Beth Jackson, USFWS

MAKING RENEWABLE ENERGY WILDLIFE FRIENDLY

DEFENDERS OF WILDLIFE

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Defenders of Wildlife is a national, nonprofit membership organization dedicated to the protection of all native wild animals and plants in their natural communities.

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This report was made possible by generous support from the Doris Duke Charitable Foundation.

MAKING RENEWABLE ENERGY WILDLIFE FRIENDLY

AVOIDING, MINIMIZING AND MITIGATING THE IMPACTS OF RENEWABLE ENERGY DEVELOPMENT ON WILDLIFE AND IMPORTANT LANDS AND NATURAL RESOURCES

Introduction

We must accelerate the transition to clean energy in America. We all know this. As one element of the solution to climate change, as a means of producing new jobs and improving our economy, and as part of the response to the call for energy security, we need to do more to capture energy from solar, wind and geothermal sources.

The Obama administration is moving rapidly to develop renewable energy and Interior Secretary Ken Salazar has taken the lead in promoting solar, wind, and geothermal projects. Already, the BLM is processing hundreds of right of way applications for solar and wind energy projects primarily in California, Nevada, Arizona and Wyoming.

The emphasis on renewable energy is clearly warranted as the impacts of climate change on our wildlife and natural resources are becoming more evident. Defenders of Wildlife has been a leader in bringing to light the effects that the Earth's warming is having on a wide range of species and the need to develop strategies to both curb greenhouse gas pollution and to help wildlife adapt to habitat changes. The Gulf oil disaster has amplified the fact that our continuing dependence on oil comes with high risk and can result in grave consequences for our lands, waters and wildlife.

To meet the ambitious goals set by 33 states[1] and contemplated by the Obama administration and many key Congressional leaders, greenhouse gas pollution must be reduced and the percentage of our energy needs that comes from renewable sources must increase. This can be achieved, in part, through improved energy efficiency and conservation and through the use of "distributed energy systems" such as rooftop solar. But to reach our ambitious goals in a timely manner, we will also have to make a commitment to some utility-scale development of solar, wind and geothermal energy. This is where things get complicated.

For example, building a single major solar facility in the California desert can require thousands of acres of biologically-fragile land – land that supports a wide range of sensitive and imperiled species (including the desert tortoise, desert bighorn sheep, and Mohave ground squirrel) and unique habitats – to be cleared and leveled. The sheer size and scope of these projects is difficult to comprehend. Some proposed projects could cover a land area a third to half the size of the island of Manhattan when completed. Impacts are not limited to renewable energy generation. Construction

[1] Department of Energy, States with Renewable Portfolio Standards [Five states, North Dakota, South Dakota, Utah, Virginia, and Vermont, have set voluntary goals for adopting renewable energy instead of portfolio standards with binding targets], http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm.

of a new power line corridor through BLM and national forest lands can involve clearing thousands of acres of forest and rangeland habitat along a route stretching hundreds of miles. As a result, unless renewable energy generation and transmission projects are carefully planned and their environmental impacts thoroughly evaluated, wildlife, habitat, key corridors, and unique wild lands and natural resources can be substantially altered, impacted, or destroyed.

Through a generous three year grant from the Doris Duke Charitable Foundation, Defenders of Wildlife is working in partnership with the Natural Resources Defense Council and The Wilderness Society to promote renewable energy development that avoids, minimizes and mitigates impacts on wildlife, important lands and natural resources.

This is an extremely challenging undertaking. Interior Secretary Salazar has set ambitious goals to fulfill the 2005 Energy Policy Act, in which Congress gave the U.S. Department of Interior until 2015 to approve 10,000 megawatts of renewable energy development on public lands.[2] However, the projects and the processes to determine where to develop projects in ways that avoid, minimize and mitigate impacts to wildlife are still being developed. The U.S. Department of the Interior is moving quickly to get projects permitted while, at the same time, trying to frame national policies to guide renewable energy development over the long term.

Americans shouldn't have to choose between reducing our greenhouse gas pollution and protecting our rich wildlife legacy from energy development. We can, and must, do both. Defenders of Wildlife is excited to be working with our conservation partners in leading the effort to encourage wildlife-friendly renewable energy development.

Rodger Schlickeisen,
President & CEO

[2] Energy Policy Act of 2005, Pub. L. No. 109-58 (2005).

