



## Renewable Resource Potential On Public Lands

Our nation’s vast and varied public lands have an essential role to play in the imminent transition from a fossil-fuel based economy to one based on renewable energy and energy efficiency. Since the early 19<sup>th</sup> century, public lands have functioned as a vital source of the raw energy inputs powering our economy, and they will undoubtedly continue to be a critical supplier of sun, wind and geothermal resources that will power the 21<sup>st</sup> century economy. Responsible planning for sustainable development of these resources will be critical in ensuring the clean energy future also protects our public lands, water and communities.

Renewable energy potential in the United States is enormous, and a significant share of generation will likely be developed on public lands. Policy leaders have begun to promote development of renewable energy on public lands, as seen for example in Section 211 of the Energy Policy Act of 2005 that set a goal of developing 10,000 megawatts (MW) of non-hydropower renewable energy on public lands by 2015. A recent Secretarial Order from Secretary of the Interior Ken Salazar also encourages development of these vast resources by establishing an energy task force that will help identify the best areas for development and focus agency resources to ensure thorough and timely review and permitting.<sup>1</sup>

### **Summary Table**

The renewable energy potential of our nation’s public lands is vast. However, not all lands are suitable for renewable energy development. The acreages with potential listed in the table below have not all been screened to remove areas where development is prohibited or unacceptable, such as designated National Parks, Wilderness Areas, Roadless Areas, and crucial wildlife habitats. Please see below for discussion and citations for the table.

	<b>Current generation</b>	<b>Acreage with potential</b>		<b>Generation potential</b>
<b>Wind</b>	327 MW (all on BLM)	20.6 million acres (on BLM); 93 Indian reservations with potential		206 gigawatts (GW) in the West, 1,000 GW Atlantic offshore, and 900 GW Pacific offshore
<b>Solar PV</b>	0 MW	67% of federal lands	30 million acres (on BLM)	2,900 GW in the Southwest
<b>Solar CSP</b>	0 MW	74% of federal lands		
<b>Geothermal</b>	1,275 MW	143 million acres (BLM), 104 million acres (FS) in 11 western states and Alaska		12,200 MW in 12 Western states

<sup>1</sup> U.S. Department of the Interior. “Secretary Salazar Issues Order to Spur Renewable Energy Development on U.S. Public Lands.” March 11, 2009. [http://www.blm.gov/ca/st/en/info/newsroom/2009/march/DOI0911\\_Salazar\\_spurs\\_renewables.html](http://www.blm.gov/ca/st/en/info/newsroom/2009/march/DOI0911_Salazar_spurs_renewables.html)

## **Technologies**

### ***Wind***

Currently there are 327 MW of wind capacity installed on lands managed by the Bureau of Land Management (BLM).<sup>2</sup> Additionally, there are 281 proposed wind development projects on BLM lands in the western U.S.<sup>3</sup> While there have been no projects built on Forest Service (FS) land, two are in the permitting process: the Deerfield Wind Project on the Green Mountain National Forest in Vermont, and the White Pines Wind Farm on the Huron-Manistee National Forest in Michigan.



Source: Community Wind Energy LLC

Wind energy on public lands has great potential for growth. Secretary of the Interior Ken Salazar recently stated that “Americans have an estimated 206 GW of wind energy potential on public lands in the West and ... an estimated 1,000 GW of wind energy potential in waters off the Atlantic coast alone.”<sup>4</sup> Additionally, the Department of the Interior estimates that there are 900 GW of wind energy potential off of the Pacific shore.<sup>5</sup> The BLM manages 20.6 million acres of lands with wind potential,<sup>6</sup> and a 2005 government report found that 93 Indian reservations had high wind energy potential.<sup>7</sup> The same study found that “about 18 percent of Federal lands, principally in the West, have high potential for the development of wind ... [and] about 46 percent of the 261 million acres managed by the Bureau of Land Management have commercial wind-energy development potential.” However, modeling for a 2005 Wind Energy Programmatic Environmental Impact Statement (PEIS) in 11 Western states determined that only 160,100 acres in the area are economically developable.<sup>8</sup>

### ***Solar***

There are currently no solar energy projects on public lands, but this is likely to change very soon as the BLM sorts through the more than 220 applications it has in queue.<sup>9</sup> The two solar projects that are the furthest along in the process and will soon release their environmental reviews are the Stirling Energy Systems Solar Two in Southern California and the Ivanpah Solar Electric Generating System, also in the California desert.

