units will have insignificant effects on the arid-land hydrology of the project site." I disagree. The Record is clear that stormwater flows across the proposed site in a southwesterly direction until it reaches the BNSF Right-of-Way, and then flows west. This has the most direct and significant impact on Sections 07 and 12 within the proposed project site. Before the Applicant was told it had to reduce its project site footprint, both Applicant experts – Messrs. Byall and Moore, as well as Staff expert Mr. Weaver – all agreed that the placement of the SunCatchers, together with the main service complex and substation foundations and pads, the hundreds of miles of roadways that interlace the project site and afford Applicant the ability to perform maintenance on the site, and other features and structures that will necessarily be built on the site will adversely affect the stormwater flow on the site. In turn, this will likely cause increased sediment build up along the BNSF Right-of-Way and also increase the risk of adverse impacts to backslopes, ditches, culverts, and trestles within the Right-of-Way. Ultimately, it will increase the risk of stormwater disrupting the transcontinental mainline. There is ample evidence of this fact and Dr. Chang does not present any evidence to the contrary. Contrary to Dr. Chang's assertions, alluvial fans are not stable and are not

at equilibrium. The arid desert region, such as the proposed project area in the Mojave Desert, is subject to flash flood type events that leave new sediment deposits after every event. When a subsequent flood occurs it may establish a new route to the valley floor. This creates a system of braided stream channels found in most alluvial fans. Dr. Chang has oversimplified the complex morphology of this region in particular and alluvial fans in general.

In my professional experience, when structures are built upgradient of the Right-of-Way along an alluvial fan in a desert environment there is increased runoff and erosion along the Right-of-Way and typically we see backslope, ditch and culvert damage. This is simply because the structures on the upgradient development reduce the ability of the respective property to absorb stormwater, which in turn results in increased flow and increased damage. Dr. Chang's analysis does not appear to take this into account. Ultimately, the stormwater can wash out a track and cause substantial damage and lengthy interruptions in train service.

The BNSF Railway Company has experienced heavy rainfall events in this area with the water surface rising against the bridge girders. However, there is no record of historic floods overtopping the tracks. This historic flooding demonstrates that the current drainage system does not have additional capacity to spare and it is critical that the proposed Calico Solar development maintain historic flows. Any increases in flows or sediment to the railroad drainage could result in overtopping of the railroad tracks. Therefore the BNSF Railway Company requires more substantial analysis for the hydrology of the proposed development to demonstrate that the construction of 24,000 sun catcher, miles of maintenance roads, a 90 acre substation

and the associated construction disturbance to the desert top soils will not change the existing drainage to the railroad structures.

Q.7 What is your opinion about the impact of emplacing the SunCatchers and associated infrastructure on the proposed Alternative 5.5 or Alternative 6?

A.7 In relation to this site, there will be over 24,000 SunCatchers placed in a tight grid over the site. Each SunCatcher has a 2 foot circumference base pedestal, which will be impervious to stormwater absorption and will act as a barrier to channelize stormwater, causing what is referred to as scouring around the base of the pedestal. Both Alternatives include provision for a large main services complex and a substation, with associated foundations and pads. Additionally, I understand that there will be an improved roadway along the entire border of the site and then access/maintenance roads between every other row of SunCatchers. The total estimated roadway is hundreds of miles. While not all of the roads will be paved, I understand all roads may be all-weather roads, which will be graded and either paved or treated with Soiltec or a similar substance to keep dust down. The resulting effect is that these roads will act as at least partial impervious barriers to the absorption of stormwater and will channelize stormwater flow and disrupt the natural flows of the alluvial fan. In addition, Applicant plans to place the SunCatchers as close together as physically possible in order to maximize the concomitant megawatt output from increased SunCatchers. While they will be "stowed" during a storm, the rainfall will naturally flow along the "stowed" surface of the SunCatcher, ensuring that the stormwater will run off the SunCatchers in a different fashion than if the site remained in its natural state, without SunCatchers.

Q.8 In your opinion, given the current state of hydrological analysis and issues raised by Calico Solar as recently as this week, does BNSF have sufficient information to analyze and grant Calico Solar's four requests for licenses and crossings on the BNSF ROW?

A.8 No. In the absence of an adequate study and in light of the issues raised by the Applicant through Dr. Chang's declarations and studies and Mr. Moore's declaration of September 13, 2010, it is not possible to analyze the safety or compatibility concerns raised by the requests that (1) BNSF allow it to drive hundreds of trucks and cars over the ROW; (2) BNSF build a new temporary at-grade crossing for Calico Solar's use in the ROW; (3) BNSF allow it to build a bridge over the BNSF ROW; and (4) BNSF allow an expansion of an at-grade crossing's use to allow for emergency access to the Calico Solar site. The proper studies, including hydrological, need to be completed. In addition, Calico Solar needs to disclose what is being referred to by the statement of Matt Moore of URS when he states that: "Existing sedimentation and maintenance issues at railroad facilities represent an existing condition that would not be significantly altered by Scenario 5.5 or 6." Once this information is obtained, BNSF will need time to evaluate if such uses and infrastructure are compatible with railroad infrastructure and operations and where they might best be located. BNSF needs to be provided the precise location of all SunCatchers and related infrastructure so it can assess potential impacts on the ROW that need to be considered in processing Calico Solar's applications. Until this occurs, BNSF is not in a position to grant the requested licenses and crossings.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: September 14, 2010

Steven J. Metro

Exhibit G

TESTIMONY OF DOUGLAS HAMILTON, P.E., D.WRE

PROPOSED CALICO SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA

Q.1 What is your name, occupation, and experience?

A.1 I, Douglas Hamilton, am a registered civil engineer in the State of California (License No. 42210). I am a Principal Engineer at Exponent, Inc. My area of specialization is water resources including flood hazards in arid regions including the sometimes ultra-hazardous processes such as high velocity water flow, uncertain flow paths, erosion, sediment deposition, transport of debris, and perilous impact forces. I have extensive local experience, knowledge of railroad hydrology in Southern California, and international experience in the types of flood hazards associated with alluvial fans. My practice includes identifying and mitigating flood hazards in both the pristine and developed desert regions of California. I have worked with many public and private experts who provide important information that is relevant to this type of hazard including Flood Control agencies in San Bernardino and Riverside Counties. I served on the National

Research Council Committee on *Alluvial Fan Flooding*,[1] and as a consultant to the California Governor's Task Force on Flooding. Later, I served in a key advisory role in the California Governor's Task Force on Alluvial Fan Flooding.[2] My C.V. is attached as Exhibit 1 to this Declaration.

I have direct knowledge of hydrology, geology, geomorphology, sediment transport, and hazardous flooding conditions in the vicinity of the Cady Mountains in San Bernardino County. These types of process affect the Burlington Northern Santa Fe (BNSF) rail line and the proposed Calico Solar Project which is located both north and south of the BNSF line between Daggett and Ludlow in the vicinity of historic Hector, a former watering stop for steam locomotives. This subdivision of the BNSF track was originally built in the 1880's and 1890's. The Hector Station shows up on the United States Geological Survey (USGS) topographic maps that are shown in the background of most of the source maps prepared by the applicant from both

[1] Alluvial Fan Flooding, National Research Council, National Academy Press, Washington, D.C., 1996 http://www.nap.edu/openbook.php?isbn=0309055423

[2] California Governor's Alluvial Fan Task Force, California State University San Bernardino, Water Resources Institute, 2010
http://aftf.csusb.edu/documents/FINDINGS_Final_July2010_web.pdf
http://aftf.csusb.edu/documents/IA_Final_July2010_web.pdf
http://aftf.csusb.edu/documents/FACT%20SHEET_Plenary%2010%20Distribution_Mar2010.pdf

Thank you for your comment, Anne Alexander.

The comment tracking number that has been assigned to your comment is SolarD11903.

Comment Date: May 3, 2011 02:10:55AM
Solar Energy Development PEIS
Comment ID: SolarD11903

First Name: Anne
Middle Initial:
Last Name: Alexander
Organization: Katten Muchin Rosenman LLP
Address: 2029 Century Park East
Address 2: Suite 2600
Address 3:
City: Los Angeles
State: CA
Zip: 90067
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: BNSF Comments to Draft Solar PEIS Part 2..pdf

Comment Submitted:

the California Energy Commission (CEC)[3] and the United States Bureau of Land Management (BLM)[4].

Q.2 Are extreme alluvial fan flooding, erosion, and debris flow hazards associated with active alluvial fans at the proposed Calico Solar Site?

A.2 The proposed Calico Solar site is on an active alluvial fan. Significant information exists that confirms the alluvial fans and the associated flooding hazards emanating from the Cady Mountains are located within and pass through the proposed Calico Solar project area. The proposed Calico project area also extends south of the existing BNSF track down to Interstate 40 (I-40) shown on the USGS topographic provided as Exhibit 2 attached to this declaration. The project boundary on Exhibit 2 is the one originally proposed by the applicant.

The Existing Conditions Hydrologic and Hydraulics Study prepared for the applicant by Huitt Zollars on April 23, 2009, Binder 1, Exhibit A shows a Geomorphic Hazard Map for the project area. Basically, this map concludes that virtually the entire area between the foot of the mountains

[3] http://www.energy.ca.gov/sitingcases/calicosolar/documents/index.html
[4] http://www.blm.gov/ca/st/en/prog/energy/fasttrack/calico.html

down to the BNSF Railroad is subject to either Severe or High Hazard Levels. Severe and High Hazards mean that high velocity flows, debris flows, unpredictable flow paths, and sediment movement characterize the flood hazards at the site in its existing condition. The applicant and their consultants have not provided an updated map showing that these types of hazards are non-existent in this area. In fact, in 1966, T.W. Dibblee and A.M. Bassett working for the California Division of Mines and Geology, prepared a surficial geology map with cross sections for the area. The map is consistent with the Geomorphic Hazard Map in the Huitt Zollars report and shows that the proposed Calico Solar Site is on an active alluvial fan area composed of Recent Alluvium and Recent Alluvium Fan Gravel (See Exhibit 3). The project boundary shown on Exhibit 3 is the one original proposed by the applicant.

Because the flooding sources emanating from the Cady Mountains flow onto a series of alluvial fans, the direction of flow and the amount of flow in any given desert wash further down the fan is unpredictable. In fact, entirely new desert washes can be formed during a single flood event. This element of randomness is one of the factors that makes flooding on alluvial fans so hazardous.

Appendix G of the FEMA guidelines (See Exhibit 4) for analyzing floods on alluvial fans states that for active alluvial fan areas, the prudent assumption is that all of the water from the apex of the fan could reach any point on the fan and, therefore, the target area where a facility is being designed should accommodate the erosion, sediment, and water from the full flow that emanates from the fan apex.

In a letter dated September 10, 2010 to the CEC, Tessera Solar provided two revised project alternatives identified as Scenarios 5.5 and 6. These scenarios move the northern project boundary south avoiding Sections 4 and 5 as well as make other adjustments. The project layout and proposed drainage patterns for Scenario 5.5 is overlaid on a recent aerial photograph and is shown in Exhibit 5. As can be seen from the aerial photo, the site is still subject to random flood flow paths characteristic of active alluvial fans. Instead of benign, shallow sheet flow spreading out over the surface of the desert floor, water emanating from the Cady Mountains will concentrate in existing drainage paths as well as new ones created during a flood event. This is why critical infrastructure on alluvial fans should have

structural flood control measures to collect and convey floodwater around and/or through the project.

A review of the proposed project alternative in a letter from Tessera Energy dated February 12, 2010 to the CEC shows Figure 12 from URS. This plan indicates that a series of stormwater collection devices on the northern boundary would partially separate the project from stormwater flow from the Cady Mountains. This essentially surrounds the project and addresses the uncertainty of flow paths on the alluvial fans. This approach could be designed in a way such that sediment passes through the system and not trap sediment. In fact, bypassing sediment through constructed flood control facilities is a common practice in desert regions both to reduce maintenance and to preserve the environment downstream. Even though Scenarios 5.5 and 6 are moved further from the base of the mountains, eliminating flood protection measures at the northern boundary will subject the site to the full force of alluvial fan flooding.

Q.3 Do you have an opinion on whether the sediment, erosion, and flooding studies prepared by Howard H. Chang Ph.D., P.E. are inadequate, factually incorrect, and do not propose required

mitigation to protect the proposed Calico Solar Project and prevent impacts to the BNSF right of way?

A.3 In the study by Howard H. Chang, Ph.D., P.E. entitled Sediment Study for Washes at Calico Solar Project Site in San Bernardino County (Original Chang Study) dated July, 2010, no discussion of the unpredictability of flood flows from alluvial fans is presented. In a paper dated November 1982 entitled Fluvial Hydraulics of Deltas and Alluvial Fans, Dr. Chang state, "Streams on deltas and alluvial fans that are formed in noncohesive alluvium are characterized by unstable channel geometries."[5] However, he does not include the unstable and unpredictable nature of channel behavior in the alluvial fan analyses for the Calico Solar Project site.

The Original Chang Study relies on the use of a hydraulic and sediment transport computer program known as FLUVIAL-12. It should be noted that this computer program is not on the list of programs accepted by FEMA for use in analyzing floods on alluvial fans nor for use in rivers (See Exhibit 6). Estimates of pier scour depth for the 2-foot diameter foundation for each of the proposed solar devices range from 3.14 feet to 4.61 feet deep based on the depth of

[5] Chang, H.H. Fluvial Hydraulics of Deltas and Alluvial Fans. ASCE Journal of the Hydraulics Division. November 1982.

water flow (page 17). However, the standard formula from the Federal Highway Administration referenced on page 11 of the Original Chang Report is incorrect.

The Federal Highway Administration (FHWA) formula for local scour around round-nosed piers/bents or cylindrical piers/bents is incorrectly quoted in Dr. Chang's July 2010 report. The actual formula in Hydraulic Engineering Circular No. 18, labeled as Equation 6.1, reads as follows[6]: $y_s/y_1 = 2.0*K_1*K_2*K_3*K_4*(a/y_1)^{0.65}*Fr_1^{0.43}$. These factors are important to consider in order to estimate scour depths for alluvial fans.

Furthermore, a review of the FLUVIAL-12 computer program output file labeled FAN-WASH.TXT indicates that the water flow calculations were based on a hypothetical channel carrying only 40 cubic feet per second (cfs) of flood water. Whereas, Figure 4, Page 9 shows a hydrograph involving a maximum flow of approximately 10,000 cfs. Combining the use of an incomplete scour equation and underestimating the amount of stormwater flow through the site means that both the depth and length of scour holes around the 2-foot diameter piers could be much greater than

[6] Federal Highway Administration. Hydraulic Engineering Circular No. 18. Evaluating Scour at Bridges Fourth Edition. Publication No. FHWA NHI 01-001, May 2001. Available online at: http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17&id=37. Accessed September 17, 2010.

reported and could impact natural flow patterns which ultimately impact down gradient areas, including the BNSF right of way.

On September 8, 2010 Dr. Chang prepared a report entitled Assessment of Detention Basins / Debris Basins for Calico Solar Site (Revised Chang Report). In this report, he recommends the removal of what are referred to as basins from the northern boundary of the Calico Solar project. My examination of the actual function of the proposed basins would be to funnel offsite stormwater into discrete, discernable flow paths. The decision to eliminate all of the flood hazard control at the northern boundary of the Calico Solar Project is unsound as the projected stormwater flows cited in the Original Chang Study are on the order of 10,000 cfs. Should a significant portion of the flow be concentrated in a flow path that does not exist today, it could damage the Calico Solar Project. Furthermore, the localized scour around the cylindrical concrete foundations of the proposed SunCatchers could be much greater than predicted by the Original Chang Study and divert floodwaters to areas along and within the BNSF right of way this could undermine the track embankment and the bridge crossings.

In the Original Chang Study, the predicted scour depth around the 2-foot diameter foundation post supporting the SunCatchers assumes water spreads as sheet flow. This assumption does not account for the random effects of hazardous flows on alluvial fans where a large percentage of the water from the apex of the alluvial fan reaches the pier rather than spreading out and dissipating. The original option of collecting and funneling offsite flows into discrete flow through paths is reasonable and necessary.

I do not believe this type of critical flood protection element at the northern boundary of the Calico Solar Project should be eliminated as an option in the proposed hydrology study.

Q.4 Does the currently proposed Calico Solar Project ignore potential flood hazard impacts on the existing BNSF Right of Way, I-40, and to the project itself?

A.4 The original proposal from the applicant to the CEC showed that there would be floodwater collection devices, detention basins, debris basins, or some other type of device to better control the uncertainties of hazardous

flood processes on the alluvial fans at the northern boundary of the proposed Calico Solar Project.

The Revised Chang Report, filed with the CEC, states that flood control measures at the northern boundary are not necessary. In fact, according to Dr. Chang, attempts at mitigating the alluvial fan flooding hazards could actually harm the Calico Project.

In response to Dr. Chang’s declarations to the CEC, the project engineers from URS decided to adopt a policy of reaction rather than one that includes direct flood hazard mitigation. The proposed approach by the project proponent is to wait and see what happens after a 5-year 24 hour storm which amounts to more than 1.5 inches of rain in one day. For desert environments, this amount of rain in one day can be problematic. These characteristics of desert environments are confirmed by the Huitt Zollars study and the West Consultants Appendix therein. In my experience, even after one-half inch of rain in this region, both roads and railroads are inspected for damage. Based on NOAA Atlas 14, the most recent compilation of rainfall statistics in the desert region, the 100-year storm amounts to more than 3 inches in 24 hours, which can cause severe erosion and deposition.

Q.5 What is the history of flood hazards related to railroad transportation in the Mojave Desert Region of California as it pertains to the this project?

A.5 The history of floods occurring in the Mojave Desert Region of California is documented in numerous hydrologic and geologic publications including some that stem from reconnaissance surveys and assessments performed in the early Twentieth Century. The United States Department of Interior Geological Survey (now the United State Geological Survey, USGS) noted in 1929 that there are substantial flood risks in the Mojave Desert:

> Storms, especially those occurring in the summer, frequently do great damage. At several places the crops of entire ranches have been washed away or buried by debris in a single storm. Large sums of money have been expended in protecting railroads from the floods that rush down from the mountains. Large drainage channels several thousand feet long are constructed to lead the floods to specially protected culverts, and concrete walls have been built at a

number of places to protect the Atchison, Topeka & Santa Fe Railway. In spite of all these protective works sections of track are washed out every few months. Considerable damage is also frequently done to highways. Strangely enough, in this land, of little rain the monetary losses due to excessive rainfall probably exceeded those due to all other climatic conditions.[7]

Q.6 Do the Chang reports ignore the impacts of increasing the concentration of rainwater on localized areas of soil in desert environments and the detrimental effect of superimposing a gridded road system that does not follow the natural stormwater flow direction?

A.6 The railroad track in question has suffered damage from activities related to intensive adjacent land use. For example, in Hesperia and Victorville, California, large scale residential development decreased the ability of desert soils to absorb rainfall and directed ever

[7] US Department of the Interior Geological Survey. Water-Supply Paper 578 The Mohave Desert Region California. United States Government Printing Office, Washington. 1929. Available at: http://ngmdb.usgs.gov/Prodesc/proddesc_24591.htm. Accessed September 14, 2010.

increasing amounts of stormwater runoff toward the BNSF track. In the storms of 1992 and 1993, extreme erosion occurred near the tracks. This problem of increased impervious surfaces on desert lands and the concentration of the resulting water culminated on August 14, 2004 when the BNSF track at Milepost 39 and 41 in the Cajon Subdivision was undermined by stormwater runoff and collapsed (See Exhibit 7).

The September 15, 2010 Applicant's Submittal of Response to Sierra Club Data Requested on September 14, 2010 briefly discusses the changes in hydrology, drainage, erosion, and sedimentation that would result by adopting reduced footprint project scenarios. In the response to this query regarding potential impacts, it is explained that there is 3.14 square feet per 0.28 acres of the project site and that this relation is "too small…to cause significant impacts."[8] However, this statement is only referring to the concrete pedestal of the solar device.

The August 2010 Testimony by Marie McLean, James Jewell, and Alan Linsley, AIA discuss Traffic and Transportation

[8] This is discussed on Page 7 of the September 15, 2010 letter from Felicia L. Bellows of Tessera Solar to Christopher Meyer of the California Energy Commission regarding the Calico Solar (formerly Solar One) Project (08-AFC-13) Applicant's Submittal of Response to Sierra Club Data Requested September 14, 2010.

matters related to the Calico Solar Project. This document states that approximately 34,000 SunCatchers are proposed for the project, each of which is 11.5 meters (approximately 38 feet) in diameter. The area of each solar unit is approximately 1,130 square feet. These units rotate to take advantage of the angle of the sun and theoretically could be tilted or put in a "store" mode to minimize the interception of rainfall. However, rain does not always fall vertically downward. Winds can cause the rain to fall at an angle and could strike the solar panel. The resulting runoff could concentrate and create localized runoff. The project also includes a 14.4 acre "main services complex" and a 2.8-acre substation.[9] The only mitigation plan being proposed is to build a detention basin for increased runoff from the main services complex. The change to the local hydrology that could be caused by an approximate 24,000 SunCatchers is not acknowledged.

Item B.1.4.1 of the Staff Assessment and DEIS discusses that the original project has approximately 25 miles of paved roads, 168 miles of North-South dirt roads, and 102 miles of East-West Dirt Roads. The dirt roads are to be treated with a polymer for dust control and stabilization.

[9] Appendix C.11 – Traffic and Transportation. Testimony of Marie McLean, James Jewell, and Alan Lindsley, AIA. August 2010.

Increased runoff can be expected to occur as a result of the roads. Even the dirt roads will have decreased infiltration capacity from rainfall due to compaction by vehicle traffic and the hydrophobic nature of the chemicals typically applied to dirt roads.

The road systems used to access and maintain the solar panels are arranged in a North-South and East-West grid. This is contrary to the natural flow direction of water and debris along the alluvial fan is from Northeast to Southwest. Ultimately the system of dirt roads will serve as flood conveyance paths during large storms and change the way that water reaches the BNSF track potentially concentrating and eroding the track embankment.

The issues above are indicators that there are substantial impacts to land use resulting from the proposed Calico Solar Project including increased runoff and sediment transport. The Revised Chang Report essentially eliminates upstream flood protection on the Northern project boundary and does not revise, correct, or explain why it is prudent to deviate from the Geomorphic Hazard Map in the Huitt Zollars report. Furthermore, none of the 5 proposed flood protection alternatives from the Huitt Zollars report have been carried over to the Revised Chang Report. I agree with

the Huitt Zollars report that without including some structural flood mitigation measure on the northern project boundary, that the solar units, and other infrastructure will be subject to severe and damaging flooding and erosion. Unmitigated, such damage and erosion will impact the BNSF railroad embankment by altering existing flow paths, increasing flood runoff, and increasing the amount of sediment and debris that will reach the BNSF tracks.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on September 17, 2010 at Irvine, California.

Douglas Hamilton, P.E.

Registered by the California Board of Professional Engineers No. 42210

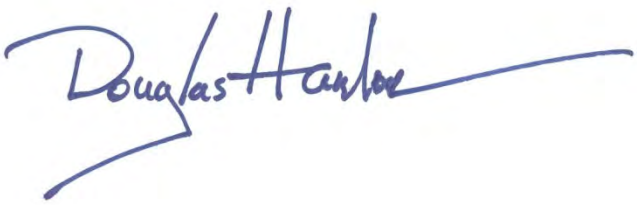


Exhibit 1

Exponent
Failure Analysis Associates

Exponent
320 Goddard
Suite 200
Irvine, CA 92618

telephone 949-242-6000
facsimile 949-242-6099
www.exponent.com

Douglas Hamilton, P.E., D.WRE
Principal Engineer

Professional Profile

Mr. Douglas Hamilton is a Principal Engineer in Exponent's Civil Engineering practice. He has extensive experience in water resources, hydrology, and natural hazards in arid environments. He has developed and applied a wide range of analytical techniques in order to explain the hydrologic impacts of natural hazards. He is also an expert in the application of sediment transport, geomorphic and hydrologic principles to natural systems, and to the design of constructed facilities.

Prior to joining Exponent, Mr. Hamilton worked for the Hydrologic Engineering Center (HEC), which provides consulting and technology services to the civil works and military missions of the U.S. Army Corps of Engineers. While in the Research Branch of HEC, Mr. Hamilton was responsible for conducting flood hazard, sedimentation, and debris flow studies for Mount St. Helens, Washington, and for the Wasatch Front Range, Utah. He was also in charge of the computer program HEC-6, Sediment Transport in Rivers and Reservoirs. Mr. Hamilton has held lead engineering positions in the consulting firms Simons, Li & Associates, and Rivertech. For eight years prior to joining Exponent, Mr. Hamilton operated his own hydrologic consulting firm. He has taught a number of professional courses for hydraulic and sediment transport analysis techniques. He is a cooperating partner with the Chinese Academy of Sciences, Institute of Mountain Disasters and Environment (Sichuan, China), and has served as a committee member for the National Research Council's Water Science and Technology Board.

Academic Credentials and Professional Honors

M.S., Civil Engineering, University of California, Davis, 1984
B.S., Engineering, Harvey Mudd College, 1983

National Research Council's Water Science and Technology Board: Committee on the Evaluation of the National Flood Insurance Program Policy for Alluvial Fan Areas (member)

U.S. Delegation, International Conference on Natural Disaster Reduction, Yokohama, Japan, 1994 (observer); Sedimentation Technical Committee; American Society of Civil Engineers (past chair); Consultant to the California Governor's Task Force on Flooding; Trade Partner of the Year 2005 Pulte Homes, Del Webb; Technical Consultant to the California Governor's Alluvial Fan Flooding Task Force; Metropolitan Water District; Mobil Land Development; Pacific Ocean Division of the U.S. Army Corps of Engineers; Saddleback Valley Unified School District; Safeco Insurance Company; Santa Fe Railroad; and the World Bank; Technical Consultant to the California Governor's Alluvial Fan Flooding Task Force; Metropolitan Water District; Mobil Land Development; Pacific Ocean Division of the U.S. Army Corps of Engineers; Saddleback Valley Unified School District; Safeco Insurance Company; Santa Fe Railroad; and the World Bank

Licenses and Certifications

Registered Professional Civil Engineer, California, #42210; Licensed Professional Engineer, South Carolina, # 23305; Diplomate, Water Resources Engineer, American Academy of Water Resources Engineers, 2008

Publications and Presentations

Cydzik K, Hamilton D, Stenner H, Cattarossi A, Shrestha PL. Natural hazard public policy implications of the May 12, 2008 M7.9 Wenchuan earthquake, Sichuan, China. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

Cydzik K, Shrestha PL, Hamilton D, Rezakhani M, Scheffner NW, Lenaburg RT. Numerical modeling to support floodplain mapping in coastal areas. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

Shrestha PL, Hamilton DL, Cydzik K, Wardak S, Jordan N, Shaller PJ, Doroudian M. Flood hazard analysis and mitigation. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), New Delhi, India, January 12–16, 2009.

Murillo B, Wardak S, Hamilton DL, Shrestha PL, Cydzik K, Doroudian, M. Sedimentation analysis for existing and proposed development conditions. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), New Delhi, India, January 12–16, 2009.

Lenaburg RT, Scheffner NW, Shrestha PL, Cydzik K, Rezakhani M, Hamilton DL. EST-based tropical storm flood mapping of the Hawaiian Islands. Proceedings, An International Perspective on Environmental and Water Resources, Bangkok, Thailand, January 5–7, 2009.

Stenner H, Hamilton D, Cydzik K, Cattarossi A, Mathieson E. Landslides and quake lakes from the M7.9 China earthquake—Are Californians in the same boat? 3rd Conference on Earthquake Hazards in the Eastern San Francisco Bay Area, October 24, 2008.