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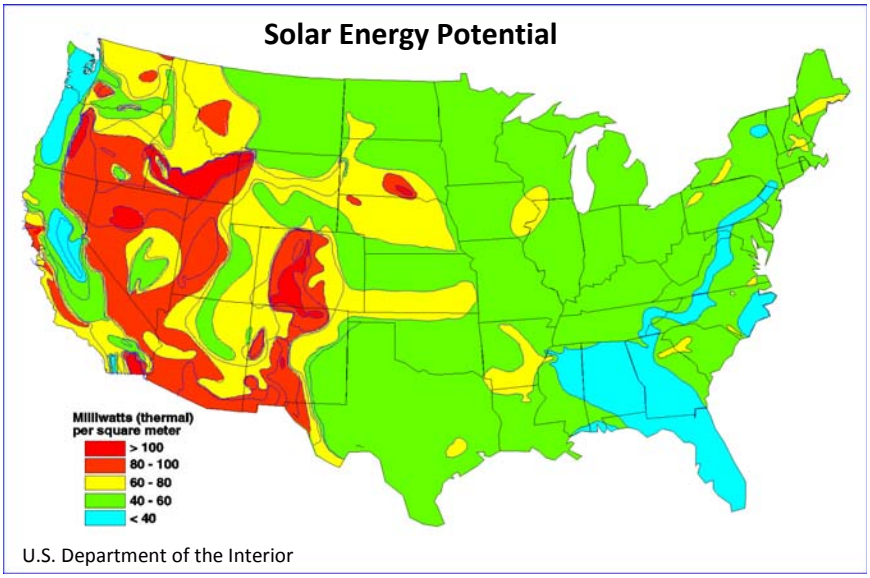
The Need for Renewable Energy and the Role of Public Lands

To reach an 80 percent reduction in greenhouse gas pollution by 2050[3] and avoid the worst effects of climate change, we will need to maximize the enormous renewable energy potential in the United States. While debate continues in the Congress over the need to establish a national renewable energy standard, 33 states have established renewable or alternative energy standards requiring that a specific percentage of the energy utilities provide to their customers comes from renewable sources.[4]

The U.S. Department of Energy estimates that the nation's public lands hold vast potential for the production of energy from solar, wind and geothermal sources. The U.S. Bureau of Land Management (BLM), for example, has identified approximately 20.6 million acres with wind energy potential, approximately 29.5 million acres with solar energy potential, and more than 140 million acres of public land with geothermal energy potential.[5]



President Obama has made his commitment to developing renewable energy clear. In his first Oval Office address, the President reaffirmed his call for an accelerated effort to develop renewable energy to respond to the need to curb the nation's addiction to oil and the likelihood of future disasters like the Gulf oil spill.[6]

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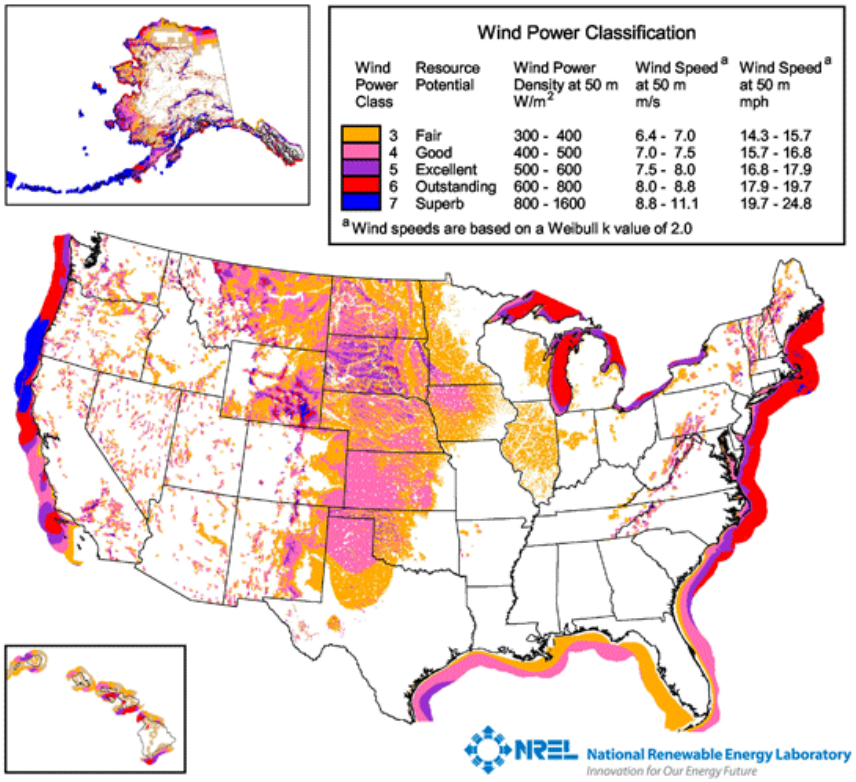
[3] The 2007 U.N. Intergovernmental Panel on Climate Change's "Fourth Assessment Report" concluded that impacts from climate change rise sharply as planetary warming exceeds 2°C from preindustrial levels. An 80% reduction in greenhouse gas pollution by mid-century is generally agreed upon by scientists as the target necessary to reduce significant impacts from climate change.

