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Renewable Energy Development and Endangered Species: How Do You Develop Smart from the Start? Lessons from California

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ABSTRACT

California's desert is ground zero for the discussion about how California, and our country, moves forward into a new "green" energy future. Frequently, we hear our "green energy future" framed as a choice between meeting our renewable energy targets and protecting fragile public and private lands and endangered species. Fortunately, we don't have to make that choice. With the right policies in place, we can conserve natural resources while still moving toward a clean-energy economy. This paper examines the challenges facing the development of renewable energy projects in the sensitive desert landscape and how federal and state agencies and stakeholders in California are working to put in place planning policies and permitting frameworks to facilitate development while conserving threatened, endangered and declining wildlife.

Introduction

The California Desert is a unique and special environment, as recognized by Federal Land Policy Management Act ("FLPMA") in establishing the California Desert Conservation Area ("CDCA"). This vast landscape is home to diverse biological communities, cultural sites, scenic and wild places, and other valuable areas. The ancient and threatened Desert Tortoise survives in this arid land as well as Bighorn sheep, Golden Eagle, Mojave fringe-toed lizard, and Mohave ground squirrel. These desert lands also sequester carbon in the fragile desert crust, providing an important benefit in the effort to reduce carbon emissions. In addition, these lands are attractive for renewable energy projects, and have fueled a rush by companies to file applications on public and private lands for potential projects. The need to find alternatives to carbon based energy is great. In California, we are moving forward to meet a Renewable Portfolio Standard of 33% by 2020, a goal widely supported as necessary to address climate change.

We do not need to raze the California Desert for sprawling renewable energy facilities. Instead, we need to take a careful look at the right balance of appropriately-sized renewable energy projects to jump start our move toward clean energy while investing in distributed generation such as outfitting our homes and offices with solar panels. The siting of renewable energy projects in the California Desert can be done in a way that benefits local communities while reducing the level of impact to the fragile desert ecosystems. For example, new renewable

energy projects should not fuel sprawl, but should be clustered in appropriate locations, reducing the carbon footprint. And, we must ensure that future siting of renewable energy projects is conducted in a way that protects resilient habitat, which will provide room for species to adapt to climate change. We should be siting these projects on already disturbed and degraded lands such as abandoned developments, mines, and brownfields. We should also be adopting policies that do not skew the bulk of projects to public or private lands, but instead incentivizes the development of projects on lands that make the most sense economically and environmentally.

California and the federal government are starting to take this "smart from the start" approach to renewable energy development through the adoption of the Solar Programmatic Environmental Impact Statement ("Solar PEIS") and through the development of the Desert Renewable Energy Conservation Plan ("DRECP").

Background

The California Desert is comprised of more than 25 million acres of fragile ecological resources. This area is under immense and increasing pressure from human use and expansion. With forty million people living within a day's drive of the desert and the expansion of ground disturbing activities such as renewable energy development, desert wildlife is under tremendous pressure. The following are some of the species most impacted by renewable energy projects:

Desert Tortoise: Desert Tortoise populations have declined alarmingly over the past 30 years throughout most of the California Desert, and especially in the Western Mojave region and continue to decline despite current conservation measures that have been put in place.[1] Long term persistence of this species in the various recovery units and its ability to respond to climate change are two critical issues that need to be addressed. Major highways, fences and canals have effectively blocked Desert Tortoise movements and gene flow between core population areas.

Mohave Ground Squirrel: The Mohave Ground Squirrel ("MGS") was listed in 1971 by the California Fish and Game Commission due to concerns about habitat and population loss in the Antelope Valley region. This species occurs only in suitable habitat within a portion of the Western Mojave Desert. The 2006 West Mojave amendments to the CDCA Plan established the MGS Wildlife Habitat Management Area, known during the multi-jurisdictional planning process as the Proposed MGS Conservation Area. The conservation provisions for this species for public land administered by BLM are substantial; a 5:1 ratio for habitat loss compensation and a one-percent development cumulative habitat impact limit for projects proposed within the designated management area. In 2005, Defenders of Wildlife petitioned the federal government to list the Mohave ground squirrel as threatened under the Endangered Species Act. In 2011, the U.S. Fish and Wildlife Service ("FWS") found that listing was not warranted, in part, citing to existing protections on Bureau of Land Management ("BLM") lands. 76 Federal Register 62214 (October 6, 2011).