Stenner H, Hamilton D, Cydzik K, Cattarossi A. Landslide hazards of the M7.9 Wenchuan, China earthquake and geologists' role in response. Annual Association of Engineering and Environmental Geologists, New Orleans, LA, September 19, 2008.

Wardak S, Murillo B, Hamilton D, Shrestha PL, Doroudian M, Cydzik K, Medellin J, Shaller PJ. Sedimentation analysis in an open channel network for existing and proposed development conditions. ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Shrestha PL, Hamilton D, Jordan N, Lyle JE, Doroudian M, Shaller PJ, Wardak S, Cydzik K, Medellin J. Inland flood hazard analysis and mitigation. ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

Gangai JW, Lenaburg R, Batten B, Drei-Horgan E, Scheffner N, Hamilton D, Rezakhani M, Shrestha P. Hurricane flood insurance study for the Hawaiian Islands. ASCE-COPRI Solutions to Coastal Disasters Conference, Oahu, HI, April 13–16, 2008.

Hamilton D. Hazards on alluvial fans and their mitigation. Presentation to the California Governor's Alluvial Fan Task Force, February 8, 2008.

Shrestha P, Hamilton D, Lyle J, Doroudian M, Shaller P. Analysis of flood hazards for a residential development. ASCE World Environmental and Water Congress, Tampa, FL, May 15–19, 2007.

McAnally WH, Teeter A, Schoellhamer D, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Kirby R. Management of fluid mud in estuaries, bays, and lakes. II: Measurement, modeling, and management. J Hydr Eng 2007; 133(1):23–38.

McAnally WH, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Teeter A. Management of fluid mud in estuaries, bays, and lakes. I: Present state of understanding on character and behavior. J Hydr Eng 2007; 133(1):9–22.

Cattarossi A, Mastrocola P, Hamilton D, Shrestha P. Hydrological potential for the restoration of the Mesopotamian marshlands. ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Shrestha P, Bigham G, Hamilton D, Doroudian MA. Three-dimensional model for Lake Sam Rayburn, Texas. ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Futornick K, Shrestha P, Sykora D, Hamilton D. Post-Katrina strategies to manage consequences of levee failure. Presentation, A&WMA 99th Annual Conference and Exhibition, New Orleans, LA, June 20–23, 2006.

Shaller P, Hamilton D, Lyle J, Mathieson E, Shrestha P. The fire-flood-erosion sequence in California—A recipe for disaster. ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P, Hamilton D, Shrestha P, Lyle J, Doroudian M. Investigation of flood and debris flow recurrence—Andreas Canyon, San Jacinto Range, Southern California. ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Hamilton D, Shrestha P, Lyle J, Doroudian M, Shaller P. Flood hazard analysis and protection plan for a residential development. ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Investigation of flood hazards on alluvial floodplains. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

Shrestha P, Hamilton D, Jordan, N, Doroudian M, Hong S, Proctor D. Impact of sewage line spills on pathogen levels in recreational waters. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

Hamilton D, Shaller P, Shrestha P, Lyle J, Doroudian M. Investigating flood hazards on alluvial floodplains. Presentation, Alluvial Fan Flood Hazard Management Symposium, Phoenix, AZ, April 20–22, 2005.

Shaller P, Hamilton D, Lyle J, Medley E, Mathieson E, Shrestha P. Fire-flood-erosion sequence: analysis and mitigation. Presentation, Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Hamilton D, Shaller P, Lyle J, Doroudian M, Shrestha P. Multi-disciplinary approach to distinguishing flood hazards on alluvial floodplains. Presentation, Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Interpretation of tectonic, fluvial, and eolian landforms in the Upper Coachella Valley, California, using aerial photography, DEM, and LiDAR technology. Poster Presentation, Geological Society of America, 2004 Denver Annual Meeting, Denver, CO, November 7–10, 2004.

Hamilton D, Cattarossi A, Polo P, Shrestha P, Nielson D. Restoration of the Mesopotamian marshlands. Presentation, Society of Wetland Scientists, 25th Anniversary Meeting, Seattle, WA, July 18–23, 2004.

Cattarossi A, Hamilton D, Shrestha P, Polo P. Macro- and micro-scale circulation modeling in the Mesopotamian marshlands of Southern Iraq. Proceedings, Arid Lands Symposium, ASCE-EWRI World Water and Environmental Resources Congress, Salt Lake City, UT, June 27–July 1, 2004.

Hamilton D, Cattarossi A, Shrestha P. The Eden again project: Restoration of the Mesopotamian Marshlands. Keynote presentation, National Society of Consulting Soil Scientists, NSCSS 17th Annual Meeting, San Diego, CA, February 5–7, 2004.

Hamilton D, Cattarossi A, Shrestha P. Numerical modeling of flows in the Iraqi Marshlands. Presented at Headwaters to Oceans (H2O) Conference, Long Beach, CA, October 23–25, 2003.

Hamilton D, Joaquin A. Urban planning for flood hazards. Inland Flooding, Cambridge University Press, New York, 2000.

Hamilton D, et al. Hydrologic computer models. In: May's Handbook of Water Resources, McGraw-Hill, New York, 1996.

Hamilton D, Ford DT. Computer models of water excess management. In: May's Handbook of Water Resources, Chapter 28, Phoenix, AZ, 1994.

Hamilton D. Reliability of sedimentation modeling for alluvial fan floodplain analysis. Modeling of Flood Propagation over Initially Dry Areas, ENEL, Milan, Italy, June 29–30, 1994.

Hamilton D, Zhang S, MacArthur RL. Debris flow velocity estimation methods for natural hazard assessment. Hydraulic Engineering, '93, pp. 334–339, Hydraulics Division of the American Society of Civil, San Francisco, CA, July 25–30, 1993.

MacArthur RC, Hamilton D, Branch WE. Assessment procedures for lahars, mudflows, debris flows, and debris torrents. Hydraulic Engineering, '93, Hydraulics Division of the American Society of Civil, pp. 210–215, San Francisco, CA, July 25–30, 1993.

MacArthur RC, Hamilton D, Brunner GW. Numerical methods for simulating debris blockage failures and mudflows. Proceedings, National Conference on Irrigation and Drainage, American Society of Civil Engineers, Honolulu, HI, July 1991.

Umble A, Hamilton D. Development of alluvial floodplains. American Society of Civil Engineers, Orange County Branch, Hydraulics and Hydrology Technical Group, May 1991.

Hamilton D. Mitigation of sedimentation problems in watersheds at the urban interface. California Watersheds at the Urban Interface, Watershed Management Council, Davis, CA, October 1990.

Schamber DR, MacArthur RC. One-dimensional model for mudflows user's manual. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis, CA, November 1990 (co-author).

Schamber DR, MacArthur RC. Two-dimensional model for mudflows user's manual. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis, CA, November 1990 (co-author).

Hamilton D. Scour stability design of San Sevaine wash levee. San Bernardino County, CA, 1989.

MacArthur RC, Schamber DR, West MH. Verification of a generalized mudflow model. Proceedings, Hydraulic Engineering National Conference, American Society of Civil Engineers, Williamsburg, VA, August 1987 (co-author).

Schamber DR, MacArthur RC. Numerical modeling of arid region floods hazards. Computational Hydrology '87, Proceedings, First International Conference, Computational Hydrology Institute, Anaheim, CA, July 1987 (co-author).

MacArthur RC, Schamber DR, West MH. One-dimensional analysis of debris flows. (In Chinese). Soil and Water Conservation in China, Beijing, People's Republic of China, July 1987 (co-author).

Hamilton D. Two-dimensional hydrodynamics and sediment transport for estuaries. Taiwan Water Conservancy Bureau, Republic of China, 1987.

Hamilton D. A hydrologic perspective on geomorphic hazards related to the 1993 floods in the San Diego, California and Tijuana, Mexico regions. Geological Society of America Conference, San Bernardino, CA, 1993.

Hamilton D. Hydrologic assessment for riparian restoration projects. Water Forum, '92, American Society of Civil Engineers, Baltimore, MD, August 1992.

MacArthur RC, Harvey MD, Kekaula HW. Analyses of special hazards and flooding problems in tropical island environments. Water Forum, '92, American Society of Civil Engineers, Baltimore, MD, August 1992 (co-author).

MacArthur RC, Schamber DR. Numerical and physical modeling of debris flows. 4th International Symposium on River Sedimentation, International Research and Training Center for Erosion and Sedimentation, Beijing, People's Republic of China, June 5–9, 1989 (co-author).

MacArthur RC, Schamber DR, West MH. Generalized methodology for simulating mudflows. Water Forum '86, American Society of Civil Engineers, Long Beach, CA, July 1987 (co-author).

MacArthur RC. The Corps of Engineers efforts in modeling mudflows. Western States High Risk Flood Areas Symposium, Association of State Floodplain Managers, Las Vegas, NV, 1986 (co-author).

MacArthur RC, Li R-M. Coincident frequency approach to fire/flood problems. Western States High Risk Flood Areas Symposium, Association of State Floodplain Managers, Las Vegas, NV, 1986 (co-author).

Hamilton D. A Comprehensive approach to the mitigation of special flood hazards in the Western United States: Debris flows, mudflows and hyperconcentrated flows. 2nd National Conference on Debris Flows, Chinese Academy of Sciences, Chengdu, Sichuan, People's Republic of China, October 1986.

Reports

MacArthur RC, Harvey MD. Urban flooding and debris flow analysis for Niu, Aina Haina, and Kuliouou Valleys. U.S. Army Corps of Engineers, Pacific Ocean Division, Contract No. DACW83-91-P0055, 1991 (co-author).

MacArthur RC, Brunner GW. Numerical simulation of a hypothetical failure of the Castle Lake blockage near Mount St. Helens, Washington. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Special Projects Report 89-04, May 1989 (co-author).

MacArthur RC. Incorporating the effects of mudflows into flood insurance studies on alluvial fans. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Special Projects Report 86-4, August 1988 (co-author).

MacArthur RC. Review of the U.S. Army Corps of Engineers involvement with alluvial fan flooding problems. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis CA, Technical Paper No. 124, December 1988 (co-author).

MacArthur RC, Li R-M. Analysis of flows on alluvial fans—State of the art. U.S. Department of Transportation, Federal Highway Administration, Report No. FHWA-AZ88-802, October 1988 (co-author).

MacArthur RC, Schamber DR. Laboratory and numerical modeling of mudflows. U.S. Army Corps of Engineers, Portland District, Contract No. DACW57-86-C-0042, March 1987 (co-author).

Schamber DR. Petrov-Galerkin Finite element formulation of the one-dimensional mudflow model. U.S. Army Corps of Engineers, Portland District, Contract No. DACW57-86-C-0042-1, November 1987 (co-author).

Hamilton D. Computation of unit weight of debris flow. Simons, Li & Associates, Inc., Technical Note for OR-COE-02, August 1986.

MacArthur RC, Schamber DR. Toutle River mudflow investigation, Mount St. Helens, Washington. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis, CA, Special Projects Report 85–3, July 1985 (co-author).

Book Chapters

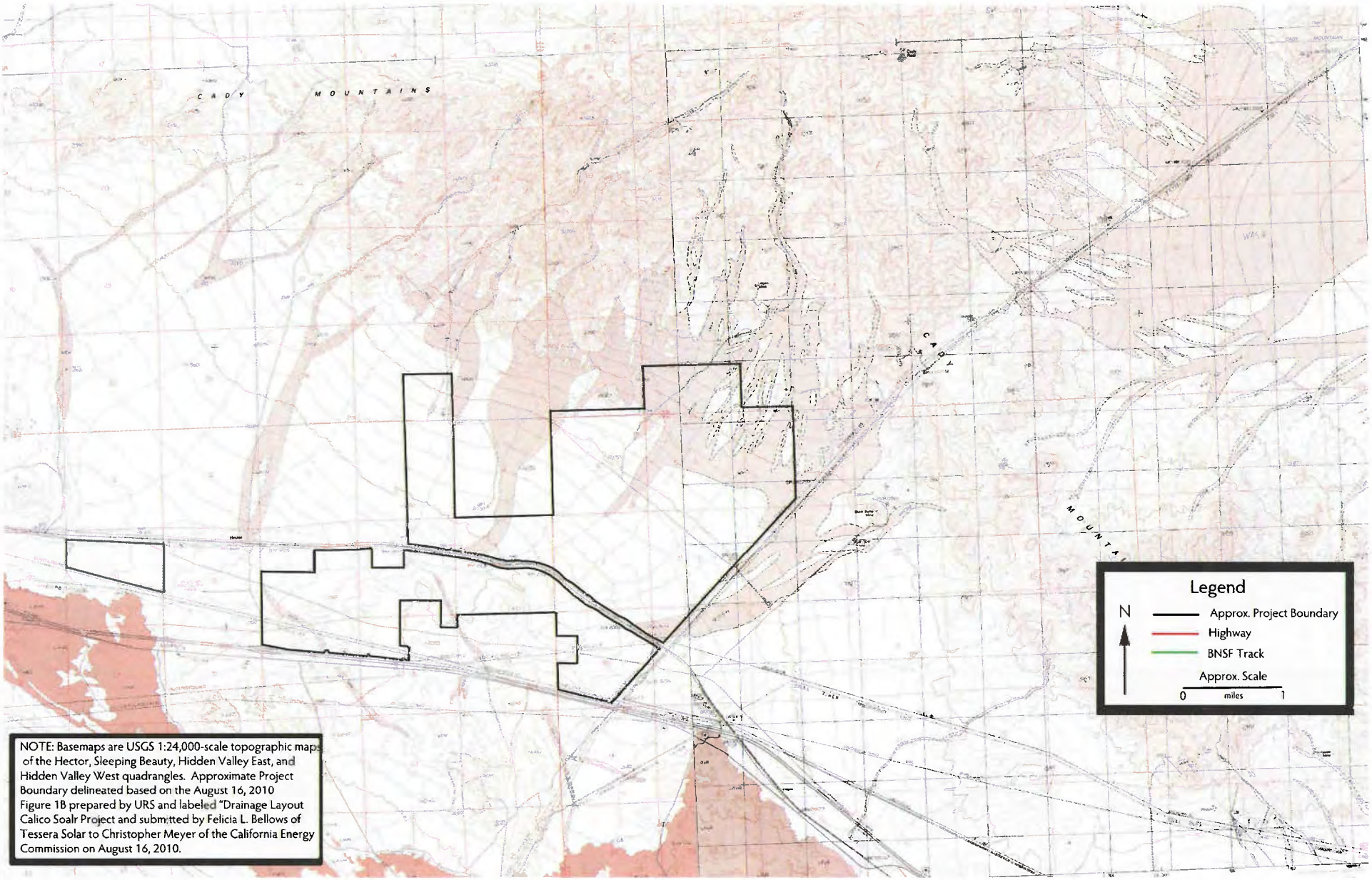
Slosson JE, Hamilton D, Shuirman G. American sedimentation law and physical processes. In: Sedimentation Engineering: Processes, Measurements, Modeling, and Practice. ASCE Manuals and Reports on Engineering Practice No. 110, ASCE Task Committee for the Preparation of the Manual on Sedimentation, ASCE, Garcia MH (ed), Reston, VA, 2008.

Hamilton D, et al. Sedimentation law. In: Sedimentation Engineering, American Society of Civil Engineers, New York, 1997.

Hamilton D, et al. Hydrologic computer models. In: May's Handbook of Water Resources. McGraw-Hill, New York, 1996.

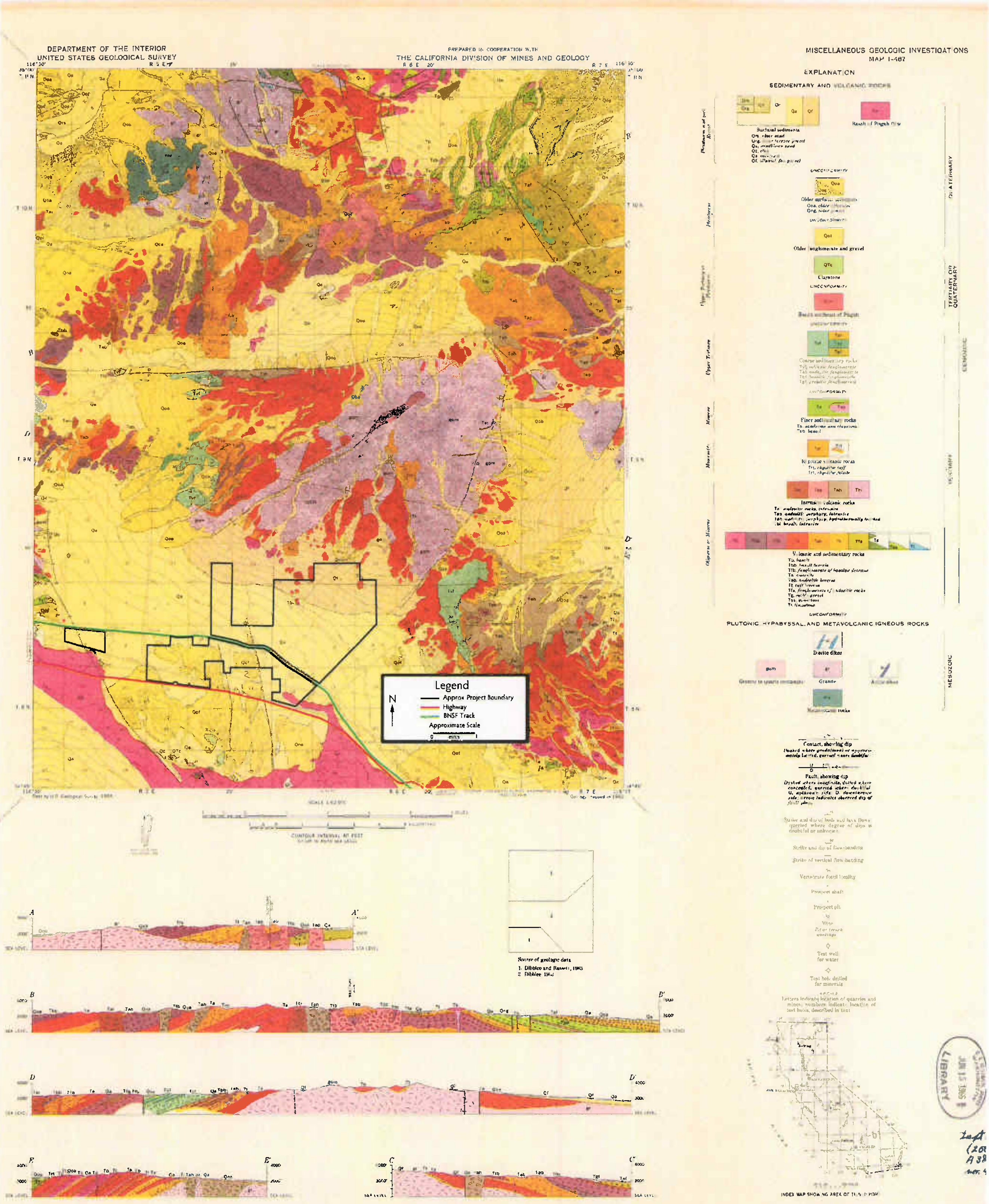
Hamilton D, Ford DT. Computer models of water excess management. Chapter 28. In: May's Handbook of Water Resources. Phoenix, AZ, 1994.

Exhibit 2



NOTE: Basemaps are USGS 1:24,000-scale topographic maps of the Hector, Sleeping Beauty, Hidden Valley East, and Hidden Valley West quadrangles. Approximate Project Boundary delineated based on the August 16, 2010 Figure 1B prepared by URS and labeled "Drainage Layout Calico Soalr Project and submitted by Felicia L. Bellows of Tessera Solar to Christopher Meyer of the California Energy Commission on August 16, 2010.

Exhibit 3



GEOLOGIC MAP OF THE CADY MOUNTAINS QUADRANGLE, SAN BERNARDINO COUNTY, CALIFORNIA

By

T. W. Dibblee, Jr., and A. M. Bassett

1966

For sale by U.S. Geological Survey, price 75 cents

Exhibit 4

Map MODERNIZATION

Federal Emergency Management Agency

FEMA's Flood Hazard Mapping Program

Guidelines and Specifications *for* Flood Hazard Mapping Partners

Appendix G: Guidance for Alluvial Fan Flooding Analyses and Mapping

FEDERAL EMERGENCY MANAGEMENT AGENCY

www.fema.gov/fhm/dl_cgs.shtm

April 2003

Summary of Changes to Appendix G,

Guidance for Alluvial Fan Flooding Analyses and Mapping

The Summary of Changes below details changes to Appendix F that were made subsequent to the initial publication of these *Guidelines* in February 2002. These changes represent new or updated guidance for Flood Hazard Mapping Partners.

Date	Affected Section(s)/Subsection(s)	Description of Changes
April 2003	None	No changes representing new or updated guidance were made.

Appendix G

Guidance for Alluvial Fan Flooding Analyses and Mapping

G.1 Introduction [February 2002]

Alluvial fans, and flooding on alluvial fans, show great diversity because of variations in climate, fan history, rates and styles of tectonism, source area lithology, vegetation, and land use. Acknowledging this diversity, the Federal Emergency Management Agency (FEMA) developed an approach that considers site-specific conditions in the identification and mapping of flood hazards on alluvial fans. This approach, summarized herein, was first documented in *Guidelines for Determining Flood Hazards on Alluvial Fans*.

Investigation and analysis of the site-specific conditions may require knowledge in various disciplines, such as geomorphology, soil science, hydrology, and hydraulic engineering. Although the scope of study may constrain the degree of site-specific consideration undertaken, field inspections of the alluvial fan must be conducted.

According to Section 59.1 of the National Flood Insurance Program (NFIP) regulations, the current definition of "Alluvial Fan Flooding" means

> flooding occurring on the surface of an alluvial fan or similar landform which originates at the apex and is characterized by high-velocity flows; active processes of erosion, sediment transport, and deposition; and, unpredictable flowpaths.

FEMA will revise the current definition under Section 59.1 to be consistent with the approach described in this Appendix and specifically to eliminate reference to "similar landforms." The process described in this Appendix is intended for flooding only on alluvial fans as described below.

As interim guidance in the determination of "similar landform," unless the landform under investigation meets the three criteria under Stage 1 for composition, morphology, and location, the landform is not considered to be "similar."

This Appendix provides guidance for the identification and mapping of flood hazards occurring on alluvial fans, irrespective of the level of fan forming activity. The term ***alluvial fan flooding*** encompasses both ***active alluvial fan flooding*** and ***inactive alluvial fan flooding***. Each type of alluvial fan flooding is described below.

Active alluvial fan flooding occurs only on alluvial fans and is characterized by flow path uncertainty so great that this uncertainty cannot be set aside in realistic assessments of flood risk or in the reliable mitigation of the hazard.

An active alluvial fan flooding hazard is indicated by the following three related criteria:

1. Flow path uncertainty below the hydrographic apex;

2. Abrupt deposition and ensuing erosion of sediment as a stream or debris flow loses its ability to carry material eroded from a steeper, upstream source area; and

3. An environment where the combination of sediment availability, slope, and topography creates an ultrahazardous condition for which elevation on fill will not reliably mitigate the risk.

Inactive alluvial fan flooding is similar to traditional riverine flood hazards, but occurs only on alluvial fans. Inactive alluvial fan flooding is characterized by flow paths with a higher degree of certainty in realistic assessments of flood risk or in the reliable mitigation of the hazard. Unlike active alluvial fan flooding hazards, an inactive alluvial fan flooding hazard is characterized by relatively stable flow paths. However, like areas of active alluvial fan flooding, inactive alluvial fan flooding may be subject to sediment deposition and erosion, but to a degree that does not cause flow path instability and uncertainty.

An alluvial fan may exhibit both active and inactive alluvial fan flooding hazards. The hazards may vary spatially or vary at the same location, contingent on the level of floodflow discharge. Spatially, for example, upstream inactive portions of the alluvial fan may distribute floodflow to active areas at the distal part of the alluvial fan. Hazards may vary at the same location, for example, with a flow path that may be stable for lower flows, but become unstable at higher flows.

An example of an alluvial fan that exhibits both active and inactive alluvial fan flooding is depicted in Figure G-1. In this example, the area between the topographic apex and the hydrographic apex (apex definitions will be discussed below) would be considered *inactive alluvial fan flooding* because this reach is characterized by a stable, entrenched channel which can convey the 1-percent-annual-chance (100-year) flood discharge without overbank flooding. The area below the hydrographic apex would be considered *active alluvial fan flooding* because this area is characterized by flow path uncertainty, abrupt deposition, and ensuing erosion of sediment as the channel loses its competence to carry material eroded from a steeper, entrenched upstream source area.

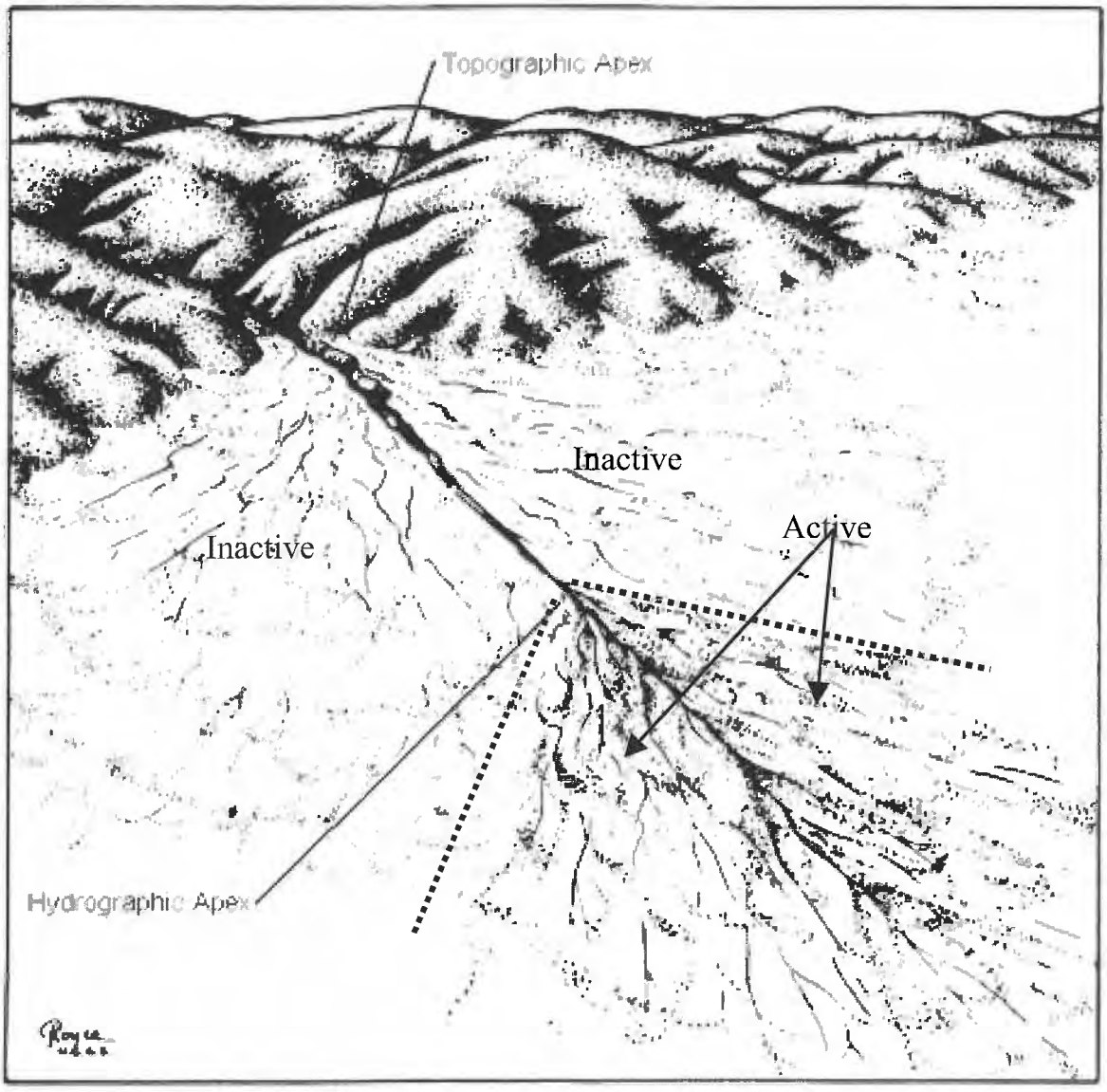


Figure G-1. Alluvial Fan With Entrenched Channel Leading To Active Deposition at Distal Part of the Fan. Original Published as Figure 3-2 in *Alluvial Fan Flooding* (National Research Council, 1996). Reproduced with Permission From the National Research Council; Annotations Added by FEMA.