[4] Department of Energy, *supra* note 1.

[5] The New Energy Frontier, Department of Interior, http://www.doi.gov/budget/2011/11Hilites/DH003.pdf.

[6] See Remarks by the President to the Nation on the BP Oil Spill (June 15, 2010), http://www.whitehouse.gov/the-press-office/remarks-president-nation-bp-oil-spill.



U.S. National Renewable Energy Laboratory

To help fulfill President Obama's commitment to the development of renewable energy, one of the first directives issued by Interior Secretary Salazar was Secretarial Order 3285,[7] making renewable energy development a priority for the Interior Department. The Order also established a task force to formulate renewable energy development policy, including the identification of large-scale production locations, transmission infrastructure and corridors; additional policies or revisions to existing programmatic environmental impact statements for geothermal and wind generation and transmission; and best management practices for environmentally-responsible renewable energy development and delivery. Almost immediately, the BLM began processing a large number of right of way applications for solar and wind energy projects primarily in California, Nevada, Arizona and Wyoming.

Renewable Energy Technology

Utility-scale solar, wind and geothermal energy development, associated transmission lines, and their impacts on public and private lands and wildlife resources are the focus of Defenders of Wildlife's renewable energy program. A brief description of the technologies used to produce energy from these renewable sources follows.

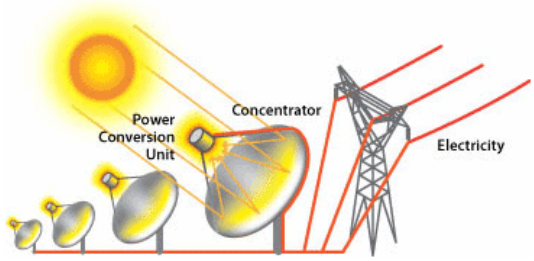
Solar energy is generated by two technologies: photovoltaic (PV) and concentrated solar power (CSP). Using semi-conducting materials, such as silicon, PV panels convert sunlight directly to electricity. PV solar panels joined together to create one system are often referred to as a solar array.[8] Unlike PV, CSP systems do not directly convert the sun's heat into electricity. Instead, CSP

[7] Sec. Order No. 3285 (2009).

[8] See Solar Photovoltaic Technology, National Renewable Energy Laboratories, http://www.nrel.gov/learning/re_photovoltaics.html.

systems capture heat from the sun and use that heat to power steam generators that in turn produce electricity.[9]

Parabolic troughs. BLM California.



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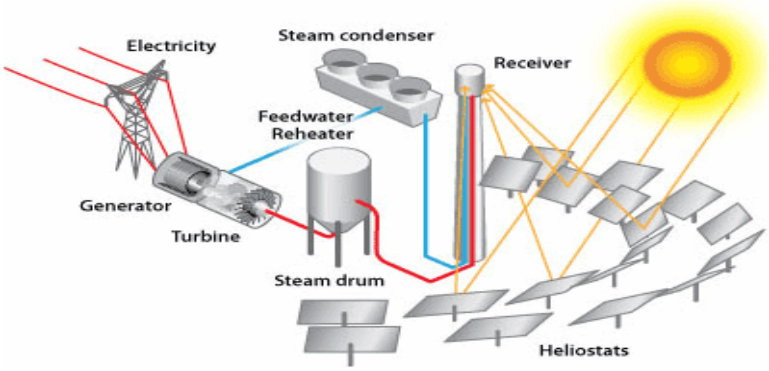
Types of CSP systems:

• **Parabolic trough systems**[10] use long, rectangular curved mirrors tilted toward the sun to focus sunlight on a pipe that runs down the center of the trough. The concentrated sunlight heats the fluid flowing through the pipe. The fluid is then used to boil water in a conventional steam-turbine generator to produce electricity. Currently, all parabolic trough plants are "hybrids," meaning that they use fossil fuels (usually natural gas) to supplement the solar output during periods of low solar radiation.