A draft solar PEIS that analyzes solar resources in six Western states is due to be published summer 2010. Meanwhile, the BLM’s 2003 “Assessing the Potential for Renewable Energy on Public Lands” identified Arizona, California, Nevada and New Mexico as areas of high solar

<sup>2</sup> Bureau of Land Management. “Renewable Energy and the BLM: WND.” January 2009.

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION\\_/energy.Par.58306.File.dat/09factsheetmap\\_Wind.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy.Par.58306.File.dat/09factsheetmap_Wind.pdf)

<sup>3</sup> Strickland, Thomas. Testimony to 111<sup>th</sup> Congress U.S.Senate Committee on Environment and Public Works. “Climate Change And Ensuring that America Leads the Clean Energy Transformation.” August 6, 2009. [http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore\\_id=252adb23-01b1-468b-8351-1aec4cf4a12d](http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=252adb23-01b1-468b-8351-1aec4cf4a12d)

<sup>4</sup> U.S. Department of the Interior Secretary Ken Salazar. “Remarks to the American Wind Energy Association.” May 5, 2009. [http://www.doi.gov/secretary/speeches/050509\\_speech.html](http://www.doi.gov/secretary/speeches/050509_speech.html)

<sup>5</sup> Strickland, Thomas. Testimony to 111<sup>th</sup> Congress U.S.Senate Committee on Environment and Public Works. “Climate Change And Ensuring that America Leads the Clean Energy Transformation.” August 6, 2009. [http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore\\_id=252adb23-01b1-468b-8351-1aec4cf4a12d](http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=252adb23-01b1-468b-8351-1aec4cf4a12d)

<sup>6</sup> Bureau of Land Management. “Renewable Energy and the BLM: WND.” January 2009.

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION\\_/energy.Par.58306.File.dat/09factsheetmap\\_Wind.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy.Par.58306.File.dat/09factsheetmap_Wind.pdf)

<sup>7</sup> Department of the Interior. “Renewable Resources for America’s Future.” January 2005. [http://www.doi.gov/initiatives/renewable\\_energy.pdf](http://www.doi.gov/initiatives/renewable_energy.pdf)

<sup>8</sup> Bureau of Land Management. Wind Energy Programmatic EIS. “2. PROPOSED ACTION AND ALTERNATIVES.”

<http://windeis.anl.gov/documents/fpeis/maintext/Vol1/Vol1Ch2.pdf>

<sup>9</sup> Bureau of Land Management. “Renewable Energy and the BLM: SOLAR.”

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION\\_/energy.Par.78074.File.dat/09factsheetmap\\_Solar.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy.Par.78074.File.dat/09factsheetmap_Solar.pdf)

potential, as well as Colorado, Texas and Utah.<sup>10</sup> And a 2005 Department of the Interior (DOI) report noted that “about 67 percent of Federal lands in the lower 48 States, primarily in the western United States, have high potential for concentrated solar thermal energy production and approximately 74 percent have high potential for photovoltaic solar energy production.”<sup>11</sup> Secretary of the Interior Ken Salazar also noted that there are “an estimated 2,900 GW of solar energy potential in the southwest.”<sup>12</sup>

### **Geothermal**

Geothermal power accounted for about 12% of the country’s net renewable capacity in 2007.<sup>13</sup> Lands managed by the DOI provided over 48 percent of the country’s geothermal power. As of January 2009 there were 58 geothermal leases generating 1,275 MW in operation on BLM lands.<sup>14</sup>



Source: Inhabitat Enever

The BLM issued a Programmatic Environmental Impact Statement (PEIS) for Geothermal Leasing in the western United States in early 2008. The PEIS estimated that there are 5,540 MW of potential geothermal power in the planning area (11 western states and Alaska), which could be viable for commercial generation by 2015 and another 6,660 MW could be added by 2025.<sup>15</sup> The PEIS also identified 143 million acres of BLM lands and 104 million acres of National Forest lands with geothermal potential in the 12 western states including Alaska.<sup>16</sup> In late 2008, 111 million acres of BLM-managed lands and 79 million acres of National Forest lands were opened to geothermal leasing.

### **Policy Issues**

#### **Land and water use**

Like all energy production, utility-scale renewable energy development has significant impacts to lands and other resources, and great care must be taken to minimize and mitigate those impacts. Geothermal energy development poses many of the same impacts as oil and gas drilling; solar energy requires consideration of water use, surface disturbance, and habitat fragmentation; and wind development may involve the disruption of bird and bat migration corridors. In particular, solar arrays can cause permanent effects, as the area must be graded to a slope of less than five percent<sup>17</sup> and all vegetation must be removed to reduce the risk of fire. Serious efforts should be made to develop on already degraded lands and areas with limited other resources – if renewable energy projects are not planned well or are built in sensitive areas,

<sup>10</sup> Department of the Interior/Department of Energy. “Assessing The Potential For Renewable Energy On Public Lands.” February 2003.