G.2 Analysis Approach [February 2002]

Through the approach for alluvial fan flooding identification and mapping documented herein, FEMA seeks to identify whether (1) the area under study is an alluvial fan and (2) which portions of this area, if any, are characterized by or subject to active alluvial fan flooding. After these steps, various methods unique to different situations can be employed to analyze and define the 1-percent-annual-chance (100-year) flood within the areas of alluvial fan flooding identified on the alluvial fan. Thus, the approach for the identification and mapping of alluvial fan flooding can be divided into three stages.

- Stage 1—Recognizing and characterizing alluvial fan landforms;
- Stage 2—Defining the nature of the alluvial fan environment and identifying active and inactive areas of the fan; and
- Stage 3—Defining and characterizing the 1-percent-annual-chance (100-year) flood within the defined areas.

Each of these stages is described in detail in this Appendix. Additional information also can be found in a National Research Council report entitled *Alluvial Fan Flooding* (National Research Council, 1996).

Each stage must be addressed and thoroughly documented during the analysis process. Because each stage builds on the previous stage and because of the complexity of many alluvial fans, the Mapping Partner who undertakes the analysis and mapping of alluvial fan flooding must coordinate closely with the FEMA Regional Project Officer (RPO) and FEMA Headquarters (HQ) from the onset of the study. The progression of the process is shown in Figure G-2.

Progression through each of the stages results in a procedure that narrows or divides the problem to smaller and smaller areas. In Stage 1, the landform on which the flooding occurs must be characterized. If the location of study is an alluvial fan, the Mapping Partner proceeds to Stage 2 to identify which parts of the alluvial fan are active or inactive. Finally, in Stage 3, the Mapping Partner performing the analysis must use various methods to define and analyze the 1-percent-annual-chance (100-year) flood within each identified area of alluvial fan flooding. Progression through these stages requires a variety of maps and photographs, as well as a significant amount of field work and analysis to fully understand the flood hazard. The Mapping Partner may need to consult with geologists, geomorphologists, and/or soil scientists during each stage.

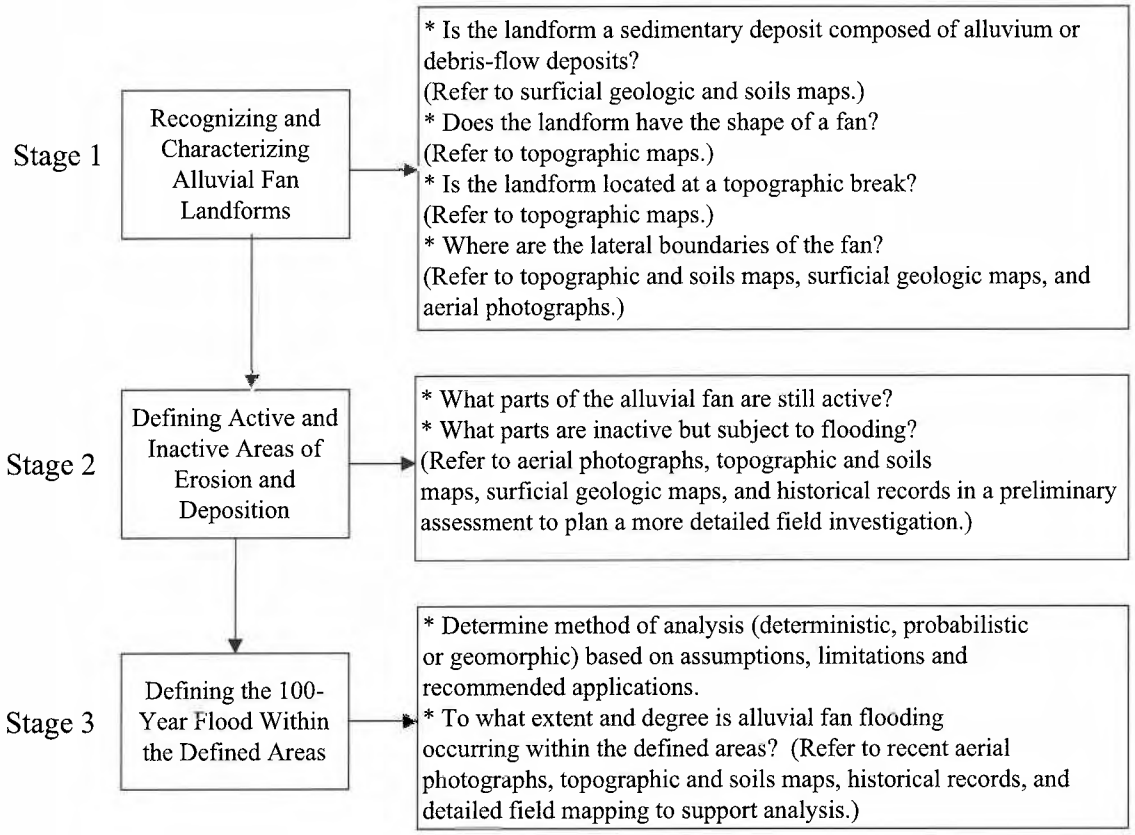


Figure G-2. Three Stages of the Process To Identify and Map Alluvial Fan Flooding. Original Published in National Research Council, 1996, Figure 3-1; Amended by FEMA.

G.2.1 Stage 1: Recognizing and Characterizing Alluvial Fan Landforms [February 2002]

As defined in this Appendix, alluvial fan flooding occurs only on alluvial fans. Therefore, the first stage of the process is to determine whether the landform in question is an alluvial fan. If, after following the guidelines in this subsection, the Mapping Partner concludes that the landform is not an alluvial fan, then the methods described in this Appendix are not intended for, or necessarily applicable to, the landform in question.

An alluvial fan is a sedimentary deposit located at a topographic break such as the base of a mountain front, escarpment, or valley side, that is composed of streamflow and/or debris flow sediments and has the shape of a fan, either fully or partially extended. These characteristics can be categorized by composition, morphology, and location as discussed in Subsections G.2.1.1, G.2.1.2, and G.2.1.3.

G.2.1.1 Composition [February 2002]

Alluvial fans are landforms constructed from deposits of alluvial sediments or debris flow materials. These deposits, "alluvium", are an accumulation of loose, unconsolidated to weakly consolidated sediments. Alluvium refers to sediments transported by either streamflow or debris flows. Geologic maps and field reconnaissance can be used to determine whether the landform is composed of alluvium.

G.2.1.2 Morphology [February 2002]

Alluvial fans are landforms that have the shape of a fan, either partly or fully extended. Flow paths may radiate outward to the perimeter of the fan; however, drainage may exhibit a range of patterns such as dendritic, anastomosing, and distributary. Topographic maps and aerial photos can be used to assess this criterion.

G.2.1.3 Location [February 2002]

Alluvial fan landforms are located at a topographic break where long-term channel migration and sediment accumulation become markedly less confined than upstream of the break. This locus of increased channel migration and sedimentation is referred to as the alluvial fan apex.

The topographic apex is at the extreme upstream extent of the alluvial fan landform. The hydrographic apex is the highest point on the alluvial fan where there exists physical evidence of channel bifurcation and/or significant flow outside the defined channel; its location may be either coincidental with, or at a point downstream of, the topographic apex as seen in Figure G-1. The hydrographic apex may depend on the discharge and may vary with the magnitude of the flooding event.

G.2.1.4 Defining Toe and Lateral Boundaries [February 2002]

The distal terminus, or ***toe***, of an alluvial fan commonly is defined by:

- A stream that intersects the fan and transports deposits away from the fan;
- A playa lake;
- An alluvial plain; and
- Smoother, gentler slopes of the piedmont plain.

Such boundaries can often be identified on topographic maps by changes in contour lines or identified on aerial photographs or by field inspection as changes in vegetation as a result of sediment changes or increased water table depth.

Lateral boundaries of alluvial fans are the edges of deposited and reworked alluvial materials. The lateral boundary of a single alluvial fan typically is a trough, channel, or swale formed at the lateral limits of deposition. The lateral boundary also may be a confining mountainside.

Lateral boundaries of single alluvial fans can often be identified as a contact of distinct differences between light-colored, freshly abraded, alluvial deposits and darker-colored, weathered deposits with well-developed soils on piedmont plains. Care should be taken to ensure that the contact is not simply a divide between older and more recent deposits of the alluvial fan.

The lateral boundaries of alluvial fans that coalesce with adjacent alluvial fans are generally less distinct than those of single alluvial fans. These lateral boundaries may be marked by a topographic trough or ridge. It is sometimes possible to distinguish between surfaces of adjacent alluvial fans based on different source-basin rock types. Defining the lateral boundaries of coalescing fans will likely require additional fieldwork, use of surficial geologic and soils maps, and consultation with a geomorphologist or soil scientist.

G.2.2 Stage 2: Defining Active and Inactive Areas [February 2002]

During Stage 1, the Mapping Partner conducting the analysis identified whether the landform in question is an alluvial fan. During Stage 2, the Mapping Partner will seek to delineate areas of the alluvial fan that are active or inactive in the deposition, erosion, and unstable flow path flooding that builds alluvial fans. The activities in Stage 2 have been designed to narrow the area of concern for Stage 3, which is the specific identification of the extent of the 1-percent-annual-chance (100-year) flood.

Although active alluvial fan flooding has occurred on all parts of an alluvial fan at some time in the geologic past in order to construct the landform itself, this does not mean that all parts are equally susceptible to active alluvial fan flooding now. Also, flooding may be occurring on inactive areas of the alluvial fan.

In most of the United States, it is possible to identify parts of alluvial fans that were actively constructed during the Pleistocene epoch (approximately 2 million to 10,000 years ago) and parts that have been active (i.e., flooded) during the Holocene epoch (the past 10,000 years). The reason that this broad distinction generally is possible is that the two epochs were identified and defined on the basis of climatic conditions.

The Holocene epoch is a time of interglacial warm conditions, whereas the Pleistocene epoch was marked by repeated full glacial, cool conditions alternating with warm interglacials like that of the Holocene epoch. As a result of these climatic differences, flooding and sedimentation occurred at different rates and magnitudes during the Pleistocene and Holocene epochs. The impacts of these climatic changes on alluvial fan formation can be inferred from geologic, geomorphic, and soil data.

A change in the rate of tectonic uplift along a mountain front can also result in abandonment of parts of alluvial fans. For example, a decrease in the rate of uplift at a mountain front relative to the alluvial fan could result in stream channel downcutting at the mountain front/alluvial fan apex over a period of time. As a consequence, the upper part of the fan would become entrenched, and the active area of deposition would shift downfan.

G.2.2.1 Identification of Active Areas [February 2002]

The term *active* refers to that portion of an alluvial fan where deposition, erosion, and unstable flow paths are possible. If flooding and deposition have occurred on a part of an alluvial fan in the past 100 years, clearly that part of the fan can be considered to be active.

Historic records, photographs, time-sequence aerial photography, and engineering and geomorphic information may support this conclusion. If flooding and deposition have occurred on a part of an alluvial fan in the past 1,000 years, for example, that part of the fan may be subject to future alluvial fan flooding.

This conclusion may only be supported by geomorphic information, however. It becomes more difficult to determine whether a part of the fan that has not experienced sedimentation for more than 1,000 years actually is active, that is, that there is some likelihood of flooding and sedimentation under the present climate conditions.

Because there is no clear analytical technique for making such projections of the estimates of the spatial extent of inundation, Stage 2 analysis involves systematically applied judgment and the combination of hydraulic computations and qualitative interpretations of geologic evidence concerning the recent history and probable future evolution of channel forms, as well as flooding and sedimentation processes. It must be kept in mind, however, that the intent of Stage 2 is to narrow the area of concern with regard to active deposition, erosion, and unstable flow paths

over a period of time generally exceeding 100 years. Therefore, the combination of engineering and geomorphic analyses, both qualitative and quantitative, provide an indication of the approximate spatial extent of possible inundation over a relatively long time period (i.e., several thousand years). During Stage 3, the Mapping Partner that performs the detailed study shall determine the floodplain limits associated with the 1-percent-annual-chance (100-year) flood.

G.2.2.2 Identification of Inactive Areas [February 2002]

For a given area of the alluvial fan, if the situations described in Subsection G.2.2.1 do not exist, then the area is considered inactive and not subject to the deposition, erosion, and unstable flow path flooding that builds alluvial fans. Inactive areas may be subject to flooding though, most notably within entrenched channels.

Evidence of inactive areas may include armoring along the margin of the area bordering active areas, older vegetation, and the lack of change in flow paths viewed over the aerial photographic record. This evidence, though, does not preclude the area from possibly being classified as an active area as a result of changes in, or conditions within, adjacent active areas.

Older alluvial fan surfaces are considered active if any of the following are true:

- The recently active sedimentation zone is migrating into the older surface.
- The elevation difference between the recently active sedimentation zone and the older surface is small relative to flood, deposition, and debris depths conceivable in the current regime of climate, hydrology, or land use in the source area.
- Upstream of the site, there is an opportunity for avulsions that could lead channels or sheet floods across the older surface.

G.2.2.3 Identification Process [February 2002]

Once a relative time period is chosen (e.g., <1,000 years) to help evaluate the active areas of an alluvial fan, the analyst must determine relative ages for the morphologic features on the alluvial fan. Indicators of land surface age for Stage 2 are based on relative age indicators. Absolute (numerical) dating techniques, such as radiocarbon dating, are generally beyond the scope of many studies.

Detailed soils and surficial geological maps, when available, provide useful delineation of soil types and surface ages. An examination of the historical record of flooding and deposition can enhance the information gained from the soils map. Aerial photographs from different years can be used to identify sites of deposition. Field examination of morphologic features on the alluvial fan surface, particularly noting evidence of human activity (recent or archaeological) or weathering characteristics such as desert pavement, rock varnish, B-horizon development in the soil profile, calcic-horizon development, and pitting and rilling of clasts may also provide relative age information.

Density and type of vegetation can provide useful clues to the age of an alluvial fan surface area. Texture and composition of the sediment, in addition to the water-holding capacity, relate to the surface vegetation. Fresh alluvial deposits contain little organic carbon or clay and, as a result, do not promote vegetation growth. Vegetation is limited on older surfaces because they receive only direct rain, are often erosional, and can be less fertile (carbonate soil cropping out at the surface, for example). Intermediate-age surfaces (middle to late Holocene) contain the most dense and diverse vegetation. Use and interpretation of diagnostic vegetation, like the use and interpretation of desert pavement, varnish, or soil properties, are generally specific to the individual fan in question. Within a geographic region, however, surface characteristics of alluvial fans may be correlated from one fan to another.

Detailed topographic maps (i.e., 2-foot contour interval) are instrumental in identifying potential avulsion areas and in delineating the boundaries of areas subject to different flood, deposition and debris flow depths. Topographic maps also can be used to identify older alluvial surfaces within active zones that are not subject to flooding.

Areas of question noted during the analysis of maps and aerial photographs should be closely examined during the field inspection. All flow paths should be walked to verify the active and inactive areas that have been delineated. Stage 2 is complete when the analyst has defined and delineated all active and inactive areas of deposition, erosion, and unstable flow path flooding, as well as adjacent inactive fan areas. All inactive areas with stable flow path flooding and all active areas may be considered floodprone, but through Stage 2, the degree to which these areas are floodprone is not yet known. **The delineated floodprone areas of Stage 2 should approximate the largest possible extent of the 1-percent-annual-chance (100-year) flood.**

G.2.2.4 Types of Alluvial Fan Flooding [February 2002]

Several types of flooding occur on alluvial fans. The most common ones are flooding along stable channels, sheetflow, debris flow, and unstable flow path flooding.

Flooding Along Stable Channels

A deeply entrenched channel or network of channels often is subject to inactive alluvial fan flooding. This type of flooding usually occurs within distributary flow systems that were formed during climatic or tectonic conditions different from the present. This flooding can occur at the head of the alluvial fan but become unstable downstream. Conversely, unstable channels can become stable in the downstream direction; this can occur because of headcutting into the toe as a result of changing hydraulic conditions downstream from the toe. Human intervention, directly by channel modification or indirectly by land-use change, can create stable channels.

Sheetflow

Some parts of alluvial fans are characterized by sheetflow, which is the flow of water as broad sheets that are completely unconfined by any channel boundaries. Sheetflow might occur where flow departs from a confined channel and no new channel is formed. It might also occur where several shallow, distributary channels join together near the toe of a fan and the gradient of the

fan is so low that the flows merge into a broad sheet. Because such sheetflows can carry high concentrations of sediment in shallow water and follow unpredictable flow paths, they are classified as active alluvial fan flooding.

Sheetflows generally occur on downslope parts of fans, where channel depths are low and the boundaries of channels become indiscernible. They are also more common at distal locations because of the likelihood of fine-grained sediments and shallow groundwater; during prolonged rainfall, the ground can become saturated, resulting in extensive sheet flooding as runoff arrives from upslope. Fine-grained sediments can aggravate the likelihood of sheetflow because some clay minerals swell when wet, forming an impermeable surface at the beginning of a rainstorm.

Debris Flow

Some parts of alluvial fans are characterized by debris flows, flows with a very high concentration of sediment in relation to water. Debris flows pose hazards that are very different from those of sheetflows or water flows in channels. Identifying those parts of alluvial fans where debris flow deposition might occur requires the examination of deposits from past flows. Debris flow deposits can be distinguished from fluvial deposits by differences in morphology, depositional relief, stratigraphy, and clast fabric. Exposures in channel banks can be examined and can be supplemented with shallow trenches in different deposits.

Unstable Flow Path Flooding

Active areas of an alluvial fan will generally be characterized by unstable and uncertain flow path flooding. This type of flooding usually creates a single channel just below the apex, but splits into multiple channels as it proceeds down the alluvial fan. These channels are subject to deposition and bank or bottom erosion that cause channel migration, avulsion, and the formation of new channels. Areas subject to this type of flooding are characterized by shallow, braided or distributary, sand- to gravel-bed channels. Recently formed channels may have less established vegetation, such as trees, than older channels in the same general area.

G.2.3 Stage 3: Defining the 100-Year Flood Within Defined Areas

[February 2002]

FEMA uses the 100-year flood, the flood having a 1-percent chance of being exceeded in any given year, to delineate Special Flood Hazard Areas (SFHAs) on NFIP maps. In the preceding discussion of Stages 1 and 2, methods of identifying alluvial fan landforms and areas of active and inactive deposition, erosion, and unstable flow path flooding were described. During Stage 3, the Mapping Partner that performs the detailed study will determine the severity and will delineate the extent of the 1-percent-annual-chance (100-year) flood within any floodprone area identified during Stage 2.

The broad spectrum of alluvial fan landforms and types of flooding illustrates, as previously discussed, the futility of developing a "cookbook" method to apply to all fans in all geographic areas. The analysis of the flood hazards on alluvial fans therefore requires a flexible approach

that is based on site-specific evaluations. Several methods for quantifying the 1-percent-annual-chance (100-year) flood are presented in the following sections and are summarized in Table G-1. Not all methods are appropriate for all situations. The assumptions and limitations of each should be carefully considered in deciding which methods to apply to particular areas of an alluvial fan.

Sample maps resulting from the application of some of the available methods are included as Figures G-5 through G-13.

G.2.3.1 Risk-Based Analysis [February 2002]

The U.S Army Corps of Engineers provided a framework that may be used to analyze flood hazards on alluvial fans using the principles of risk-based analysis in *Guidelines for Risk and Uncertainty Analysis in Water Resources Planning* (U.S Army Corps of Engineers, 1992). This method uses the total probability equation that will be discussed in detail in Subsection G.2.3.2. The degree of uncertainty associated with a prediction of a given flood scenario is assessed by bringing to bear evidence derived from geomorphologic and other studies. This method tracks the effects of the error associated with a calculation to provide a confidence band in ensuing predictions of flood-hazard severity.

Table G-1. Methods for Defining the 1-Percent-Annual Chance (100-Year) Flood Within Floodprone Areas Defined During Stage 2

METHOD	ASSUMPTIONS	LIMITATIONS	RECOMMENDED APPLICATIONS	FIGURE NUMBER
Risk-Based Analysis	Refer to *Guidelines for Risk and Uncertainty Analysis in Water Resources Planning* (USACE, 1992).			
FAN Computer Program	Flooding in rectangular channel; critical depth, erosion of rectangular channel banks until the change in width divided by the change in depth equals –200; the probability density function of a discharge occurring at the apex is log-Pearson Type III; the frequency of flood events for various recurrence intervals, i.e., 2-year through 500-year, can be adequately defined; equal probability along contour arcs (random flow paths); (also provides for multiple channels at normal depth, assuming total width is 3.8 times the single-channel width)	Fluvial (as opposed to debris flow) formed fan, unstable flow paths	Highly active, conical fans	G-5
Sheetflow	Broad, unconfined, shallow flooding	Not for use in areas of undulating terrain	Shallow flooding across uniformly sloping surfaces	G-6
Hydraulic Analytical Methods	Stable flow path, uncertainty is to a degree that may be disregarded	Not for use with active alluvial fan flooding	Entrenched stable channel networks, constructed channels, urbanized areas	G-7 and G-13
Geomorphic Data, Post-Flood Hazard Verification, and Historical Information	Relies primarily on qualitative information, post-flood verification, historical data, and interpretive studies	Approximate method	Alluvial fans with little or no urbanization	G-8 and G-9
Composite Methods	As identified in the sections referring to the methods being applied	Must integrate multiple methods into one result	Floodprone areas that contain unique physical features in some locations or have areas varying in levels of erosion and migration activity	G-10, G-11, and G-12

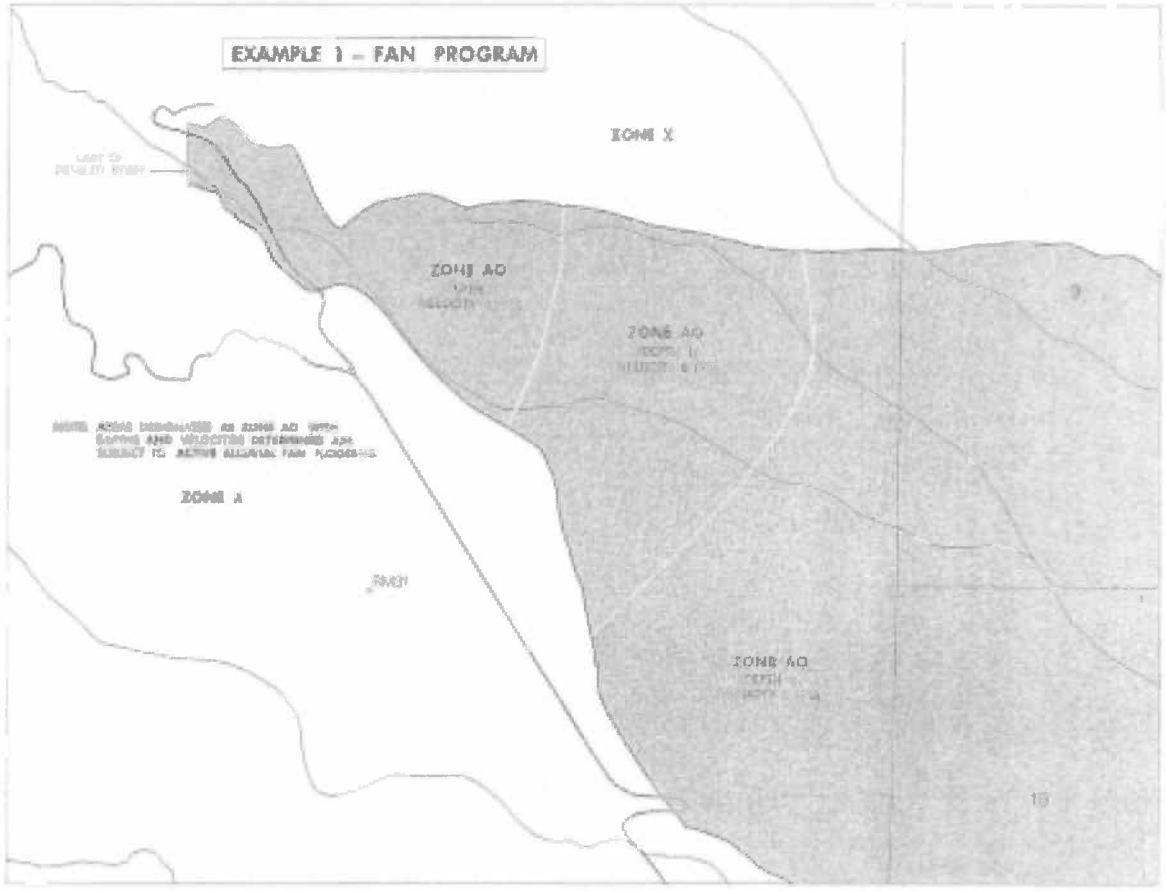


Figure G-5. Sample Map Generated From Alluvial Fan Analysis Using FAN Computer Program. This map appeared as Example 1 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

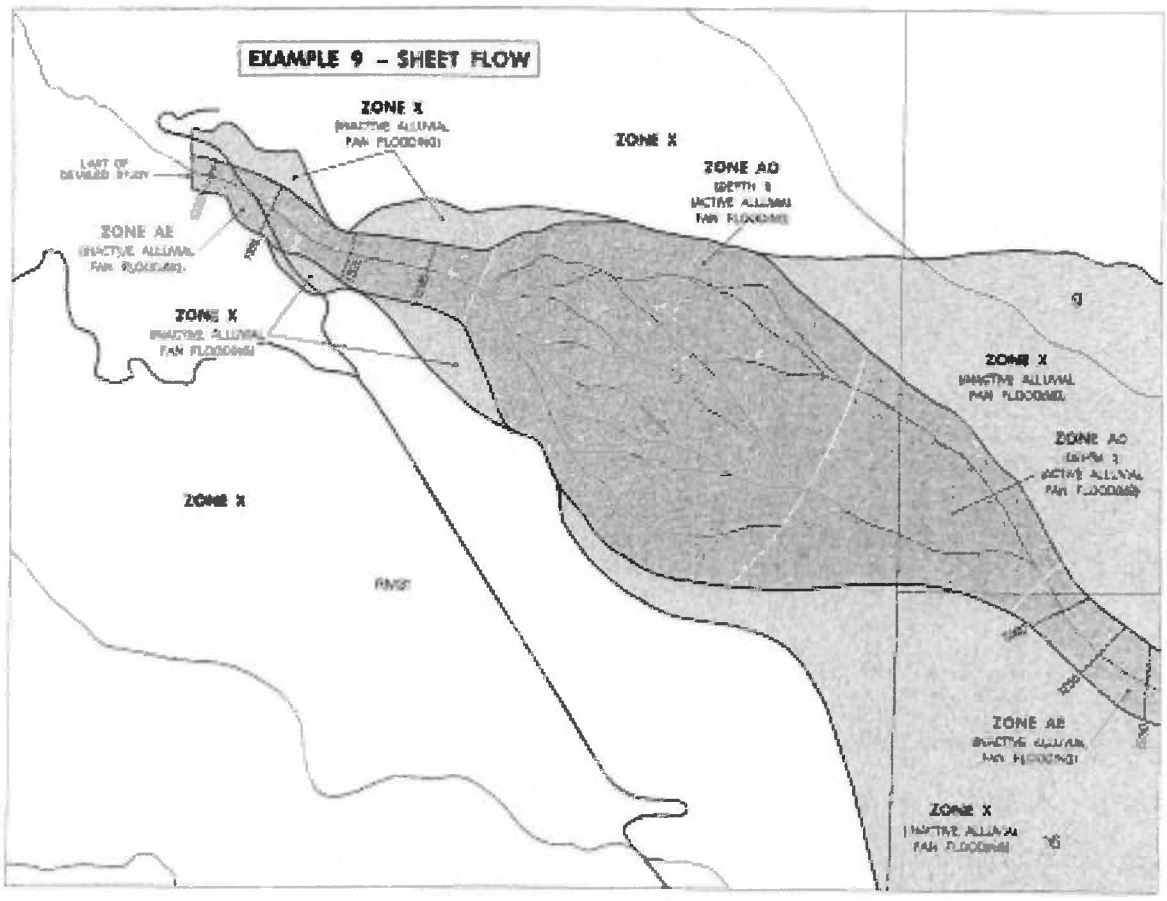


Figure G-6. Sample Map Generated From Alluvial Fan Analysis Using Sheetflow Analysis Methods. This map appeared as Example 9 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