• **Dish/engine systems**[11] look much like large satellite dishes. The mirrored, dish-shaped surface directs and concentrates sunlight onto a thermal receiver. The thermal receiver collects and absorbs the heat and transfers it to a generator. One common type of heat engine uses fluid heated by the receiver to create mechanical power, which runs a generator to produce electricity. Heat is converted to mechanical power in a manner similar to conventional engines, by compressing the working fluid, and then expanding it through a turbine or with a piston to produce mechanical power.

• **Solar power towers**[12] use heliostats - large fields of flat, sun-tracking mirrors - to reflect and concentrate sunlight on a receiver on the top of a tower. Power towers are similar to parabolic trough systems in that they also use a large field of mirrors to concentrate the sun's energy. The receiver collects the sun's heat in a heat-transfer fluid that flows through



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[9] See Concentrating Solar Power, National Renewable Energy Laboratories, http://www.nrel.gov/learning/re_csp.html.
[10] Id.
[11] Id.
[12] Id.

the receiver. Then, the fluid's heat is used to generate electricity through a conventional steam generator, located at the foot of the tower. While most projects use water/steam as the heat-transfer fluid, some companies are experimenting with molten salt because of its ability to efficiently store and retain heat for days before being converted into electricity. The ability to store energy, known as thermal storage, allows the system to dispatch electricity even when the sun is not shining. The solar power tower system's ability to operate for extended periods of time on stored solar energy separates it from other renewable energy technologies.

Wind energy is produced by turbines mounted on a tower. At 100 feet or more above ground, turbines use blades, usually two or three, to collect the wind's energy. The blades are attached to a shaft which only turns about 18 revolutions per minute (rpm) which is not nearly fast enough to generate electricity. For that reason, the rotor shaft spins a series of gears that increase the rotation up to about 18,000 rpm. The high speed shaft then spins a generator which converts the wind energy to electricity. [13]

Wind turbines. Joshua Winchell/USFWS

Geothermal energy is an energy source that uses the heat from the earth. Although there are three different geothermal power plant designs, all utilize hot water and steam from the ground. Once the water and steam are used for energy generation purposes, they are deposited back into the ground to preserve the life of the heat source.[14]

Types of geothermal power plants:[15]

- **Direct-steam plants** use steam from underground wells to rotate a turbine, which then generates electricity.
- **Binary plants** use the heat from lower temperature reservoirs to boil a working fluid, which is then vaporized in a heat exchanger and used to power a generator. The fluid boils at a lower temperature than water, making it easier to convert into steam to run the turbine.
- **Flash steam plants** are the most common type of geothermal power plant. Hot water flows up through wells in the ground under its own pressure. As the water flows upward the decrease in pressure causes some of the water to boil into steam. The steam is then used to power a generator.

[13] See Wind Energy Basics, National Renewable Energy Laboratories, http://www.nrel.gov/learning/re_wind.html.
[14] See Geothermal Energy Basics, National Renewable Energy Laboratories, http://www.nrel.gov/learning/re_geothermal.html.
[15] Id.

How Can Renewable Energy Development Impact Wildlife?

While the benefits of renewable energy development are undeniable, its development also comes with great risk and responsibility. The intense new effort to promote utility-scale development of renewable energy sources and related transmission facilities on federal lands can threaten wildlife, habitats and the ecosystems sustained by those lands. Project developers and federal land managers have a responsibility to avoid and minimize those risks.

Impacts of solar energy development

Habitat loss and fragmentation: Utility-scale solar 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. Some proposed solar developments would impact in excess of 8,000 acres of desert habitat.[16] 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 (the Mojave subspecies is federally listed as threatened), golden eagle (federally protected), Mohave ground squirrel (under review for federal protection), 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.

One species potentially harmed by solar development is the threatened desert tortoise. Beth Jackson /USFWS

Direct mortality: The development of utility-scale solar can also result 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 that are relocated to other sites, long term survival rates may be as low as 50 percent.

Other resource values: Water resources can also be affected by utility-scale solar development. For concentrated solar production, mirrors that direct the sun to energy collectors need to be washed to reduce dust and soil buildup that can reduce reflectivity. In addition, a design which requires water for cooling may be problematic in desert areas which have limited water resources. The use of water

[16] Calico Solar Project is located in the Mojave Desert in San Bernardino County, California.

on these sites for energy production results in less water available for wildlife and vegetation. Also, these projects can change how water moves through the desert, impacting wildlife and habitat around these sites.