Desert Bighorn Sheep: The California Department of Fish and Wildlife ("CDFW") in conjunction with other research biologists have recently reviewed the status of various populations of Desert Bighorn throughout the California Desert. Through their Resource Assessment Program, CDFW and others have characterized Bighorn herds occupying the numerous mountain ranges as metapopulations, or physically distinct subpopulations that are essential components of a larger population. Subpopulations or herds occupying mountain ranges

[1] http://www.fws.gov/nevada/desert_tortoise/documents/recovery_plan/rrp%20for%20the%20mojave%20desert%20tortoise%20-%20may%202011.pdf

are biologically linked to varying degrees depending on availability of movement corridors. These corridors are described by CDFW as "… vast open areas of alluvial fans and vast, dry expanses of relatively flat terrain."[2] The metapopulation model for Desert Bighorn recognizes that metapopulations may persist for varying periods of time involving generations of individuals, or may become extirpated for various reasons, but over time they are recolonized by animals moving from other subpopulations across landscape corridors.

Raptors: Numerous species of raptors occur in the California Desert either permanently or seasonally. Raptor nesting and foraging areas are particularly important to conserve because many of these species return to the same nesting and foraging sites over multiple years. Viable nesting and foraging areas in the California Desert have been impacted by highways, mining, off-road vehicle use, urban development, etc.

Renewable Energy Impacts

While renewable energy sources are "clean" and reduce our reliance on carbon energy sources – something the conservation community strongly supports – renewable energy projects do have impacts on wildlife and their habitats.

Renewable energy projects, with the accompanying roads and other infrastructure, present a particular challenge to wildlife as a result of habitat loss and fragmentation due to these projects' sheer size. Depending upon the technology used, these areas may be completely cleared and graded to a slope of three degrees or less, fenced and maintained to reduce or eliminate further vegetative growth. In areas of high solar potential such as the Mojave and Sonoran deserts, threats to desert tortoise (federally and state (CA) listed as threatened), golden eagle (federally protected), Mohave ground squirrel (state (CA) listed as threatened), and other unique plants and animals are particularly acute.

Continued loss of high-quality habitat and habitat fragmentation forces wildlife to live on ever-shrinking islands of habitat, where it is more difficult for them to find food, water, shelter, mates, and protection from predators. The resulting fragmented habitat can inevitably lead to smaller populations of wildlife and extinction of populations or species may become more likely. And in an ironic twist associated with our efforts to switch to clean energy, it is paramount that we ensure development does not preclude wildlife from migrating to lands essential for climate change adaptation.

In addition, the development of renewable energy projects also results in the direct loss of wildlife. Tortoises and other wildlife not relocated to other areas can be crushed when the sites are graded. Also, there could be an increase in the loss of tortoises and other wildlife located near the roads built for these projects and an increase in the predation of young tortoises by ravens, which are attracted by garbage and other food found near human developments. The latest science indicates that for tortoises relocated to other sites, long term survival rates may be as low as 50 percent.[3]

Solar thermal or Concentrated Solar Projects ("CSP") require large amounts of space to generate energy with approximately 10 acres of land needed to generate one megawatt ("MW").[4]

[2] http://www.dfg.ca.gov/rap/docs/summaries/0004-summary.pdf
[3] http://www.fws.gov/nevada/desert_tortoise/documents/publications/Esquel.2010.Effects-subsidized-pred-resource-var-human-poplns-DT-poplns.pdf
[4] http://www.nrel.gov/docs/fy13osti/56290.pdf

Further, solar thermal projects must be located in areas of high solarity. Due to solar thermal's space and solarity needs, the desert is the only feasible location for these projects. Solar thermal's footprint can be devastating to biological resources due to the size of the project and the need to grade the project, remove vegetation and install fencing. Solar thermal can also use a fair amount of water – a precious commodity in the desert – if "wet-cooling" technology is used. Finally, new bird monitoring information coming out of Brightsource's Ivanpah Solar Thermal Project shows a number of birds dead from heat (e.g., melted and singed feathers).[5] More research and monitoring will be necessary to understand better the potentially deadly impacts to birds.