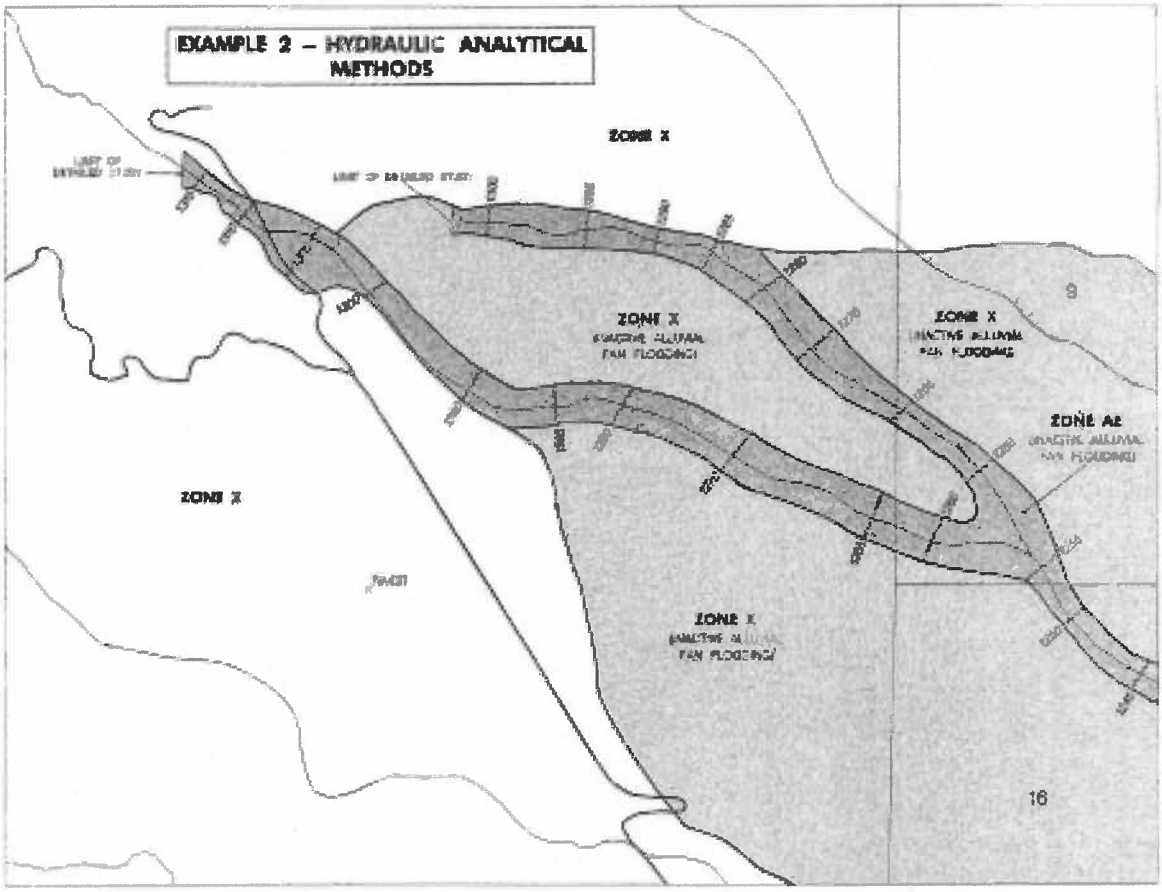


Figure G-7. Sample Map Generated From Alluvial Fan Analysis Using Hydraulic Analytical Methods. This map appeared as Example 2 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

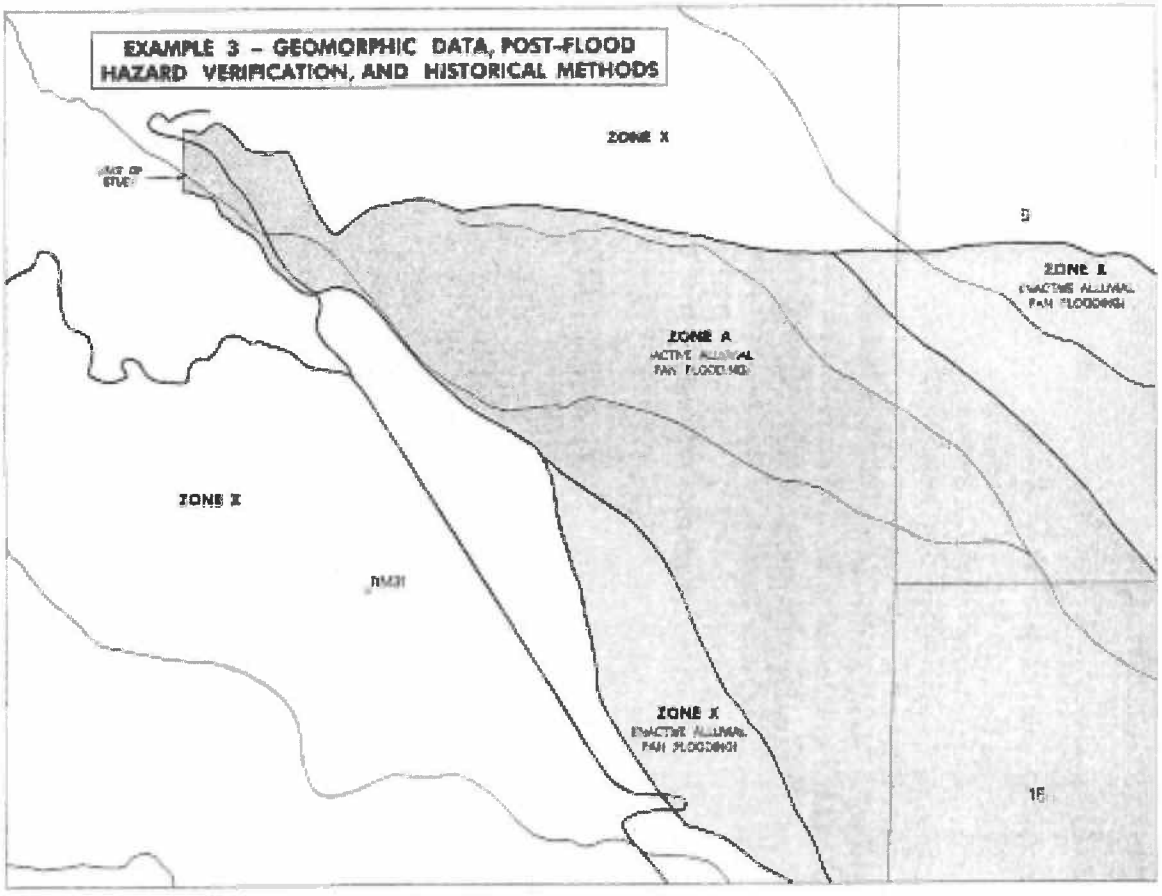


Figure G-8. Sample Map Generated From Alluvial Fan Analysis Using Geomorphic Data, Post-Flood Hazard Verification Data, and Historic Information. This map appeared as Example 3 in *Guidelines for Determining Flood Hazards on Alluvial Fan s* (FEMA, 2000).

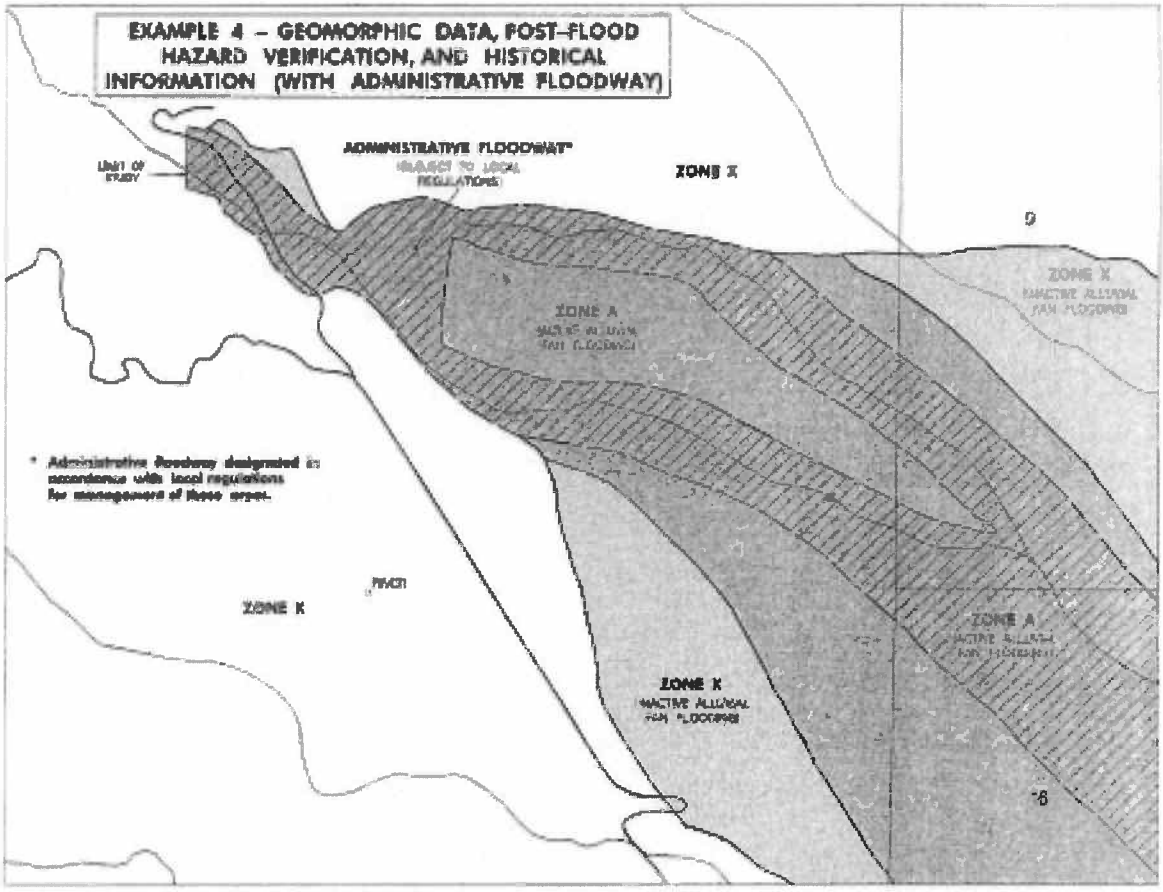


Figure G-9. Sample Map Generated From Alluvial Fan Analysis Using Geomorphic Data, Post-Flood Hazard Verification, and Historic Information (Administrative Floodway Shown). This map appeared as Example 4 in *Guidelines for Determining Flood Hazards Alluvial Fans* (FEMA, 2000).

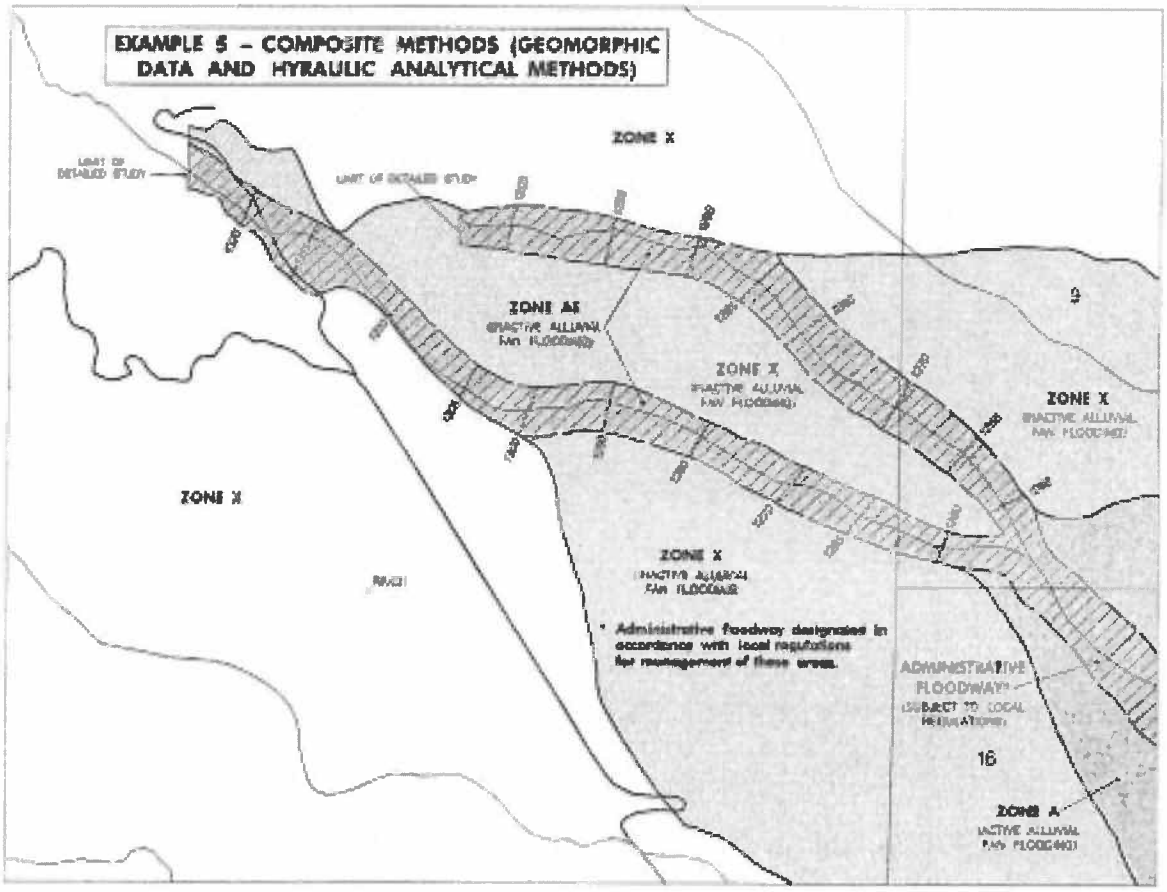


Figure G-10. Sample Map Generated From Alluvial Fan Analysis Using Composite Methods (Geomorphic Data and Hydraulic Analytical Methods). This map appeared as Example 5 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

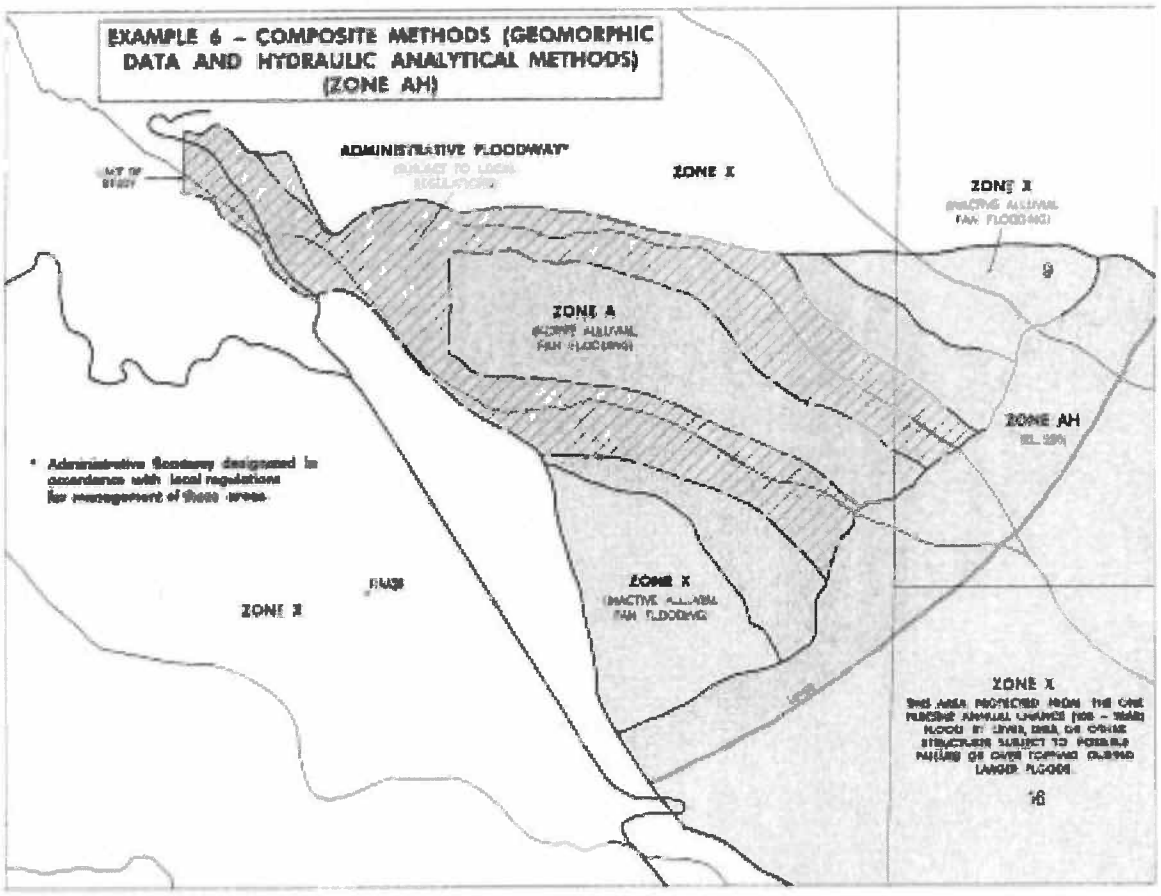


Figure G-11. Sample Map Generated From Alluvial Fan Analysis Using Composite Methods (Geomorphic Data and Hydraulic Analytical Methods); Zone AH Shown. This map appeared as Example 6 in *Guidelines for Determining Flood Hazards on Alluvial Fan s* (FEMA, 2000).

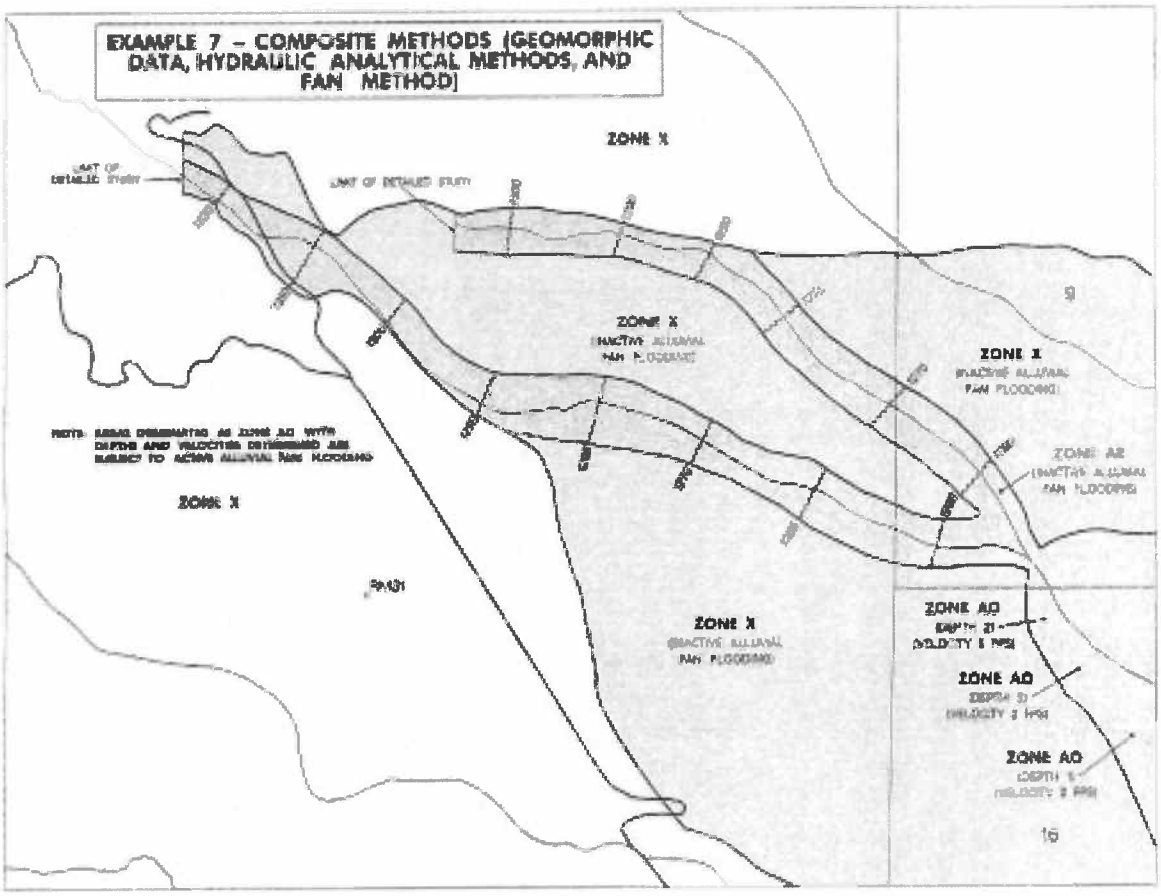


Figure G-12. Sample Map Generated From Analysis Using Composite Methods (Geomorphic Data, Hydraulic Analytical Methods, and FAN Computer Program). This map appeared as Example 7 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

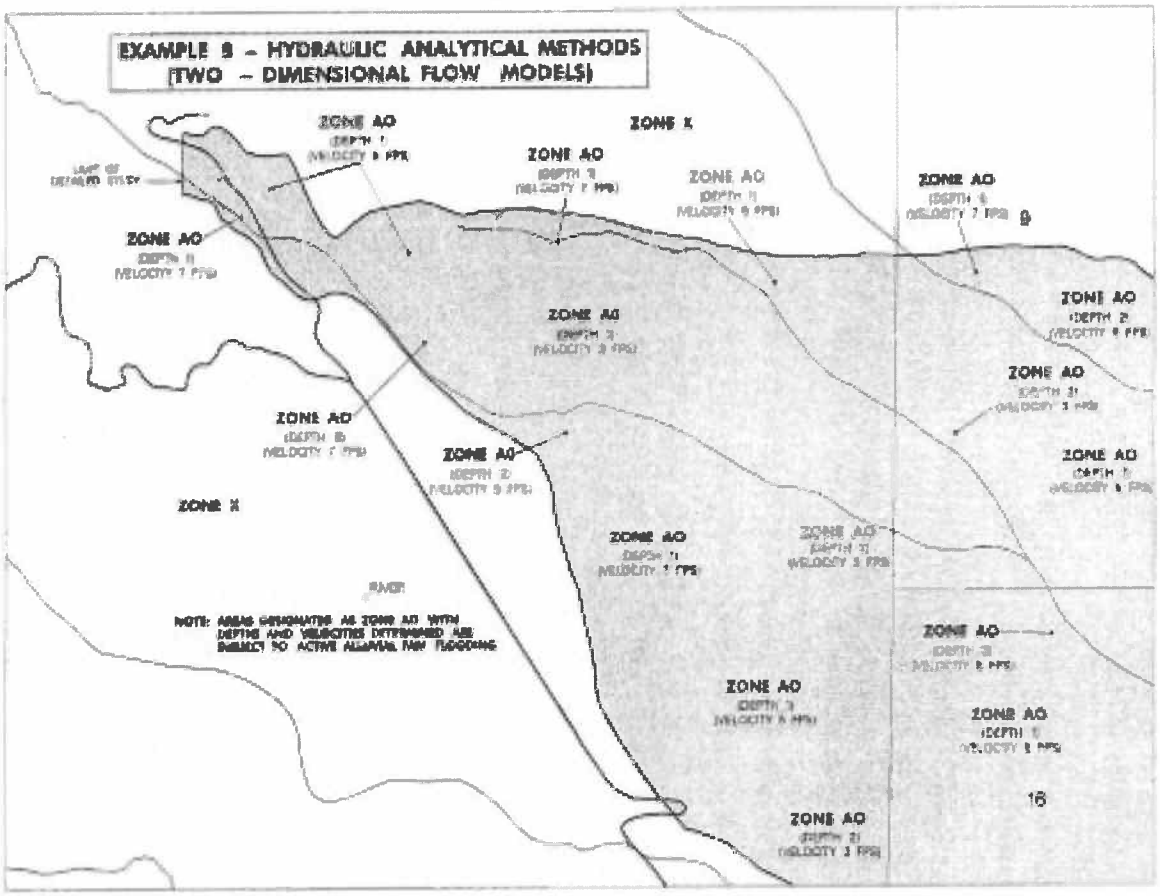


Figure G-13. Sample Map Generated From Alluvial Fan Analysis Using Hydraulic Analytical Methods (Two-Dimensional Flow Model). This map appeared as Example 8 in *Guidelines for Determining Flood Hazards on Alluvial Fans* (FEMA, 2000).