Impacts of wind energy development

Habitat loss and fragmentation: Wind energy development has the potential to modify, fragment or reduce the quality of wildlife habitat, which could lead to declines in wildlife populations. The impacts extend beyond the direct effects of the turbines—development typically involves the grading of the development site, the construction of an on-site road system, removal of vegetation and the installation of turbine towers and other necessary structures.[17]

Grassland birds: Wind turbines, transmission towers and other vertical structures provide perching areas for predatory birds such as eagles and hawks. Their presence can cause grassland birds, like the sage grouse and lesser prairie chicken, to move away from these areas -- affecting the natural population distribution. Other negative impacts can include declines in breeding success and abundance and increased risks to population viability, increasing the likelihood that a population may be locally eradicated.

Grassland birds, such as the sage grouse, avoid tall structures like wind turbines, affecting their population distribution.
Dave Menke/USFWS

Direct impacts to birds and bats: 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 condor increases its range (due to successful reintroduction efforts) it will literally fly into the new wind turbines sited along the Tehachipi Mountains and the southern Sierra Nevada.[18] 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.[19] Research indicates that the most severe problems occur at older wind development sites, while newer development has considerably lower mortality rates.[20]

[17] See Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States, Bureau of Land Management (Dec. 2005).
[18] 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).
[19] See The Tiered Approach for Wildlife Assessment and Siting Decisions, Wind Turbine Guidelines Advisory Committee Recommendations, Wind Turbine Guidelines Advisory Committee (Mar. 4, 2010).
[20] Environmental Impacts of Wind-Energy Projects, National Academy of Sciences (2007).

How to Avoid or Minimize Project Impacts

As Interior Secretary Salazar has said, renewable energy development must ". . . be accomplished in a manner that does not ignore, but protects our signature landscapes, natural resources, wildlife, and cultural resources."[21]

To achieve this goal, federal land managers and project developers should avoid renewable energy development on lands with known high-resource values and prioritize areas of low value. where wildlife and other natural resource conflicts are less likely. Threatened, endangered and sensitive species habitat; habitat elements that support biodiversity; relatively undisturbed terrestrial and aquatic ecosystems; and wildlife movement corridors should be considered areas where the potential for conflict is high.

While the first priority for project siting always should be to avoid development in areas of high resource value where wildlife conflicts are most likely, mitigation offers an alternative to help restore and protect wildlife and habitats where project impacts are unavoidable or cannot be adequately reduced through project modification.

The proposed site for the Solana Generating Station project is located on an old alfalfa farm. © Sandy Bahr

Defenders believes all new utility-scale projects should include requirements to monitor and measure impacts to wildlife and habitat. Due to the size and scale of these projects, there is little information and understanding about how these projects will impact wildlife and habitats over the long term. If we choose to develop these sites, we must monitor wildlife impacts and conduct related research to better inform and guide future development.

Golden Opportunity: Renewable Energy on Degraded Lands

An additional opportunity to avoid impacts on wildlife and habitat is to develop renewable energy projects on already disturbed or degraded lands. In June 2009, Defenders of Wildlife and our conservation partners released a document entitled, *Key Principles: Balancing Renewable Energy Development and Land Conservation in a Warming World*. One key principle encourages the development of disturbed lands:

[21] Statement of Ken Salazar, Secretary of the Interior, Before the House Committee on Natural Resources on H.R. 3534, The Consolidated Land, Energy, and Aquatic Resources Act of 2009 (Sept. 16, 2009).

Land that has already been disturbed should be preferred for development. Whether in private or public ownership, land that has been developed for industrial, agricultural or other intensive human uses is generally superior to "Greenfield" sites in terms of reduction of environmental degradation. Redevelopment of disturbed sites offers opportunities to improve lands that may not otherwise be reclaimed, but it is imperative to consider and address the effects of renewable energy development, both positive and negative, on minority and low income populations.

Fast Facts about Solana:

- **Location: Maricopa County, Ariz.**
- **Developer: Abengoa Solar**
- **Energy output: 280 megawatts**
- **Technology: Solar thermal**
- **Footprint: Approx. 1,900 acres, private property**
- **Wildlife impact: Low**
- **Fast-track: No**

The Solana Generating Station Project will soon harvest enough sunlight to power some 70,000 homes with clean energy, helping to reduce greenhouse gas emissions in the process. But that's not all. Solana -- the Spanish term for "sunny spot" -- is also lighting the path forward for responsible renewable energy development in the desert.

Once an alfalfa farm, the project site is almost ideal for a utility-scale solar power plant. Located just 70 miles away from Arizona's largest city, Phoenix, it's close to a major highway, easily accessible roads and existing energy infrastructure. And because alfalfa farming in the arid region required vast amounts of water, the Solana project will draw around 75 percent less groundwater than past agriculture. The project is backed by $1.45 billion in loan guarantees through ARRA funding and has cleared all of the regulatory hurdles. The plant could be generating power by 2013.