<http://www.nrel.gov/docs/fy03osti/33530.pdf>

<sup>11</sup> Department of the Interior. “Renewable Energy for America’s Future.” January 2005. [http://www.doi.gov/initiatives/renewable\\_energy.pdf](http://www.doi.gov/initiatives/renewable_energy.pdf)

<sup>12</sup> U.S. Department of the Interior Secretary Ken Salazar. “Remarks to the American Wind Energy Association.” May 5, 2009. [http://www.doi.gov/secretary/speeches/050509\\_speech.html](http://www.doi.gov/secretary/speeches/050509_speech.html)

<sup>13</sup> Comparing wind, solar, and geothermal. Energy Information Administration. “Renewable Energy Consumption and Electricity Preliminary 2007 Statistics.” May 2008. Page 12.

[http://www.eia.doe.gov/cneaf/alternate/page/renewable\\_energy\\_consump/reec\\_080514.pdf](http://www.eia.doe.gov/cneaf/alternate/page/renewable_energy_consump/reec_080514.pdf)

<sup>14</sup> Bureau of Land Management. “Renewable Energy and the BLM: GEOTHERMAL.

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION\\_/energy.Par.69359.File.dat/09factsheetmap\\_Geothermal.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy.Par.69359.File.dat/09factsheetmap_Geothermal.pdf)

<sup>15</sup> Bureau of Land Management. “Geothermal Resources Leasing Programmatic EIS.” [http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal\\_nationwide.html](http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide.html)

<sup>16</sup> U.S. Department of the Interior and U.S. Department of Agriculture. “Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States.” October 2008. Pg. 1-16.

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION\\_/energy/geothermal\\_eis/final\\_programmatic.Par.95063.File.dat/Geothermal\\_PEIS\\_final.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy/geothermal_eis/final_programmatic.Par.95063.File.dat/Geothermal_PEIS_final.pdf)

the impacts on endangered species, cultural and ecological resources, or natural ecosystem services could be devastating.

### ***Permitting processes***

One of the great successes of the environmental movement was the passage of the National Environmental Policy Act (NEPA) in 1969, which offers the public an opportunity to participate in public lands management by requiring all government agencies to complete an Environmental Impact Statement as part of their decision-making processes. Although NEPA is a touchstone environmental law, it is not immune from attack. Recently, some have called for expediting state and federal environmental reviews and permitting processes to speed the development of energy projects, particularly those funded under the economic stimulus bill. Though opportunities exist to improve the permitting process by improving coordination and focusing development in least conflict areas where lengthy hurdles are unlikely, NEPA and other local environmental reviews must be thoroughly implemented for all renewable energy projects. These reviews are our government's guarantee that environmental impacts will be considered and minimized using the best available science and facts.

In addition, the public must have ample opportunities to be involved in the process of permitting renewable energy projects on public lands. Often, those that live, work, or play closest to an area proposed for renewable energy development are those that have the most meaningful concerns and recommendations for projects. Ensuing ample time for public comment, conducting public meetings, and providing a completely transparent process will not only ensure that the natural resources potentially affected by project development are protected, but should also speed final decisions by addressing issues and concerns early in the process when flexibility for changes and improvements is greatest.

### ***Transmission***

Transmission is often cited as one of the biggest barriers to transitioning to a renewable energy economy. Many of the best renewable resources do not have transmission lines with additional capacity nearby or are concentrated in remote areas, far from existing transmission lines needed to bring energy to large populations.

New transmission for renewables is crucial, but the proper siting of these new transmission lines is equally important, as many of the proposed lines will pass through large tracts of public lands. In the past, transmission siting decisions have been left until late in the process and sensitive areas have gone unprotected. In the future, decisions about where to build new lines must be made to protect ecological and cultural resources, comply with our nation's environmental laws and service primarily clean energy.

*For more information, please contact:*

*The Wilderness Society BLM Action Center, 1660 Wynkoop, Suite 850, Denver, CO 80202 (303) 650-5818 [blmactioncenter@tw.org](mailto:blmactioncenter@tw.org) or  
Chase Huntley, Policy Advisor, Energy and Climate Change, 1615 M St. NW, Washington, DC, 20036 (202)429-7431  
[chase\\_huntley@tw.org](mailto:chase_huntley@tw.org)*