G.2.3.2 Analysis Using FAN Computer Program [February 2002]

Assumptions, limitations, and recommended applications for the FAN Computer program are as follows:

- Assumptions: flooding in rectangular channel; critical depth; erosion of rectangular channel banks until the change in width divided by the change in depth equals -200; the probability density function of a discharge occurring at the apex is log-Pearson Type III; the frequency of flood events for various recurrence intervals, i.e., 2-year through 500-year, can be adequately defined; equal probability along contour arcs (random flow paths); also provides for multiple channels at normal depth, assuming total width is 3.8 times the single channel width

- Limitations: fluvial (as opposed to debris flow) formed fan, unstable flow paths

- Recommended Applications: highly active, conical fans

The FAN computer program provides one method of analyzing the flood hazards on alluvial fans. The methodology used by the FAN program defines the risk of inundation at any particular location by applying the definition of the 1-percent-annual-chance (100-year) flood through the theorem of total probability. The methodology itself is broader than the use within the FAN program. Let **H** be a random variable denoting the occurrence of flooding at a particular location. That is:

$$\mathbf{H} = \begin{cases} 1 \text{ if the location is inundated} \\ 0 \text{ if the location is not inundated} \end{cases}$$

Then the probability of the location being inundated by a flood above a given magnitude, say q_0, is:

$$P\left[\boldsymbol{H} = 1 \bigcap \boldsymbol{Q} > q_0\right] = \int_{q_0}^{\infty} P_{\boldsymbol{H}|\boldsymbol{Q}}(1,q) f_{\boldsymbol{Q}}(q) dq \qquad (1)$$

where

$\boldsymbol{Q}$ = random variable denoting the magnitude of the flood

$P_{\boldsymbol{H}|\boldsymbol{Q}}(1,q)$ = conditional probability that the location will be inundated, given that a flood of magnitude q is occurring

$f_{\boldsymbol{Q}}(q)$ = probability density function (PDF) defining the likelihood that a flood of a magnitude between q and q+dq will occur in any given year

The FAN computer program provides one method of analyzing the flood hazards on alluvial fans. The methodology used by the FAN program defines the risk of inundation at any particular location by applying the definition of the 1-percent-annual-chance (100-year) flood through the theorem of total probability. The methodology itself is broader than the use within the FAN program. Let **H** be a random variable denoting the occurrence of flooding at a particular location. That is:

$$\mathbf{H} = \begin{cases} 1 \text{ if the location is inundated} \\ 0 \text{ if the location is not inundated} \end{cases}$$

Then the probability of the location being inundated by a flood above a given magnitude, say q_0, is:

$$P\left[\boldsymbol{H} = 1 \bigcap \boldsymbol{Q} > q_0\right] = \int_{q_0}^{\infty} P_{H|Q}(1,q) f_Q(q) dq \qquad (1)$$

where

$\boldsymbol{Q}$ = random variable denoting the magnitude of the flood

$P_{H|Q}(1,q)$ = conditional probability that the location will be inundated, given that a flood of magnitude q is occurring

$f_Q(q)$ = probability density function (PDF) defining the likelihood that a flood of a magnitude between q and q+dq will occur in any given year

Equation (1) only defines whether a location is within an SFHA and does so in terms of the parameter q_0. For riverine flooding, q_0 represents an elevation, and $P_{H|Q}(1,q)$ is 1 if the elevation of the location is less than q_0 and 0 if it is greater than q_0. At a given location (point on a cross section), there is a one-to-one relationship between the discharge being conveyed by the stream and the elevation of the surface of the floodwater (i.e., the rating curve for the cross section). For riverine flooding, solving Equation (1) reduces to defining the discharge-frequency relationship for the reach of the stream under consideration (hence the notation q_0 to denote magnitude).

As in riverine analysis, the PDF describing frequency of the magnitude of flooding for alluvial fan flooding is taken to be the discharge-frequency relationship of the contributing drainage basin. Unlike riverine analysis, $P_{H|Q}(1,q)$ does not simplify to 0 or 1, because there is uncertainty in the flow path. The FAN program provides energy depths and velocities relating to discharge for use in defining the flood hazard.

The FAN program uses the assumptions outlined below. Where noted with an asterisk (*), these assumptions may be adjusted for observed field conditions; however, the FAN program does not readily accommodate these adjustments.

This method's assumptions are as follows. Floods on alluvial fans are at liberty to expend energy to create the most efficient path to convey the water and sediment load. That path is shallow and approximately rectangular in cross section. Energy is expended through sediment movement until the minimum energy possible is reached. In short, the reasoning is that a flood flows at critical depth and is confined to a rectangular path. The flow path would not widen indefinitely but, instead, would reach a point where it would stabilize. From empirical data, of which there are very little, that point is taken to be where the rate of change of topwidth per change in depth (dW/dd) is –200 (* may be adjusted).

The reasoning leads to the one-to-one relationships:

$$d = 0.106\ q^{1/5} \qquad (2)$$

$$v = 1.506\ q^{1/5} \qquad (3)$$

where

d = specific energy in feet

v = velocity in feet per second

q = discharge in cubic feet per second (cfs)

The conditional probability in Equation (1) accounts for the uncertainty in the path of a flood with a given magnitude. Even if the path of the flood can be predicted with reasonable certainty, the magnitude of the flood at a particular location may not be so certain, as deposition or scour in shallow channels may greatly affect the direction of flow at channel splits. Many alluvial fans exhibit a channel network. The capacities of the individual channels as well as the capacities of the networks in aggregate vary from almost negligible to more than the 1-percent-annual-chance (100-year) flood discharge. The treatment of the uncertainty in a given discharge being exceeded at a particular location given the discharge somewhere else [$P_{H|Q}(1,q)$] varies.

The least complex treatment (used in the FAN program) follows from the reasoning that the topography of the area is the result of deposition that occurred during the past. If that process continues, then, over the long term, the probability of every point on a contour being inundated is the same. That is, $P_{H|Q}(1,q)$ is uniformly distributed and, for a given point, is approximately the width of the flood path divided by the width (the "contour width") of the area subject to flooding at the elevation of that point (* may be adjusted). This method assumes that all areas of the alluvial fan are subject to flooding and that there is a fixed relationship between flooding depth and discharge.

In general, these assumptions apply when there is absolute uncertainty regarding how floods will occur. Thus, for the FAN program, under the simple conditions,

$$P_{H|Q}(1,q) = \frac{w(q)}{W_{fan}} = \frac{9.408\, q^{2/5}}{W_{fan}} \qquad (4)$$

where

$w(q)$ = width of the path conveying q cfs

W_{fan} = contour width

The contour width, W_{fan} , is shown in Figure G-3. The resulting flood insurance risk zones are depicted in Figure G-4. The functional form of Equation (4) is a consequence of the reasoning leading to Equations (2) and (3) and is presented here for demonstrative purposes, not as the only form possible.

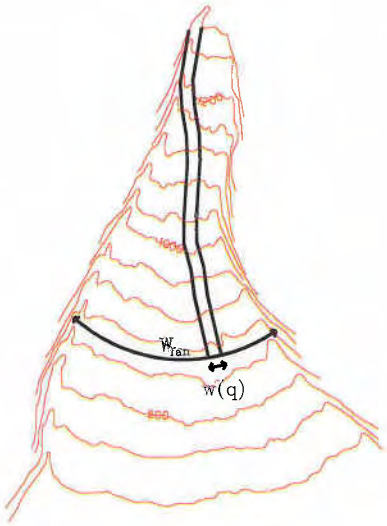


Figure G-3. Fan and Single-Channel Widths

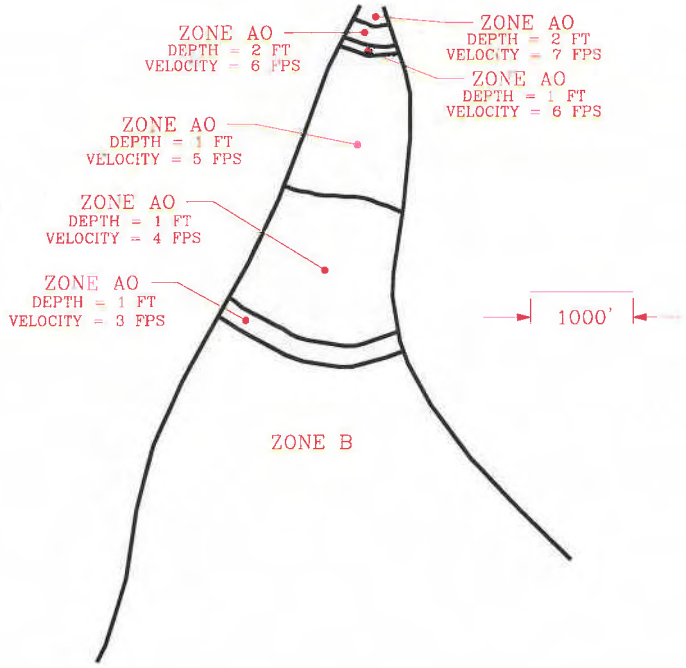


Figure G-4. Flood Insurance Risk Zones Respective to Figure G-3

The FAN program provides for the situation where flows are near normal depth in multiple channels. Program output includes results for this situation in addition to the single channel at critical depth. The results are then applied based on observed field conditions. More information is provided in *FAN: An Alluvial Fan Flooding Computer Program User's Manual and Program Disk* (FEMA, 1990). The FAN program is available online through the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_fnprg.shtm.

G.2.3.3 Sheetflow Analysis Method [February 2002]

Assumptions, limitations, and recommended applications for the sheetflow analysis method are as follows:

- Assumptions: broad, unconfined, shallow flooding
- Limitations: not for use in areas of undulating terrain
- Recommended Applications: shallow flooding across uniformly sloping surfaces

Guidance on the analysis and mapping of shallow flooding is provided in Appendix E of these Guidelines. Although Appendix E indicates that Mapping Partners are not to use the procedures in that Appendix for the analysis of alluvial fan flooding, the approach established by this Appendix enables the use of those methods described in Appendix E, except for highly active conical fans that are studied using the FAN program.

G.2.3.4 Hydraulic Analytical Methods [February 2002]

Assumptions, limitations, and recommended applications for hydraulic analytical methods are as follows:

- Assumptions: stable flow path, uncertainty is to a degree that may be disregarded
- Limitations: not for use with active alluvial fan flooding
- Recommended Applications: entrenched stable channels and channel networks, constructed channels, urbanized areas

For inactive, yet floodprone areas, the Mapping Partner that performs the alluvial fan analysis may use "riverine" hydraulic analytical methods. Where flow paths are stable and flow is reasonably confined, standard hydraulic engineering methods, such as backwater computations, may be used to define the elevation (or depth), velocity, and extent of the 1-percent-annual-chance (100-year) flood. Hydraulic methods may also be used for stable channel networks when applicable. For example, relict alluvial fans or inactive fans with stable channels, as determined by a geomorphic analysis, may be subject to flow splits throughout the distributary system that exists. Hydraulic modeling can generally handle split-flow analyses through stream junctions of this type.

In general, for stable channels on alluvial fans, physically based methods that consider site processes and hydraulics, such as channel geometry, grade and roughness, and channel bank and bed material are preferred. Where precise computations of water-surface profiles using energy and momentum based methods may not be feasible based on the scope of the study, the use of normal depth calculations for definition of approximate floodplain boundaries for the 1-percent-annual-chance (100-year) flood may be warranted.

Appendix C of these Guidelines provides guidance for hydraulic analytical methods. Several methods applicable to conditions found on alluvial fans are described. These methods include two-dimensional water-surface models, modeling techniques of streams with supercritical flow regimes, and split-flow analysis.

Two-dimensional models may be appropriate for determining flood hazards on an alluvial fan. Different two-dimensional models may be particularly useful in the analysis and modeling of some or all of the following situations: flows that contain a high amount of sediment, unconfined flows, split flows, mud/debris flows, and complex urban flooding. For use in defining flood hazards for the NFIP, all hydraulic models must meet the conditions of Paragraph 65.6 (a) (6) of the NFIP regulations.

One-dimensional sediment transport models or the methods described in Section G.3 are also useful for the analysis of conditions on alluvial fans.

G.2.3.5 Analysis Using Geomorphic Data, Post-Flood Hazard Verification, and Historical Information [February 2002]

Assumptions, limitations, and recommended applications for alluvial fan flooding analyses performed using geomorphic, post-flood hazard verification, and historical information are as follows:

- Assumptions: relies primarily on qualitative information, post-flood hazard verification, historical data, and interpretive studies
- Limitations: approximate method
- Recommended Applications: alluvial fans with little or no urbanization

The geomorphic approach is for active alluvial fans where deposition, erosion, and unstable flow paths are possible. Traditional engineering methods, as described in Subsection G.2.3.4, generally are inappropriate for areas with these hydraulic characteristics. Probabilistic methods, as described in Subsection G.2.3.2 and contained in the FAN computer program, also contain inherent limiting assumptions that may not adequately represent field conditions and may not be applicable to many active alluvial fans.

In some situations, the Mapping Partner may use the information collected during Stage 2 to delineate an approximate floodplain on an alluvial fan. In situations where geomorphic field investigations, coupled with historical documentation, and documentation of hydrologic and hydraulic characteristics of flood event(s) (post-flood hazard verification) are available, an approximate flood hazard delineation is possible.

By combining quantitative data on an actual flood event, historical information and photographs of other flood events, time-sequence aerial photography documenting recent activity or inactivity, and field investigation of the morphologic characteristics and relative ages of the fan, an approximate (Zone A) flood hazard delineation may be warranted.

For many alluvial fans, the various flood indicators (Stage 2 information) provide limited or partial information. Because the flood assessment of active alluvial fans is more uncertain than more traditional flood assessment, the Mapping Partner that perform the analysis must document all assumptions and limitations well and consider these assumptions and limitations in the overall evaluation.

G.2.3.6 Analysis Using Composite Methods [February 2002]

Assumptions, limitations, and recommended applications for alluvial fan flooding analyses performed using composite methods are as follows:

- Assumptions: as identified in the sections referring to the methods being applied
- Limitations: must integrate multiple methods into one result
- Recommended Applications: floodprone areas that contain unique physical features in some locations or have areas varying in levels of erosion and migration activity

Site-specific conditions on alluvial fans may lend themselves to the use of multiple or combined methods previously described for the determination of flood hazards. For example, in areas that contain manmade conveyance channels or deeply entrenched stable channels, the Mapping Partner can combine the results of traditional hydraulic computer programs with methods for analyzing active areas. The Mapping Partner that performs the analysis must coordinate with the FEMA RPO and with FEMA HQ staff during the development of the study plan.

Thank you for your comment, Anne Alexander.

The comment tracking number that has been assigned to your comment is SolarD11904.

Comment Date: May 3, 2011 02:12:03AM
Solar Energy Development PEIS
Comment ID: SolarD11904

First Name: Anne
Middle Initial:
Last Name: Alexander
Organization: Katten Muchin Rosenman LLP
Address: 2029 Century Park East
Address 2: Suite 2600
Address 3:
City: Los Angeles
State: CA
Zip: 90067
Country: USA
Privacy Preference: Don't withhold name or address from public record
Attachment: BNSF Comments to Draft Solar PEIS Part 3.pdf

Comment Submitted:

G.3 Additional Information on Sediment Transport

[February 2002]

This section regarding sediment transport is included as supplemental information for the analysis of alluvial fans. Sediment transport analyses are generally required for alluvial fan studies and revisions.

The boundaries of the stream channel are usually soil material with a given resistance to erosion. Bed material can range from large boulders to very fine clay particles. In general terms, sediment can be cohesive, including clay, silt, and mixtures, or noncohesive, including sand, gravel, and larger particles. Transport of noncohesive materials is strongly dependent on particle size. The entire size distribution of the material is needed to ascertain its erodibility. The bond between particles in cohesive soil dictates its resistance to erosion and is far more important than size distribution. However, size becomes important once the material has been eroded and is transported by the flow.

An important sediment transport process is the development of an armor layer in beds containing gravel and cobbles. Water flowing over the mixture of sand and coarser material lifts the smaller grains and leaves an upper layer or armor of large particles. This armor protects the underlying sediment from further erosion and controls the subsequent behavior of sediment transport. A flood event of large magnitude can disturb the protective layer, and the armoring process will start again.

Sediment transport exerts substantial control over morphology and channel geometric configuration. An indicator of this influence is the sediment transport rate, which is the rate at which material moves in the stream as quantified in units of weight per unit time. The transport rate is closely dependent on the water discharge.

Two classification systems are used describe the sediment load in a stream. The first classification system divides the load into ***bed load*** and ***suspended load***. The ***bed load*** is that portion of the sediment that moves along the bottom by sliding, rolling, or saltation. The ***suspended load*** is comprised of all of the material carried in suspension.

The second classification system divides the sediment load into ***wash load*** and ***bed-material load***. The ***wash load*** is comprised of very fine materials, clay and silt, rarely found in the bed. The wash load does not depend on the carrying capacity of the stream but on the amount supplied by the watershed. The ***bed-material load*** is comprised of all of the material found in the bed. Some of it will move very close to the bottom, but some may be found in suspension.

Quantification of sediment transport is fraught with uncertainty because of the complexity of the phenomenon and its inherent spatial and temporal variability. Existing mathematical representations have relied heavily on experimental results.

The available sediment transport formulas have been grouped according to the approach used to derive them. Three major approaches have been used: shear stress, power, and parametric. Formulas also can be grouped according to the component of the total load they attempt to quantify: bed load, suspended load, or bed-material load. Table G-2 summarizes some of the more commonly used formulas; however, it is not intended to be a complete listing.

Table G-2. Sediment Transport Formulas and Classifications

		Sediment Transport Formula										
Criteria	**Grouping**	**DuBoys (1879)**	**Shields (1936)**	**Einstein Bed Load(1950)**	**Einstein Suspended Load (1950)**	**Meyer-Peter-Muller (1948)**	**Einstein-Brown (1950)**	**Parker *et al.* (1982)**	**Engelund-Hansen (1967)**	**Ackers-White (1973)**	**Yang (1972)**	**Colby (1964)**
Approach	Shear Stress	x	x	x		x	x	x				
	Power								x	x	x	
	Parametric											x
Load Component	Bed Load	x	x	x		x	x	x				
	Suspended Load				x							
	Bed-Material Load								x	x	x	x

Despite the intense efforts expended in the development of these formulas, evaluation against field data indicates that they commonly overpredict or underpredict sediment loads by orders of magnitude of actual measured sediment transport rates. This discrepancy is likely a result of imperfect knowledge of the physics of sediment transport and also of the extensive variability and heterogeneity in hydrologic and geologic factors.

For these reasons, no one formula is better than the others. Mapping Partners, who must have sufficient field experience to make decisions regarding the method to use and how to map the results obtained using that method, must select a sediment transport formula based on how well the conditions of the problem at hand match the assumptions underlying the formula. If possible, Mapping Partners should verify the applicability of the formula with site-specific field data.

G.4 References [February 2002]

Chang, H. H., *Fluvial Processes in River Engineering,* New York: John Wiley & Sons, 1988.

Dawdy, D.R., "Flood Frequency Estimates on Alluvial Fans," *Journal of the Hydraulics Division, ASCE, Proceedings*, Vol. 105, No. HYII, pp. 1407-1413, November 1979.

Federal Emergency Management Agency, *FAN: An Alluvial Fan Flooding Computer Program User's Manual and Program Disk*, September 1990.

Federal Emergency Management Agency, *Guidelines for Determining Flood Hazards on Alluvial Fans*, February 2000.

Gomez, B., and M. Church, "An assessment of bed load sediment transport formulae for gravel bed rivers," *Water Resources Research*, Vol. 25, No. 6, p. 1161-1186, 1989.

National Research Council, Committee on Alluvial Fan Flooding, *Alluvial Fan Flooding,* Washington, DC: National Academy Press, 1997

Simons, Li & Associates, Inc., *Design Manual for Engineering Analysis of Fluvial Systems*, prepared for Arizona Department of Water Resources, Tucson, Arizona, 1985.

U.S. Department of the Army, Corps of Engineers, *Guidelines for Risk and Uncertainty Analysis in Water Resources Planning,* Report 92-R-1, Fort Belvoir, Virginia, 1992.

Yang, C. T., and S. Wan, "Comparison of selected bed-material formulas," *ASCE Journal of Hydraulic Engineering*, Vol. 117, p. 973-989, 1991.

Exhibit 5

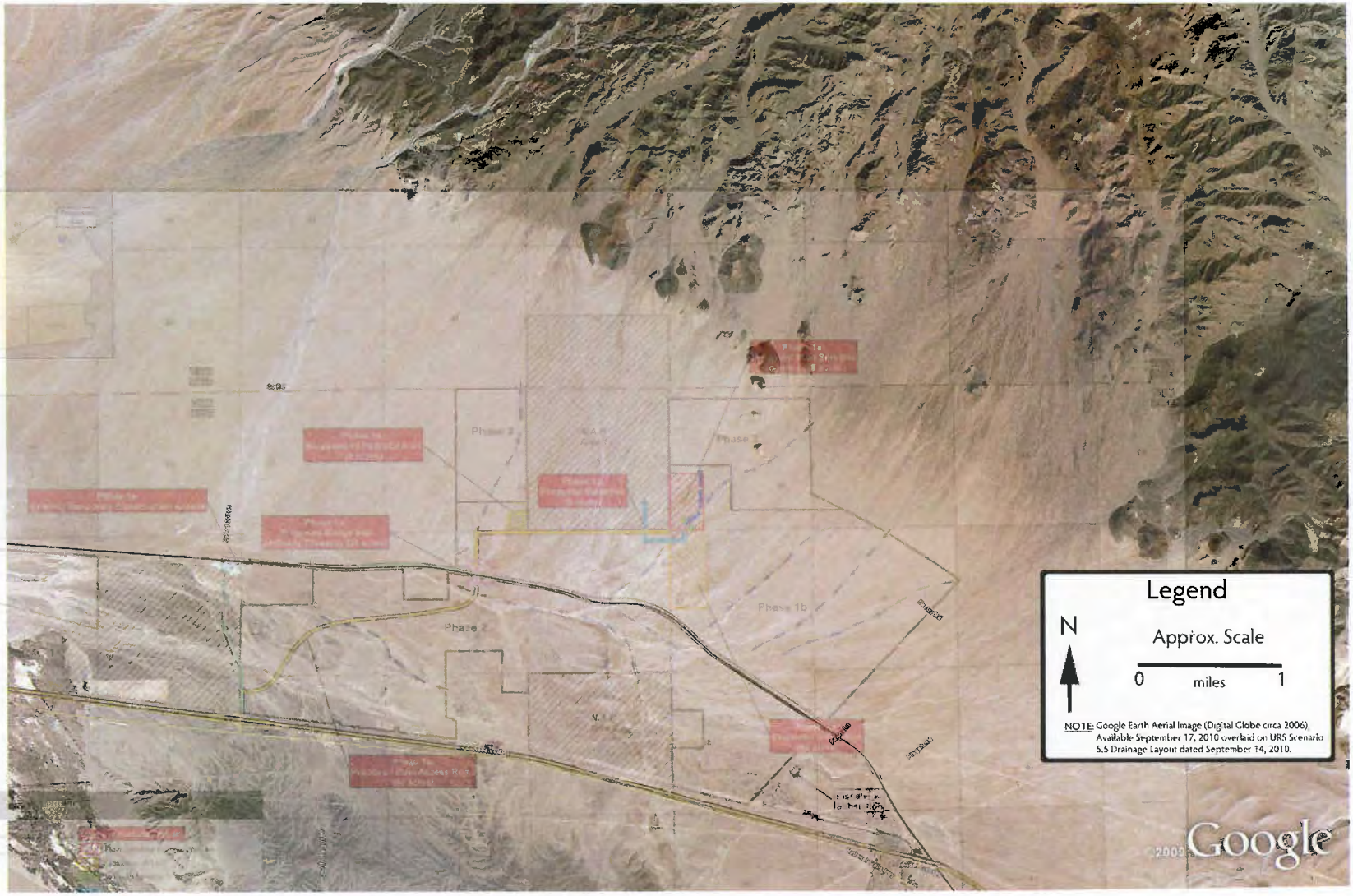

Phase 2
Phase 1b
Phase 2
Legend
N
Approx. Scale
0
miles
1
NOTE: Google Earth Aerial Image (Digital Globe circa 2006).
Available September 17, 2010 overlaid on URS Scenario
5.5 Drainage Layout dated September 14, 2010.
Google

Exhibit 6

FEMA

Numerical Models Meeting the Minimum Requirement of NFIP

Nationally Accepted Hydraulic Models as of January 2009

- Hydraulic Models: Determination of Water-Surface Elevation for Riverine Analysis
- View More Nationally Accepted Models
- Locally Accepted Models
- Numerical Models No Longer Accepted

Hydraulic Models: Determination of Water-Surface Elevation for Riverine Analysis

Please reference the following memorandums on the use of HEC-RAS for NFIP purposes. Note that the memorandums are periodically updated, so be sure to read and apply them each time you reference the chart below.

- Policy for Accepting Numerical Models for Use in the NFIP Policy Memorandum
- New Policy for the Use of HEC-RAS in the NFIP

Hydraulic Models: Determination of Water-Surface Elevations for Riverine Analysis

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
One-Dimensional Steady Flow Models			
HEC-RAS 3.1.1 and up	U.S. Army Corps of Engineers	Water Resources Support Center Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, CA 95616-4687 www.hec.usace.army.mil/	For water surface elevation difference due to use of different HEC-RAS versions, refer to FEMA Memorandum HEC-RAS Version Updates (August 17, 2004) HEC-RAS Program Update Public Domain: Yes
HEC-2 4.6.2 [1] (May 1991)	US Army Corps of Engineers	Water Resources Support Center Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, CA 95616-4687	Includes culvert analysis and floodway options. Public Domain: Yes
WSPRO (Jun. 1988 and up)	US Geological Survey, Federal Highway Administration (FHWA)	Federal Highway Administration (FHWA) web page at: www.fhwa.dot.gov/engineering/hydraulics/software/softwaredetail.cfm	Floodway option is available in June 1998 version. 1988 version is available on the USGS web page at: water.usgs.gov/software/surface_water.html Public Domain: Yes

QUICK-2 1.0 and up (Jan. 1995)	FEMA	Federal Emergency Management Agency Federal Insurance and Mitigation Administration 500 C Street, SW Washington, DC 20472 www.fema.gov/plan/prevent/fhm/frm_soft.shtm	Intended for use in areas studied by approximate methods (Zone A) only. May be used to develop water-surface elevations at one cross section or a series of cross sections. May not be used to develop a floodway. Public Domain: Yes
HY8 4.1 and up (Nov. 1992)	US Department of Transportation, Federal Highway Administration (FHWA)	Federal Highway Administration (FHWA) web page at: www.fhwa.dot.gov/engineering/hydraulics/software/softwaredetail.cfm	Computes water-surface elevations for flow through multiple parallel culverts and over the road embankment. Public Domain: Yes
WSPGW 12.96 (Oct. 2000) and up	Los Angeles Flood Control District and Joseph E. Bonadiman & Associates, Inc.	Joseph E. Bonadiman & Associates, Inc. 588 West 6th Street San Bernardino, CA 92410 www.bonadiman.com	Windows version of WSPG. Computes water-surface profiles and pressure gradients for open channels and closed conduits. Can analyze multiple parallel pipes. Road overtopping cannot be computed. Open channels are analyzed using the standard step method but roughness coefficient cannot vary across the channel. Overbank analyses cannot be done. Multiple parallel pipe analysis assumes equal distribution between pipes so pipes must be of similar material, geometry, slope, and inlet configuration. Floodway function is not available. Demo version available from: www.bonadiman.com/software/wspg.htm Public Domain: No
StormCAD v.4 (June 2002) and up	Bentley Systems	Bentley Systems 685 Stockton Drive Exton, PA 19341 www.bentley.com/en-US	Perform backwater calculations. Should not be used for systems with more than two steep pipes (e.g. supercritical conditions). Inflow is computed by using the Rational Method; the program is only applicable to watershed, which has the drainage area to each inlet less than 300 acres. Public Domain: No
PondPack v. 8 (May 2002) and up	Bentley Systems	Bentley Systems 685 Stockton Drive Exton, PA 19341 www.bentley.com/en-US	Cannot model ineffective flow areas. HEC-RAS or an equivalent program must be used to model tail water conditions when ineffective flow areas must be considered. Public Domain: No
Culvert Master v. 2.0 (September 2000), and up	Bentley Systems	Bentley Systems 685 Stockton Drive Exton, PA 19341 www.bentley.com/en-US	Compute headwater elevations for circular concrete and RCB culverts for various flow conditions. Public Domain: No
XP-SWMM 8.52 and up	XP Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221	XP-SWMM cannot represent more than three Manning's n values per channel section. Where more than this number of values per section are required, the user must demonstrate that the three n values used accurately depict the composite n value for the entire section at various depths. The

		www.xpsoftware.com	floodway procedures are for steady flow purposes only. Refer to procedures for unsteady flow floodway calculation posted on the FEMA website at Floodway Analysis for SWMM Models Public Domain: No
Xpstorm 10.0 (May 2006)	XP Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221 www.xpsoftware.com	Xpstorm has the same stormwater modeling capability as the XP-SWMM program.
One-Dimensional Unsteady Flow Models			
HEC-RAS 3.1.1 and up	US Army Corps of Engineers	Water Resources Support Center Corps of Engineers Hydrologic Engineering Center (HEC) 609 Second Street Davis, CA 95616-4687 www.hec.usace.army.mil/	Calibration or verification to the actual flood events highly recommended. Floodway concept formulation unavailable. Version 3.1 cannot create detailed output for multiple profiles in the report file. CHECK-RAS cannot extract data. Public Domain: Yes
FEQ 9.98 and FEQUTL 5.46 (2005, both),FEQ 8.92 and FEQUTL 4.68 (1999, both)	Delbert D. Franz, Linsley, Kraeger Associates; and Charles S. Melching, USGS	U.S. Geological Survey 221 North Broadway Avenue Urbana, IL 61801 il.water.usgs.gov/proj/feq/	The FEQ model is a computer program for the solution of full, dynamic equations of motion for one-dimensional unsteady flow in open channels and control structures. The hydraulic characteristics for the floodplain (including the channel, overbanks, and all control structures affecting the movement of flow) are computed by its companion program FEQUTL and used by the FEQ program. Calibration or verification to the actual flood events highly recommended. Floodway concept formulation is unavailable. Public Domain: Yes
ICPR 2.20 (Oct. 2000), 3.02 (Nov. 2002), and 3.10 (April 2008)	Streamline Technologies, Inc.	Streamline Technologies, Inc. 1900 Town Plaza Ct Winter Springs, FL 32708 www.streamnologies.com	Calibration or verification to the actual flood events highly recommended. Floodway concept formulation unavailable; however, version 3 allows user to specify encroachment stations to cut off the cross section. PercPack is currently under FEMA review. Public Domain: No
SWMM 5 Version 5.0.005 (May 2005) and up	U.S. Environmental Protection Agency	Water Supply and Water Resources Division U.S. Environmental Protection Agency www.epa.gov/ednnrmrl/models/swmm/index.htm	SWMM 5 provides an integrated environment for editing study area input data, running hydrologic simulations, and viewing the results in a variety of formats. Public Domain: Yes