Two federal efforts to identify disturbed lands appropriate for renewable energy are an encouraging development. First, the Restoration Design Energy Project, a BLM initiative in Arizona, uses American Recovery and Reinvestment Act (ARRA)[22] funds to identify and assess disturbed lands that are suitable for renewable energy development. The BLM is currently identifying suitable lands in Arizona, including: brownfields, abandoned mines, landfills and other sites.

Second, the U.S. Environmental Protection Agency (EPA) has initiated the "RE-Powering America's Land" program to evaluate the renewable energy potential of brownfields, Resource Conservation and Recovery Act (RCRA) sites, Superfund sites and abandoned landfills and mines. Through this initiative the EPA has identified more than 11,000 EPA-tracked sites with renewable energy development potential.[23] The development potential of these sites is significant. The total generation potential for such development is estimated at more than 920,000 megawatts.[24]

Prioritizing renewable energy development on disturbed lands helps relieve the pressure on sensitive and undeveloped public and private lands. In addition, such development can improve community wellbeing by cleaning up contamination and blight, restoring local tax bases,

[22] American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5 (2009).

[23] RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites, U.S. Environmental Protection Agency, http://www.epa.gov/oswercpa/docs/repower_technologies_solar.pdf

[24] Id.

and bringing economic opportunities to the places that need them most. Lastly, disturbed sites such as abandoned mines, landfills and agricultural fields are often near existing infrastructure required for utility-scale energy generation, including transmission, making development cheaper and reducing overall environmental impacts.

Where Do Things Stand Today?

The BLM currently has 241 applications for wind projects and 199 applications for solar projects in various stages of processing.[25] While the BLM is processing applications, both national and regional processes are being developed and utilized to help ensure renewable energy avoids, minimizes, and mitigates impacts on wildlife. Defenders is currently tracking and engaged in a number of these processes.

Fast Track Projects in CA, AZ and NV

A map of Fast Track projects in California, Arizona and Nevada. Green dots indicate projects supported by Defenders, red dots indicate projects Defenders opposes and blue dots are projects whose wildlife impacts are still being determined.
© Defenders of Wildlife

Fast-Track Projects: In an effort to jump start the development of renewable energy projects, the BLM identified 34 "fast-track" projects.[26] Projects were designated "fast-track" because, as noted by the BLM, project developers "demonstrated that they ha[d] made sufficient progress to formally start the environmental review and public participation process."[27] In addition, these projects were "advanced enough in the permitting process that they could potentially be cleared for approval by December 2010, thus making them eligible for economic stimulus funding under the American Recovery and Reinvestment Act of 2009."[28] Defenders and our partners are particularly concerned about the permitting and environmental review processes associated with "fast-track" projects. We have made it a priority to engage the Department of the Interior and project developers to help them move forward projects that can avoid, minimize and mitigate wildlife impacts.

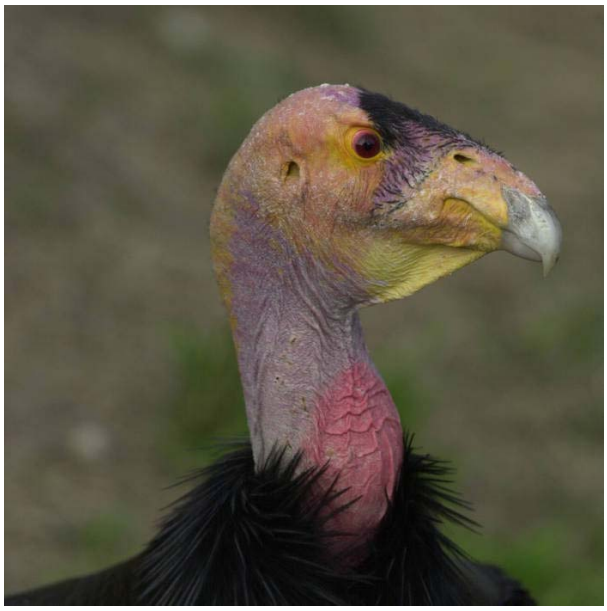
Next Generation projects: The BLM continues to process right of way applications for "next generation" projects - the successor to "fast-track" projects. Although the agency has not yet released a list of the projects that they intend to move forward, Defenders will actively monitor and engage in this process as projects advance.