Solar photovoltaic ("PV") collects the sun's waves by having the waves hit a photovoltaic cell and excite the electrons within layers of the cell. The excited electrons jump back and forth, creating electricity. This electricity is captured by wires running through the PV cells and sends the electricity into a collector. Solar PV is a more flexible technology for siting purposes as it requires less acreage and needs less solarity, allowing it to be located in areas beyond the desert. According to National Renewable Energy Laboratory ("NREL"), Solar PV needs between 7.9 and 8.3 acres to generate one MW.[6] However, Solar PV's footprint has essentially the same kind of impact on biological resources as solar thermal. And, like solar thermal, Solar PV appears to present potentially significant threat to birds given the number of recovered bird bodies found at some of the recently construct Solar PV projects in the desert (e.g., First Solar's Desert Sunlight Project). Some biologists theorize that Solar PV's flat appearance from the sky looks like water to birds in the desert and birds are flying into the panels and dying from blunt force trauma. This impact is somewhat unexpected and more research and monitoring will need to occur to understand what is happening and if and how it may be avoided.

Wind energy is generated by wind moving large individual turbines, each of which generates energy that is collected and moved into the energy system. How fast wind blows, how often, and when it blows plays a significant role in its power generation cost. If wind speed doubles, the power output increases eight times.[7] Therefore, higher-speed winds are more easily and inexpensively captured. Wind turbines can be as high as 70 meters. These projects are typically located in California in mountain passes and along ridges. While the footprint of a wind project may be smaller than that of a solar project, the impacts of wind on biological resources can be large if poorly located in a migratory bird or bat pathway.

One of the more well-known issues with wind development projects is the risk of birds and bats flying into turbine blades. Such collisions can lead to population declines and threaten the viability of some threatened or endangered species. In California, there is increasing concern that as the highly endangered California condor increases its range (due to successful reintroduction efforts) it will literally fly into the new wind turbines sited along the Tehachapi Mountains and the southern Sierra Nevada.[8] Bird and bat mortality can usually be kept to a minimum by choosing appropriate sites for wind development, selecting appropriate turbine types and arrangements, and by using tower and turbine designs that reduce mortality.[9]

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[5] http://www.livescience.com/43458-bird-deaths-ivanpah-solar-energy-plant.html
[6] http://www.nrel.gov/docs/fy13osti/56290.pdf
[7] http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/how-wind-energy-works.html
[8] Kelly Sorenson et al., California Condors and the Potential for Wind Power in Monterey County, Ventana Wildlife Society and Stanford University Solar and Wind Energy Project (Oct. 2009).
[9] The Tiered Approach for Wildlife Assessment and Siting Decisions, Wind Turbine Guidelines Advisory Committee Recommendations, Wind Turbine Guidelines Advisory Committee (Mar. 4, 2010).

Geothermal energy is generated by drilling into geothermal fields and using the earth's heat to generate electricity. Geothermal plants use 1-8 acres per MW. Most geothermal energy is located in the West. Geothermal energy's impacts on biological resources come from the drilling of the wells, the roads and pipelines and, potentially, the use of water. Generally speaking, however, geothermal energy impacts tend to be less than the other renewable energy impacts due to its smaller footprint.[10]

Endangered Species Laws

Renewable energy projects are subject to a myriad of environmental laws depending upon where they choose to develop. For public land projects, the project proponent may be subject to federal environmental laws (e.g., FLPMA), the National Environmental Policy Act ("NEPA"), the Clean Water Act, the Bald and Golden Eagle Act, the Migratory Bird Treaty Act, and/or the federal Endangered Species Act ("ESA")), and state environmental laws (e.g., the California Endangered Species Act ("CESA"), the Fully Protected Species Act, and/or the California Environmental Quality Act ("CEQA"). Private land projects are subject to many of these same laws as well as local government ordinances and permit requirements.

Most of these laws incorporate some aspect of identifying, analyzing and, sometimes, mitigating for impacts to wildlife. However, given the priority placed on protecting endangered species, projects sited in locations where there are federal and state endangered species are the ones facing the greatest level of controversy and the greatest degree of difficulty in permitting. The federal and state ESA requirements are further complicated by the fact that, in the California Desert, most of the land is in federal ownership, which leads to questions about how to adequately mitigate for impacts to endangered species when much of the endangered species' habitats are located on land managed under a multiple use mandate (e.g., FLPMA). In addition, as discussed below, the California Endangered Species Act requires mitigation lands to be "permanently" protected.