UNET 4.0 (April 2001)	U.S. Army Corps of Engineers	Water Resources Support Center Corps of Engineers Hydrologic Engineering Center (HEC) 609 Second Street Davis, CA 95616-4687	Calibration or verification to the actual flood events highly recommended. Comparison of bridge and culvert modeling to other numerical models reveals significant differences in results; these differences may be investigated in the near future. Floodway option is not accepted for NFIP usage. Public Domain: Yes
FLDWAV (Nov. 1998)	National Weather Service	Hydrologic Research Laboratory Office of Hydrology National Weather Service, NOAA 1345 East-West Highway Silver Spring, MD 20910	Includes all the features of DAMBRK and DWOPER plus additional capabilities. It is a computer program for the solution of the fully dynamic equations of motion for one-dimensional flow in open channels and control structures. Floodway concept formulation is unavailable. Calibration to actual flood events required. This model has the capability to model sediment transport. Program is supported by NWS. **National Weather Service FLDWAV Computer Program** Public Domain: Yes
MIKE 11 HD v.2009 SP4	DHI Water and Environment	DHI, Inc. 319 SW Washington St. Suite 614 Portland, OR 97204	Hydrodynamic model for the solution of the fully dynamic equations of motion for one- dimensional flow in open channels and control structures. The floodplain can be modeled separately from the main channel. Calibration to actual flood events highly recommended. Floodway concept formulation is available for steady flow conditions. This model has the capability to model sediment transport. The web page is at: www.dhisoftware.com/mike11/ Public Domain: No
FLO-2D v. 2006.01 and 2007.06	Jimmy S. O'Brien	FLO-2D Software, Inc. P.O. Box 66 Nutrioso, AZ 85932 www.flo-2d.com/	Hydrodynamic model for the solution of the fully dynamic equations of motion for one-dimensional flow in open channels and two-dimensional flow in the floodplain. Bridge or culvert computations must be accomplished external to FLO-2D using methodologies or models accepted for NFIP usage. Calibration to actual flood events required. Floodway option is under review. User of Version 2006.01 is strongly encouraged to update to the latest version for bug correction. Version 2007.06 dated October 25, 2009 has been updated. This model had an incorrect levee weir coefficient value (0.0) that did not permit any levee overtopping. The model with the incorrect weir coefficient may not have been posted until 2010. **Please use the updated Version 2007 model on NFIP studies.**

			Public Domain: No
XP-SWMM 8.52 and up	XP Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221 www.xpsoftware.com	XP-SWMM cannot represent more than three Manning's n values per channel section. Where more than this number of values per section are required, the user must demonstrate that the three n values used accurately depict the composite n value for the entire section at various depths. Calibration to actual flood events required. The floodway procedures are for steady flow purposes only. Use the procedure for unsteady flow floodway calculation posted on FEMA website at Floodway Analysis for SWMM Models Public Domain: No
Xpstorm 10.0 (May 2006)	XP Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221 www.xpsoftware.com	Xpstorm has the same stormwater modeling capability as the XP-SWMM program.
Two-Dimensional Steady/Unsteady Flow Models			
TABS RMA2 v. 4.3 (Oct. 1996) RMA4 v. 4.5 (July 2000)	US Army Corps of Engineers	Coastal Engineering Research Center Department of the Army Waterways Experiment Station Corps of Engineers 3909 Halls Ferry Road Vicksburg, MS 39180-6199	Limitations on split flows. Floodway concept formulation unavailable. More review anticipated for treatment of structures. Public Domain: Yes
FESWMS 2DH 1.1 and up (Jun. 1995)	US Geological Survey	U.S. Geological Survey National Center 12201 Sunrise Valley Drive Reston, VA 22092 water.usgs.gov/software/surface_water.html	Region 10 has conducted study in Oregon. Floodway concept formulation unavailable. This model has the capability to model sediment transport. Public Domain: Yes
FLO-2D v. 2006.01 and 2007.06	Jimmy S. O'Brien	FLO-2D Software, Inc. Tetra Tech, ISG P.O. Box 66 Nutrioso, AZ 85932 www.flo-2d.com/	Hydrodynamic model that has the capabilities of modeling unconfined flows, complex channels, sediment transport, and mud and debris flows. It can be used for alluvial fan modeling. Floodway option is under review. User of Version 2006.01 is strongly encouraged to update to the latest version for bug correction. Public Domain: No
MIKE Flood HD v.2009 SP4	DHI Water and Environment	DHI, Inc. 319 SW Washington St. Suite 614 Portland, OR 97204	A dynamic coupling of MIKE 11 (one-dimensional) and MIKE 21 (two-dimensional) models. Solves the fully dynamic equations of motion for one- and two-dimensional flow in open channels, riverine flood plains, alluvial fans and in costal zones. This allows for embedding of sub-grid features as 1-D links within a 2-D modeling domain. Examples of sub-grid features could

			include small channels, culverts, weirs, gates, bridges and other control structures. Calibration for actual flood events is highly recommended. The web page is at www.dhisoftware.com/mikeflood/ Public Domain: No

[1] The enhancement of the program in editing and graphical presentation can be obtained from several private companies.

View More Nationally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP
- Statistical Models Meeting the Minimum Requirement of NFIP

Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP

Numerical Models No Longer Accepted

- Numerical Models No Longer Accepted by FEMA for NFIP Usage

FEMA

Hydrologic Models Meeting the Minimum Requirement of NFIP

Current Nationally Accepted Hydrologic Models

- Hydrologic Models
- View More Locally Accepted Models
- Nationally Accepted Models
- Numerical Models No Longer Accepted

Hydrologic Models

Hydrologic Models: Determination of Flood Hydrographs

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
Single Event			
HEC-1 4.0.1 and up [1] (May 1991)	U.S. Army Corps of Engineers	Water Resources Support Center Corps of Engineers Hydrologic Engineering Center (HEC) 609 Second Street Davis, CA 95616-4687	Flood hydrographs at different locations along streams. Calibration runs preferred to determine model parameters. Public Domain: Yes
HEC-HMS 1.1 and up (Mar 1998)	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, CA 95616-4687	The Hydrologic Modeling System provides a variety of options for simulating precipitation-runoff processes. Now includes snowmelt and interior pond capabilities, plus enhanced reservoir options. Calibration runs should be used wherever possible to determine model parameters. Public Domain: Yes
TR-20 Win 1.00 (Jan 2005)	U.S. Department of Agriculture, Natural Resources Conservation Service	U.S. Department of Agriculture, Natural Resources Conservation Service	The TR-20 computer model has been revised and completely rewritten as a Windows based program. It is storm event surface water hydrologic model applied at a watershed scale that can generate, route, and combine hydrographs at points within a watershed. Calibration runs preferred to determine model parameters. Public Domain: Yes
WinTR-55 1.0.08 (Jan 2005)	U.S. Department of Agriculture, Natural Resources Conservation Service	U.S. Department of Agriculture, Natural Resources Conservation Service	The new WinTR-55 uses the WinTR-20 program as the driving engine for analysis of the hydrology of the small watershed system being studied. Public Domain: Yes
SWMM 5 Version 5.0.005	U.S. Environmental Protection Agency	Water Supply and Water Resources Division	SWMM 5 provides an integrated environment for editing study area input data, running hydrologic simulations, and viewing the results in a variety of

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
(May 2005) and up		U.S. Environmental Protection Agency	formats. These include color-coded drainage area and conveyance system maps, time series graphs and tables, profile plots, and statistical frequency analyses. Calibration or verification to the actual flood events highly recommended. Public Domain: Yes
MIKE 11 (2009 SP4)	DHI Water and Environment	DHI, Inc. 319 SW Washington St. Suite 614 Portland, OR 97204	Simulates flood hydrographs at different locations along streams using unit hydrograph techniques. Three methods are available for calculating infiltration losses and three methods for converting rainfall excess to runoff, including SCS Unit hydrograph method. Calibration or verification to the actual flood events highly recommended. Public Domain: No
PondPack v.8 (May 2002) and up	Bentley Systems	Bentley Systems 685 Stockton Drive Exton, PA 19341	The program is for analyzing watershed networks and aiding in sizing detention or retention ponds. Only the NRCS Unit Hydrograph method and NRCS Tc calculation formulas are acceptable. Other hydrograph generation methods or Tc formulas approved by State agencies in charge of flood control or floodplain management are acceptable for use within the subject State. Calibration or verification to the actual flood events highly recommended. Public Domain: No
XP-SWMM 8.52 and up	XP-Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221 www.xpsoftware.com	Model must be calibrated to observed flows, or discharge per unit area must be shown to be reasonable in comparison to nearby gage data, regression equations, or other accepted standards for 1% annual chance events. Calibration or verification to the actual flood events highly recommended. Public Domain: No
Xpstorm 10.0 (May 2006)	XP Software	XP Software 5415 SW Westgate Dr. Suite 150 Portland, OR 97221 www.xpsoftware.com	Xpstorm has the same stormwater modeling capability as the XP-SWMM program. Calibration or verification to the actual flood events highly recommended.
Continuous Simulation			
HSPF 10.10 and up (Dec 1993)	U.S. Environmental Protection Agency, U.S. Geological Survey	Center for Exposure Assessment Modeling U.S. Environmental Protection Agency Office of Research and Development Environmental Research Laboratory	Calibration to actual flood events required. Water Resources Application Software Public Domain: Yes

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
HEC-HMS 3.0 and up (Dec 2005)	U.S. Army Corps of Engineers	960 College Station Road Athens, GA 30605-2720 U.S. Army Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, CA 95616-4687	The Hydrologic Modeling System (HMS) includes two different soil moisture models suitable for continuous modeling, one with five layers and one with a single layer. Two approaches to evapotranspiration are provided and snowmelt is available. Calibration to actual flood events is required. Public Domain: Yes
MIKE 11 RR (2009 SP4)	DHI Water and Environment	DHI, Inc. 319 SW Washington St. Suite 614 Portland, OR 97204	The Rainfall-Runoff Module is a lumped-parameter hydrologic model capable of continuously accounting for water storage in surface and sub-surface zones. Flood hydrographs are estimated at different locations along streams. Calibration to actual flood events is required. MIKE 11 River Modelling Public Domain: No
PRMS Version 2.1 (Jan 1996)	U.S. Geological Survey	U.S. Geological Survey 12201 Sunshine Valley Drive Reston, VA 22092 U.S. Geological Survey P.O. Box 25046, Mail Stop 412 Denver Federal Center Lakewood, CO 80225-0046	PRMS is a modular-designed, deterministic, distributed-parameter modeling system that can be used to estimate flood peaks and volumes for floodplain mapping studies. Calibration to actual flood events required. The program can be implemented within the Modular Modeling System) that facilitates the user interface with PRMS, input and output of data, graphical display of the data, and an interface with GIS. Public Domain: Yes

[1] The enhancement of the program in editing and graphical presentation can be obtained from several private companies.

View More Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP

Nationally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP
- Statistical Models Meeting the Minimum Requirement of NFIP

Numerical Models No Longer Accepted

- Numerical Models No Longer Meeting the Minimum Requirement of NFIP

FEMA

Numerical Models Meeting the Minimum Requirement of NFIP

Current Nationally Accepted Statistical Models

- Statistical Models
- View More Nationally Accepted Models
- Locally Accepted Models
- Numerical Models No Longer Accepted

Statistical Models

Statistical Models

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
HEC FFA 3.1 (February 1995)	U.S. Army Corps of Engineers	Water Resources Support Center [1] Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, CA 95616-4687	Performs flood frequency analyses following Bulletin 17B, *Guidelines for Determining Flood Flow Frequency*, prepared by the Interagency Advisory Committee on Water Data (1982). Supersedes HECWRC. Public Domain: Yes
PEAKFQ 2.4 (April 1998) and up	U.S. Geological Survey	U.S. Geological Survey Hydrologic Analysis Software Support Team 437 National Center Reston, VA 20192	Performs flood frequency analyses following Bulletin 17B, *Guidelines for Determining Flood Flow Frequency*, prepared by the Interagency Advisory Committee on Water Data (1982). Public Domain: Yes
FAN	FEMA	The Mod Team 3601 Eisenhower Avenue Alexandria, VA 22304	FAN, Alluvial Fan Flooding software, is used to define special flood hazard information in areas subject to alluvial fan flooding. The model does not define the extent of the special flood hazard area (SFHA), rather, develops output information that can, in conjunction with soil, topographic, and geomorphic information, be used to divide the SFHA into zones of similar depth and velocity. The minimum input required is the flood-frequency relation at the apex. Options allow for consideration of multiple flow paths with or without avulsions during flood events. NFIP software list Public Domain: Yes

[1] Program is typically distributed by vendors and may not be available through HEC. A list of vendors may be obtained through HEC.

View More Nationally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP

Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP

Numerical Models No Longer Accepted

- Numerical Models No Longer Accepted by FEMA for NFIP Usage

FEMA

Numerical Models Meeting the Minimum Requirement of NFIP

Current Locally Accepted Hydraulic Models

- Hydraulic Models: Determination of Water-surface Elevations for Riverine Analysis
- View More Locally Accepted Models
- Nationally Accepted Models
- Numerical Models No Longer Accepted

Hydraulic Models: Determination of Water-surface Elevations for Riverine Analysis

Hydraulic Models: Determination of Water-surface Elevations for Riverine Analysis

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
One-Dimensional Unsteady Flow Models			
HCSWMM 4.31B (Aug. 2000)	Stormwater Management Section Public Works Department Hillsborough County, Florida	Stormwater Management Section Public Works Department Hillsborough County, Florida 601 E. Kennedy Boulevard 21st Floor P.O. Box 1110 Tampa, FL 33601	Modified version of EPA SWMM 4.31. The major modifications are: integrated the SCS-CN method into the model to calculate the rainfall-runoff process; allow up to 21 different Manning's coefficients for each cross-section; added 4 more fields to C1 line to calculate the exit, entrance, and other minor losses, and to stretch the pipe based on stability condition automatically create an ASCII file, HYDROG.DAT, containing hydrograph for each subbasin generated after each run. **Only accepted for usage and applicable within** Hillsborough County, Florida. Public Domain: Yes
ICPR v.3.10 with PercPack Option	Streamline Technologies	Streamline Technologies, Inc. 1900 Town Plaza Ct. Winter Springs, Florida 32708-6208 www.streamnologies.com	Add-on to ICPR, modeling the interactions between surface water systems and the groundwater table. Must follow FEMA "Guidelines for Estimation of Percolation Losses for NFIP Studies" in using the model to simulate percolation process. Only accepted for usage in FEMA Region IV. Public Domain: No
NETWORK (Jun. 2002)	Southwest Florida Water Management District	Engineering Section Resource Management Department 2329 Broad Street Brooksville, Florida 34604-6899	Interconnected ponds and channels routing model. **Only accepted for usage within Southwest Florida Water Management District.** Public Domain: Yes
CHAN for Windows v.2.03 (1997)	Aquarian Software, Inc.	Aquarian Software 1415 Briercliff Drive Orlando, Florida 34604-6899	Calibration or verification to the actual flood events highly recommended. Floodway concept formulation is unavailable. Encroachment stations can be specified in editor to cut off section.

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
			Only accepted for usage within Southwest Florida Water Management District. Public Domain: No
Two-Dimensional Unsteady Flow Models			
S2DMM (Feb. 2008)	Tomasello Consulting Engineers, Inc.	Tomasello Consulting Engineers, Inc. 5906 Center Street Jupiter, FL 33458	Applicable to a network of rectangular grids. Capable of routings on natural overland sheetflow areas and water management systems with cascading lakes and channels. Computing runoff from either daily or hourly rainfall with design distributions, using SCS formula with soil storage and soil moisture updated on daily basis. Stage/storage, sheetflow cross sections, and soil types are represented in each computational grid entered via GIS. HEC-2 type cross sections can be entered on specific channel grids and minor channels can be embedded on general grids. Evapotranspiration computations are based on seasonal factors and soil moisture of unsaturated and saturated zones. Interactions with the subsurface conditions are handled by MODFLOW routines. Capable of simulating continuous hydrologic conditions. Cannot compute regulatory floodway. **Only accepted for usage in the South Florida Water Management District.** Public Domain: No
Two-Dimensional Steady/Unsteady Flow Models			
DHM 21 and 34 (Aug. 1987)	Theodore V. Hromadka II and Chung-Cheng Yen	Hromadka & Associate Costa Mesa, California	Diffusion flow model that can route unconfined surface and open channel flows. Can be used to model alluvial flooding. Rainfall-runoff output can be used for hydrologic studies. Kinematic routing optional. Floodway concept formulation unavailable. Calibration to actual flood events is recommended. **Only accepted for usage within the San Bernardino County Flood Control District, California.** Public Domain: No

View More Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP

Nationally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP
- Statistical Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP

Numerical Models No Longer Accepted

- Numerical Models No Longer Accepted by FEMA for NFIP Usage

FEMA

Numerical Models Meeting the Minimum Requirement of NFIP

Current Locally Accepted Hydrologic Models

- Hydrologic Models: Determination of Flood Hydrographs
- View More Locally Accepted Models
- Nationally Accepted Models
- Numerical Models No Longer Accepted

Hydrologic Models: Determination of Flood Hydrographs

Hydrologic Models: Determination of Flood Hydrographs

PROGRAM	DEVELOPED BY	AVAILABLE FROM	COMMENTS
Single Event			
AHYMO 97 (Aug. 1997)	Albuquerque Metropolitan Arroyo Flood Control Authority, Anderson-Hydro	Anderson-Hydro 13537 Terragon Drive, NE Albuquerque, NM 87112	Flood hydrographs at different locations along streams. **Only accepted for usage and the default parameters in the model applicable within New Mexico.** Information on the AHYMO model Public Domain: Yes
Colorado Urban Hydrograph Procedure (CUHPF/PC) (May 1996 and May 2002)	Denver Urban Drainage and Flood Control District	Denver Urban Drainage and Flood Control District 2480 West 26th Avenue, Suite 156-B Denver, CO 80211	Flood hydrographs at different locations along streams. Hydrographs are routed using UDSWM2-PC (a modified version of the Runoff Block of EPA's SWMM). **Only accepted for usage and the default parameters in the model applicable within the Denver, Colorado, metro area.** Public Domain: Yes

View More Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Meeting the Minimum Requirement of NFIP

Nationally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydrologic Models Meeting the Minimum Requirement of NFIP
- Statistical Models Meeting the Minimum Requirement of NFIP

- Hydraulic Models Meeting the Minimum Requirement of NFIP

Numerical Models No Longer Accepted

- Numerical Models No Longer Meeting the Minimum Requirement of NFIP

FEMA

Numerical Models No Longer Accepted by FEMA for NFIP Usage

Currently Unacceptable Models

- Current Unacceptable Models
- Nationally Accepted Models
- Locally Accepted Models

Current Unacceptable Models

Currently Unacceptable Numerical Models

TYPE	PROGRAM	DEVELOPED BY	COMMENTS
Coastal Models; Coastal Storm Surges	ODISTIM (1975)	Coastal Consultants, Inc.	Have not been used for NFIP studies for more than 5 years.
	Northeaster Model (1978)	Stone & Webster Engineering Group	
	FLOW2D (1975) [1]	Resource Analysis, Inc.	
Coastal Models; Coastal Wave Effects	GLWRM (1992)	U.S. Army Corps of Engineers	Have not been used for NFIP studies for more than 5 years.
Hydrologic Models; Single Event	DBRM 3.0 (1993)	Bernard L. Golding, P.E. Consulting Water Resources Engineer Orlando, FL	Have not been used for NFIP studies for more than 5 years.
	HYMO	U.S. Department of Agriculture, Natural Resources Conservation Service	NRCS is no longer supporting the program.
	DR3M (Oct. 1993)	U.S. Geological Survey	Have not been used for NFIP studies for more than 5 years.
	TR-20 (February 1992)	U.S. Department of Agriculture, Natural Resources Conservation Service	NRCS is no longer supporting the DOS version of the program.
	TR-55 (June 1986)	U.S. Department of Agriculture, Natural Resources Conservation Service	NRCS is no longer supporting the DOS version of the program.
Interior Drainage Analysis	HEC-IFH 1.03 and up	U.S. Army Corps of Engineers	The U.S. Army Corps of Engineers is no longer supporting the program.

Hydraulic Model; One-dimensional Steady Flow	WSP2 (October 1993)	U.S. Department of Agriculture, Natural Resources Conservation Service	NRCS is no longer supporting the program.
	FLDWY (May 1989)	U.S. Department of Agriculture, Natural Resources Conservation Service	NRCS is no longer supporting the program; for past studies done using FLDWY, the user manual is still available from NRCS to help interpret the data.
Hydraulic Model; One-dimensional Unsteady Flow	UNET 4.0 (Apr. 2001)	US Army Corps of Engineers	Replaced by HEC-RAS.
	DAMBRK	National Weather Service	NWS is no longer supporting the program.
	NETWORK (DWOPER)	National Weather Service	NWS is no longer supporting the program.
Floodway Model	SFD	U.S. Army Corps of Engineers / FEMA	The U.S. Army Corps of Engineers / FEMA are no longer supporting the program.
	PSUPRO	Pennsylvania State University / U.S. Army Corps of Engineers / FEMA	Pennsylvania State University / U.S. Army Corps of Engineers / FEMA are no longer supporting the program.
Locally Accepted Hydraulic Model	SHEET2D 9	Tomasello Consulting Engineers, Inc.	Replaced by S2DMM.

Nationally Accepted Models

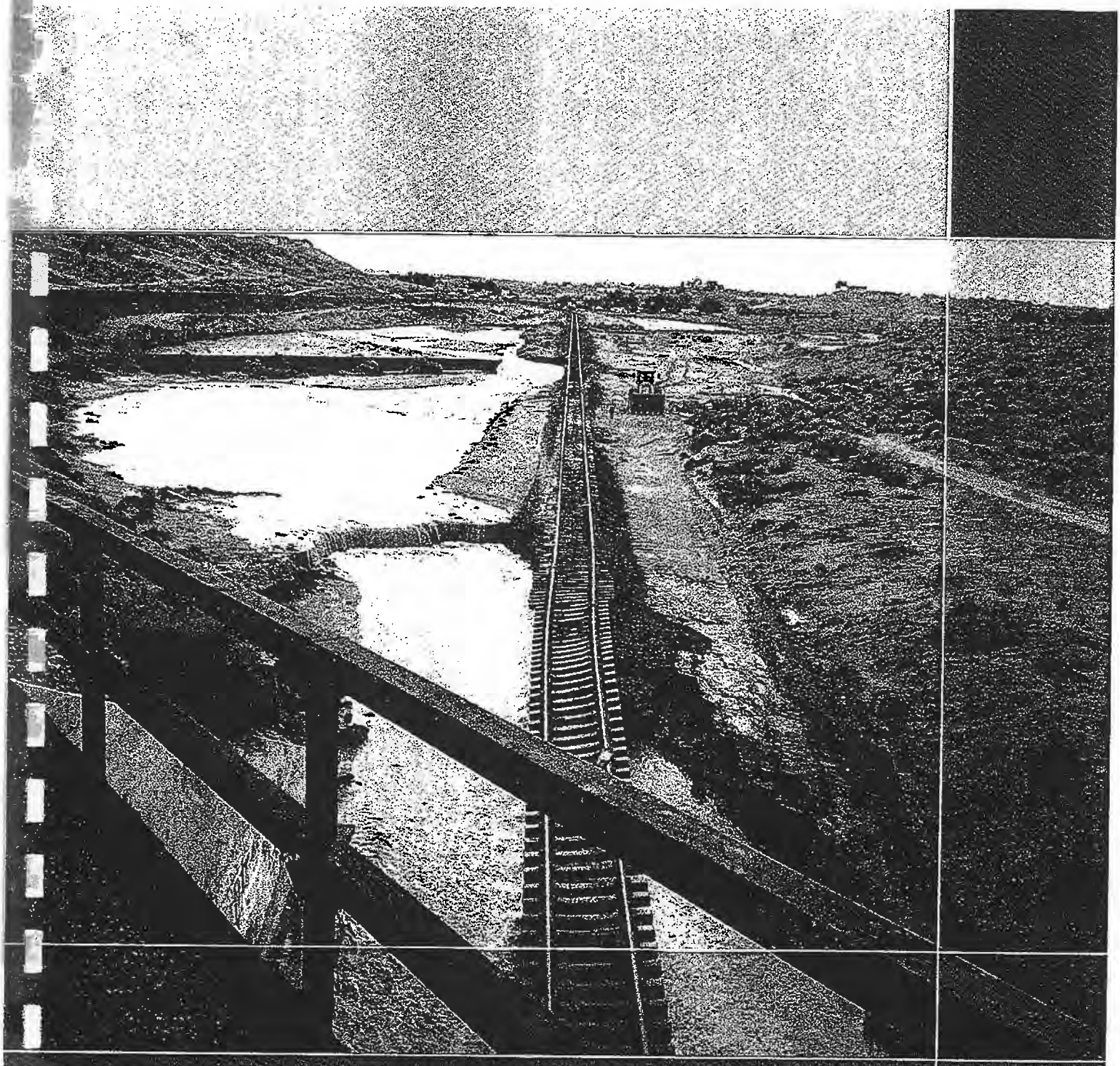
- Coastal models accepted by FEMA for NFIP usage
- Hydrologic models accepted by FEMA for NFIP usage
- Statistical models accepted by FEMA for NFIP usage
- Hydraulic models accepted by FEMA for NFIP usage

Locally Accepted Models

- Coastal Models Meeting the Minimum Requirement of NFIP
- Hydraulic Models Accepted by FEMA for NFIP usage
- Hydrologic Models Accepted by FEMA for NFIP usage

Return to the Numerical Models Page.