Solar PEIS: On June 30, 2009, the Department of Energy and the BLM released maps depicting 24 solar energy study areas on more than 600,000 acres to be analyzed in a joint Programmatic

[25] Bureau of Land Management-Renewable Energy Authorization, Department of the Interior.
[26] The 34 projects include: 14 solar projects with a potential capacity of nearly 6,500MW, 7 wind projects with a potential capacity of about 800MW, 6 geothermal projects with a potential capacity of 285 MW, and 7 transmission projects crossing 750 miles of BLM administered lands.
[27] Fast-Track Renewable Energy Projects, U.S. Department of Interior, Bureau of Land Management, http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/fast-track_renewable.html.
[28] Id.

Environmental Impact Statement (Solar PEIS). The scope of the Solar PEIS is limited to six states with the highest solar potential: Arizona, California, Colorado, Nevada, New Mexico and Utah. Defenders supports this approach to the planning process and the objectives of creating an efficient process for authorizing energy development while conserving sensitive resource areas and minimizing environmental impacts. Given the magnitude of development being considered, strategic planning at this scale has a higher likelihood of leading to decisions with improved conservation outcomes as compared to analysis on a project by project basis. The BLM has yet to release a draft of the Solar PEIS.

Desert Renewable Energy Conservation Plan: The federal government and the State of California have started a long-term habitat conservation planning effort in the California Desert to identify the best areas for development, while also creating a long-term conservation strategy for declining and imperiled desert species. One of the benefits of this planning effort is that it includes both public and private lands in one planning process. The effort could serve as an example of how to do long-term planning for energy development and conservation. Defenders was one of the leading proponents behind this state-federal effort and serves on the stakeholder committee for this plan.



Planning renewable energy development carefully can help ensure the protection of endangered species, such as the California condor. Scott Nikon/USFWS

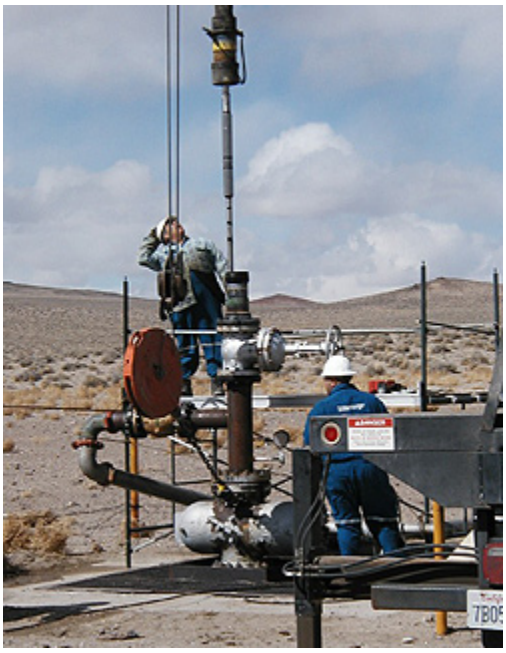
Wind and Geothermal PEIS: In 2005, the BLM completed a Programmatic Environmental Impact Statement (PEIS) for wind energy development on public lands in 11 western states, excluding Alaska.[29] Proposed wind projects on BLM lands can now tier to the PEIS during the environmental review process. The BLM and U.S. Forest Service also completed a PEIS for geothermal leasing on public lands in the 12 western states, including Alaska, in 2008.[30]

Wind and Wildlife Federal Advisory Committee: The Wind Turbine Guidelines Advisory Committee (the Committee), on which Defenders staff served, was established in 2007 to provide recommendations to the U.S. Fish and Wildlife Service (FWS) on developing effective measures to avoid or minimize impacts on migratory birds, bats and other wildlife and related habitats from wind energy development. A broad range of stakeholders -- including federal, state and tribal governments, conservation organizations, and the wind industry -- worked together to develop these guidelines. In March 2010, the Committee came to consensus on several recommendations and submitted

[29] Bureau of Land Management, *supra* note 17.

[30] See Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (Dec. 2008).

guidelines to Interior Secretary Salazar for review.[31] These guidelines provide developers with a process for conducting an assessment of wildlife and habitat risk on a proposed site, making decisions about whether or not to develop a project, and best management practices for construction and operation that reduce impacts to birds, bats and other wildlife. The recommendations and guidelines have not yet been adopted.