A. The Federal and State Endangered Species Acts

The federal ESA is one of our most important and successful conservation laws. Section 9 contains the general prohibitions under the ESA. 16 U.S.C. § 1538. This section makes it unlawful for any person to "take" an endangered species, which means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, or capture, or collect, or to attempt to engage in any such conduct." Section 10 of the ESA provides a limited exception to this prohibition for take that is incidental to an otherwise lawful activity. The FWS may not issue an incidental take permit ("ITP") unless it makes all of the following findings: (a) the take will be incidental; (b) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking; (c) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; (d) any other measures the FWS has required as necessary or appropriate will be met; and (e) the FWS has received such other assurances as required to ensure that the plan will be implemented. 16 U.S.C. § 1539(a)(2)(B).

In addition, Section 7 directs all federal agencies, in consultation with the Secretary, to use their existing authorities to conserve threatened and endangered species, and to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat] of such species." *Id.* at § 1536(a).

[10] http://www.nrel.gov/docs/fy05osti/35939.pdf

Similar to the federal ESA, the California Endangered Species Act ("CESA") authorizes CDFW to issue permits for the incidental take of candidate, threatened and endangered species. Cal. Fish and Game Code § 2081(b). CESA incidental take permits ("ITPs") must meet the following requirements: (a) the take is incidental to an otherwise lawful activity; (b) the impacts of the authorized take must be minimized and *fully mitigated*; (c) the applicant must ensure adequate funding to implement the mitigation and monitoring measures; and (d) the issuance of the permit will not jeopardize the continued existence of the species. *Id.* at § 2081(b) and (c) (emphasis added). CDFW has interpreted the "fully mitigated" requirement to mean that project must provide mitigation that is "permanent" (i.e., acquisition of lands in fee or permanent conservation easements). This incidental take provision is largely used for individual projects and is not designed for larger, ecosystem-based planning. Further, CESA ITPs do not include "assurances" to permittees that future changes in the permit will not be required nor do they provide coverage for species that are currently unlisted, but listed as endangered or threatened in the future (commonly referred to as "no surprises" assurances).

B. The California Natural Community Conservation Planning Act (NCCP Act)

The NCCP Act was enacted in 1991 to "conserve long-term viable populations of California's native animal and plant species and their habitats in areas large enough to ensure their continued existence," while at the same time allowing for "compatible and appropriate" urban growth and economic development.[11] In early 2002, the California Legislature enacted major legislation that revised NCCP Act, and added numerous new procedural and substantive requirements to the NCCP Act.[12]

To comply with the NCCP Act, a natural community conservation plan ("Plan") must provide for measures necessary to recover covered species within the plan area. In particular, the statute's definition of "natural community conservation plan" requires that a Plan "shall identify and provide for those measures necessary to conserve and manage natural biological diversity within the plan area while allowing compatible and appropriate economic development, growth, and other human uses." Cal. Fish and Game Code § 2805(h). Section 2820, which sets forth the findings that CDFW must make in order for a plan to be approved, details the requirement that a plan provides for the conservation (i.e., recovery) of species. For example, before approving a Plan, CDFW must find that "[t]he development of reserve systems and conservation measures in the plan area provides, as needed for the conservation of species, all of the following," and lists specific categories of conservation measures. *Id*. at § 2820(a)(4). In addition, the plan must establish measures "that provide equivalent conservation of covered species within the plan area." (§2820(a)(4)(B)). Finally, before CDFW is allowed to a permit authorizing the take of a covered species under the NCCP Act, it must find that the covered species "conservation and management is provided for in a natural community conservation plan approved by the department." *Id.* at § 2835.

The NCCP Act very specifically defines the terms "conserve," "conserving," and "conservation" as "the use of, methods and procedures within the plan area that are necessary to bring any covered species to the point at which the measures provided pursuant to [CESA] are not necessary, and for covered species that are not listed pursuant to [CESA], to maintain or enhance

[11] California Department of Fish and Game, 1991-92 Report on the Status of the Natural Communities Conservation Planning Program.
[12] SB 107 (Sher), Chapter 4, Stats. of 2002.

the condition of a species so that listing pursuant to [CESA] will not become necessary. *Id.* at § 2805(d).

Thus, for species listed as endangered or threatened under the CESA, an NCCP must, by definition, within the plan area, identify and provide for those measures necessary to recover the species to the point where it is no longer is considered endangered or threatened and no longer needs to be on the endangered species list. For unlisted species, the plan must provide measures, within the plan area, that keep the species from declining to the point in which it would need to be listed under CESA.