Exhibit 7



prepared for:

BNSF

Burlington Northern Santa Fe Railway

BNSF 003241

by:

HANSON WILSON INCORPORATED

August 20, 2004

BNSF Flooding Analysis

At

MP 39.0 to 41.0
Cajon Subdivision

Burlington Northern Santa Fe

BNSF

Prepared by:

Hanson-Wilson Inc.
275 W. Hospitality Lane, Suite 300
San Bernardino, CA 92408
909/806-8000

REGISTERED PROFESSIONAL ENGINEER
CHARLES J. STEFFENSMEIER
No. C 66578
EXP. 6/30/06
CIVIL
STATE OF CALIFORNIA

BNSF 003242

X4-510-157

August 20, 2004

BNSF FLOODING ANALYSIS
MILEPOST 39.0 to 41.0 – CAJON SUBDIVISION

This report provides documentation and background information regarding the recent flooding at The Burlington Northern and Santa Fe Railway Company's (BNSF's) track between Mileposts (MP) 39.0 and 41.0 on the Cajon Subdivision. The storm event occurred at approximately 3:30 p.m. on Saturday, August 14, 2004. According to the City of Victorville, approximately 2 inches of rain fell in some areas of Victorville in a one-hour period. The result of this rainfall was extreme runoff and damage to BNSF's track at several locations between MP 39.0 and MP 41.0 and the natural crossover structure at MP 39.14.

An aerial photo of the track and structures in the immediate vicinity of the study area is shown on Figure 1. As further background, stormwater runoff is collected along the west side of the tracks in an open ditch from MP 41.0 north to MP 39.4. This flow is then conveyed through Track Number 1 at MP 39.4 with a 42-foot bridge and three 48-inch corrugated metal pipes (cmp's). The runoff continues to the north and passes through the embankment at MP 39.23, which is an 8-ft x 8-ft cast in place arch culvert.

Bridge 39.14 and the Number 1 track though the bridge sustained substantial damage as a result of overflow and limited capacity from the structures upstream and to the south of this bridge. Bridge 39.14 is the grade separation bridge for the natural crossover and is not designed or intended to convey stormwater. In fact, the footing of the bridge is on relatively shallow spread footings that made it more susceptible to scour damage. During Saturday's storm event, runoff was limited by the conveyance of the 8-ft x 8-ft arch pipe at MP 39.23 on Track Number 2 and was forced to flow to the north and through Bridge 39.14. The results were extensive scour to the foundation of the bridge and to the track structure in the immediate area. A high water mark is shown in Photo 5.

The drainage basin that contributes runoff to this outflow consists of approximately 17 square miles of predominantly residential and commercially developed property with some areas that have not yet been developed. The majority of that area, approximately 75 percent, lies within the City of Hesperia to the south. The northern 25 percent of the basin lies within the City of Victorville and is currently under development for commercial use.

In addition to the structures at MP 39.4 and MP 39.23, there are three detention ponds at the lower end of the drainage basin that are intended to attenuate the peak flow. These detention ponds are shown on Figure 1. It is unclear what the condition of the detention ponds were before the storm event. However, a considerable volume of sand was removed from the lower ponds after the flood event. The upper detention pond, located at MP 40 actually diverted flow around the dam and into the track, washing out a portion of the ballast (see photos 8 and 9).

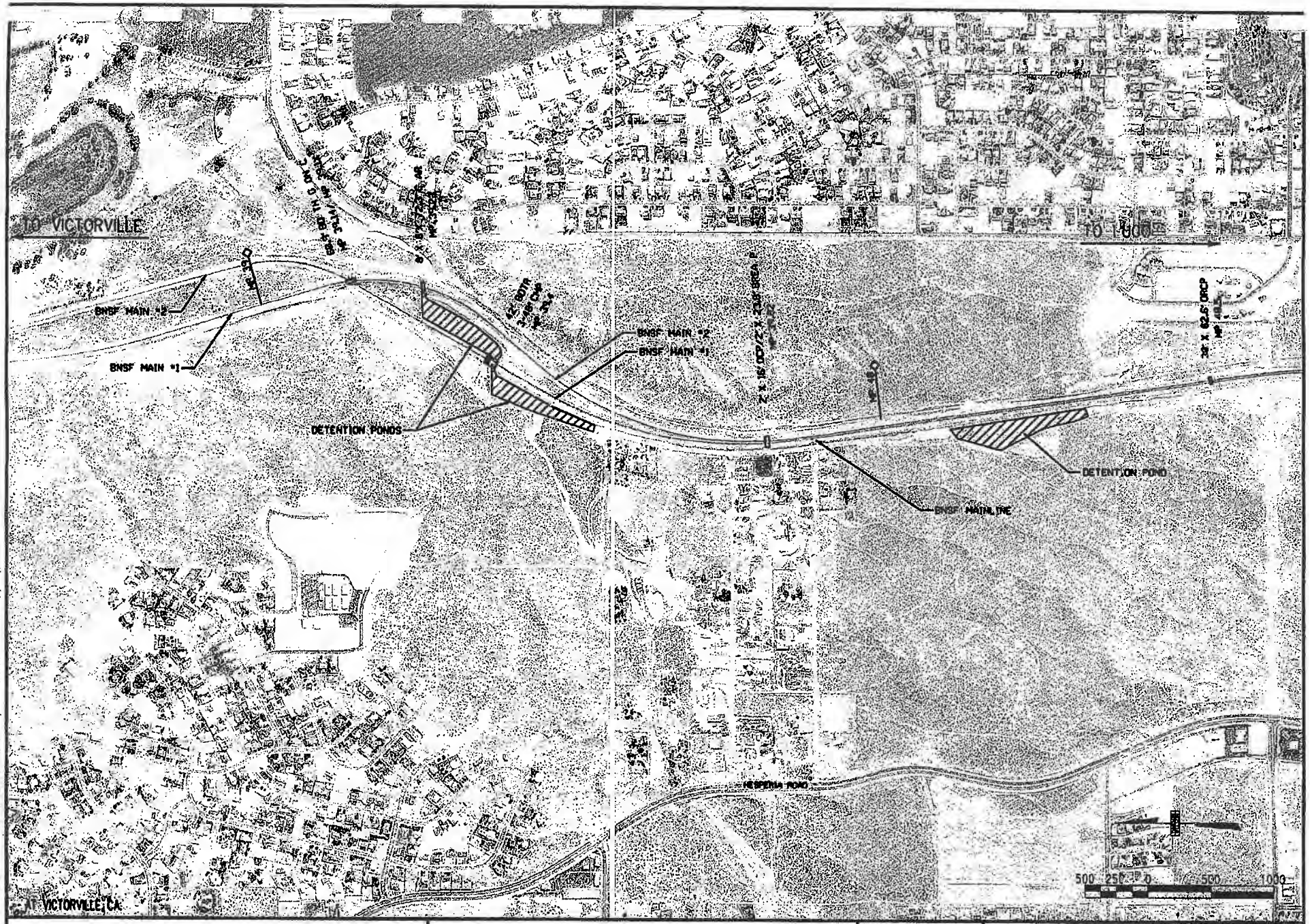


FIGURE 1

Burlington Northern Santa Fe Railway

HANSON WILSON INCORPORATED

275 W. HOSPITALITY LANE STE. 300
SAN BERNARDINO, CALIFORNIA 92408
PHONE: 909-806-8800
FAX: 909-806-8899

FILE:victorville2.dgn

DESIGNED
CHECKED
DRAWN GAM
CHECKED CJS

NATURAL CROSSOVERS
MP 39.1

SHEET 1

8-19-04

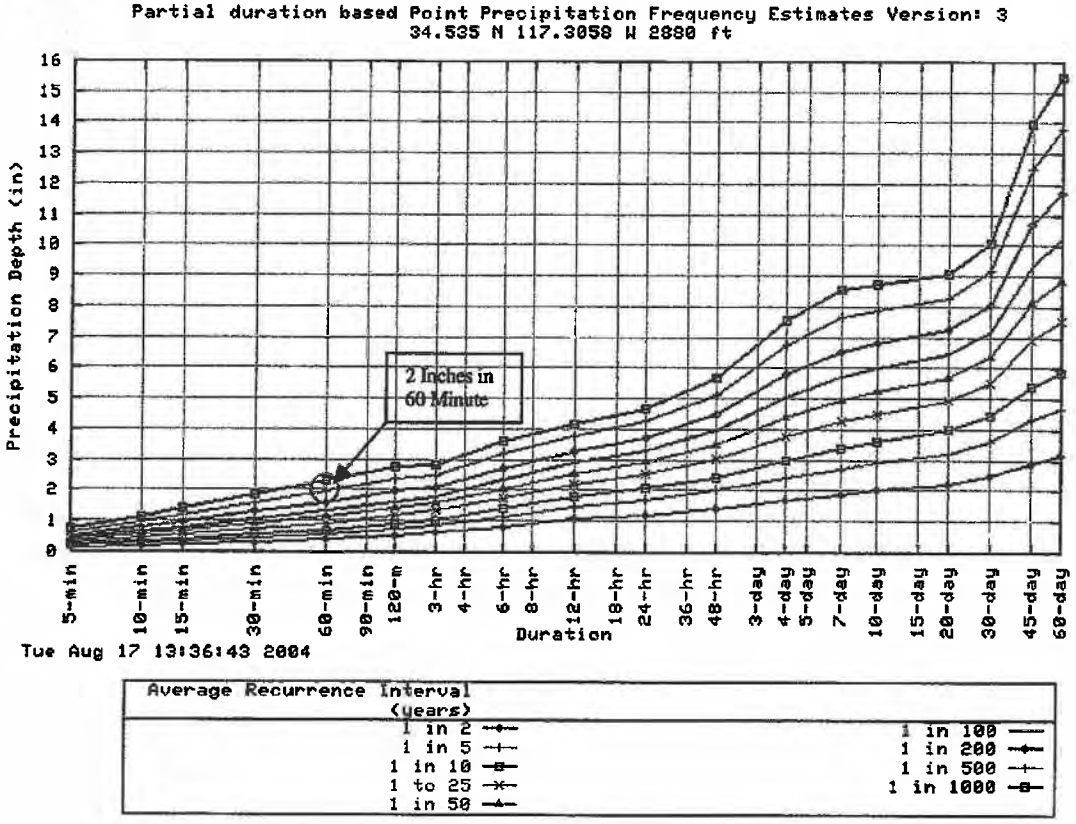
BNSF 003244

In addition to the detention ponds upstream, the City of Victorville has constructed a concrete lined channel to collect and control the runoff in a portion of the upstream channel. However, this channel construction is not complete and portions of the channel are lined with riprap along the track side of the channel. A large scour hole has developed at the downstream end of the concrete channel (see photos 10,11 &12). This scour will cause damage in the future to the track structure unless counter measures are implemented by the City of Victorville. San Bernardino County owns a portion of the unimproved upstream channel, between approximately MP 39.58 and 39.97.

Precipitation Analysis

Significant precipitation occurs infrequently in the Victorville/Hesperia area. The average annual precipitation is 5 inches, with 70 percent falling between October and March. These months usually produce general winter storms of low intensity and long duration. The months of April through September usually yield thunderstorms of high intensity and short duration. These thunderstorms occur, on the average, three times a year.

Rainfall data was collected to compare Saturday's event with isohyetal maps and point precipitation frequency estimated for the immediate area (see Figure 2) to identify the frequency of the storm. Figure 2 shows that 2 inches of rainfall falling in a 60-minute period has a recurrence interval of approximately once in every 500 years.



VICTORVILLE, CALIFORNIA (04-9325) 34.535°N 117.3058°W 2880 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 3
G.M. Bonnin, D. Todd, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2003

Figure 2

The Hanson-Wilson team obtained precipitation from the California Department of Water Resources Internet real time data service. Data from the Mormon Rock (MRN), Granite Mountain (GAM) and the Victorville Pump Plant (VCT) were accessed. The rainfall information obtained from this source showed little if any activity during the time frames of the flooding event. Our team also accessed other Internet weather monitoring devices but the information was similar in nature. Our conclusions from these data sources indicate the storm cell over the area was small and focused on the upper area of the drainage basin, but had very high intensity.

Hanson-Wilson staff members collected and researched local accounts that appeared in the newspaper and local police and fire stations were called for rain gage data. The San Bernardino Sun reported the storm dumped between 2 to 3 inches of hail and rain in a one-hour time frame. A rain gage located on Bear Valley Road reported 0.83 inches of rainfall. The City of Victorville reported that approximately 2 inches of rain fell in a one-hour period

The last source of rainfall information used was the BNSF Weather Data Service. A flash flood advisory, Warning 2011, was issued between Saturday at 1:30 p.m. PDT to 3:30 p.m. PDT on August 14, 2004. From this advisory notice, we were able to obtain storm Doppler information during the timeframe of the event. The Doppler information from the storm was also converted into Surface Rainfall Accumulation on an hourly basis and Storm Total Rainfall Accumulation maps for the event. Hanson-Wilson was then able to superimpose the drainage shed of the natural crossover area onto these maps. Preliminary investigation of the data from this source shows areas of the shed received between 0.2 inches to 2 inches of rain. These maps are shown in the Appendix.

Considering the rainfall data that our team gathered and personal accounts of the storm, it is our opinion that approximately 2 inches of rain fell within a 60-minute period in the lower portion of this basin. This correlates to a rainfall event with a frequency of between 100 and 500 years. It should be noted that this depth of rainfall was not evenly distributed over the entire basin. In fact, some areas of the basin received very little precipitation. Accordingly, there is no direct correlation between the frequency of the rainfall event and the runoff event; e.g., a 500-year storm over a small portion of the drainage basin will not produce a 500-year runoff event at the outlet of the basin.

Hydraulic Analysis

A hydraulic analysis was completed to estimate the peak flow during Saturday's flooding and estimate the frequency of the runoff. High-water lines were identified at Bridge 39.14, (see photo 5) and also at a location approximately 1,800 feet upstream of Bridge 39.4. Considering the amount of scour that occurred at Bridge 39.14 and the uncertainty of the channel section during the runoff event, it was decided to correlate the peak flow with the cross-sections upstream of Bridge 39.14.

The two channel sections were modeled with the Corps of Engineer's HEC-RAS hydraulic program. The flow was iterated in the model until the hydraulic grade line at the upstream section matched the surveyed high water mark at that location. There was good correlation to the high water line at the second channel cross-section with this flow. The peak flow obtained from the model is approximately 1,900 cfs.

The *Williams & Schmid Master Plan of Drainage* for the cities of Victorville and Hesperia estimates the fully developed 100-year flow to be 2,070 cfs at this same location, which is 170 cfs more than we estimated in our drainage model. This estimate assumes that the drainage basin is fully developed. Considering that a portion of the basin is not developed, it is likely that this runoff event was greater than the 100-year runoff event.

Summary

The runoff from this storm was on the number 2 track near or above that of a 100-year flood event. However, there are two factors that caused the drainage system to fail and cause flow to be diverted south to Bridge 39.14 and wash out the track and scour the footings of the bridge.

The first contributing factor was the size of the conveyance structure located at MP 39.23. The 8-ft x 8-ft arch pipe did not have the capacity to carry the peak flow and consequently water built up to the west of the inlet and breached the dike, diverting the majority of the peak flow to Bridge 39.14.

The second contributing factor to the damage was the amount of storage provided in the three detention ponds. It is uncertain what the condition of the detention ponds was prior to the storm. However, if the ponds were not properly maintained by removing the collected sediment from previous storms, the peak flow would have reached the 8-ft x 8-ft arch pipe at MP 39.23 without being attenuated and resulted in overflow to the grade separation at MP 39.14.

Doppler Rainfall Information

BNSF 003249

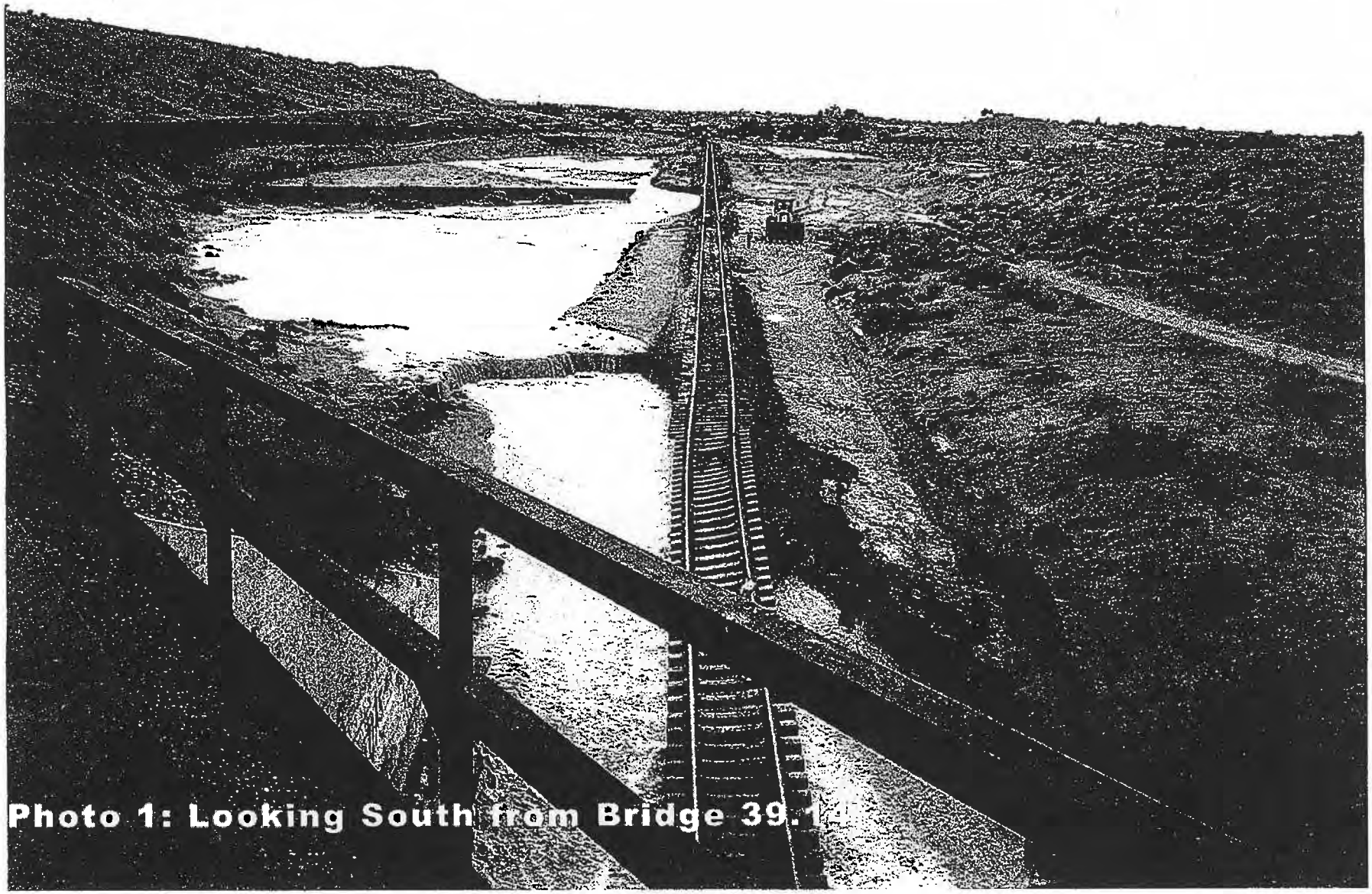


Photo 1: Looking South from Bridge 39.1

BNSF 003252

Photo 2: Looking South East from Bridge 39.14

Photo 3: Looking South West from South Abutment of Bridge 39.14

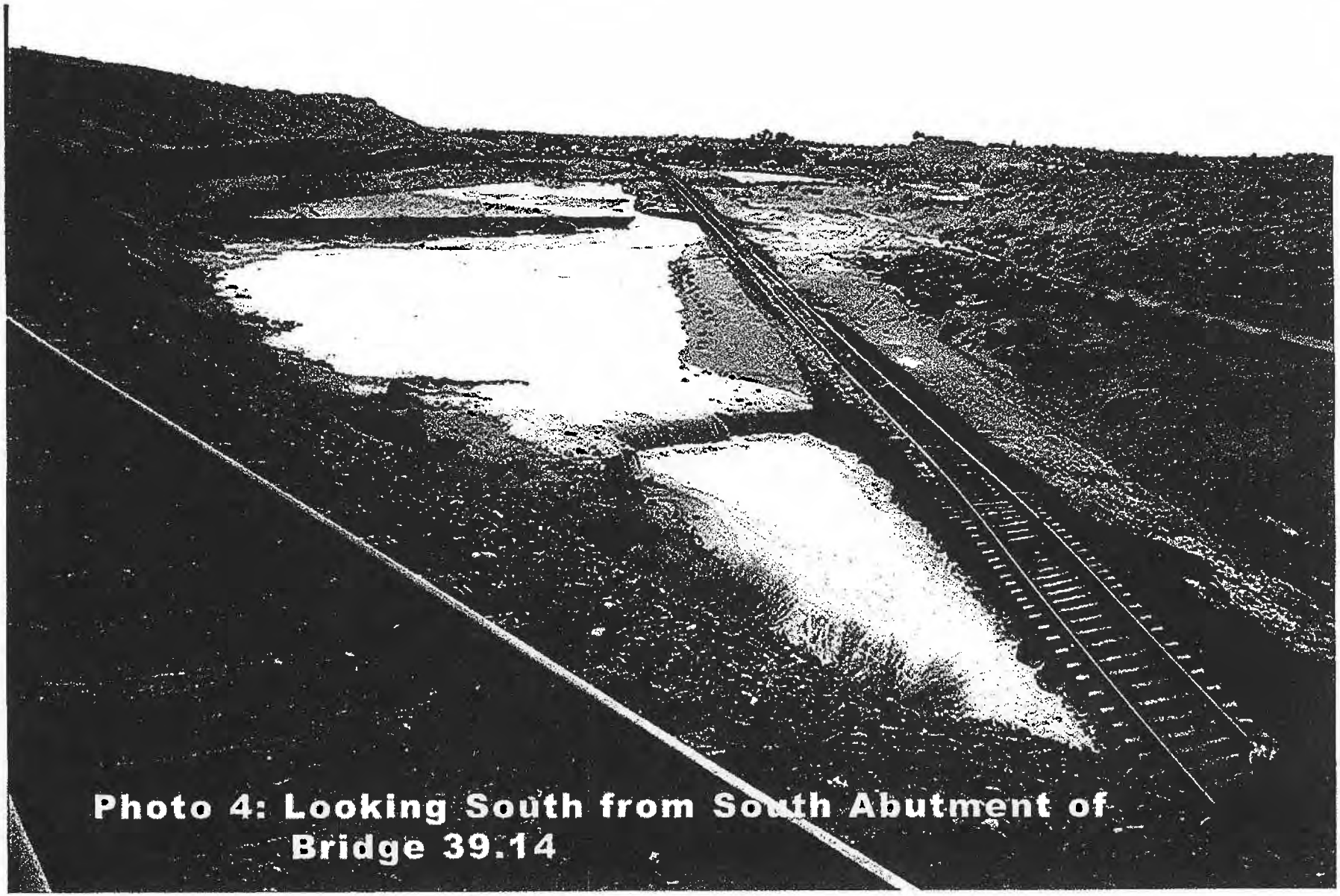


Photo 4: Looking South from South Abutment of Bridge 39.14

High Water Mark
Photo 5: Looking South

Photo of Bridge 39.14

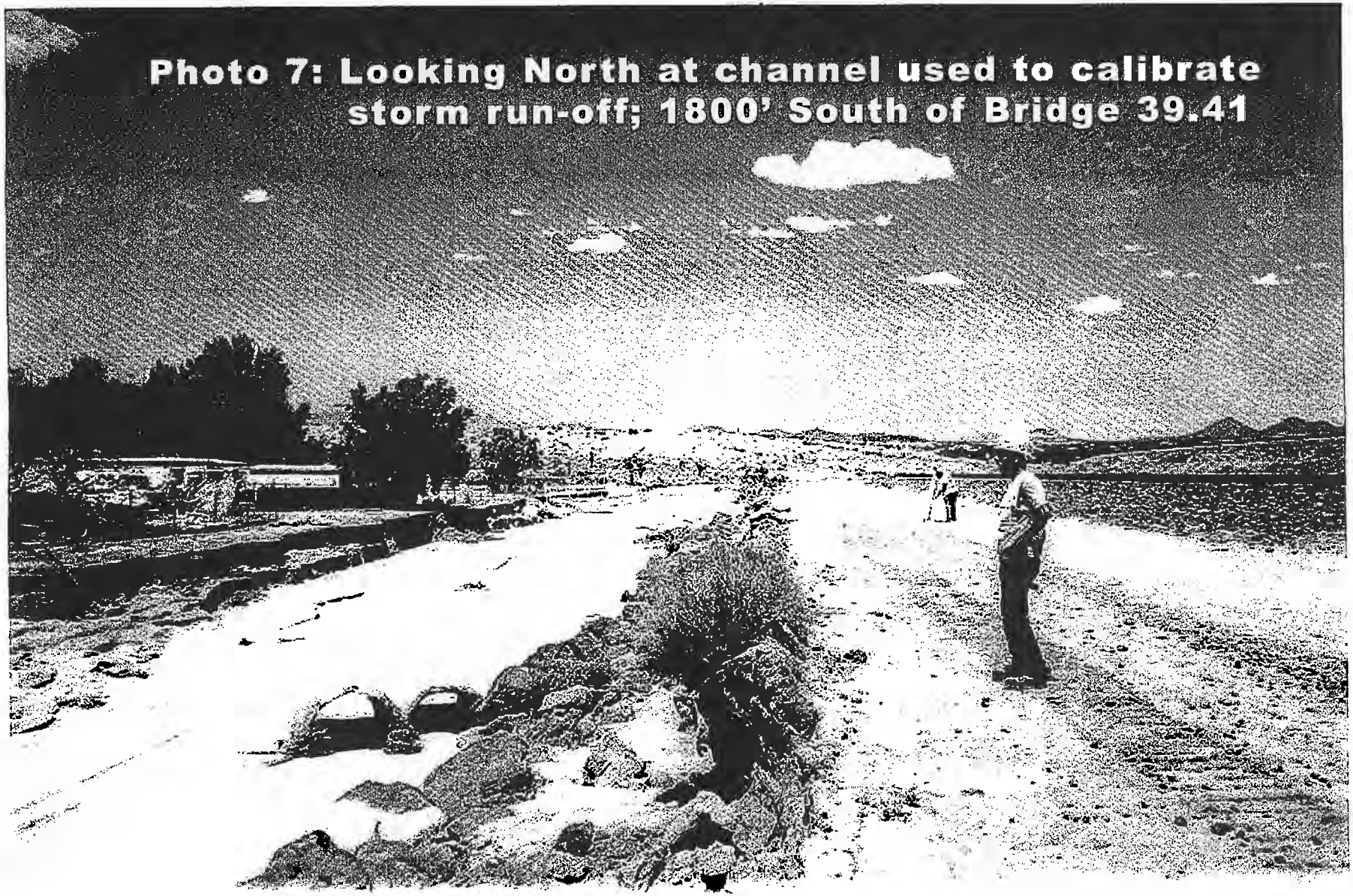


Photo 7: Looking North at channel used to calibrate
storm run-off; 1800' South of Bridge 39.41