Drilling of a geothermal exploration well at the Desert Peak site in Nevada.
National Renewable Energy Laboratory

Moving Forward

Given the high priority placed on promoting the development and transmission of renewable sources of energy, it is important that clear guidelines and environmentally-sound national policies be established and that state efforts align closely to maximize wildlife protections on public and private lands alike. It is critical that solar, wind and geothermal energy are developed in ways that avoid, minimize and mitigate the effects of renewable energy generation and transmission on wildlife, important lands and natural resources.

We refer to this approach as "smart from the start". It should include guidelines for siting renewable energy generation and transmission that place a priority on minimizing their environmental impacts as well as on maximizing energy production and efficiency. With proper analysis, areas of high resource values can be identified and mapped to avoid unnecessary conflicts between energy development and wildlife resources. Locating projects close to existing transmission lines, where road networks and access already exist, and near to electrical load centers should reduce project costs, increase efficiency, and minimize conflicts compared to development on more remote and undisturbed landscapes.

Priority zones for renewable energy development can be identified where wildlife and natural resource conflicts are reduced and energy production and transmission are encouraged. In fact, the draft solar PEIS may include the identification of solar zones which could be designed to achieve this outcome. Siting decisions should give priority to previously disturbed lands, brownfields and other places where energy production provides the opportunity to "recycle" lands to more productive uses.

Smart from the start should ensure that project environmental reviews meet all the requirements of the National Environmental Policy Act (NEPA), including consideration of an adequate range of alternatives. Greater consistency in how EISs are developed and presented would facilitate their

[31] Wind Turbine Guidelines Advisory Committee Recommendations, Wind Turbine Guidelines Advisory Committee (Mar. 4, 2010).

analysis, stakeholder participation, and could help reduce the time and cost associated with environmental reviews.

Smart from the start should also include guidelines for best management practices to ensure that projects are installed and managed in ways that reduce their environmental impacts. Technologies should be used that are appropriate to project sites and conditions. For example, water-cooled solar power systems should not be installed in arid desert environments. And monitoring projects to ensure that their impacts do not exceed those that were anticipated is critical to ensuring that wildlife and resource damages are limited and mitigation adequate. The information generated by monitoring can be used to inform and improve future renewable energy development.


California desert. California BLM.

Mitigation guidelines and policies need to be developed and designed to offset project impacts on wildlife, habitat and natural resources consistent with state and federal requirements. Onsite impacts and landscape-scale effects (e.g., cumulative impacts) need to be considered in both project siting and mitigation design to be effective. A wide range of mitigation technologies exists and should be carefully evaluated and considered for suitability for a project site and the degree of disturbance caused by a project.

Finally, smart from the start should encourage early stakeholder involvement and agency collaboration in order to identify issues and conflicts that may affect a project or render it unacceptable. Through early engagement, solutions may be found to help make some "problematic" projects better through changes in siting, design or technologies. Alternatively, early discussions can help avoid the need for expensive and time consuming analysis for projects with a low probability of success -- saving project proponents and other stakeholders time, money, and aggravation.

An added concern with regard to future project development is the process used to accept, screen and process renewable solar and wind energy applications on BLM lands. Presently, project proponents need only submit an application for a right of way which grants them the right to develop the specific tract of land. Simply continuing to pay a fee for the right of way allows the developer to maintain a place in the queue for project reviews. With minimal requirements to qualify for a right of way, the system encourages energy speculators and does little to help the BLM process projects with high potential for success. This is because right of way applications are handled on a "first come, first served" basis. An alternative approach – competitive leasing – has been used for years for oil and gas development (as well as for geothermal projects) on BLM lands. Competitive leasing may provide a more efficient and effective alternative to managing renewable projects on

BLM lands in the future. At present, however, there is strong resistance to transitioning to a competitive leasing system – particularly by those holding rights of way.

Defenders and our partners will continue to monitor and engage the Interior Department, state agencies, project proponents and other stakeholders in discussions regarding "fast-track" and "next generation" projects. We will continue to urge Secretary Salazar to issue clear guidelines for renewable energy projects (especially "next generation" projects) to reduce the difficulty for project developers and other stakeholders in siting projects and evaluating potential impacts. And we will promote the development of a competitive leasing system for future renewable energy projects on BLM lands.

Our primary goal is to help shape those national and state policies and procedures that will encourage good projects and ensure that harmful projects are identified and modified before they become the focus of controversy and potential conflict.

We will continue to work to educate the public, policymakers, the media, the energy industry, and investors to understand that the conservation of wildlife and important lands and natural resources is no less a priority than the need to increase renewable energy production. We need to encourage the development of solar, wind, and geothermal energy, and all the benefits that they provide. But we must not do so at the expense of our nation's rich wildlife legacy.

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