"Smart from the Start"

Given what we know about the potentially devastating impacts of renewable energy projects on endangered, threatened and declining wildlife, and given the difficulty facing projects impacting these species, Defenders of Wildlife has formulated a set of principles to guide "smart from the start" development:

- Thorough landscape-level analysis, early identification of areas on private and public lands with the following characteristics: high energy production potential; conflicts with wildlife, wild lands, water and other important resources and uses of the surrounding environments can be avoided or offset; and, wherever feasible, access to existing transmission.
- Thorough, up front analysis of the potential environmental impacts of renewable energy projects, including their cumulative impacts, effects on threatened and endangered species, and associated climate benefits will allow better project site selection that will reduce or speed regulatory process requirements and increase the certainty that wildlife-friendly projects can be permitted and built.
- In project siting, efforts should be made to first avoid and then minimize impacts to wildlife and important natural resources. In many instances this can be achieved by directing development to previously disturbed, degraded or abandoned lands of minimal wildlife value.
- Where unavoidable site-specific and regional wildlife impacts will occur, they must be offset by effective mitigation measures. Projects should be designed so that they provide an overall net benefit to imperiled wildlife populations and their habitats, with special focus on threatened and endangered species.
- Early and ongoing input and coordination among interested stakeholders, including project developers, regulators, tribes, conservation groups and other members of the public as well as with appropriate federal, state and local decision makers will benefit project proponents by producing fewer conflicts over project locations and designs.
- The operation and mitigation measures associated with renewable energy projects must be consistently and carefully monitored at both the individual project and landscape levels, and the information obtained be publicly accessible and used to improve existing and future projects and permitting and mitigation processes.
- Public lands committed to large-scale renewable energy development must be fully and fairly valued like private lands, and a significant portion of the revenues generated from renewable energy development on public lands must be reinvested in conservation.
- Project developers must have the financial and technological resources to carry out appropriate on-site and off-site restoration and mitigation.

As detailed below, these "Smart from the Start" principles are reflected, at least in part, in the final federal Solar PEIS and in the developing DRECP in California.

The Solar PEIS

On July 24, 2012, the BLM published notice of its Final Solar PEIS for solar development on public lands in six southwestern states. The PEIS established 17 Solar Energy Zones ("SEZs") in California, Arizona, Colorado, Nevada, New Mexico, and Utah. These SEZs, which encompass 285,000 acres, will be where solar development is focused on federal lands. However, the PEIS also established 19 million acres of "variance" areas on public lands throughout the affected states on which utility-scale solar development may proceed under rules that have yet to be finalized. However, development on variance lands will proceed without the accelerated permitting developers in the SEZs enjoy. Between the SEZs and the variance areas, the PEIS provides for potential solar development on nearly 20 million acres of public land. In California, the BLM designated two SEZs covering 153,627 acres in total: the 5,717-acre Imperial East SEZ near Calexico and the Riverside East SEZ, which covers 147,910 acres – approximately 230 square miles -- in eastern Riverside County between Blythe and Desert Center. The PEIS also allows for additional identification of SEZs. And, in November 2012, the BLM designated the Chocolate Mountains east of the Salton Sea as an additional SEZ. The West Chocolate Mountains Renewable Energy Evaluation Area is 64,058 acres.[13]

While the Final Solar PEIS was an important step forward in the effort to balance the siting of large-scale renewable energy projects with efforts to protect important wildlife and wild lands, the plan did suffer from some problems, including inadequate analysis for the federally threatened Desert tortoise under the federal ESA, a lack of desert tortoise conservation measures on variance lands, and inadequate analysis of impacts of development on wildlife within the SEZs to allow for NEPA tiering at the site-specific level.

The DRECP

In light of the unresolved wildlife issues in the Solar PEIS, the conservation community has continued to work towards improving the Solar PEIS with particular emphasis on the next stage of planning on California public and private lands through the DRECP. The DRECP is a joint federal and state planning effort to streamline renewable energy project permitting and transmission line permitting while conserving biological, cultural and natural resources in the California desert. The Renewable Energy Action Team ("REAT"), a collaborative effort among the California Energy Commission, CDFW, BLM and FWS, is preparing the DRECP.

The goals of the DRECP are to:

- Identify areas of the California Desert for conservation and provide for the conservation of species that will be affected by renewable energy development.
- Identify the places in the desert where solar, wind and geothermal projects would have the least environmental impact and provide streamlined permitting for these projects.
- Identify 200,000 to 350,000 acres as development focus areas, enough to meet California renewable energy goals through 2040.
- Provide landscape-level planning for renewable energy development instead of a project-by-project approach that tends to scatter development across the desert.