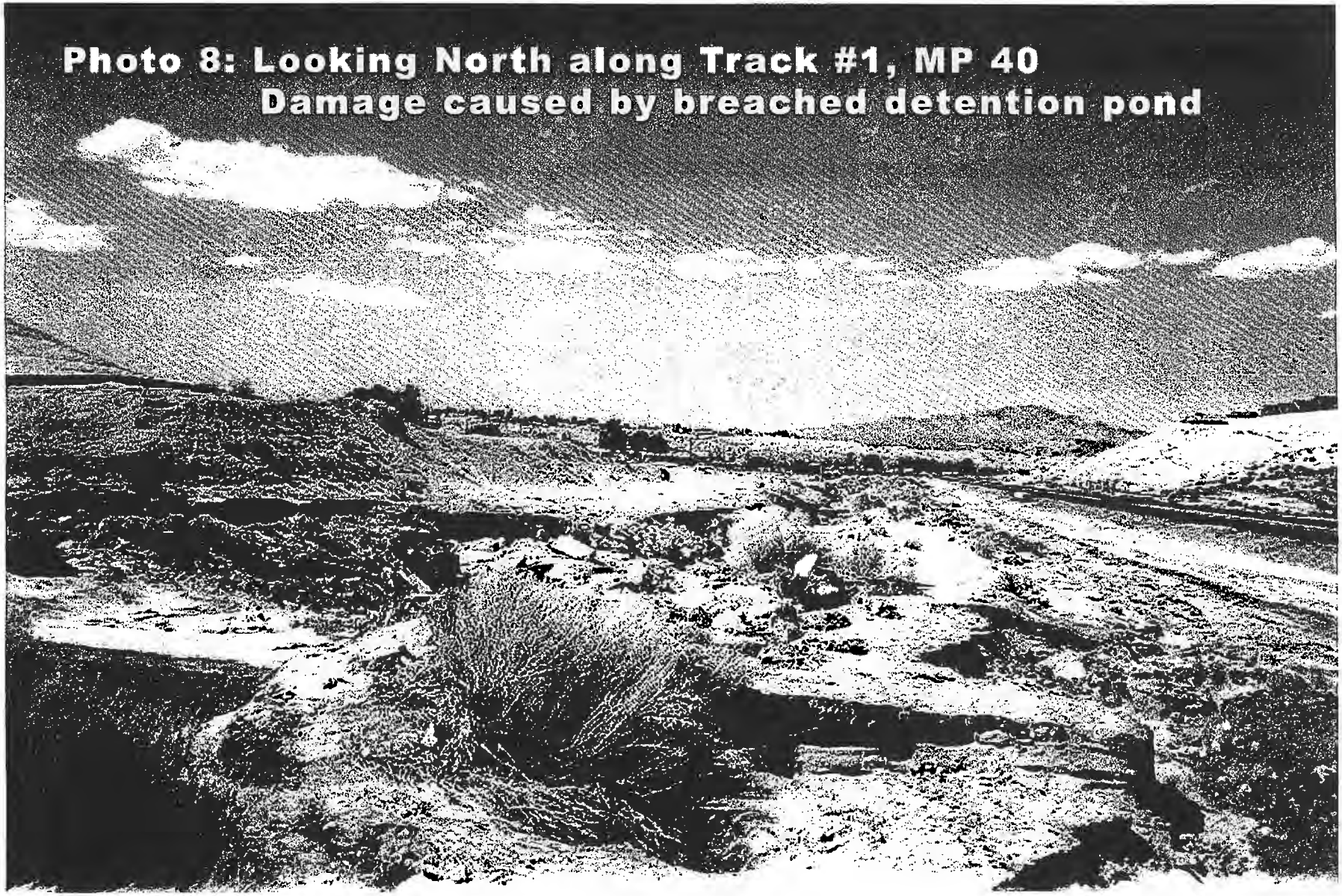


Photo 8: Looking North along Track #1, MP 40
Damage caused by breached detention pond

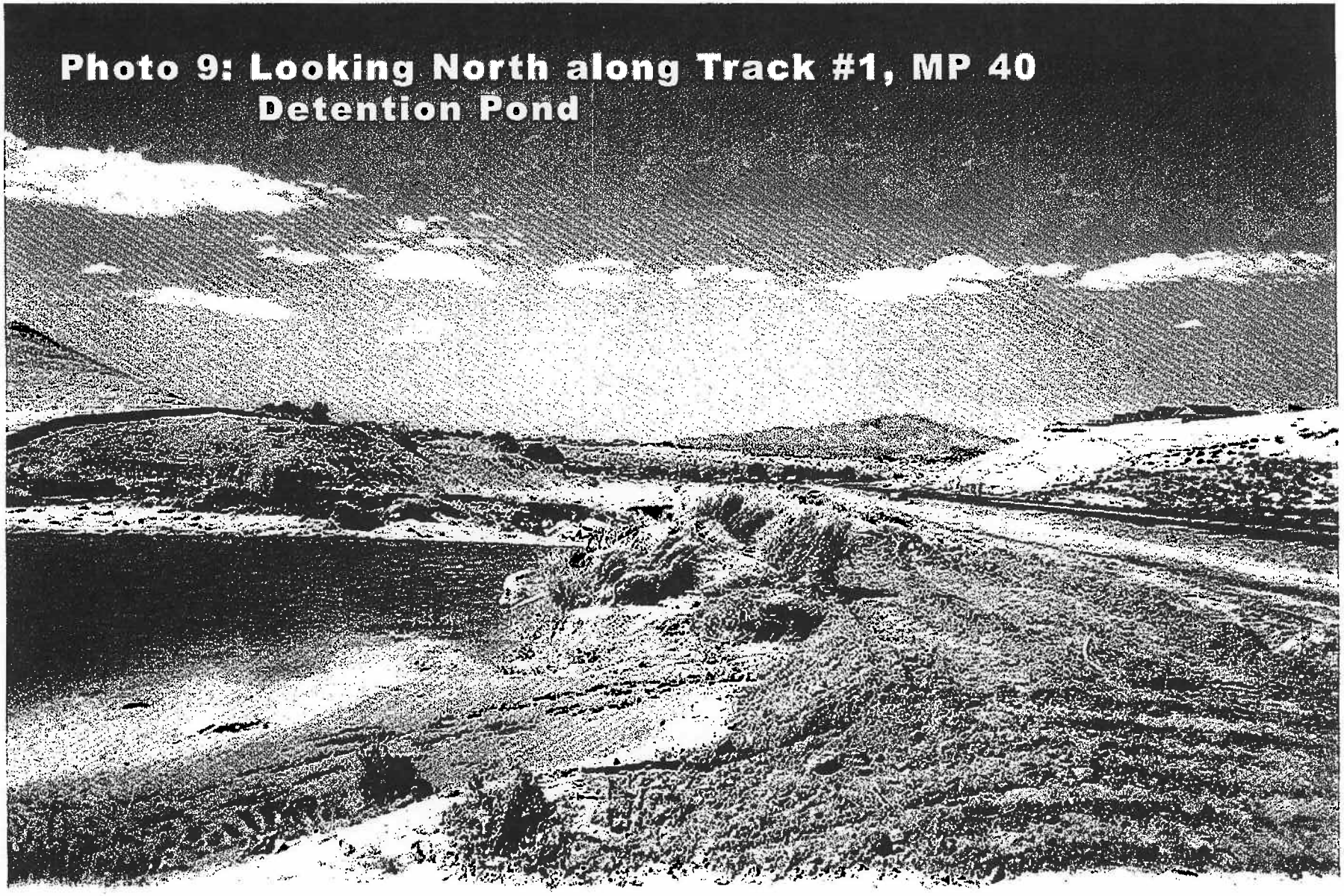
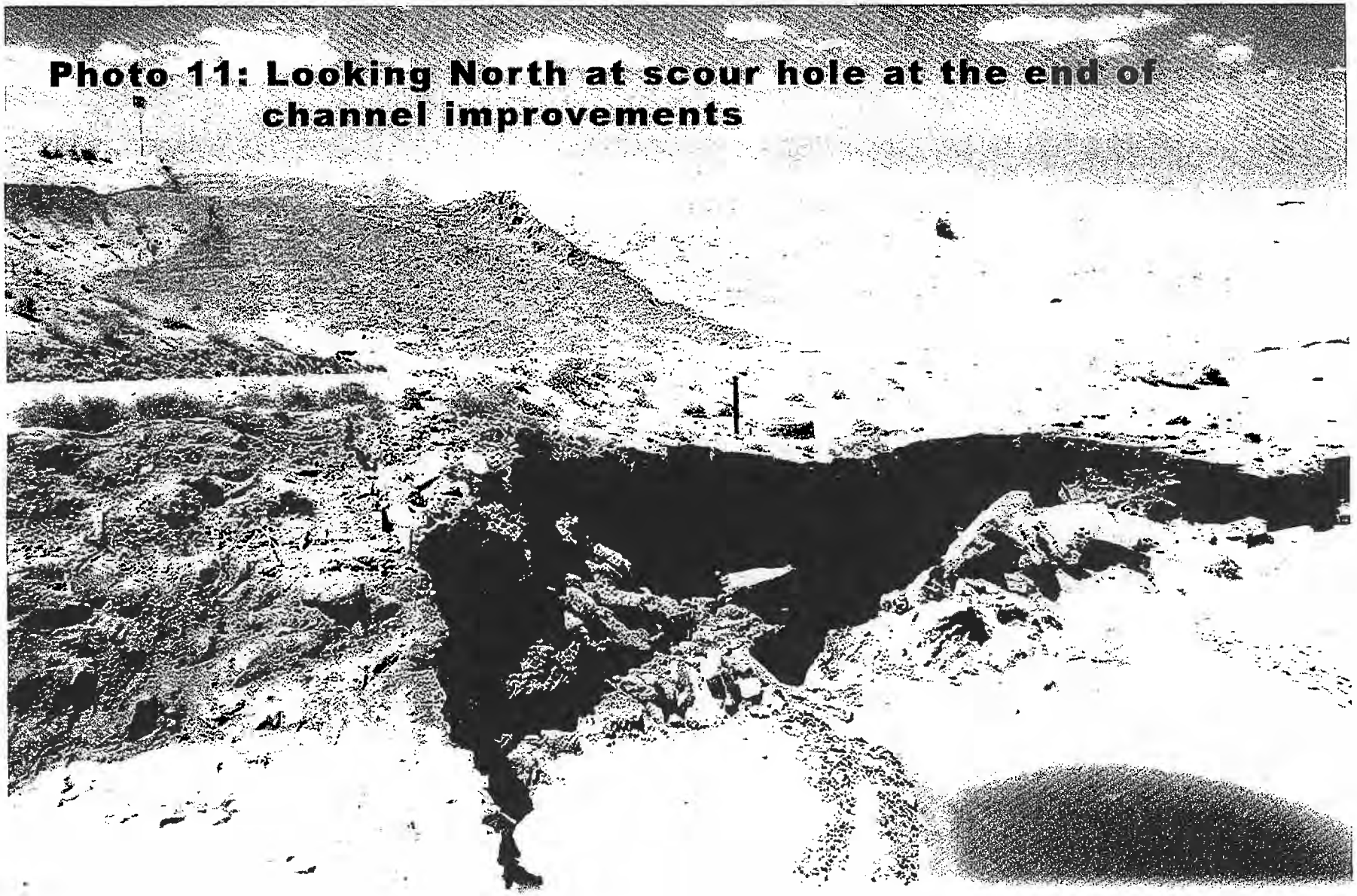


Photo 9: Looking North along Track #1, MP 40
Detention Pond

Photo 10: Looking North at scour hole at the end of the channel improvements. MP 41

Photo 11: Looking North at scour hole at the end of channel improvements



BNSF 003262

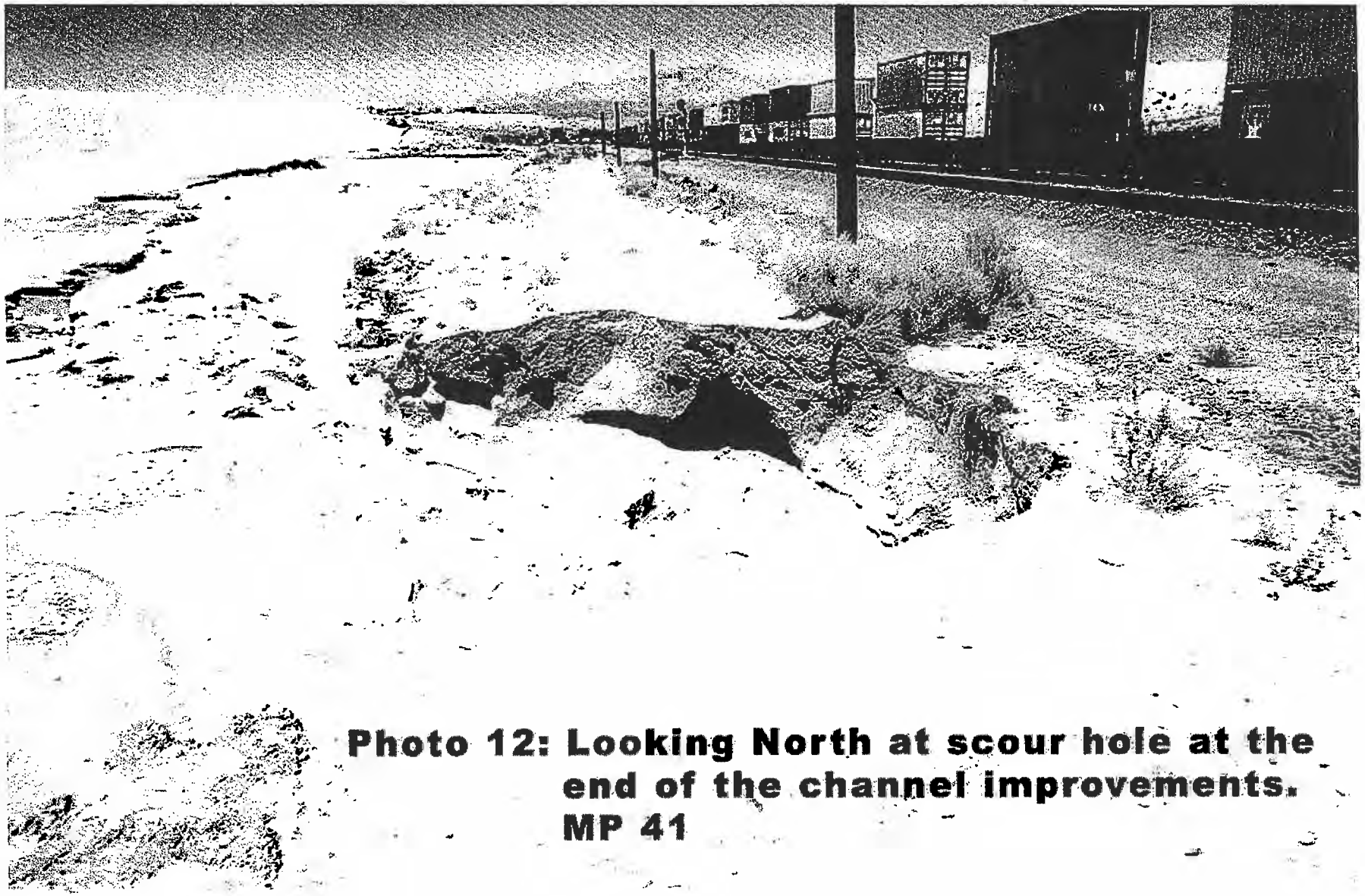


Photo 12: Looking North at scour hole at the end of the channel improvements. MP 41

Photo 1: Looking South from Bridge

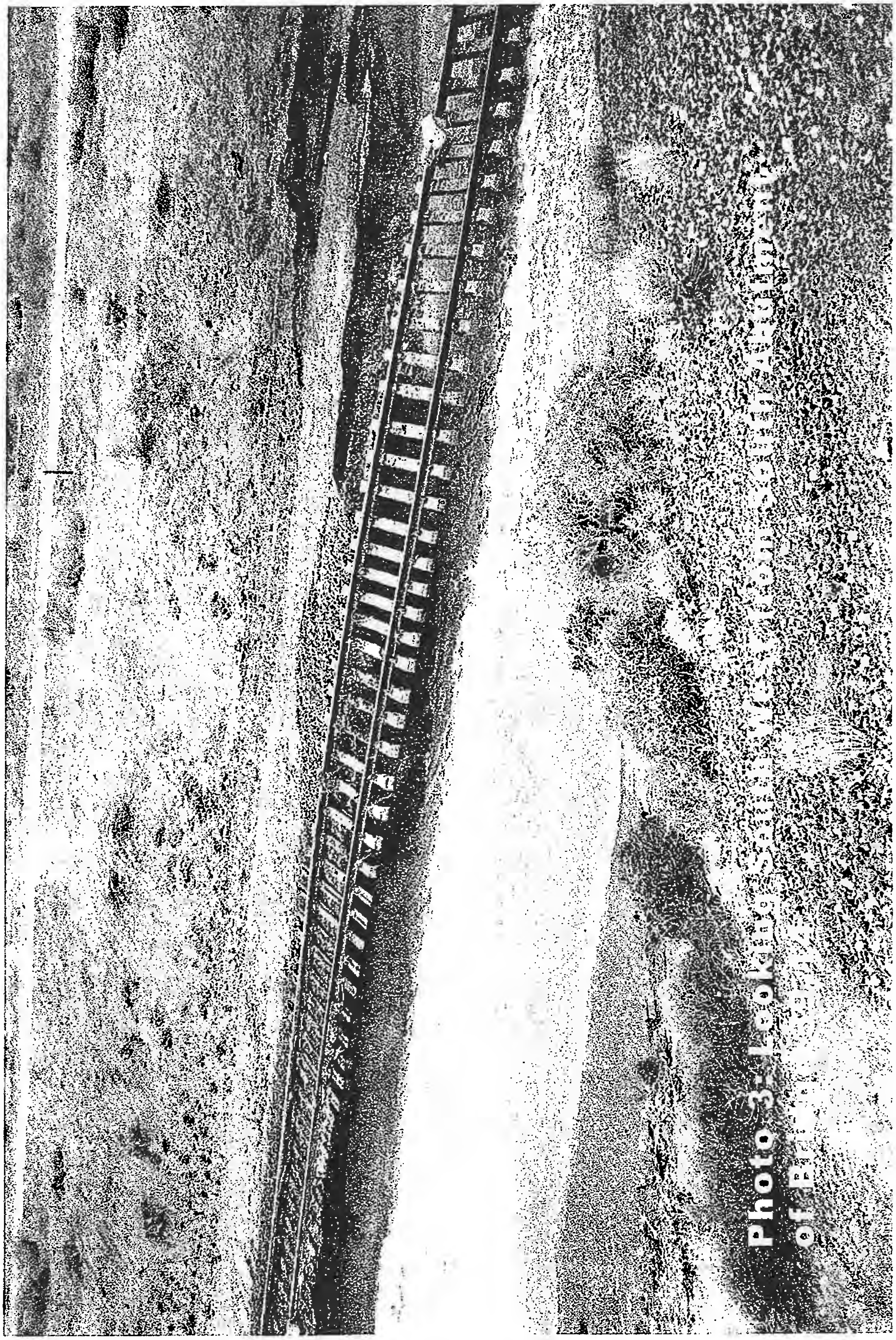


Photo 3 - Look

Exhibit H

STATE OF CALIFORNIA

Energy Resources Conservation And Development Commission

In the Matter of:
The Application for Certification for the Calico Solar Power Project Licensing Case

Docket No. 08-AFC-13

PREPARED DIRECT TESTIMONY OF EDWARD P. PHILLIPS
BNSF RAILWAY COMPANY

August 17, 2010

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East, Suite 2700
Los Angeles, California 90067-3012
Telephone: 310) 788-4400
Email: cynthia.burch@kattenlaw.com
steven.lamb@kattenlaw.com
anne.alexander@kattenlaw.com

Attorneys for Intervenor
BNSF Railway Company

Exhibit 1206

PREPARED DIRECT TESTIMONY

OF

Edward P. Phillips

Manager Environmental Operations – California Division, BNSF

Q.1 Please state your name and occupation?

A.1 My name is Edward P. Phillips. I am the Manager of Environmental Operations for the California Division of BNSF Railway Company ("BNSF"). I am based in San Bernardino, California. My resume was attached to my earlier testimony.

Q.2 What is the purpose of your testimony in this proceeding?

A.2 I will testify regarding access issues raised in the SSA, Part II, Traffic and Transportation.

Q.3 Why does BNSF have concerns regarding the Calico Solar Project?

A.3 BNSF is one of two Class 1 railroads operating in California. BNSF's transcontinental mainline, traversed by as many as 80 trains per day, carries interstate commerce from the Ports of Los Angeles and Long Beach to U.S. Midwestern, Southwestern and Eastern markets. BNSF's mainline has operated through the section of the Mojave Desert, where Calico Solar has now proposed its Project, since the late 19th Century. The proposed Project, comprised of 34,000 solar dishes (SunCatchers), transmission line upgrades, detention basins, etc., would surround both sides of approximately 5 miles of BNSF's mainline tracks. Accordingly,

BNSF has significant concerns that the construction and operation of the Project do not adversely impact BNSF operations or otherwise impose unacceptable safety risks to BNSF personnel and operations. An adverse impact to rail traffic by Project construction or operations could have a devastating impact on interstate commerce and portions of this nation's economy. BNSF carries transcontinental shipments of, *inter alia* coal, grains and merchandise for everything from UPS to major retailers. BNSF trains currently run approximately every fifteen minutes in both directions and extend for over a mile in length. Because of the critical nature of the role of BNSF's mainline in interstate commerce, BNSF must maintain complete and unimpeded access to and use of its Right of Way ("RoW").

The consummation of the Project would require the granting of several licenses and permits from BNSF, which Applicant Calico Solar ("Calico Solar") has requested in a piecemeal fashion over the course of the past year. To date, only preliminary access agreements have been granted, including a permit to survey and a permit to use the RoW crossing at Hector Road. Before BNSF can grant such licenses and permits, BNSF must be assured that its significant safety and operational concerns are addressed.

Q.4 What are the access issues BNSF is concerned about in relation to the Calico Solar Project?

A.4 First, BNSF has been discussing various aspects of access with Calico Solar for some time. During all discussions, BNSF has made it clear that BNSF must maintain complete and unimpeded access to and use of its RoW and that any grant of access by BNSF to Calico Solar will be predicated first, on Calico Solar addressing BNSF's safety and operations concerns to BNSF's requirements and second, on Calico Solar obtaining all the appropriate and required permits and compliance with all applicable laws, ordinances, regulations and statutes. To date, significant concerns raised by BNSF have neither been studied nor addressed, e.g. the impact of glint/glare on railroad signals. Similarly, based upon information provided in the SSA Part II, Traffic and Transportation section, CEC Staff has proposed conditions, e.g. a paved roadway on BNSF's RoW, the impact of which has not been evaluated and it is unlikely that all required and appropriate permits in compliance with all applicable laws, ordinances, regulations and statutes can be achieved in the required time frames.

Second, as noted above, while there have been discussions between BNSF and Calico Solar related to Calico Solar having access to the BNSF RoW, only limited access has been granted to date. Significantly, the current access proposal set forth in SSA Part II at C.11-6 through C.11-18 and TRANS-1 is inconsistent with those discussions and, moreover, is inconsistent with Calico Solar's most recent proposal for access roads on the Project site as depicted in Figure No. 1-1, Phase 1a Project Features

Calico Solar, dated August 12, 2010 ("Figure No. 1-1"). BNSF Railway concluded and advised Calico Solar that the proposed construction activity would obstruct the use of its RoW for critical railroad operations and that they would not grant such a license. Since that time, BNSF and Calico Solar have been engaged in a discussion to determine the feasibility of the proposal reflected in Calico Solar's design dated August 12, 2010 ("Figure No. 1-1"). That design proposes a 2-3 month very limited use of the existing Maintenance of Way ("MoW") graded, dirt road on the northern side of BNSF's RoW, east of Hector Road, to permit Calico Solar to commence surveying, relocating tortoises and placing exclusionary fences. Concurrent with this use, Calico Solar would construct the permanent roadway along its property south of the RoW and BNSF would construct a temporary at-grade crossing to connect to the permanent road. The temporary at-grade crossing would be utilized until approximately October 1, 2011, when Calico Solar's proposed bridge-grade crossing over the BNSF RoW would be completed. The feasibility and terms of this approach are still being discussed between the parties. Once the bridge was built, Calico Solar would no longer utilize either of the at-grade crossings.

Third, building a permanent, two-lane asphalt road with culverts and gutters along either the north side of the RoW east of Hector Road or the south side of the RoW west of Hector Road, for a distance in excess of several miles, was never discussed. The proposed paved roads would

cross several ephemeral streams, and permit the use of the road by over one to two hundred vehicles per day during the construction period. BNSF Railway believes that this proposed use may constitute a project under California's Environmental Quality Act (CEQA), and at a minimum, would require consultation with the U.S. Army Corps of Engineers to determine the jurisdictional nature of the ephemeral streams and potential Clean Water Act Section 404 Dredge and Fill permitting authority, similar consultation with the California Department of Fish and Game for potential state jurisdiction and Fish and Game Code Section 1602 Streambed Alteration Agreement authority, and either the California State Water Resources Control Board or Regional Water Quality Control Board for potential Clean Water Act Section 401 Certification. BNSF Railway also believes that the proposed road project would, due to its size, require a Construction General Permit to adequately cover the construction activities during the build-out of the road as required by California's Porter-Cologne Water Act. BNSF Railway believes that, as the land owner, such a permit would, by its regulatory requirement, encumber BNSF as a responsible party to this permit activity. BNSF has neither fully evaluated nor consented to these requirements. BNSF has discussed the possibility of using a class 2 base on the proposed road on the southern side of the RoW, west of Hector Road.

Fourth, as noted above, we never discussed a paved road within the RoW. We were always talking about minimal impacts to the RoW. Asphalt

roads change the runoff coefficient of the land surface during rain events, change the natural drainage patterns of cross-directional run-on, and may impact BNSF Railway's track infrastructure significantly due to both the road runoff itself and the proposed drainage systems' focused flow patterns. BNSF Railway believes that this proposed road project warrants a hydrology study to determine the potential impacts to the railroad infrastructure. BNSF Railway believes that the proposed road project may also impact desert tortoise habitat and mobility in the immediate area. BNSF Railway believes that at a minimum, consultation with U.S. Fish and Wildlife and U.S. Bureau of Land Management is warranted on this potential impact.

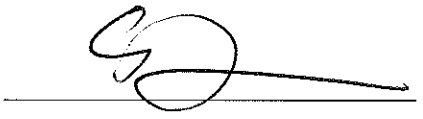
These are the primary issues we were able to identify within the short time period of time that was provided to us.

Q.5 Does this complete your direct testimony?

A.5 Yes, it does.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge and belief.

Dated: August 17, 2010



Edward P. Phillips

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION

***For the CALICO SOLAR** (Formerly SES Solar One)*

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 8/9/10)

APPLICANT
Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd.,
#1000
San Diego, CA 92108
angela_leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
richard_rotte@blm.gov

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer,
County Counsel
Bart W. Brizzee,
Deputy County Counsel
385 N. Arrowhead Avenue,
4th Floor
San Bernardino, CA 92415-
bbrizzee@cc.sbcounty.gov

California Unions for Reliable
Energy (CURE)
c/o: Loulena A. Miles,
Marc D. Joseph
Adams Broadwell Joseph
& Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham &
Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

*indicates change

INTERVENORS CONT.

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochsjack@earthlink.net

Gloria D. Smith, Senior Attorney
***Travis Ritchie**
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org
travis.ritchie@sierraclub.org

Newberry Community
Service District
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East,
Ste. 2700
Los Angeles, CA 90067-3012
Cynthia.burch@kattenlaw.com
Steven.lamb@kattenlaw.com
Anne.alexander@kattenlaw.com

ENERGY COMMISSION

ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Harriet Vletas, declare that on August 17, 2010, I served and filed copies of the attached Prepared Direct Testimony of Edward P. Phillips, BNSF Railway Company dated August 17, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.govlsitingcaseslsolarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_x__ sent electronically to all email addresses on the Proof of Service list;

___ by personal delivery;

___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

___ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

HARRIET VLETAS

*indicates change