[13] http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/fy11/wcm.Par.59394.File.dat/WCM_REEA_FEIS_Volume_1.pdf

The DRECP covers 22.5 million acres of public and private land in the desert regions and adjacent lands of seven California counties - Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and San Diego.

The DRECP released an interim document, "Description and Comparative Evaluation of Draft DRECP Alternatives," on December 17, 2012. This release was intended to provide stakeholders and the public a chance to review and provide feedback on what has been developed so far regarding the plan alternatives and the agencies' approach to developing the plan. The Draft Environmental Impact Statement/Report is due out in the summer of 2014.

Based on the current unique circumstances in the California Desert, the scope and scale of this plan, and on past experiences with other NCCP planning efforts in California, the conservation community has articulated that in order for the DRECP to be successful, the plan must contain the following elements:

There must be durable and lasting conservation for species, natural communities and processes within the Plan Area. In order to ensure lasting protections for natural resources covered under the DRECP, the plan and its implementing agreement(s) must provide for enduring and durable conservation on public and private lands. In particular, the issue of durability of conservation designations needs to be adequately resolved for the DRECP to meet the standards of the NCCP Act. The lands identified in the DRECP as part of the "habitat reserve" or other conservation area must be durable in relation to designation, management and funding. Specifically, conservation lands should be: (1) protected from another executive branch undoing the designation; (2) managed by agencies that have both the authority and the responsibility to monitor and remove threats, and to meet the biological goals and objectives for natural communities and covered species; and (3) assured adequate funding for ongoing conservation management as required in a final DRECP.

Development must be focused on disturbed, degraded or contaminated lands to minimize impacts to the species, natural communities, and ecological systems. Disturbance from development on desert lands will result in long-lasting impacts due to the fact that desert lands recover from disturbance on a geologic timetable. The decisions the DRECP makes in relation to the location of large-scale renewable energy development will affect our ability to maintain and enhance conservation of natural communities and landscapes in the desert. Development should be planned and prioritized to ensure the protection of large, intact and connected landscapes and to minimize the need for linear features such as roads and transmission lines.

The DRECP should refine and expand the BLM's Solar Program. As part of the process to develop a final DRECP, the agencies must refine the two BLM-designated SEZs and identify new zones based on (a) projected long-term renewable energy needs, (b) the DRECP's mapping of disturbed, degraded and contaminated lands in the planning area, and (c) the plan's conservation strategy.

The DRECP conservation strategy must include SMART (specific, measurable, achievable, replicable, and time-bound) biological goals and objectives. They must incorporate conservation recommendations found in recovery plans, biological opinions, and other existing parallel conservation efforts or initiatives for covered species, natural communities and ecological processes.

The Development Focus Areas (DFAs) must make sense for industry. The DRECP must make it clear how development within a DFA will provide a benefit for a renewable energy company. The agencies need to provide a clearer understanding of what it means to develop within a DFA, including any streamlining that might be possible. Flexibility of DFA boundaries must also be built into the model for future Plan amendments, to account for changes in technology, biological distribution, and changes in the transmission system over the life of the plan. Moreover, needs for renewable energy and conservation are not static. The plan should also provide clarity about what level of development may or may not be allowed within reserve areas. Finally, any DFA must have adequate transmission.

Counties' participation in the DRECP is necessary. Implementation of the DRECP is dependent on the counties agreeing to designations for both conservation and development on private land that the DRECP establishes through its planning process. Without county participation, the permits and assurances for development under the DRECP will be limited to public lands, thus missing opportunities to incentivize renewable energy development on disturbed and degraded private lands.

DRECP must have a clear plan for implementation, governance and continued funding. The DRECP is likely to be one of the more complicated NCCP/HCPs in California, which will required a very detailed and clear plan for implementing and governing this effort over the decades in which this plan is in place. Given the fact that plan will rely extensively on public land management for the conservation strategy, it is critical that there is a robust, stable and reliable funding plan along with transparent accounting of funds so that the public and private companies know where the DRECP is spending public funds and the fees paid by the developers.

Conclusion

The policies that the federal government and California are putting into action will lay the groundwork for renewable energy development nationwide. These policies and permitting frameworks are not easily completed, and will require creative thinking and a tremendous effort on the part of all stakeholders. However, it is critical that we do this right so that our nation can move toward a clean energy economy while still conserving our natural lands and treasured places.